

FAILURE AND RESILIENCE IN CREATIVITY, INNOVATION, AND ENTREPRENEURSHIP: PSYCHOLOGY RATIONALES

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FAILURE AND RESILIENCE IN CREATIVITY, INNOVATION, AND ENTREPRENEURSHIP: PSYCHOLOGY RATIONALES

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Family Business Internationalization in Paradox: Effects of Socioemotional Wealth and Entrepreneurial Spirit

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This study investigates the internationalization (i. e., foreign investment) of small family businesses by classifying the effects of external socioemotional wealth (family reputation) vs. internal socioemotional wealth (family involvement). The study involved 2,704 small family businesses in China, and the results support the hypothesis that family reputation has a positive effect on internationalization, while family involvement has a negative effect on internationalization. Moreover, entrepreneurial spirit reinforces the positive effect of family reputation on internationalization and enhances the negative relationship between family involvement and internationalization. This study contributes by examining the effect of entrepreneurial spirit as a potential balancing factor for the paradoxical influence of internal vs. external socioemotional wealth.

Keywords: socioemotional wealth, family reputation, family involvement, foreign investment, entrepreneurial spirit

INTRODUCTION

To respond to the challenges brought about by economic globalization, internationalization strategies have become crucial or even necessary for many family businesses that traditionally operate in domestic markets. The organizational behaviors of family business differ from other types of firms with different ownership structures because family members usually intend to run the business by creating and preserving socioemotional wealth (SEW), even at the expense of financial gains (Chrisman et al., 2007; Chrisman and Patel, 2012). Studies have shown that family businesses are less likely to internationalize than non-family businesses. The risk-aversion of family businesses (Fernández and Nieto, 2005), deep local embeddedness (Gallo and Garcia Pont, 1996), concern for subsequent generations (Yang et al., 2018), and other family-related factors may result in different internationalization processes and internationalization strategies compared to non-family businesses. Hence, family business internationalization as a strategic decision is often affected simultaneously, and paradoxically, by professional rationale and family concerns about socioemotional wealth (Bell et al., 2004; George et al., 2005; Fernández and Nieto, 2006; Johanson and Vahlne, 2009).

Against such a backdrop, the importance of the socioemotional wealth of a family business on its internationalization is well-recognized. SEW is defined as the “affective endowment of family owners” (Gomez-Mejia et al., 2011), or “non-financial value accruing a family through its association with a firm” (Debicki et al., 2016). It is acknowledged that family businesses

may pay particular attention to preserving and fostering SEW when they strategically consider internationalization. However, the specificities of family businesses make them heterogeneous in their SEWs, justifying the need to explore the effects of SEWs on internationalization in detail. To do so, this study adopts the research strategy of dimensionalizing the construct of SEW, exploring the effects of external SEW proxied by firm reputations and internal SEW proxied by family involvement in foreign investment of Chinese small family businesses. Family reputation based on the financial performance of the family business (Lange et al., 2011) and family involvement backed by family ownership (Bloom, 1985) are usually mentioned in exploring the black box of SEW and are regarded as valid and useful proxy variables in measuring SEW. This study considers how the internal and external dimensions of SEW are in tension and are associated with foreign investment in small family businesses.

This study explores the moderating effect of entrepreneurial spirit in foreign investment choices. Overall, this study theoretically and empirically advances current understanding of the internationalization of family businesses from a SEW perspective. In particular, the present study makes three unique contributions to extant literature about family business internationalization.

First, this study examines how the SEWs of small family businesses affect foreign investment by external vs. internal sources. Family heterogeneity should be carefully considered when we are talking about SEWs, and a good way of doing this is to detail the construct *per se* by dimensionalization. In most literature, the non-financial values associated with a family business are roughly labeled by SEW and indiscriminately treated and measured by proxies such as family ownership and family control on many occasions. In this study, we classify SEW into family reputation originating from the financial performance of the family business and family involvement backed by family ownership. The study thus explores the “black box” of SEW with empirical evidence in the context of foreign investment in Chinese small family businesses.

Second, we chose to investigate foreign investment, rather than export intensity or export propensity. Foreign investment is a deep-level internationalization process usually involving higher resource commitments. Studies have found that the SEW is heavily weighted in the family decision process when a heavy resource commitment is involved. Therefore, foreign investment offers an excellent context in which to explore the functions and effects of SEW on internationalization.

Finally, this study explores the moderating effect of entrepreneurial spirit on the relationship between SEWs and foreign investments. In previous studies, entrepreneurial spirit is usually missing from discussions about the SEW of a family business. Our study found that the priority ordering of SEW in a family business with a lasting entrepreneurial spirit or family business losing their entrepreneurial spirit is quite different. Therefore, as this study indicates, the effects of SEWs on foreign investment are distinct in these two contexts, contributing to perspectives on SEW in family business internationalization theory.

THEORY AND HYPOTHESES

Socioemotional Wealth and the Internationalization of Family Businesses

Following a pioneering study by Gallo and Sveen (1991), research about the internationalization of family businesses has steadily been the subject of growing interest from scholars from multiple disciplines (Kontinen and Ojala, 2010; Pukall and Calabrò, 2014; Arregle et al., 2016). The majority of literature on family firm internationalization focuses on the relationship between family ownership and internationalization (Pukall and Calabrò, 2014; Arregle et al., 2016; Dou et al., 2020). Though there are strong arguments that family business may be reluctant to internationalize for the intention of preserving Socioemotional Wealth (SEW), existing empirical studies offer contradictory predictions about either positive (Minetti et al., 2015; Fang et al., 2018), negative (Sanchez-Bueno and Usero, 2014; Alessandri et al., 2018), curvilinear (Liang et al., 2014), or no relationship (Cerrato and Piva, 2012) between internationalization and family ownership. Family-specific heterogeneity is an important factor in the strategic process of internationalization of family businesses (Pukall and Calabrò, 2014; Yang et al., 2018).

In past years, perspective of socioemotional wealth has attracted academic interest as an insightful approach for explaining why, when, and how “familiness,” meaning family-specific factors (Habbershon et al., 2003), or the affect-related non-financial values of families exert influence on the internationalization of family firms (Yang et al., 2018; Dou et al., 2020). It is acknowledged that family businesses would pay more attention to the balance between financial performance and socioemotional value than non-family businesses. Long-term orientation and shared values for the future are important features of a family business, which are more or less related to family ownership and family control of the business (Kotlar and de Massis, 2013). Therefore, the psychology-driven motives of a family business for internationalization (Schulze and Kellermanns, 2015) differs from non-family business, family-specific characteristics, and SEWs and is likely to shape their values, missions, and objectives (Jaskiewicz et al., 2017). This intention to preserve SEW is associated with conservative strategy and risk aversion in the context of a family business (Zahra, 2005). These types of businesses tend to internationalize later, more slowly, and more prefer to internationalize in geographically or culturally similar countries (Claver et al., 2007; Graves and Thomas, 2008; Jiang et al., 2020; Xu et al., 2020). Furthermore, family businesses are also assumed to follow the stage model, preferring to lower resource commitments (Pukall and Calabrò, 2014) in their internationalization process. SEW perspective offers more rich explanations about the organizational modes of expanding internationally in the context of a family business.

It has been widely acknowledged that the primary reference point of a family business in making strategic decisions is not only economic tradeoff but also SEW preservation (Gómez-Mejía et al., 2007; Berrone et al., 2012; Jiang et al., 2020). Although the SEW approach has been widely used to explain unique considerations about socio-affective utilities in family

strategic decisions, the heterogeneity of SEW ordering among family businesses has not been explored in detail. It is necessary to shed light on the conceptual nature of SEW, which is roughly defined as the affective endowment or non-economic, affective values that a family derives from its ownership in the family business (Gómez-Mejía et al., 2007; Gomez-Mejia et al., 2010, 2011; Berrone et al., 2012). In previous studies, the percentage of family ownership has been usually employed as a general operational measure for SEW. Although family ownership theoretically leads to affective values for the owning family, this simplified indicator is not sufficient to express the various multifaceted aspects of SEW. It is, therefore, necessary to explore the multidimensionality of SEW to match heterogenous priority ordering of the owning family when they define their SEW pursuits. Various effective utilities, including the perpetuation of a positive family image and reputation, the need for identification, a sense of belonging, enjoyment of personal control, the ability to exercise authority, and an active role in the family dynasty, have been mentioned as the content of SEW (e.g., Gomez-Mejia et al., 2010; Berrone et al., 2012; Debellis et al., 2020; Jiang et al., 2020). It is suggested that families may vary their preference for internal and external sources of SEW, depending on family context (Debicki et al., 2016). For example, even though the first inclination of the owning family is to enhance family ownership to preserve SEW, family concern for SEW may dynamically shift toward family reputation if the external sources of SEW do not enhance family ownership (Vardaman and Gondo, 2014). The external and internal sources of SEW may be associated with organizational behaviors in differential ways (Miller and le Breton-Miller, 2014). For example, an owning family emphasizing the firm's reputation is likely to place high importance on business performance, while another family concerned about increased family involvement may not (Naldi et al., 2013; Debicki et al., 2016). This study focuses on two typical external and internal sources for SEW: family reputation originating from the financial performance of a family business and family involvement backed by family control over the business. Furthermore, the heterogenous priority of SEW pursuits is dynamically changed and may be associated with a family-specific context.

This study discusses foreign investments in Chinese family businesses. Foreign investment, formally called Outward Foreign Direct Investment (OFDI), is a typical mode of internationalization with heavy resource commitment (Kao and Kuo, 2017; Yang et al., 2018). When heavy resource commitment involves disputes about internationalization among family members will be amplified (Jiang et al., 2020; Xu et al., 2020). The potential threat of internationalization to SEW will loom salient in such cases. The purpose of foreign investment by Chinese small family business explored in this study is expansion, which is related to foreign investment targeted to industrial sectors. Family ownership provides the foundation for the intention to preserve SEW endowment to build a family legacy (Zellweger et al., 2007). The attitude of the owning family to foreign investment will shape their pursuit of SEW in different contexts.

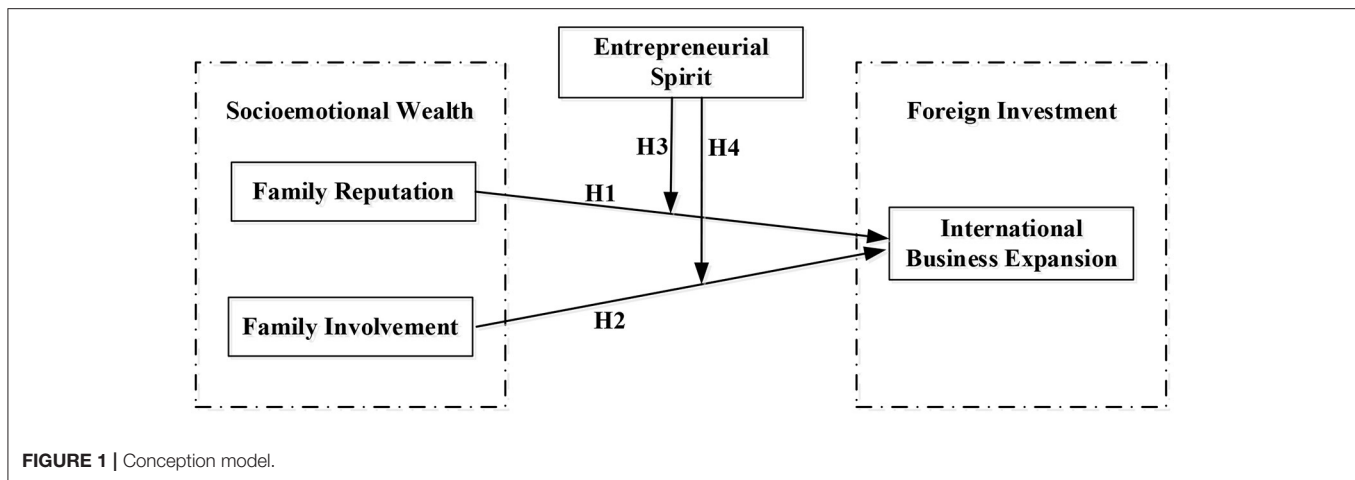
The international business expansion involves entrepreneurship for most owning families (Oviatt and

McDougall, 2005; Yang et al., 2018). Usually, the family business will face a resource gap in the internationalization process and have to seek capital, skill, and capabilities from external resources, stakeholders, and institutions (Jiang et al., 2020; Xu et al., 2020). International expansion implies changes in strategies and organizational structure to meet the demands of entrepreneurship activities is full of uncertainty in a foreign country. Prior studies have proposed that family members may be suspicious of structural changes or afraid of losing family influence (Mitter et al., 2014; Chua et al., 2018). Aversion to the loss of SEW would restrain foreign investment decisions and exert influences on intention and mode of international expansion. There is also another argument that international expansion is a reputational signal for a family business in emerging markets. The aspiration to develop SEW endowment may inspire the owning family to engage in international expansion in some family contexts (Gomez-Mejia et al., 2010). The attitude and intention of foreign investment are largely moderated by the entrepreneurship of the owning family. The priority SEWs of the owning family with a strong entrepreneurial spirit would differ from that of an owning family with a weak entrepreneurial spirit. Therefore, the entrepreneurial spirit of the owning family is an important moderating variable in the strategic process, especially when the first generation of the Chinese owning family is facing the problem of succession. See **Figure 1** for conception model.

Family Reputation and Foreign Investment

A distinction between external (e.g., family reputation) and internal (e.g., family involvement) sources for SEW has been explicitly or implicitly proposed in the literature on this subject (Block, 2010). Family reputation is usually perceived as an important external source for SEW (Gomez-Mejia et al., 2010; Berrone et al., 2012; Naldi et al., 2013). The family business places high importance on family reputation and firm image over short-term financial benefits (Gomez-Mejia et al., 2011). This great concern for family reputation makes the family business more sensitive to the potential threat of negative images caused by business strategy. The family business has a stronger preference for a positive reputation (Dyer and Whetten, 2006), for instance, the inclusion of the family surname in the business name is positively associated with the family business' social responsibility (Uhlener et al., 2004).

In other aspects, reputation building offers motivation for the owning family to seek business success. A firm's reputation is defined as the "beliefs of various stakeholders regarding the likelihood that the firm will deliver value along key dimensions of performance (Rindova and Fombrun, 1999), chiefly product quality and financial performance" (Rindova et al., 2006). Therefore, reputation serves as "a signal of future performance based on perceptions of past performance" (Dimov et al., 2007, p. 486). Potential business partners may choose to cooperate with the family business because of its reputation and the fact that it is run by a trustworthy family. Successful international business expansion is a strong signal for better performance and can create a more positive image for the firm in emerging markets. For example, international product brands or local firms



with successful outward foreign direct investments are usually overvalued in the Chinese market.

The Chinese government also encourages firms to invest abroad, and the volume of Chinese OFDI has been increasing in recent years (Yang et al., 2018). Family businesses with foreign investment are usually more appreciated by local governments (Jiang et al., 2020; Xu et al., 2020). In such a context, successful expansion in international markets will bring a more positive reputation to the owning family and offer more advantages in establishing and maintaining a good relationship with local governments (Xu et al., 2020). In this way, reputation-building offers more motives to expand the business internationally. This study thus proposes the following hypothesis:

Hypothesis 1: there is a positive relationship between family reputation and international business expansion.

Family Involvement and International Business Expansion

Family involvement is usually proposed as a core aspect of internal sources for SEW (Gómez-Mejía et al., 2007; Cabeza-García et al., 2017). The effect of family involvement on entry mode and the geographical choice of foreign investment is focused at the intersection of the family business and international business disciplines. For example, Liang et al. (2014) propose that family businesses with a high level of family involvement will assign a higher priority to risk-aversion to SEW than those with lower family involvement (Choi et al., 2015).

The strategic decision to undertake internationalization may present a salient threat to SEW, especially when heavy resource commitment is involved (Gomez-Mejia et al., 2010). Foreign investment usually requires more international human resources, knowledge, skills, and funding from outside sources (Fatemi, 1984), as these skills and resources may not be available within the family (Schulze et al., 2003; Hitt et al., 2006). To acquire such external resources, the internationalization process may coincide with the loss of family control over their business, which most family businesses want to avoid (Koropp et al., 2014). Furthermore, a family business might be pressured to change its

business strategy and corporate governance to meet the demands of the family's international business expansion. This could increase external professionals, outside managers, investment partners, and other stakeholders involved in the process of foreign investment. The involvement of family members may thus decrease and lead to a loss of control over firm affairs and decision-making power (Berrone et al., 2012; Zellweger et al., 2012). In the majority of studies on SEW, family control and the involvement of family members in the firm's business are the core internal sources for SEW. Maintaining family involvement and influence over the firm usually gain higher priority than risk diversification advantage or entrepreneurial opportunity of international business expansion (Yang et al., 2018). Thus, considering the potential loss of SEW related to foreign investment in other countries, a family business with greater family involvement is less likely to initialize a foreign investment strategy.

The social embeddedness of family members offers more physiological reasons for the owning family to resist strategic investment abroad (Chua et al., 2018). Most of the Chinese family businesses rise along with the opening and reform of Chinese governance and society. The social ties and emotional connections of family members with local communities are regionally bounded (Banalieva and Eddleston, 2011; Jiang et al., 2020). For most Chinese owning families, social capital that is also regionally bounded offers important advantages when operating a family business (Wu, 2018). Family businesses with greater family involvement are likely to focus their investment on familiar domestic markets. Accordingly, this study proposes the following:

Hypothesis 2: there is a negative relationship between family involvement and international business expansion.

The Moderating Effects of Entrepreneurial Spirit

The priority ordering of SEWs is family-specific and context-specific. The conceptual nature of SEW grasps the diversity and valence of affective values derived from family control (Miller

and le Breton-Miller, 2014; Vardaman and Gondo, 2014; Chua et al., 2015; Schulze and Kellermanns, 2015). The meaning of this concept is so rich that it is expressed in terms of its multidimensionality, and accordingly, this study focuses on the context-specific dynamics of the priority ordering of SEWs.

Entrepreneurial spirit offers an insightful perspective for the dynamic priority ordering of SEWs. The entrepreneurial spirit in our study is close to an entrepreneurial orientation defined as “behavior of the business characterized by innovation, proactivity and risk-taking” (Miller, 1983): and conceptualized as the capacity of the firm to undertake activities related to innovation, assumption of risk and pioneering new actions (Engelen et al., 2015). Any attempt at international business expansion is essentially entrepreneurial as it represents a combination of risk-taking, innovation, and proactiveness (Javalgi and Todd, 2011). The concept of entrepreneurial spirit is measured as an inclination for being entrepreneurial, innovative, and risk-taking in the context of Chinese economic transformation in our study shapes the strategic thinking of the owning family about the priority ordering of SEWs (Memili et al., 2020). This argument is supported by literature about how SEW interplay with psychological capital (Memili et al., 2020; Tsai et al., 2020). Small family businesses with a strong entrepreneurial spirit are expected to place higher priority on family reputation and the lasting prosperity of the family business, and those with a low entrepreneurial spirit are expected to highly appreciate risk-aversion and maintain family control. Particularly, when the first generation of small family businesses is facing the challenge of succession, entrepreneurial spirit increasingly gains significance in determining SEW priority order. A failure in transgenerational entrepreneurship will exacerbate the decline of entrepreneurial orientation (Jaskiewicz et al., 2015). This study attempts to link the family ordering of SEWs to the moderation of entrepreneurial spirit, particularly the impact of entrepreneurial spirit on the priority shift between the external and internal sources of SEW, and its influence on the investment modes of a family business in foreign countries.

The attitude and strategic choice of foreign investment in a family business with a strong entrepreneurial spirit is expected to differ from that in a family business with a weak entrepreneurial spirit. Previous studies confirm entrepreneurial orientation positively influences the international performance of the family business (Hernandez-Perlines, 2018). This perspective of entrepreneurial orientation is used as a dynamic way of explaining why companies become internationalized (Freeman and Cavusgil, 2007; Sundqvist et al., 2012). Our study argues that the presentence or absence of entrepreneurial spirit will moderate the relationship of multiple dimensions of SEW and international business expansion.

The perspective of entrepreneurial orientation addresses how entrepreneurial spirit stimulates decision-making through the search and exploitation of opportunities in a proactive, innovative, and risky way (Hernandez-Perlines, 2018). Benefiting from a strong entrepreneurial spirit, the family business is more likely to expand its SEW along with their entrepreneurial expansion of international business (Yang et al., 2018). International business expansion is a

good signal reflecting the strength, capability, and prestige of family business in China's domestic market. Successful international business expansion is good for improving the reputation and image of a family business. It is expected that these family businesses with a strong entrepreneurial spirit place greater importance on family reputation based on business performance and a positive attitude to international business expansion (Javalgi and Todd, 2011). Conversely, the absence of entrepreneurial spirit usually leads to risk-aversion strategy and the owning family may place more importance on saving the current stock of SEW and stress on maintaining family control and influence on the family business. In this instance, reputation-building motives for international business expansion are necessarily weakened. A family business with a low entrepreneurial spirit usually intends to liquidate its assets rather than initialize international business projects. These family businesses would like to preserve wealth for the owning family in a risk-averse way, such as maintaining the current domestic market share rather than start a risky international entrepreneurial activity. Reputation-building based on international business expansion loss priority in SEW is by order of the owning family. Thus, the connection between family reputation and family business expansion is relatively strong due to entrepreneurial spirit. Accordingly, this study proposes the following:

Hypothesis 3: the presence of entrepreneurial spirit will positively moderate the relationship between family reputation and international business expansion.

It is a reasonable assumption that entrepreneurial spirit is positively associated with a positive attitude to change, outside resources, professionals and managers, and aggressive business strategy, etc. With a strong entrepreneurial spirit, the family business usually is more willing to push forward business expansion at the cost of decreasing the extent of family involvement. These family businesses usually weigh financial goals heavily and to some extent refrain from the negative effect of family involvement on international business expansion. Such family businesses with a strong entrepreneurial spirit usually place their priority on creating SEW along with international business expansion and are optimistic about the potential loss of SEW caused by decreasing family involvement. The presentence of a strong entrepreneurial spirit may enable them to release this perception of the links between family involvement and risk-aversion. The social embeddedness that is tightly associated with family involvement is not likely to be changed by a strong entrepreneurial spirit. The combination of these traits of family involvement and entrepreneurial spirit in the owning family is more likely to facilitate the family business to expand in the domestic market, especially considering that the Chinese domestic market is one of the fastest-growing in the world. Focus on the domestic market is a reasonable strategic choice for family businesses with a higher level of family involvement and entrepreneurial spirit. Putting a higher priority on domestic expansion means a declining likelihood of them initiating international business expansion.

The picture in a family business with a weak entrepreneurial spirit is expected to be quite different. Weak entrepreneurial spirit means less likeliness of actual business expansion both in domestic markets and international markets. The absence of entrepreneurial spirit may enhance the inclination of risk-aversion that is closely linked with a high level of family involvement. If there is a lack of entrepreneurial spirit, these family businesses like to preserve wealth for the owning family in a risk-averse way. Besides, there may be concerns about the intra-generational transfer of family wealth. To some extent, abroad financial investment offers a feasible way to preserve business capital by diversifying its international wealth allocation. International business expansion, in some special but not unpopular cases, offers a suitable way to transfer family wealth internationally. The absence of entrepreneurial spirit may relieve the negative effect of family involvement in international business expansion. Then, the absence of entrepreneurial spirit should offset part of the negative impact of family willingness for international business expansion. Thus, the negative connection between family involvement and international business expansion in a family business with strong family involvement is relatively stronger than that in a family business with weak family involvement. Accordingly, this study proposes the following:

Hypothesis 4: the presence of entrepreneurial spirit will reinforce the relationship between family involvement and international business expansion.

MATERIALS AND METHODS

Data

The data used in this study are based on the 12th China Private Enterprise survey (CPES) in 2016, which is a nationwide aerial survey on Chinese private entrepreneurs jointly conducted by the All-China Federation of Industry and Commerce (ACFIC), State Administration for Industry and Commerce (SAIC) and Chinese Academy of Social Science (CASS) since the beginning of the 1990s. Each wave of the survey covers about 0.055% of private firms in China mainland and 31 provincial regions, including 22 provinces, four municipalities directly under the supervision of the central government, and five minority autonomous regions.

To achieve a balanced representation across all regions and industries in China, a multistage-stratified random sampling method was used in this survey. The sampling procedure was conducted as follows: in the first step, we determined the total number of private enterprises surveyed. This total national sample size was assigned to 31 provinces in mainland China according to their shares of local private enterprises in the national total. Then six cities or counties were picked up for each province, generally including the provincial capital city, one prefecture-level city, one county-level city, and three counties. Then the number of private enterprises surveyed in each city/county and industry are in turn likewise determined according to its share of private number in this province or industry. Finally, private enterprises were randomly selected for each sub-sample. This dataset is by far the best for studying

TABLE 1 | Description of sampled companies.

Region	Samples	Industry	Samples
Eastern	1,535	Non-manufacturing	1,674
Central	674	Manufacturing	1,030
Western	495		
Total	2,704	Total	2,704

Family ownership	Samples	Firm size (million)	Samples
0–25%	257	0–10	1,211
25–50%	271	10–50	614
50–99%	600	50–100	291
100%	1,576	>100	588
Total	2,704	Total	2,704

research issues concerning Chinese private enterprises because of its large sample cover. This survey is based on detailed household interviews with the majority owner of each selected private firm (Gao and Hafsi, 2015). The face-to-face data gathering process largely ensured the availability and accuracy of sensitive information on private enterprises, including family conception, internationalization, and personal characteristics, etc. It is acknowledged that this dataset is widely used for studying private entrepreneurs, family business, and other related topics.

The majority of private firms in China are under family ownership and are small businesses. In the 12th China Private Enterprise survey, the average size of sampled enterprises included ~215 employees, and the annual revenue of these enterprises was about 140.19 million RMB. The average share of family ownership was 79.9%, and about 58.4% of the sampled firms are held by an owning family, with 95.8% of sampled firms controlled by family ownership. It is well-accepted that the agency problem of corporate management is not a prominent issue in these family-owned small businesses (Du et al., 2015). Hence, our focus on family-controlled small businesses allows us to intensively explore the effect of SEWs on foreign investment in a family business by controlling the agency problem. The 12th China Private Enterprise survey contains 8,111 initial observations. After deleting those observations with missing data, this study obtained the final sample, including 2,704 observations. Please see **Table 1** for details of the sample descriptions.

Measurement of International Business Expansion

International business expansion is usually measured by export intensity (Bausch and Krist, 2007; Elango and Pattnaik, 2007), export propensity (Ganotakis and Love, 2012; Yang et al., 2018), OFDI intensity (Vermeulen and Barkema, 2002; Bhaumik et al., 2010; Chari, 2013), and OFDI propensity (Hu and Cui, 2014; Liang et al., 2014). In this study, we focus on foreign investment by Chinese family-controlled small businesses. Following previous studies (Liang et al., 2014; Haapanen and Tapio, 2016; Jiang and Holburn, 2018; Yang et al., 2018), we

constructed a dummy measurement for international business expansion depending on whether the family business is engaged in real foreign investment. Family business owners were asked to report the volume of their foreign investment in 2015 and illustrate the investment destination of their foreign investments in this survey. The classification of the usage destination of foreign investments in the surveys is as follows: (1) building overseas plants; (2) establishing overseas marketing branches; (3) merge, acquisition or investment in a foreign enterprise; (4) investing in real estate property in foreign countries; (5) purchasing natural resources, energy resources, and land overseas; (6) establishing overseas research and development branches; (7) investment immigration for the business owner or family members; and (8) others.

International business expansion was the main purpose of foreign investment in this study. The dummy variable of international business expansion was constructed by valuing it equal to 1 if one of the investment destinations is (1), (2), (3), (5), (6), or (8), otherwise equal to 0. Referring to sample statistics, we found that only 9.69 and 5.27% of sampled firms have Foreign Investment and international business expansion, respectively. In the CPES survey, the respondents reported the amount of OFDI. All of the family businesses that self-reported the investment destinations also reported the investment amount, providing an additional validity check of this dummy measurement.

Measurement of Family Reputation and Family Involvement

The conceptualization of organizational/family reputation “consists of familiarity with the organization, belief about what to expect from the organization in the future, and impressions about the organization’s favourability” (Lange et al., 2011, p. 153). The political status of a family business offers a strong signal about its reputation because official political titles can easily improve the visibility of a family business among business social networks, enhance the impression of business image and increase the favorability of the family business. Research by Du et al. (2015) supports the argument that political connection directly contributes to a firm’s reputation. Den Hond et al. (2014) argues that corporate political activities affect firm reputation and that gaining access to and the attention of politicians contributes to positive reputation. The “coronation” of political title is an official recognition of the social reputation of a family business in the Chinese political context. Hence, this study measures family reputation by their political positions in the political system of the Chinese People’s Congress (CPC) or Chinese People’s Political Consultative Conference (CPPCC), and their position in the Local Federation of Industry and Commerce (LFIC). An ordinal variable is constructed based on the highest rank of CPC, CPPCC and LFIC the family business owner serves (Not titled = 0, County level = 1, Prefectural level = 2, Provincial level = 3, and National level = 4). After referring to the sample statistics, we found that 21.01, 29.12, and 65.27%, respectively, of sampled family business owners, serve or served in the CPC, CPPCC, and LFIC system, and that 61.1% of family business

owners self-reporting for LFIC also occupied a position in CPC or CCPCC.

The literature on this subject observes that “components of involvement” and “essence” approaches are often used to measure family involvement in the family firm (Chrisman et al., 2005). The involvement approach focuses on the owning family’s involvement in ownership, management, or control (Chrisman et al., 2005; Zellweger et al., 2010), whereas the essence approach focuses on “behaviors that produce distinctiveness before the firm can be classified a family firm” (Pearson et al., 2008, p. 966).

Involvement proxied by family ownership and management control is not sensitive in this study, since family ownership is generally high among all the sampled firms. In the survey, the value of family involvement is measured using the following items: (1) The owning family should retain over 50% ownership of the family firm; (2) Strategic decisions about the family business should be made by family members; and (3) The key positions should be occupied by family members. All items are measured using a five-point Likert scale anchored between “strongly disagree” and “strongly agree.” The internal consistency of the family involvement scale is measured using Cronbach’s alpha. The three items are highly correlated (Cronbach’s coefficient alpha = 0.82), confirming that the measuring scale is suitable for the present purposes. The Kaiser–Meyer–Olkin (KMO) measure of sampling adequacy value is 0.68, greater than the recommended level of 0.6. Bartlett’s test of sphericity is also statistically significant ($p < 0.000$). These results suggest that it was appropriate to proceed to the factor analysis. One factor was subsequently extracted via principal component analysis with varimax rotation using the Kaiser normalization rotation method, and the total variance explained by this factor was 73.5%. Thus, the three items were averaged into an operating measure of family involvement.

Measurement of Entrepreneurial Spirit

An entrepreneurial spirit is a value that enables an entrepreneur to look beyond accepted boundaries and find innovative ways to leverage the business and improve its practices. In the context of Chinese economic transformation and industrial upgrading, the entrepreneurial spirit is embodied in the pursuit of product innovation, technological innovation, and strategic transformation. Our measurement of entrepreneurial spirit is close to Miller’s definition of entrepreneurial orientation as the “behavior of the business characterized by innovation, proactivity and risk-taking” (Miller, 1983: 771). Entrepreneurial orientation can also be defined as the capacity of a firm to undertake activities related to innovation, assumption of risk, and pioneering new action (Engelen et al., 2015). For companies struggling for survival in the transformation process of the Chinese economy, innovation must be addressed. In this study, entrepreneurial spirit is measured using the following items: (1) compared to your rivals, does your company have competitive advantages in core R&D team, core technologies, or technological talent? (2) Compared to your rivals, has your company invested in new product development? (3) In adapting to dynamic environmental changes, is your company willing to invest intensively in risky upgrading of products, reducing pollution, or diversification

through technological innovation and product innovation? Total scores are obtained by assigning 1 for a positive answer and 0 otherwise. This measurement was constructed from existing official questionnaires, which differ from traditional scales for entrepreneurial spirit and entrepreneurial orientation (e.g., Covin and Slevin, 1989; Brown et al., 2001). In our sample, the KMO measure of sampling adequacy value is 0.64, above the recommended level of 0.6. Bartlett's test of sphericity is also statistically significant ($p < 0.00$). The internal consistency of the entrepreneurial spirit scale is measured using Cronbach's alpha; the three items are highly correlated (Cronbach's coefficient alpha = 0.70). These results suggest that the scale for entrepreneurial spirit used in this study is relatively reliable.

Other Control Variables

This study uses a number of control variables for firm characteristics. Previous research has suggested that foreign investment is essentially capital flight across borders in an attempt to flee a worsening business environment, and it is reasonable to assume that the domestic business environment is a key factor influencing foreign investment decisions. In the survey, the domestic business environment is evaluated using 14 items covering administrative approval, honesty, and efficiency of public officials, fair enforcement of laws, intellectual property protection, personal security, protection of property, infrastructure, business service in the market, interference from local government, financing from banks and private sources, and availability of skilled workers. A factor extracted from these 14 items is used to control for the family business owner's perception of the domestic environment. This study assumes that in firm-level investment strategy, domestic investment is closely linked to foreign investment. International diversification is a strategic consideration within a firm's diversification strategy and may be connected with trends in industry diversification. Therefore, domestic investment and industry diversity are controlled. Education background is also controlled for using dummy variables for high school (or equivalent) and college degree and above, with junior high school and below as the default educational background.

Larger family firms may exhibit a greater inclination toward internationalization (Acedo and Casillas, 2005), and family influence and control over the family business, along with SEW structure, may vary with firm size (Gomez-Mejia et al., 2011; Pukall and Calabrò, 2014). Accordingly, this study controls for firm size, measured as the logarithm of the number of employees (Cesinger et al., 2016). Outward foreign investment is closely connected to financial status in terms of total assets and profitability. Consistent with the literature, this study adopts the logarithm of profit and net assets as control variables. The industry effect of internationalization, particularly between the manufacturing sector and other sectors, has often been mentioned in previous studies (e.g., Carpenter and Fredrickson, 2001; Yang et al., 2018), and this study uses a dummy variable to control for the industry effect of manufacturing. Regional heterogeneity is treated in line with the literature, with dummy variables constructed to control for regional effects of central and western China, taking eastern China as the default. In analyses

not reported here, this study uses more fine-grained controls for industry and region; these do not affect the results and are omitted here for parsimony (Bernerth and Aguinis, 2016; Yang et al., 2018).

RESULTS

As international business expansion (IBE) is a binary dependent variable, this study applies a Probit model to test the hypotheses (e.g., Fernández and Nieto, 2005). The descriptive statistics and correlations for the variables are shown in **Table 2**. IBE is correlated with family reputation, family involvement, entrepreneurial spirit, and other control variables, demonstrating that these are empirically connected. The correlations between independent variables are moderate, demonstrating that they are empirically distinct.

Table 3 shows the results of all the hypothesis tests, based on the Probit regression. Bootstrapping is used to generate standard errors and t statistics. Model 1 includes the control variables, showing that entrepreneurial spirit (coefficient = 0.25, $p < 0.01$), domestic investment (coefficient = 0.07, $p < 0.01$) and profit (coefficient = 0.04, $p < 0.05$) have positive significant effects on the international expansion of a family business, while business environment and firm size have no significant effects. Slack resources offered by profitability may be important in the implementation of internationalization strategies (Yang et al., 2018), including IBE. The results from Model 1 indicate that IBE (i.e., industrial investment abroad) is not significantly associated with the domestic business environment. The results in **Table 3** suggest that a small company has strategic advantages in the flexibility of its internationalization, which is in line with theoretical expectations.

Model 2 provides the results for the main effect on IBE. The regression results show that family reputation has a significant and positive effect on IBE (coefficient = 0.19, $p < 0.05$). Outward foreign indirect investment in industrial fields is encouraged and supported by the Chinese government as a sign of growing Chinese market power, and substantial business expansion in international markets is welcomed by the local government and the public. It is acknowledged that only firms that perform well in the domestic market are in a position to implement a successful internationalization strategy, and foreign investment for business expansion enhances the business reputation and political assimilation of the owning family. A family business with a better family reputation (proxied by political status) will thus have greater incentives to expand its business internationally than a family business with a lower family reputation.

The results of Model 2 also suggest that family involvement has a significant and negative effect on IBE (coefficient = -0.19, $p < 0.01$). The SEWs for the family involvement of the owning family are based on family cohesion and embeddedness in the local social network. The internationalization process is always accompanied by a partial loss of family control associated with the need to leverage external resources and talents. A family business with a high level of family involvement will try to avoid foreign investment that involves a heavy commitment

TABLE 2 | Descriptive statistics and correlation.

	N	Mean	Sd	1	2	3	4	5	6	7	8	9	10	11	12	13
IBE	2,704	0.05	0.22	1												
Family reputation	2,704	0.55	0.57	0.12*	1											
Family involvement	2,704	3.38	1.16	-0.13*	-0.12*	1										
Entrepreneurial spirit	2,704	1.13	0.83	0.15*	0.18*	-0.05*	1									
Profit	2,704	3.89	2.68	0.12*	0.41*	-0.05*	0.27*	1								
Equity	2,704	7.04	2.56	0.08*	0.41*	-0.08*	0.24*	0.47*	1							
Business environment	2,704	3.80	0.63	0	-0.11*	0.05*	0	-0.03	-0.06*	1						
Domestic investment	2,704	3.92	3.05	0.13*	0.41*	-0.13*	0.33*	0.52*	0.47*	-0.07*	1					
Diversification	2,704	0.28	0.45	0.03	0.17*	-0.10*	0.02	0.12*	0.12*	-0.11*	0.16*	1				
Firm size	2,704	3.91	1.80	0.11*	0.55*	-0.14*	0.31*	0.62*	0.58*	-0.09*	0.60*	0.17*	1			
Edu	2,704	2.00	0.45	0.05*	0.20*	-0.10*	0.13*	0.15*	0.14*	0.02	0.14*	0.06*	0.17*	1		
Region	2,704	1.62	0.78	-0.05*	-0.03	-0.07*	-0.09*	-0.08*	-0.16*	-0.07*	0	0.10*	-0.12*	-0.06*	1	
Manu	2,704	0.38	0.49	0.05*	0.13*	0.01	0.27*	0.22*	0.35*	0.03	0.22*	-0.16*	0.34*	0.02	-0.28*	1

IBE, International business expansion. * $p < 0.05$.**TABLE 3 |** Probit model for foreign investment of Chinese small family business.

Dependent Variable	Model 1	Model 2	Model 3
International business expansion			
Family Reputation (FR)		0.19** (2.27)	0.06 (0.49)
Family Involvement (FI)		−0.19*** (−5.55)	−0.16*** (−3.89)
FR*ES			0.26** (2.50)
FI*ES			−0.16*** (−3.50)
Entrepreneurial Spirit (ES)	0.25*** (3.93)	0.21*** (3.31)	0.10 (1.44)
Domestic investment	0.07*** (3.39)	0.06*** (3.19)	0.07*** (3.18)
Business environment	0.01 (0.14)	0.01 (0.13)	0.00 (0.00)
Profit	0.04** (2.01)	0.04** (2.08)	0.04* (1.78)
Equity	−0.01 (−0.59)	−0.02 (−0.98)	−0.02 (−0.77)
Diversification	0.05 (0.58)	0.03 (0.27)	0.05 (0.56)
Firm size	−0.03 (−0.66)	−0.07* (−1.65)	−0.06 (−1.46)
Edu-higher school	−0.05 (−0.37)	−0.06 (−0.45)	−0.08 (−0.53)
Edu-collage and above	0.10 (0.58)	0.01 (0.06)	−0.00 (−0.02)
Region-central	−0.12 (−1.13)	−0.15 (−1.40)	−0.15 (−1.33)
Region-western	−0.25* (−1.83)	−0.32** (−2.37)	−0.29** (−2.13)
Manu	−0.06 (−0.63)	−0.01 (−0.15)	0.00 (0.02)
Constant	−2.16*** (−6.19)	−1.34*** (−3.68)	−1.35*** (−3.62)
N	2,704	2,704	2,704
Prob. > chi2	0.000	0.000	0.000
R ²	0.081	0.110	0.139

t statistics in parentheses. FR*ES, Family Reputation * Entrepreneurial Spirit; FI*ES, Family Involvement * Entrepreneurial Spirit. * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$.

of resources and will accord a higher priority to risk-aversion and SEW (Choi et al., 2015). Thus, Hypothesis 1 (that family reputation is positively related to IBE) and Hypothesis 2 (that family involvement is negatively related to IBE) are supported by the results of this study.

Model 3 shows the results for the moderating effects of entrepreneurial spirit. The interaction term of family reputation \times entrepreneurial spirit, which was added in Model 3, is positive and significant (coefficient = 0.26, $p < 0.05$). The results for

the interaction effect show that the level of entrepreneurial spirit positively moderates the positive incentive of family reputation on IBE. In other words, a family business with a strong entrepreneurial spirit will have more incentive through family reputation to undertake IBE. Hypothesis 3 (that there is a moderating effect of entrepreneurial spirit on the relationship between family reputation and IBE) is thus supported.

An interaction term of family involvement \times entrepreneurial spirit, added in Model 3, is found to have a significant and negative association with IBE (coefficient = -0.16 , $p < 0.01$). Thus, an absence of entrepreneurial spirit will place higher importance on the preservation of family capital utilizing an international asset portfolio, which reflects a high level of family involvement. In the social context of the first generation of Chinese entrepreneurs following the opening up and reform of China, higher family involvement implies higher social embeddedness in the local community, which in the presence of strong entrepreneurial spirit places a higher priority on domestic investment than on foreign investment. In other words, the presence or absence of entrepreneurial spirit will make no substantial difference to the IBE for a family business with high family involvement. Hypothesis 4 (that there is a moderating effect of entrepreneurial spirit on the relationship between family involvement and IBE) is thus supported.

ROBUSTNESS TESTS

To address the potential issues of self-selection and endogeneity, we use propensity score matching (PSM) analysis to check our results. The PSM analysis shows a good level of robustness of the empirical results even after controlling for the self-selection problem for both family reputation and family involvement (see below for details). Tobit models are also used to check the robustness of the empirical results. As shown below, the results of the Tobit models are similar to those of the Probit models, with the same significance. Accordingly, our results can be considered robust.

Propensity Score Matching (PSM) Analysis

This study aims to identify the causal effect of family reputation and family involvement on the foreign investment of small family businesses. Unlike experimental studies in which sample cases are assigned at random to treatment or control conditions, any sample case can be subject to only one of the potential states of family reputation/family involvement, and we can only observe the outcome (IBE) in the treatment state or control state. Extending causal inference into observational studies is problematic since it is impossible to assign sample cases to treatment and control conditions (Morgan and Winship, 2007; Rosenbaum, 2010). Family businesses with positive reputations may be quite different from other family businesses in terms of company size, financial strength, diversification, perception of the business environment, and attitude to internationalization. Similarly, family businesses with lower family involvement may perform better in relation to corporate governance and management philosophy, which are not easily observed and are also associated with company size, financial strength, diversification, perception of the business environment, and

attitude to internationalization. Therefore, any causal inference from the results in this study may be affected by selection bias.

To address endogeneity problems, this study used PSM to control for selection bias and to test the reliability of the regression results (see **Table 3**). PSM has major advantages over regression analysis, as matching on the propensity score can determine the distribution of covariates across sample cases exposed to the treatment and control conditions, as well as identifying sample cases that are comparable considering processes of self-selection based on previous empirical knowledge and theory (Morgan and Harding, 2006; Waibel et al., 2018). Thus, matching the propensity score is justified by the common support assumption and has to overlap the comparison groups of the analysis. PSM can be applied when the functional form of the relationship is not linear, as this method makes less stringent parametric assumptions.

For PSM purposes, this study constructs a dummy for family reputation, assigning 1 to a family business with political status in the CPC or CPPCC and 0 otherwise. A further dummy for family involvement assigns 1 to a family business with a level of family involvement greater than the median value in the sample and 0 otherwise. Using logistic models for PSM estimations, this study estimates propensity to family reputation and family involvement, respectively, including covariates. The group-specific propensity scores between family reputation groups and family involvement groups in both estimations show considerable overlap, allowing straightforward estimation of the treatment effect with comprehensive common support. The balancing assumption in both PSM estimations is also well-satisfied, with statistical comparisons across the treatment and control groups before and after the matchings indicating that both matchings are effective in balancing all variables affecting selection into family reputation/family involvement.

In the PSM estimation, the average treatment effect (ATT) of family reputation on IBE is positive and significant (coefficient = 0.0362 , $p < 0.05$). As shown in **Table 4**, the difference between the treatment and control group drops from 0.0468 in the unmatched samples to 0.0362 in the matched samples and remains significant after controlling for selection bias. In the PSM estimation, the ATT of family involvement on IBE is negative and significant (coefficient = -0.0384 , $p < 0.01$). Differences between the treatment and control groups in both matched and unmatched samples are negative and significant, implying that family involvement has a negative effect on IBE even after controlling for selection bias.

The results of the PSM estimations are substantially in line with those of the Probit model, and the hypotheses are supported in both cases (compare **Tables 3, 4**). This indicates that the results of this study are robust even after considering selection bias and the relevant endogeneity issues.

Tobit Model Regression Analysis

This study uses Tobit models to check the robustness of its empirical results. The questionnaire includes items relating to the magnitude and purpose of investment in foreign countries in 2015, and **Table 5** gives the results of the Tobit models. Comparison of **Tables 3, 5** shows that the effects of family reputation and family involvement on IBE are supported by

TABLE 4 | PSM estimates of effect of family reputation/family involvement on international business expansion.

Treatment variable	Sample	Treated	Controls	Difference	S.E.	T-stat
Family reputation	Unmatched	0.0874	0.0406	0.0468	0.0099	4.73***
	ATT	0.0874	0.0512	0.0362	0.0166	1.97**
Family involvement	Unmatched	0.0291	0.0861	−0.0570	0.0086	−6.59***
	ATT	0.0291	0.0675	−0.0384	0.0118	−2.82***

ATT, average treatment effect. BS = 1,000. ** $p < 0.05$; *** $p < 0.01$.

TABLE 5 | The results of tobit models.

	International business expansion
Family reputation	2.25 (1.54)
Family involvement	−1.98*** (−4.64)
FR*ES	8.47*** (3.49)
FI*ES	−2.99*** (−3.96)
Profit	0.84*** (3.83)
Equity	−0.11 (−0.51)
Business environment	1.03 (1.50)
Domestic investment	0.14 (0.81)
Entrepreneurial spirit	3.11*** (4.07)
Diversification	2.35** (1.97)
Firm size	0.21 (0.50)
Edu-higher School	−2.37 (−1.46)
Edu-collage and above	−1.34 (−0.47)
Region-central	−0.12 (−0.12)
Region-western	−1.20 (−1.05)
Manu	2.00** (1.99)
Constant	−2.56 (−0.76)
N	2,704
R ²	0.016

t statistics in parentheses. FR*ES, Family Reputation * Entrepreneurial Spirit; FI*ES, Family Involvement * Entrepreneurial Spirit. ** $p < 0.05$; *** $p < 0.01$.

reputation and IBE is robust in both cases. Moreover, the moderating effect of entrepreneurial spirit on the relationship between family involvement and IBE is supported in the Tobit model with statistical significance. Thus, a comparison of the Probit models, PSM analysis, and Tobit models confirm the robustness of the empirical results.

DISCUSSION

This study proposes that the SEWs of an owning family will affect its attitude and preference in relation to IBE. It contributes to future research by distinguishing the effects of external and internal SEW on outward foreign investment. Research on outward foreign investment, a deep internationalization process with heavy resource commitment, offers a good context for exploring the functions and effects of dimensions of SEW on internationalization.

This study finds two relatively independent logics for external SEW and internal SEW in determining whether a family business will decide to invest abroad for the purposes of business expansion. Under an authoritarian regime in an emerging economy, a business family will usually seek protection in patron–client relationships. The importance of political connections to a family business has been extensively examined (Faccio, 2006; Berkman et al., 2010; Wu et al., 2018), and the political position of a business family is recognized as a vital facet of its social status. The reputations of business families are largely reflected in, and determined by, the official political titles and chairs in federations of industry and commerce held by family members or their agents. In China, only the most successful and prestigious businesspeople will have the opportunity to be assimilated politically by the local or national political system and chamber of commerce. A business family with a member in the CPC, CPPCC, or LFIC usually enjoys a more positive social reputation than others, and social reputation (especially political assimilation) is based on long-term business performance. Successful business expansion and interaction with local government economic strategy have always played an important role in building a family's reputation. In this way, business families with positive social reputations (proxied by political titles) will differ from other business families in their strategic choices for foreign investment. Successful IBE is a sign of powerful market competitiveness and prestigious market and social image, and an impetus to further enhance the family reputation, especially when local governments are keen to support firms to expand internationally. The preservation

both the Probit and Tobit models. Likewise, the moderating effect of entrepreneurial spirit on the relationship between family

and improvement of external SEW based on family reputation offers extra motivation for the international expansion of a family business. In our empirical results, family reputation is significantly and positively associated with IBE.

On the other hand, family involvement, conceptualized as the inclination of family members to participate in the business operations of the family firm, is negatively associated with IBE. It is acknowledged that a family business with a high level of family involvement will assign a higher priority than other businesses to avoiding SEW risk (e.g., Choi et al., 2015). Foreign investment for business expansion usually involves a heavy commitment of resources (e.g., Gomez-Mejia et al., 2010) and leads to some loss of family control, which presents a threat to the preservation of SEW (Berrone et al., 2012; Zellweger et al., 2012). It is reasonable for a family business with a strong inclination toward family involvement to place a high priority on risk-averse investment for the sake of family continuity. The empirical results indicate that the effects of family involvement on IBE may differ from those of family reputation.

A SEW perspective is useful in explaining the strategic choices of Chinese family businesses concerning IBE. This study contributes to the literature by classifying distinct effects of external SEW (family reputation) and internal SEW (family involvement) and finds that the orders of priority proposed by external and internal SEW may be quite different. In the context of this study, family reputation places greater emphasis than family involvement on ambitious IBE. More importantly, the effects of family reputation and family involvement are moderated by entrepreneurial spirit. In a family business with high levels of entrepreneurial spirit, the owning family may focus on the preservation of external SEW, which will enhance the effect of family reputation on IBE. In a family business without high levels of entrepreneurial spirit, the owning family may focus instead on the preservation of internal SEW, which will have quite different effects. This study proposes that whether a family business chooses international expansion should be explained in terms of the distinction between external and internal SEW, with careful consideration as to which logic will dominate in a specific diversified business context.

This study provides insights into other factors in the choice of IBE. The results in **Table 3** indicate that profit has a positive and significant effect on IBE; that is, profitability is a basic factor in motivating the internationalization of a family business. Similarly, the domestic investment of a family business is positively and significantly associated with IBE. Location in the western region of China is negatively and significantly connected with IBE.

CONCLUSION AND LIMITATIONS

The objective of this study was to analyze the effect of multiple dimensions of SEW on IBE. In a sample of 2,704 small family businesses in China, family reputation (i.e., external SEW) had a positive effect on IBE, while family involvement (i.e., internal SEW) had a negative effect. This study also argues that entrepreneurial spirit may change the owning family's priorities

in pursuit of SEW, moderating the effect of family reputation and family involvement on IBE. In this sample, entrepreneurial spirit reinforces the positive effect of family reputation on IBE and enhances the negative relationship between family involvement and IBE.

This study advances our understanding of the international expansion of family businesses from the SEW perspective in four key ways, theoretically and empirically. First, by classifying SEW into external sources proxied by family reputation and internal sources proxied by family involvement, our study sheds light on the multiple dimensions of SEW and their effects on IBE, thereby contributing to the literature on SEW (Debicki et al., Gómez-Mejía et al., 2007; Berrone et al., 2012; Sciascia et al., 2014; Cesinger et al., 2016; Hauck et al., 2016; Yang et al., 2018). Our findings are in line with studies that have argued for the importance of the heterogeneity of a family firm (Stanley et al., 2017; Yang et al., 2018). Family heterogeneity in the pursuit of SEW and its multiple dimensions have been ignored in the literature to date (Debicki et al., 2016; Hauck et al., 2016; Yang et al., 2018), and the concept of SEW has been indiscriminately treated and measured by proxies such as family ownership and family control (Gómez-Mejía et al., 2007; Berrone et al., 2012; Sciascia et al., 2014; Cardella et al., 2020). Our study finds heterogenic effects of external and internal SEW on the international expansion of family businesses, thus supporting the idea of heterogeneity in a family business's pursuit of SEW (Gómez-Mejía et al., 2007; Gomez-Mejia et al., 2011; Chirico and Nordqvist, 2010; Chrisman et al., 2012). In this way, our study contributes to the exploration of the black box of SEW, offering empirical evidence in the context of the foreign investment of small family businesses in China.

Second, this study explored the moderating effect of entrepreneurial spirit on the relationship between SEWs and IBE. In previous studies, entrepreneurial spirit is usually missing from the discussion of the SEW of family businesses (Gómez-Mejía et al., 2007; Berrone et al., 2012) and the influence of SEW on entrepreneurial orientation (Hernández-Perlines et al., 2019). Our study finds that the order of priority accorded to SEW in a family business varies with the presence or absence of entrepreneurial spirit. Unlike previous analyses of how entrepreneurial orientation works directly in the internationalization of family business (Claver et al., 2007; Arregle et al., 2012), our study explores the moderating effect of entrepreneurial spirit, which has received much less attention in the literature. It enriches the moderating conditions of the linkage of SEW and internationalization, building on previous explorations of the moderating effects of founder CEO and family succession intention (Yang et al., 2018), business context (Naldi et al., 2013), corporate governance (Lu et al., 2015), and other variables. In this way, our study contributes to the SEW perspective on family business internationalization theory.

Third, the study investigated IBE in terms of foreign investment rather than factors such as export intensity and export propensity (Ganotakis and Love, 2012). Foreign investment usually involves relatively heavy commitment of resources and thus offers an excellent context in which to explore the functions

and effects of SEW on internationalization (Gomez-Mejia et al., 2010; Kumpikait-Valiunien et al., 2021). The foreign investment of family businesses in emerging markets is itself an interesting topic, and this study offers a useful perspective for understanding the decision-making processes of owning families, enriching the literature on their motives for international expansion by showing that they are heterogeneous and context-dependent from the SEW perspective.

Fourth, this study offers insights into the failure and resilience of international expansion, which for most owning families is a form of entrepreneurship (Oviatt and McDougall, 2005). Our results show to some extent that SEW is an important psychology-related factor in the decisions of family businesses on international expansion; from this, it is reasonable to infer that SEW is also an important psychology-related factor in the persistence of international expansion in family businesses. Internal SEW worries, which originate for the most part in the psychological processes of family members, may hinder the family business's strategy for international expansion, leading to stagnation of its entrepreneurship. In contrast, external SEW may inspire family businesses to increase the resilience of the company in a new phase of international entrepreneurship, and that resilience can in turn enhance the effect of external SEW on further international expansion.

Concerning the practical implications of our findings, we first suggest that a family business that intends to invest abroad should manage its SEW, giving serious consideration to how to leverage the pursuit of external SEW and how to address the concerns of family members about internal SEW. Second, we suggest that the entrepreneurship orientation should be enhanced if the owning family business intends to pursue internationalization partly for the sake of external SEW. Full recognition of the competitive advantages offered by IBE will help to relieve the negative effects of internal SEW worries, making the entrepreneurship orientation more helpful in encouraging international investment. Third, local government can play an important role in the encouragement of business expansion by giving higher social appraisal to international investment when internationalization-orientated policy encourages family businesses to invest abroad.

This study is not without limitations. First, given the complexity of the internationalization of family businesses and the multiple dimensions of SEW, it is exploratory in nature and proxies external and internal SEW by family reputation and family involvement, respectively. In reality, the meaning and constituent elements of external and internal SEW go far beyond family reputation and family involvement. More effort is therefore required to shed light on the black box of SEWs

and their effects on the internationalization of family businesses, including mediating and moderating effects. Second, this study focuses on a single country (China), and the results might reflect some peculiarities of the national economic and social context. Our findings are very specific to the Chinese transitional context, and caution should be exercised in an attempt to generalize to family businesses in other countries. Third, although it would be interesting to explore the issues raised here using a cross-country dataset, we lacked samples from other countries. The family context is, to some extent, country-specific; family businesses in America and Western Europe may be quite different from family businesses in East Asia. We recommend that future studies undertake a cross-country comparison to detect the similarities and differences among family businesses in a range of cultural and economic contexts. Fourth, our study assumes that intra-heterogeneity among Chinese family businesses is relatively small. However, this assumption may underestimate the wide variations found among local cultures, industries, succession generations, and foundation background. Therefore, exploration of intra-China heterogeneity on this issue is a task for future research.

DATA AVAILABILITY STATEMENT

The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

ETHICS STATEMENT

Ethical review and approval were not required for the study on human participants in accordance with local legislation and institutional requirements. The patients/participants provided written informed consent to participate in this study.

AUTHOR CONTRIBUTIONS

All authors listed have made a substantial, direct and intellectual contribution to the work, and approved it for publication.

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When Learning Goal Orientation Leads to Learning From Failure: The Roles of Negative Emotion Coping Orientation and Positive Grieving

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Considering failure is a common result in project management, how to effectively learn from failure has becoming a more and more important topic for managers. Drawing on the goal orientation theory and grief recovery theory, the purpose of this paper is to clarify the impact of learning goal orientation on learning from failure. Furthermore, this paper examines the mediating effect of two negative emotion coping orientations (restoration orientation and loss orientation) and the moderating effect of positive grieving in this relationship. The results indicated that: (1) A learning goal orientation is positively related to learning from failure; (2) As a dual-path mediation model, restoration orientation and loss orientation mediate the relationship between a learning goal orientation and learning from failure; and (3) Positive grieving negatively moderates the relationship between a loss orientation and learning from failure.

Keywords: learning from failure, learning goal orientation, loss orientation, restoration orientation, positive grieving

INTRODUCTION

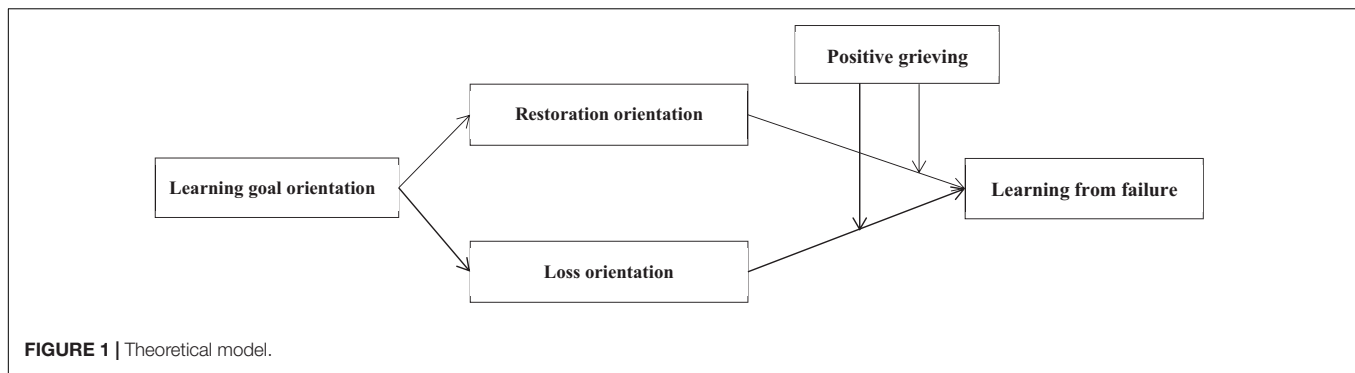
Failure is inevitable in today's business environment and may bring adverse consequences to the enterprise, but failure can also bring great value and experience to the enterprise. As a result, more and more studies are focusing on failure and individual's learning behavior after failure. Learning from failure means that "individuals can gain knowledge and skills from failure and can apply these knowledge and skills in practice" (Shepherd et al., 2011). Previous studies have shown that learning from failure can have a positive impact on individuals; this includes reducing the risk of future organizational failures (Ingram and Baum, 1997), improving innovation (Arenas et al., 2006), and improving performance (Argote and Darr, 2001). Because of the great value contained in failure, recent studies have begun to explore the antecedent variables (e.g., leadership, organizational culture, and team atmosphere) of learning from failure (Carmeli and Sheaffer, 2008) to make a better failure management for employees to meet the next challenge. However, most scholars focus their research on variables associated with specific failure events (e.g., shame, guilt; according to Wang et al., 2018), but pay scant attention to stable psychological variables such as cognition orientation and behavior patterns, which have been found to affect individuals' learning

behavior (Woolfolk, 1995). Specifically, goal orientation theory emphasizes that an individual's goal orientation, as the cognition and understanding of the achievement, influences behavior responses (Dweck and Leggett, 1988). A learning goal orientation refers to "a tendency for individuals to the desire to develop the self by acquiring new skills, mastering new situations, and improving one's competence" (Vandewalle and Cummings, 1997). Learning goal orientation has been shown to have a strong driving effect on the motivation of individuals to learn and master skills, and it plays an important role in promoting individuals to make positive behaviors: for example, improving work performance (Chughtai and Buckley, 2011) and promoting innovation behavior (Hirst et al., 2009). However, most of these studies are about its possible important impact on success, ignoring the important role on individual's behavior after failure. Therefore, exploring the important role of learning goal orientation in the learning behavior of individuals after failure can analyze the psychological process that affects failure from a deeper level, so as to make up for the lack of literature on individual's learning from failure in the past. As the R&D personnel of high-tech enterprises, as the core component of the enterprise, studying its solutions to failure has a key effect on the stability and sustainable development of the organization (Wang et al., 2013).

In order to deeply explore the role of learning goal orientation on individual's learning from failure, we need to further explore the mediation variables that may affect this role. Goal-orientation theory believes that goal orientation will affect the individual's cognitive or emotional tendency toward events, which in turn will trigger behavioral responses (Dweck and Leggett, 1988). In fact, many scholars associate learning goal orientation with the cognitive process at the individual psychological level to explore the specific mechanism of subsequent behavioral responses. With this contention in mind, we focused the present study on investigating the affective mechanisms linking learning goal orientation and learning from failure. Among them, the "grief recovery theory" emphasizes the important influence of negative emotions after failure on learning from failure. And its basic logic is "failure events—negative emotions—learning from failure," emphasizing the important role of negative emotions represented by grief brought by failure in reducing the quality of learning from failure (Shepherd, 2003). Shepherd (2003) and Shepherd et al. (2009, 2014, 2011) based on this theory focused on grief and its recovery mechanism, and proposed several coping orientations for individuals to cope with negative emotions: restoration orientation (a kind of emotion-focused coping orientation), loss orientation (a kind of event-focused coping orientation), and oscillation orientation (alternately use restoration orientation and loss orientation). While goal orientation has an important influence on the internal and external motivations and behavioral responses of individuals (Steele-Johnson et al., 2000). Therefore, according to the grief recovery theory and goal orientation theory, we assume that individuals with learning goal orientation may adopt different types of coping orientations to adapt to the negative emotions brought about by the failure, and the emotional coping behaviors may have a further effect on subsequent learning.

Furthermore, is it possible that some boundary variables will accelerate the effect of the above mechanism? We further anticipate that emotion (e.g., grieving caused by failure) may be crucial to the relationship between cognition (i.e., negative emotion coping orientation) and behavior (i.e., learning from failure) after a failure event has occurred (Dolan, 2002; Phelps, 2006). Grieving will inevitably arise after failure. According to grief recovery theory, the negative emotions represented by grief will affect the breadth and depth of individuals' information collection and processing, thus reducing the quality of learning from failure. While positive grieving is a form of grieving first proposed by Blau (2006), which describes the positive aspects of grieving, usually manifested in acceptance, exploration, etc. Some previous studies have shown that positive grieving will positively related to learning behavior (Wang et al., 2019), but as a bright aspect of the grieving, few studies use it as a moderator to explore its boundary effect on the learning process. Therefore, exploring whether positive grieving can play a positive role in the relationship between the individual's coping orientations to negative emotions and learning from failure can help us further understand the mechanism of positive grieving.

In summary, we addressed this issue by testing the conceptual model depicted in **Figure 1**. First of all, we combined the individual's deeper-level psychological and cognitive variables to explore the important influence of learning goal orientation on subsequent learning behavior, and further developed the application situation of learning goal orientation mechanism; secondly, by combining with grief recovery theory, we extend the application scope of Shepherd et al. (2011) emotional recovery mechanism, taking the individual's coping orientation to negative emotions as an mediation variables. Finally, according to the conclusion of Dolan (2002) and Phelps (2006) that emotion plays an important role in the mechanism of behavior, we add a moderation variable, namely positive grieving, which may promote the path of "coping orientation—learning from failure." Through analyze questionnaire data from high-tech companies in China, in demonstrating the linkages proposed in the model, our results contribute to the literature in several important ways, and also provide practical significance for enterprise management. First, we replicate much of the work reported in Shepherd et al. (2011), among conceptually similar constructs but at the individual's cognition and behavior level of analysis. Also, to explore the individuals' deeper level of psychological and behavioral variables (e.g., learning goal orientation and coping orientations), we make learning goal orientation as an antecedent and make coping orientations as a mediation variable to learning from failure. Hence, the current research answers mounting calls for individual-level studies on goal orientation, coping behavior orientations, and learning behavior within an integrated framework. Second, since grieving is inevitable after failure, it is necessary to explore positive grieving (i.e., the positive side of grief) for the occurrence of learning behavior. Our findings may benefit both applied researchers and practitioners, as they reveal a previously unidentified boundary condition regarding the relationship between coping orientations and learning from failure.



LITERATURE REVIEW AND HYPOTHESES

In fact, previous scholars used learning from failure as an outcome variable to explore the individual-level influencing factors that may affect individual's learning behaviors. Most of these studies focused on the emotional and cognitive variables generated by individuals after failures events. Regarding the influence of emotional response on learning from failure, Shepherd and Cardon (2009) shows that the individual's negative emotions after failure will have an impact on learning from failure and following tries. Bohns and Flynn (2013) compared the impact of the emotional response caused by failure on the performance output of employees in the next cycle, and they emphasize that for learning from failure, the emotional response of guilt is more positive and effective than shame. Secondly, the individual's cognition to failure event will also affect learning from failure. For example, Hao et al. (2018) research shows that critical thinking is beneficial to learning from failure. Boss and Sims (2008) researched that employees' self-efficacy, emotional regulation and self-leadership can help them recover faster from failure. In addition, failure is not changeless. The number of failures experienced by employees has also become an important influencing factor. For example, Boso et al. (2019) believe that business failure experience will significantly predict learning from failure behavior. Although previous studies have analyzed the influence mechanism of learning from failure from multiple perspectives at the individual level, these variables mostly focus on the emotional or cognitive response after failure, and still lack individual stable psychological factors. Exploring the stable characteristics of individuals can better interpret the cognitive and behavioral processes of ordinary individuals in the face of failure. Specifically, goal orientation theory can well explain the psychological process of the generation of individual's behavior. Previous scholars have confirmed that different goal orientations lead to different cognitive and behavioral patterns. Dweck's goal orientation theory represents how personal goals and beliefs create the mental framework from which individuals follow avoidance or approach strategies toward goals, being a distinct construct from both goal setting (e.g., personal choices concerning most attractive goals) and goal striving (e.g., behaviors and thoughts directed toward a specific) (Dweck, 1986; Dweck and Leggett, 1988; Vandewalle and Cummings, 1997).

Goal orientation relies on personal beliefs concerning intelligence as either incremental (e.g., learning orientation) or stable (e.g., performing orientation), arguing that these beliefs are responsible for the way individuals apply specific strategies toward the pursuit of goals. performance orientation has shown to possess an avoidance dimension (avoiding failure and to show incompetence) and a performing dimension (choosing to perform easier tasks in order to succeed, showing competence) toward the pursuit of results (Vandewalle et al., 1999; Chen and Mathieu, 2008). Previous research has also confirmed that compared with other goal orientation, learning goal orientation has a variety of positive effects on individual cognition and behavior, such as promoting individual internal motivation (Steele-Johnson et al., 2000), promoting innovation (Hirst et al., 2009), and communicating and cooperating with others (Levy et al., 2004). Therefore, learning goal orientation may also have a positive impact on individual learning from failure behavior. We chose to use learning goal orientation as an antecedent variable that affects individual learning from failure. Exploring this logical relationship can further clarify the stable personal characteristics factors that may promote learning from failure.

Furthermore, combined with the coping-oriented mechanism of individuals coping with negative emotions after failure, we added the mediation variable, that is, the coping orientation of individuals coping with negative emotions. Most of the research on coping orientation is based on the grief recovery theory. Based on this, Shepherd (2003) proposed the coping orientation of individuals to cope with negative emotions. Restoration orientation is a coping strategy that focuses on emotional recovery. Loss orientation is a coping strategy that focuses on event resolution. If an individual alternates using two coping orientations, it is called oscillation orientation. In fact, Shepherd et al. (2011) has proposed that every coping orientation play a moderating role in the relationship between negative emotions and learning from failure, but the conclusions in the article have not been fully confirmed after empirical research. Many scholars have also constructed a theoretical framework based on the coping orientation, and explored the key role of coping orientations in entrepreneurial failure or subsequent entrepreneurial processes. However, few scholars have explored how the coping orientation of emotional response directly affects the learning from failure process. In addition, due to the oscillation orientation integrate the characteristics of

restoration orientation and loss orientation, and the generation of oscillation orientation has time continuity, usually manifested as a method of coping with negative emotions on a long-term scale (Shepherd et al., 2011). Therefore, in this article, we only consider the mediating effect of a single loss orientation or restoration orientation, and do not consider the possible mediating effect of oscillation orientation. Therefore, based on the Chinese cultural background, we try to solve this research limitation through empirical research. The contextual factors specific to Chinese culture will cause Chinese employees or managers to show different research results from Western scholars. Many scholars have explored Chinese management culture based on Chinese unique values such as “*mianzi*.” The results show that China’s unique cultural factors will affect individual cognition and behavior patterns from many aspects such as attitude and emotion (Bedford, 2011). Whether this will affect employees’ learning from failure behavior, and how the specific mechanism of this process is still not studied by scholars.

In addition, the concept of grieving was first used in research on commercial failure by Shepherd (2003), who proposed that it is a type of negative emotional response after a failure is experienced. Blau (2006) observes that grieving may be either negative (i.e., denial, anger, and negotiation) or positive (i.e., exploration and acceptance). As a normal emotional response, negative grieving usually appears after a failure event occurs, and often leads to some undesirable consequences such as low performance and low organization citizenship behaviors. There is no doubt that negative grieving will negatively affect the individual’s learning process and behavior. However, as time goes by, there is a transition to positive grieving, which includes an individual’s acceptance and exploration of the event (Blau, 2006); this allows them to make up for the deficiencies caused by negative grieving, which will, in turn, have a positive impact on the individual’s future behavior pattern (Blau, 2007). There are few studies on whether positive grieving has a positive effect or a negative effect on individuals. Some previous studies have shown that positive grieving will positively related to learning behavior (Wang et al., 2019), but as a bright aspect of the grieving, few studies use it as a moderator to explore its effect on the process of “cognition—learning.” When employees are dealing with the impact of negative emotions, can positive grieving have a boundary effect on the learning process? This is very important for employees to learn from failure in a grieving mood. We proposed a different opinion on this question. A coping orientation usually determines the focus of an individual’s use of follow-up resources and strategies, which further influences the occurrence of subsequent behavior patterns (Shepherd et al., 2011), which in turn will be affected by individual emotions. Because positive grieving has been shown to have a positive effect on individuals, we try to further explore its mechanism on learning from failure (Blau, 2007). Therefore, we assume that positive grieving can moderate the process mechanism of the relationship between coping orientation to learning from failure. Based on the above, we have constructed a theoretical model with coping orientation and positive grieving as a mediator and boundary variable, we will systematically explain this model below.

Learning Goal Orientation and Learning From Failure

According to the goal orientation theory, an individual’s learning goal orientation will have a positive impact on that individual’s behavior (Cury et al., 2006). Individuals with a learning goal orientation mainly focus on behavioral processes related to learning and tasks (Zweig and Webster, 2004). Therefore, we believe that a learning goal orientation will promote individual behavior that helps them learn more from failure.

Individuals with a high learning goal orientation believe that abilities can be improved through learning (Dweck, 1999). With persistence and hard work, anyone can solve and overcome difficulties, develop their ability, and achieve better success in future tasks (Dweck, 1999). Rather than worrying about the adverse effects of failure, they are more interested in improving their ability (Levy et al., 2004). Therefore, people with a high learning goals orientation are more likely to persist in learning after failure events, continue to work hard, summarize their experience in order to further develop their ability, and achieve future improvements.

LGO will affect peoples’ perceptions of event feedback (Nisan, 1972). Individuals with a high LGO view feedback as useful because it provides information about events. Understanding this information and learning from it allows more effective completion of future tasks (Dahling and Ruppel, 2016). For individual with a high LGO, negative feedback is seen as a challenge and provides motivating information. If we can learn from it, we can make ourselves better (Dweck, 1986). When individuals with a high LGO receive negative feedback, they continue to work hard to find solutions (Dweck and Leggett, 1988). Overall, individuals with a high LGO regard failure as an opportunity to develop themselves, and when encountering failure events, they try to learn from them. Therefore, we propose the following hypotheses:

Hypothesis 1: Individual employees who have a high LGO will learn more from failure than individual employees who have a low LGO.

The Mediation of Restoration Orientation

Goal orientation theory says that an individual’s goal orientation will stimulate motivation, which in turn will influence behavior. Therefore, we propose that, as a stable behavioral orientation, the individual’s learning goal orientation will affect the individual’s coping response (e.g., restoration or loss orientation) after failure occurs.

A restoration orientation refers to “the suppression of feelings of loss and proactiveness toward secondary sources of stress that arise from a loss” (Shepherd et al., 2011). Individuals with a strong learning goal orientation pay more attention to the development of abilities (Dweck, 1986). They are willing to try to achieve challenging goals, possess a strong internal motivation and autonomy, and actively look for opportunities for learning and creation in a future work environment (Van Yperen, 2003). Therefore, we assume that a high learning goal orientation will lead to a restoration orientation.

A restoration orientation focuses on recovering from negative events by diverting attention away from failure events and toward other goals (Shepherd et al., 2011). Employees tend to avoid major stressors like project failures and deal with secondary stressors by “cleaning up negative consequences caused by project failures” (Stroebe and Schut, 1999). Seijts and Latham (2006) found that individuals with a high learning goal orientation collect additional information to obtain to improve their capabilities. In addition to the negative impact of project failure, it also brings challenging task requirements and follow-up work tasks (Shepherd et al., 2011), which provides employees with follow-up learning goals and tasks. Thus, the derivative problems caused by failure become an important source of learning, and the experiences and lessons learned from them can become an important source of individual knowledge and skill development (Stroebe and Schut, 1999). Therefore, individuals with a high learning goal orientation may divert their attention from the failure event, and actively engage in the handling of external events (e.g., follow-up challenging tasks and works), that is, take a restoration orientation.

Additionally, individuals with a high learning goal orientation are sensitive to information that may help them (Dahling and Ruppel, 2016). They usually hold the view that “ability can be changed,” thinking that ability can be increased through continuous learning from various events related to failure, so they often have self-confidence in their ability (Dahling and Ruppel, 2016). They are eager to enhance their internal motivation to learn through a series of challenging events brought on by failures, and then improve their abilities (Dweck and Leggett, 1988). For the derivative problems caused by failure, they will also be considered as a way of learning to strengthen the learning of experience in failure to improve personal ability (Dahling and Ruppel, 2016), which will prompt individuals to turn to solve the derivative problems (that is, external events), and continue to pay attention to the “secondary stressors” brought on by failed events. Therefore, we assume that:

Hypothesis 2a: There is a positive relationship between a high learning goal orientation and a restoration orientation.

Eastern culture usually pays attention to “mianzi” (also called “Face” or “Lian”), which is a unique cultural characteristic (Bedford and Hwang, 2003), often be interpreted as both the showing of respect (“giving face”) and ensuring that you do not offend people (causing them to “lose face”). It is a positive public image that a person conveys to others (Ting-Toomey, 1994). Factors such as external stimulus events will increase the individual’s motivation to maintain “mianzi,” and then make corresponding behavioral responses (Hwang, 1987). When facing negative events (i.e., failure events), individuals immerse themselves in a series of negative effects will influence their maintenance of “mianzi,” and increase their fear that they will be looked down upon by others (Jiang, 2006). Implementing a restoration orientation can help people divert attention away from negative events, buffer the negative effects caused by the failure, and thereby provide employees with new information

about failures and a new perspective on overcoming failures (Shepherd et al., 2011).

As Yamakawa and Cardon (2015) note, individuals usually produce learning behavior through multiple links such as scanning (i.e., selectively paying attention to, and collecting important information about, failure) and interpretation (processing the scanned information for easy understanding). The two aspects of a restoration orientation—“proactiveness restoration” (i.e., proactively solving the derivative problems caused by a failure) and “avoidance restoration” (i.e., diverting attention away from the failure) are intertwined (Shepherd et al., 2011). When proactively solving a series of problems that derive from a failure, individuals can obtain information about the failure, which is conducive to information scanning (Cope, 2011). When using avoidance restoration, individuals will be free from the negative effects of the failure (such as negative emotions), will enhance the information processing ability, and promote the interpretation of the failure event (Shepherd et al., 2011). Every level can shift the attention to events other than failure, pay more attention to a series of challenges brought by failure, which will reduce the negative emotions caused by loss of “mianzi.” By scanning and interpreting failures and follow-up events, individuals can enhance their ability to construct the meaning of a failure, which helps individuals better understand failures and learn from them (Shepherd and Cardon, 2009). Therefore, we assume that:

Hypothesis 2b: There is a positive relationship between a restoration orientation and learning from failure.

H2a predicted the positive relationship between learning goal orientation and restoration orientation, and H2b predicted the positive relationship between restoration orientation and learning from failure. In conclusion, we also assume that individuals with a high learning goal orientation will trigger a restoration orientation, which will reduce the negative effects of the failure and stimulate positive behavior (i.e., learning from failure). Thus, we assume that a restoration orientation is a mediator in the relationship between learning goal orientation and learning from failure:

Hypothesis 2c: A restoration orientation mediates the relationship between a learning goal orientation and learning from failure.

The Mediation Effect of a Loss Orientation

A loss orientation refers to “working through and processing aspects of a loss” (Shepherd et al., 2011). Some individuals with loss orientation regard failure as an important learning resource (Shepherd et al., 2011). Learning knowledge, skills, and experience from failures will help individuals improve their abilities to deal with similar tasks (Dweck, 1986). We assume that there is a close relationship between a learning goal orientation and loss orientation.

People with a high learning goal orientation value the plasticity of ability, and they believe that they can change the direction of events and improve their ability through their hard

work (Dweck, 1999). So they pay more attention to the failure and tend to invest more effort in handling failure events, such as exploring the cause of the failure and suppressing the negative emotions caused by the failure (Dweck and Leggett, 1988). When individuals with a high learning goal orientation deal with work issues, they often use a task involvement strategy, which means actively participating in issue processing in order to meet the needs of the work role. When they experience failure, they will immerse themselves in the event (VandeWalle et al., 2001), that is, adopt a loss orientation.

Failure events usually bring on negative emotions, and these negative emotions will make individuals avoid future failures (Iyer et al., 2007). Individuals with a high learning goal orientation regard negative feedback as an opportunity to make progress in their life. They face the negative feedback with confidence, ignore the negative emotions brought on by failure, and weaken the impact of negative emotions by self-adjusting (Dweck and Leggett, 1988). They investigate the cause of failure and try to determine what went wrong. In doing so, they are sensitive to information that can help them to develop (Dahling and Ruppel, 2016). Although a failure event indicates that the individual's ability is lacking in some way, it also makes the individual aware of valuable information contained in the failure event (VandeWalle et al., 2001). Rather than regard failure as a blow, individuals are more likely to regard failure as an opportunity to learn new skills. They will explore the reason of failure, search and summarize relevant information to achieve personal development (Dahling and Ruppel, 2016), thus strengthening their loss orientation. Therefore, we assume that:

Hypothesis 3a: A high learning goal orientation has a positive relationship with a loss orientation.

Shepherd et al. (2011) found that a loss orientation includes two dimensions: a "self-dimension" (which focuses on the failure process and investigates the reason for the failure), and an "others-dimension" (which involves communicating with the outside world to discover the reason for the failure). In the "self-dimension," individuals who adopt a loss orientation after failure will pay more attention to the failure and its reasons. Although they will also face negative emotions such as sadness and inferiority caused by the failure, those who adopt a loss orientation will not mindlessly engage in negative thinking from which they cannot extricate themselves (Shepherd et al., 2011). They are able to quickly break the relationship between a bad mood and failures and make the transition to a stable mood as they reflect on their failure (Shepherd et al., 2011). By exploring the reasons for a failure, individuals can understand failure deeply (Corbett et al., 2007), have a better understanding in the errors or limitations in the failed project (Birtchnell, 2001), and make an objective attribution (Baron, 2000).

In the "others-dimension" of loss orientation, individuals who adopt a loss orientation after failure tend to talk about their feelings regarding the project failure to their friends and family, and find out the reasons for the failure by asking others for their opinions (Shepherd, 2003). This helps them explore and accept the reasons for the failure, increases their confidence, and

prepares them to make corresponding adjustments to improve their present situation (Rybowiak et al., 1999). All of this helps them learn from failure.

Investigating the reasons of failure and its solutions will make individuals aware of the potential value of failure and help them to integrate relevant and useful information. Individuals who adopt a loss orientation will tend to regard failure as an opportunity to improve skills and develop themselves (Tjosvold et al., 2004). Such an orientation will help the individual have a positive cognitive assessment of failure, and encourage them to learn from failure. From the perspective of eastern culture, whether people take measures of correct attribution or cognitive assessment, they can maintain their positive images or social status, which is an effective way for them to pursue subsequent learning. Therefore, we assume that:

Hypothesis 3b: A loss orientation has a positive relationship with learning from failure.

H3a predicted the positive relationship between learning goal orientation and loss orientation, and H3b predicted the positive relationship between loss orientation and learning from failure. Together, these hypotheses specify a model in which a learning goal orientation indirectly increase learning from failure by contributing to a loss orientation. We assume that individuals with a high learning goal orientation will devote themselves to the summary of failure events and further participate in the follow-up treatment of failure events will help them become immersive, further explore the experiences and lessons learned from failures, promote them to face failures and learn from failures. Therefore, loss orientation is another mediator in the relationship between learning goal orientation and learning from failure:

Hypothesis 3c: A loss orientation mediates the relationship between a learning goal orientation and learning from failure.

The Moderation Effect of Positive Grieving

Individuals will experience some negative emotions (e.g., guilt, anger, and shame) after a failure (Carver and Scheier, 1990), and these emotions can strengthen or weaken learning behavior (Zhao and Olivera, 2006; Shepherd and Cardon, 2009). Dolan (2002) and Phelps (2006) argue that emotion will play an important role in the learning process, and will have an impact on cognition and behavior after a failure occurs. Grief is a negative emotional response (Shepherd, 2003), but positive grieving is the bright side of grief. According to Blau (2007), positive grieving manifests itself in two ways: exploration (i.e., for hopeful opportunities and new possibilities), and acceptance (i.e., accepting the fact of failure). Individuals with positive grieving will accept the facts of failure, helping them shift the attention away from failure events (Ellard et al., 2017). Individuals with a high restoration orientation are good at dealing with external or derivative information regarding failure, and pay more attention to other goals (Shepherd et al., 2011). Therefore, they can further enhance their motivation to learn from outside the failure event. In addition, individuals with high positive grieving are not

afraid of failure, and tend to easily escape from its negative effects (Blau, 2007). From a resource perspective, they will have more cognitive resources to deal with the external or derivative information (Shepherd, 2003). Individuals with positive grieving will show more constructive behaviors, such as communicating with colleagues to conclude the experience and lessons from failure, which will help them invest in the next project task earlier (Blau, 2007). These benefits will help individuals with a restoration orientation to enhance their learning behaviors.

By contrast, individuals with a loss orientation usually focus more on information about the failure event. They tend to explore the reasons for the failure, and continuously search for information about the failure. From two perspectives of positive grieving, in exploration, individuals with high positive grieving usually have a bright view of the future, and pay more attention to future tasks and work opportunities (Blau, 2007). Limited cognition resources will not be used to obsess about the failure, and less attention will be paid to the failure. This will weaken the motivation of such individuals to learn from the failure, which in turn will weaken the relationship between loss orientation and learning from failure. With respect to acceptance, accepting the fact of failure will help individuals to shift their attention from concentrating on the negative events to reflecting on the significance of the event (Ellard et al., 2017). With an acceptance, individuals will reduce their excessive attention on the failure, and they will come to regard failures as “normal events.” This will weaken the motivation of learning from failure events. Therefore, we propose the following hypotheses:

Hypothesis 4a: Positive grieving positively moderates the relationship between a restoration orientation and learning from failure, i.e., the relationship will be stronger when positive grieving is higher, rather than when it is lower.

Hypothesis 4b: Positive grieving negatively moderates the relationship between a loss orientation and learning from failure, i.e., the relationship will be weaker when positive grieving is higher, rather than when it is lower.

MATERIALS AND METHODS

Participants and Procedure

As the R&D teams of high-tech companies are more likely to encounter setbacks and failures in the R&D process, most technology-based employees may have experienced failures, and the sample is more representative than other industries. Therefore, we focus on high-tech firms in China as our research participants. We define a firm as “high-tech” if 60% or more of its annual sales revenues come from high-tech products and services, and if 10% or more of its employees have engaged in R&D in the past year. According to this standard, we randomly selected 400 high-tech enterprises from the list of Beijing high-tech enterprises provided by the Beijing Municipal Science and Technology Commission, and we invited them to participate in the research during an introductory telephone conversation. The participants are members of the R&D teams in these companies. These teams are required to have participated in project

development in the past 3 years and have had the experience of project failure. During the phone call, we emphasized the purpose of the research and the confidentiality of data collection. We then asked the CEO to write an endorsement to encourage employees to participate in a questionnaire survey, and we promised to give the final research results to the companies' leaders.

The distribution and recovery of the questionnaires was accomplished using the following steps. First, the firms that participated in the study selected a coordinator (usually a human resource manager) who provided our research assistant with a list of research teams (usually R&D teams). With the help of the coordinator, the research assistant distributed questionnaires to the staff before the weekly (or monthly) regular meeting of the team. To ensure everyone's participation, the research assistant obtained contact information from the coordinator for any members who missed meetings. An envelope was left for these absentees to fill out and return to the research assistant. In order to improve the recovery rate of the research questionnaire, we also distributed small gifts and the endorsement of the CEO. After answering the questionnaire, all participants signed a confidentiality agreement to ensure that the questionnaire was not used for other purposes.

The final sample included 22 companies in Beijing area technology industry (750 responses in total). All team leaders and members provided completed questionnaires. The average team size, including the team leader, was 5.43, and ranged from 3 to 10 ($SD = 1.60$). The mean respondent age was 31.67 years (age range was 20–56 years, $SD = 5.525$), with 577 men (79%) and 173 women (21%). About 51.2% of the respondents had bachelor's degrees and 38.5% had a master's or doctor's degrees, and the remaining samples are all college degrees.

Measures

In this study, we defined project failure depending on the results of research projects. Following previous studies, we defined project failure as ‘the termination of an initiative to create organizational value that has fallen short of its goals’ (McGrath, 1999; Hoang and Rothaermel, 2005), and we gave this definition in the introduction section of our questionnaires. We first arrange and organize the original scales, and then use the back-translation method (Brislin, 1970) to ensure that there will be no translation errors. All coefficient alpha is Cronbach's alphas. All scales are scored by using the Likert-6 scale.

Learning Goal Orientation

We used the five-item scale developed by Vandewalle and Cummings (1997) to measure learning goal orientation. It asks employees to explain how they learn from a project failure. Sample items include “I am willing to choose those challenging tasks,” and “I often seek opportunities to develop new skills and learn new knowledge.” Response options ranged from 1 (strongly disagree) to 6 (strongly agree). The coefficient alpha of the scale was 0.852.

Restoration Orientation

We used the six-item scale developed by Shepherd et al. (2011) to measure restoration orientation. It asks employees to explain

to what extent they agree with each behavior statement after a failure. Sample items include “I intentionally divert my attention, not thinking about the problem of the project failure” and “After the project fails, I try to sort out my thoughts.” Response options range from 1 (strongly disagree) to 6 (strongly agree). The coefficient alpha of the scale was 0.636.

Loss Orientation

We used the six-item scale developed by Shepherd et al. (2011) to measure loss orientation. It asks employees the extent to which they agree with the behavior statement after a failure. Sample items include “I worked with my colleagues to find the cause of the failure” and “I worked hard to overcome the negative emotions associated with the failure of the project.” Response options range from 1 (strongly disagree) to 6 (strongly agree). The coefficient alpha of the scale was 0.696.

Positive Grieving

We used the six-item scale developed by Blau (2007) to measure positive grieving. It asks employees to state their personal acceptance of failed projects. Sample items include “I accept the reality of project failure” and “I am willing to explore other possibilities from failed projects.” Response options range from 1 (strongly disagree) to 6 (strongly agree). The coefficient alpha of the scale was 0.833.

Learning From Failure

We used the eight-item scale developed by Shepherd et al. (2011) to measure learning from failure. Employees are asked to explain the degree of change in their own behavior after a failure, including both personal and project dimensions. Sample items include “I have learned to execute the project plan better” and “I have improved my ability to make more contributions to new projects.” Response options ranged from 1 (strongly disagree) to 6 (strongly agree). The coefficient alpha of the scale was 0.907.

Control Variables

Beyond the demographic variables (i.e., gender, age, education level, and tenure in the firm and on a project), we also controlled for the critical factors in project failure and the parallel variables of the variables in the following model: performance-approach goal orientation, performance-avoidance goal orientation, oscillation orientation, and negative grieving. These are described below.

Critical factors in project failure

We used the two-item scale adapted by Dilts and Pence (2006) (According to the results of exploratory factor analysis (EFA), the original 13 items are divided into two items for internal and external factors) to measure the critical factors in project failure. The instrument asks employees to explain why they think the project failed. Sample items include “change in the importance of the entire project in the organization,” and “changes in user needs.” Response options ranged from 1 (strongly disagree) to 6 (strongly agree). The coefficient alpha of the scale was 0.656.

Performance-approach goal orientation

We used the four-item scale developed by Vandewalle and Cummings (1997) to measure performance-approach goal

orientation. It asks employees to explain their personal strategy for improving their performance after a failure has occurred. Sample items include “I tried to find a way to prove my ability to colleagues” and “I am willing to do projects that can prove my ability to others.” Response options ranged from 1 (strongly disagree) to 6 (strongly agree). The coefficient alpha of the scale was 0.789.

Performance-avoidance goal orientation

We used the four-item scale adapted by Vandewalle and Cummings (1997) to measure performance-avoidance goal orientation. Because the reliability of the original scale in our research is not enough, we deleted one of the items to improve the reliability. The instrument asks employees to state their personal strategy for avoiding the possibility of failure. Sample items include “I am not willing to take on a task that may show my lack of ability” and “When performing a task, I just try to avoid showing incompetence.” Response options ranged from 1 (strongly disagree) to 6 (strongly agree). The coefficient alpha of the scale was 0.820.

Oscillation orientation

An oscillation orientation involves moving between using the restoration orientation and using the loss orientation. We used the three-item scale developed by Shepherd et al. (2011) to measure oscillation orientation. It asks employees the extent to which they agree with their statement of behavior after a failure has occurred. Sample items include “After giving my emotions a rest, I confront my negative feelings arising from the project's failure” and “After thinking about the failure for a period of time, I try not to think about it as much as possible.” Responses options ranged from 1 (strongly disagree) to 6 (strongly agree). The coefficient alpha of the scale was 0.580. Because the alpha of this variable is low, we removed this variable and did another data test. The results showed that the existence of this variable did not have much impact on the data test results (the data results are shown in the **Appendix**).

Negative grieving

We used the six-item scale adapted by Blau (2007) to measure negative grieving. Because the reliability of the original scale was low, we deleted one of the items to improve the reliability. The instrument asks employees to state their acceptance of failed projects. Sample items include “I can't believe this will happen to me” and “I'm depressed for the failure of the project.” Responses options ranged from 1 (strongly disagree) to 6 (strongly agree). The coefficient alpha of the scale was 0.864.

RESULTS

In this study, we used Amos 24.0, SPSS 25.0, and Stata 12.0 for data analysis and hypothesis testing. We analyzed the validity of the measurement model, the basic distribution of data, the correlation between variables, and the reliability of the scale. We also do multiple linear regression analysis to test our hypotheses. We use Harman's single factor analysis to test whether the data has serious common method bias. The results

show that the interpretation rate of the first common factor is less than 40% (18.66%, so our data does not have serious common method bias).

Confirmatory Factor Analysis

We first conducted a confirmatory factor analysis (CFA). As shown in **Table 1**, our theoretical model (10-factor model) fits better ($\text{CMIN}/\text{df} = 2.470$, $\text{CFI} = 0.909$, $\text{RMSEA} = 0.044$) than other models, indicating the construct distinctiveness of our measurements.

Descriptive Statistics

Table 2 shows the descriptive statistics and the correlations among the variables. As shown in the table, learning goal orientation is significantly related to restoration orientation ($r = 0.145$, $p < 0.01$), loss orientation ($r = 0.174$, $p < 0.01$), and learning from failure ($r = 0.368$, $p < 0.01$). Restoration orientation is significantly related to learning from failure ($r = 0.390$, $p < 0.01$), and loss orientation is significantly related to learning from failure ($r = 0.439$, $p < 0.01$). The data results indicate that there may be a close relationship between learning goal orientation, coping orientation, and learning from failure.

Hypothesis Testing

Since the research participants come from different companies, in order to test whether the company environment will affect the research results, we compared the results of the hierarchical regression in SPSS 25.0 and the results of the hierarchical regression after using the cluster statement to control the company variables in Stata 12.0. We found that there is a slight difference between the two regression results (results of Stata are shown in the **Appendix**), but the effect of learning goal orientation on learning from failure behavior is similar in different companies' employees. We used SPSS 25.0 for

data processing to test our hypotheses, and the result of the hierarchical regression is shown in **Table 3**.

Hypothesis 1 proposed a positive relationship between a learning goal orientation and learning from failure. As shown in **Table 3**, the coefficient between learning goal orientation and learning from failure is significant ($b = 0.322$, $p < .001$, Model 3.2); this supports Hypothesis 1. Hypothesis 2a posited that learning goal orientation is positively associated with restoration orientation. As shown in **Table 3**, the relationship between learning goal orientation and restoration orientation is significant ($b = 0.150$, $p < 0.01$, Model 1.2). Hypothesis 2b posited that restoration orientation is positively associated with learning from failure. In **Table 3**, the relationship between restoration orientation and learning from failure is significant ($b = 0.126$, $p < 0.01$, Model 3.3). These results provide support for both hypotheses 2a and 2b. Hypothesis 3a proposed that learning goal orientation is positively associated with loss orientation. As shown in **Table 3**, the relationship between learning goal orientation and loss orientation is significant ($b = 0.132$, $p < 0.01$, Model 2.2). Hypothesis 3b proposed that loss orientation is positively associated with learning from failure. In **Table 3**, the relationship between loss orientation and learning from failure is significant ($b = 0.253$, $p < 0.001$, Model 3.3). These results provide support for hypotheses 3a and 3b. Hypothesis 2c and 3c assumed a mediating role of restoration orientation and loss orientation. We use the Macro program Process developed by Hayes for Bootstrap test to further examine the mediating role of restoration orientation and loss orientation. Our results show that the indirect effect of restoration orientation is 0.0173 (95% CI [0.0042–0.0361]) and the indirect effect of loss orientation is 0.0353 (95% CI [0.0102–0.0603]); these results provide support for hypothesis 2c and 3c.

Hypotheses 4a and 4b proposed a moderating role of positive grieving. As shown in **Table 3**, when the interactive items (positive grieving \times restoration orientation and positive

TABLE 1 | Comparison of measurement model.

Model	CMIN	DF	CMIN/DF	IFI	TLI	CFI	RMSEA
Theoretical model (Ten-Factor Model) (LGO, AvoGO, AppGO, RO, LO, OO, PGri, NGri, LFF, Factor)	2682.009	1086	2.470	0.910	0.893	0.909	0.044
Eight-Factor Model (GO, RO, LO, OO, PGri, NGri, LFF, Factor)	3682.041	1103	3.338	0.854	0.83	0.853	0.056
Six-Factor Model (GO, Orientation, PGri, NGri, LFF, Factor)	3781.353	1116	3.388	0.849	0.826	0.848	0.056
Five-Factor Model (GO, Orientation, Gri, LFF, Factor)	4538.198	1121	4.048	0.807	0.779	0.805	0.064
Four-Factor Model (GO + Orientation, Gri, LFF, Factor)	5250.728	1125	4.667	0.767	0.734	0.765	0.070
Three-Factor Model (GO + Orientation + Gri, LFF, Factor)	5163.035	1128	4.577	0.772	0.74	0.770	0.069
Two-Factor Model (GO + Orientation + Gri + LFF, Factor)	5424.609	1130	4.801	0.757	0.724	0.755	0.071
One-Factor Model (GO + Orientation + Gri + LFF + Factor)	5625.266	1131	4.974	0.746	0.711	0.744	0.073

LGO refers to learning goal orientation, AvoGO refers to performance-approach goal orientation, APPGO refers to performance-avoidance goal orientation, RO refers to restoration orientation, LO refers to loss orientation, OO refers to oscillation orientation, PGri refers to positive grieving, NGri refers to negative grieving, Gri refers to grieving, LFF refers to learning from failure, Factor refers to critical factors in project failure.

TABLE 2 | Means, standard deviations, reliability, and correlations among study variables.

	Mean	SD	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
(1) Gender	1.23	0.421																	
(2) Age	31.67	5.525	-0.050																
(3) Education	4.36	0.677	-0.007																
(4) Years in the firm	1.76	0.735	-0.014	0.687**															
(5) Years in the team	1.46	0.691	-0.043	0.496**	0.187**														
(6) Position	4.31	2.691	0.037	-0.079*	-0.120**	0.218**	0.768**												
(7) Type of R&D work	2.97	0.756	.112**	-0.032	-0.124**	-0.064	-0.101**	-0.180**											
(8) Reason for project failure	2.98	0.982	-0.028	-0.038	-0.098**	-0.066	-0.047	0.034	0.003										
(9) Learning goal orientation	4.73	0.698	-0.033	-0.062	-0.07	-0.087*	-0.058	-0.045	0.06	0.011	(0.852)								
(10) Performance-approach goal orientation	4.60	0.718	-0.036	0.021	-0.041	0.039	0.033	-0.004	0.049	-0.002	0.574**	(0.789)							
(11) Performance-avoidance goal orientation	3.07	0.941	-0.066	0.076*	-0.02	0.071	0.04	-0.012	0.011	0.133**	-0.134**	0.101**	(0.820)						
(12) Restoration orientation	3.88	0.655	0.033	0	-0.06	-0.053	-0.05	-0.005	0.056	0.104**	0.145**	0.123**	0.157**	(0.636)					
(13) Loss orientation	3.92	0.724	0.06	0.01	-0.136**	-0.037	-0.058	0.028	0.034	0.066	0.174**	0.162**	0.002	0.470**	(0.696)				
(14) Oscillation Orientation	4.02	0.852	.072*	0.001	-0.056	-0.013	0.014	-0.045	0.075*	0.02	0.146**	0.168**	0.03	0.651**	0.403**	(0.580)			
(15) Positive Grieving	4.35	0.839	0.06	0.004	-0.057	-0.046	-0.066	0.004	0.134**	0.032	0.304**	0.163**	-0.179**	0.375**	0.369**	0.414**	(0.833)		
16 Negative Grieving	2.90	0.877	-0.075*	0.028	-0.095**	0.028	-0.025	0.032	0.025	0.261**	-0.113**	-0.027	0.217**	0.253**	0.219**	0.151**	0.015	(0.864)	
(17) Learning from failure	4.58	0.830	0.056	-0.024	-0.031	-0.032	-0.037	-0.021	0.091*	-0.063	0.368**	0.249**	-0.116**	0.390**	0.439**	0.425**	0.542**	-0.103**	(0.907)

* $p < 0.05$; ** $p < 0.01$.

grieving \times loss orientation) are entered at the same time, the coefficients of the two are both significant ($b_{RO} = 0.052$, $p_{RO} < 0.05$, $b_{LO} = -0.115$, $p_{LO} < 0.001$, Model 3.7). When the interaction items are entered separately, the coefficient of positive grieving \times loss orientation is also significant ($b = -0.08$, $p < 0.001$, Model 3.6), but the coefficient of positive grieving \times restoration orientation is not significant ($b = -0.016$, $p > 0.05$, Model 3.5). Thus, hypothesis 4b is supported, but hypothesis 4a is rejected. We also test the moderated mediation effect by Process. The results show that the moderating effect of positive grieving on the relationship between restoration orientation and learning from failure is not supported (index¹ = 0.006, 95% CI [-0.0005–0.0145]). Instead, the moderating effect of positive grieving on the relationship between loss orientation and learning from failure is supported (index = -0.0143, 95% CI [-0.029 to -0.0034]).

In order to better interpret the moderating role of positive grieving between loss orientation and learning from failure, following Cohen and Cohen (1983), we define high and low positive grieving as plus and minus one standard deviation from the mean. As shown in **Figure 2**, for individuals with a higher level (1 SD above the mean) of positive grieving, their loss orientation will take more learning from failure behaviors ($b = 0.349$, $p < 0.05$) than those with a lower level of positive grieving ($b = 0.119$, $p < 0.05$).

ANALYSIS AND DISCUSSION

In this study, we analyzed how a learning goal orientation promotes learning among team members after a project failure occurs. Our results show that both a restoration coping orientation and a loss coping orientation mediate the relationship between a learning goal orientation and learning from failure. Positive grieving negatively moderates the relationship between a loss orientation and learning from failure, but a hypothesis that positive grieving moderates the relationship between a restoration orientation and learning from failure is not supported.

Theoretical Contribution

The theoretical contributions of the current study are threefold. First, our study enriches the research on the antecedent variables of learning from failure. Past research has focused mostly on the cognitive reactions after failure (Zhao and Olivera, 2006; Shepherd and Cardon, 2009), little is known about the effects of a stable mindset on failure (i.e., goal orientation). This study focuses on the impact of individual behavior orientation on learning from failure. The results of the study validate the role of individual learning goal orientation in promoting learning after a failure. According to the goal orientation theory, an individual's behavioral orientation will directly or indirectly affect the individual's behavior (Dweck and Leggett, 1988). However, previous studies tend to pay more attention to variables

¹This index refers to the moderated mediation effect of the path. If its interval does not contain 0, the moderated mediation effect is significant. What needs to be noted here is the moderator only affects this path.

TABLE 3 | Hierarchical regression analysis for models.

Variables	Restoration orientation		Loss orientation		Learning from failure						
	Model 1.1	Model 1.2	Model 2.1	Model 2.2	Model 3.1	Model 3.2	Model 3.3	Model 3.4	Model 3.5	Model 3.6	Model 3.7
Gender	0.083	0.129	0.166	0.189*	0.111	0.138	0.031	−0.015	−0.017	0.001	0.015
Age	0.015	0.013	0.014	0.014	0.000	0.000	−0.007	−0.010	−0.009	−0.007	−0.008
Education	−0.070	−0.053	−0.203	−0.188**	−0.025	0.000	0.073	0.052	0.050	0.052	0.057
Years in the firm	−0.130	−0.124	−0.095	−0.079	−0.044	0.002	0.061	0.086	0.083	0.074	0.077
Years in the team	−0.005	−0.006	−0.009	−0.016	−0.006	−0.019	−0.033	−0.031	−0.031	−0.037	−0.040
Position	−0.010	−0.007	−0.003	−0.001	−0.011	−0.005	0.001	0.000	0.000	0.000	0.000
Type of R&D work	0.050	0.036	0.009	−0.005	0.112*	0.088	0.072	0.039	0.037	0.027	0.029
Reason for project failure	0.084*	0.063	0.080*	0.082*	−0.058	−0.044	−0.072*	−0.045	−0.046	−0.044	−0.043
Learning goal orientation		0.150**		0.132**		0.322***	0.254***	0.164***	0.165***	0.163***	0.159***
Performance-approachgoal orientation		0.025		0.084		0.072	0.022	0.025	0.027	0.033	0.032
Performance-avoidancegoal orientation		0.168***		−0.001		−0.069	−0.097**	−0.018	−0.019	−0.028	−0.030
Restoration orientation							0.126**	0.108**	0.105**	0.094*	0.098*
Loss orientation							0.253***	0.232***	0.230***	0.230***	0.233***
Oscillation orientation							0.206***	0.138***	0.136***	0.129**	0.131**
Positive grieving								0.306***	0.300***	0.289***	0.300***
Negative grieving								−0.168***	−0.169***	−0.164***	−0.158***
Restoration orientation × Positive grieving									−0.016		0.052*
Loss orientation × Positive grieving										−0.080***	−0.115***
R^2	0.008	0.052	0.025	0.058	0.005	0.145	0.355	0.446	0.455	0.455	0.457
ΔR^2		0.044		0.033		0.14	0.21	0.091	0.009	0	0.002
F	1.72	4.622	3.308	5.097	1.484	12.228	29.632	37.613	35.415	36.808	35.127
P	0.090	0.000	0.001	0.000	0.159	0.000	0.000	0.000	0.000	0.000	0.000

* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$.

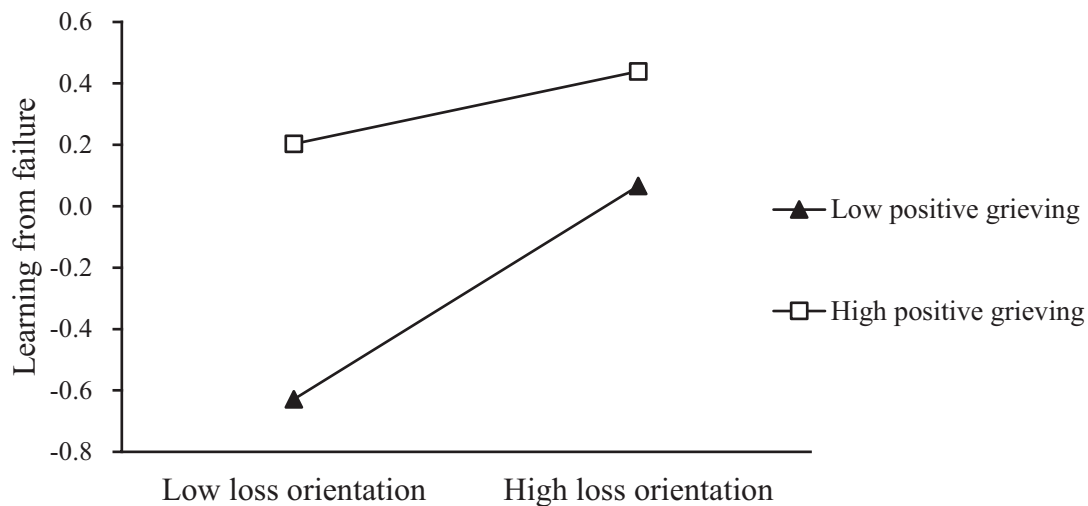


FIGURE 2 | The moderating role of Positive Grieving between Loss Orientation and Learning from Failure.

at the surface-level (such as team atmosphere and individual personality), and there is little research that is focused on individuals' deep-level attributes such as behavioral orientation. Therefore, this research provides a new research direction.

Second, combined with the theory of grief recovery theory, we extend the application environment of the theory. Shepherd et al. (2011) used grief recovery as a boundary variable to explore the moderating role of emotional coping orientation in the recovery of negative emotions, and believed that loss orientation can promote learning from failure while restoration orientation cannot promote learning. However, after empirical testing, the results have not been fully confirmed. Based on the Chinese cultural background, we propose and test that loss orientation and restoration orientation both have a positive mediating effect in the relationship between learning goal orientation and learning from failure. This expands the context of the grief recovery theory, and subsequent scholars can carry out qualitative research such as case analysis to further confirm its reliability.

Third, an emotional response after failure will influence individuals' behavior responses (Dolan, 2002; Phelps, 2006). We explored the important role of positive grieving generated by individuals interacting with projects. Regarding to the boundary factors that affect the learning from failure process, previous scholars usually limit the moderating variables to the individual's stable emotions (e.g., shame, shame, etc.), the organization's management style (e.g., error management culture), and individual characteristics (e.g., resilience), there is little research on the role of failure-induced transitional emotions (i.e., positive grieving) in individual learning process (Zhao, 2011; Fang He et al., 2018). As a normal emotion after negative events occur, previous research shows that positive grieving may have an impact on learning behaviors (Wang et al., 2019). However, few scholars use it as a moderating variable to study its influence on the mechanism of individual behavior and its antecedent variables. We further expand the research field of positive grieving. After data testing, the negative moderating

role on the relationship between loss orientation and learning from failure has been supported. This is very different from the research conclusions of previous scholars. Most of the previous scholars have confirmed that positive grieving has a positive effect (e.g., learning from failure) (Wang et al., 2019). Our research confirms that positive grieving may also have a negative effect, which provides a theoretical and practical basis for follow-up scholars to further explore. However, the moderating role on the relationship between restoration orientation and learning from failure hasn't been supported. We contend that our cross-section design contributes to this result. In fact, the benefits of a restoration orientation require time to manifest (Shepherd et al., 2011). Such an orientation cannot buffer the negative effects of failure in the short-term in the way that a loss orientation can. Therefore, our findings reveal the potential difference between loss and restoration orientation, which bears further empirical examination in the future.

Practical Contributions

In terms of management practice, this study suggestions the following recommendations. First, the research results show that individuals with a higher learning goal orientation are more concerned about the development of their abilities and are willing to work hard to improve them (VandeWalle et al., 2001) so that they can learn better from failure. Therefore, team leaders and managers can introduce incentives to encourage staff members to improve themselves. Such a system will increase performance and rewards, motivate a learning goal orientation, and help individuals to learn from failure.

Our research also shows that both restoration and loss orientations can promote learning behavior. Managers should guide and encourage employees to take appropriate countermeasures after a failure occurs. Employees should consciously adopt appropriate treatment methods to maximize the value of their experience and skill learning that failure events provide.

Finally, managers need to realize that positive grieving affects the relationship between loss orientation and learning from failure, and that appropriate grieving can promote individual learning behavior. If individual has an overly optimistic attitude toward the failed project too soon after the failure, this is not conducive to learning from the failure. Managers can encourage employees to “get out of the shadow” so they can more effectively from failure.

Limitations and Future Directions

We recognize that this study has several limitations. First, the data used in this study were cross-sectional, and participants were asked to recall a recent project failure, which may contribute to some biases. In fact, commercial failure often appears random, and it is therefore hard to trace the chain of events that led to the failure. Thus, previous studies usually ask employees to recall such an experience via questionnaires or interviews. To better understand individuals’ reactions after failure, future research should integrate field research and neuroscience-based experiments (Metcalfe, 2017). The key advantage of applying neuroscience methods is to provide more robust conclusions and interpret human behavior from a more fundamental level (i.e., neural processes). Furthermore, in order to further explore the various influencing factors of success and failure in the progress of the project, and further deepen the research, future research can collect data during the project.

Second, the data we collected were from a single point in time and from a single resource (i.e., self-reports of employees). Though we tested Harman’s one factor analysis and CFA to test the risk of CMB, we still recommend that future research use data from multiple sources to make the influence of CMB minimum. We can use coworker or leader reports to see the change of employees’ behavior.

Third, the emotion variable considered in the research model is positive grieving, which is a transitional emotion after an individual experiences a negative event. We only considered one kind of grieving emotion in the study, and did not take into account the mechanism of other emotional variables such as psychological safety (Tjosvold et al., 2004), so future research should also examine other emotional variables as moderators.

Finally, our research considered the role of “mianzi” and other Eastern cultures in the process of learning from failure in the Chinese culture background. Is it possible that there are other Chinese cultural contextual factors that will affect the relationship between individual cognition and behavior? In recent years, many scholars have put forward some Chinese native cultural concepts such as traditionality and Chaxu climate.

Are these factors likely to influence individual’s learning process as boundary variables? Additionally, does Western culture have characteristics similar to Chinese contextual factors, and can the research conclusions on Eastern culture be applied to Western culture? Follow-up scholars can further explore from the aspects of cultural differences and commonalities.

CONCLUSION

Because failure is a common occurrence in the turbulent world of business, learning from failure is an important research topic. This study validates the effect of a learning goal orientation on learning from failure, and examines the moderating role of positive grieving in the process. We not only enrich the theoretical knowledge of learning from failure, but also provide suggestions on how to promote individual learning after a failure has occurred.

DATA AVAILABILITY STATEMENT

The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

ETHICS STATEMENT

Written informed consent was obtained from the individual(s) for the publication of any potentially identifiable images or data included in this article.

AUTHOR CONTRIBUTIONS

WW and SS substantially contributed to the conception and the design of the work as well as in the analysis and interpretation of the data. XC and WY prepared the draft and reviewed it critically. All the authors contributed to the article and approved the submitted version.

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Conflict of Interest: The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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APPENDIX TABLE 1 | Hierarchical regression analysis in Stata.

Variables	Restoration Orientation		Loss Orientation		Learning from Failure						
	Model 1.1	Model 1.2	Model 2.1	Model 2.2	Model 3.1	Model 3.2	Model 3.3	Model 3.4	Model 3.5	Model 3.6	Model 3.7
Gender	0.083	0.129*	0.164*	0.186*	0.110*	0.138*	0.032	−0.014	−0.017	0.001	0.016
Age	0.015	0.014	0.015	0.015	0.000	0.000	−0.007	−0.010	−0.009	−0.007	−0.008
Education	−0.069	−0.053	−0.206**	−0.192***	−0.025	0.000	0.074*	0.053	0.051	0.053	0.058
Years in the firm	−0.130	−0.123	−0.094	−0.079	−0.045	0.002	0.061	0.085	0.082	0.073	0.076
Years in the team	−0.005	−0.007	−0.008	−0.016	−0.006	−0.019	−0.033	−0.031	−0.031	−0.037	−0.040
Position	−0.010	−0.007	−0.004	−0.001	−0.011	−0.005	0.001	0.000	0.000	0.000	0.000
Type of R&D work	0.050	0.026	0.008	−0.005	0.112**	0.088**	0.073**	0.039	0.037	0.028	0.029
Reason for project failure	0.084	0.063	0.080**	0.082**	−0.058	−0.045	−0.071	−0.045	−0.046	−0.044	−0.043
Learning goal orientation		0.150**		0.132**		0.322***	0.254***	0.164***	0.165***	0.163***	0.159***
Performance-approachgoal orientation		0.025		0.084		0.072	0.022	0.025	0.027	0.033	0.032
Performance-avoidancegoal orientation		0.168**		−0.001		−0.069	−0.097	−0.018	−0.019	−0.028	−0.030
Restoration orientation							0.126**	0.108*	0.105*	0.094*	0.098*
Loss orientation							0.253**	0.232***	0.230**	0.230***	0.234***
Oscillation orientation							0.206***	0.138***	0.136***	0.129***	0.131***
Positive grieving								0.306***	0.300***	0.289***	0.300***
Negative grieving								−0.168***	−0.169***	−0.164***	−0.158***
Restoration orientation*Positive grieving									−0.016		0.052*
Loss orientation*Positive grieving										−0.080*	−0.115**
R^2	0.019	0.066	0.036	0.073	0.016	0.158	0.367	0.458	0.458	0.468	0.471
ΔR^2		0.047		0.037		0.142	0.209	0.091	0.001	0.010	0.003
F	7.50	15.49	8.61	17.31	5.65	74.94	196.18	480.00	504.83	386.65	400.47
P	0.000	0.000	0.000	0.000	0.001	0.000	0.000	0.000	0.000	0.000	0.000

APPENDIX TABLE 2 | Hierarchical regression analysis without oscillation orientation.

Variables	Restoration Orientation		Loss Orientation		Learning from Failure						
	Model 1.1	Model 1.2	Model 2.1	Model 2.2	Model 3.1	Model 3.2	Model 3.3	Model 3.4	Model 3.5	Model 3.6	Model 3.7
Gender	0.083	0.129	0.166	0.189*	0.111	0.138	0.054	0.000	−0.003	0.015	0.029
Age	0.015	0.013	0.014	0.014	0.000	0.000	−0.007	−0.010	−0.010	−0.007	−0.008
Education	−0.070	−0.053	−0.203***	−0.188**	−0.025	0.000	0.065	0.046	0.044	0.047	0.052
Years in the firm	−0.130	−0.124	−0.095	−0.079	−0.044	0.002	0.055	0.081	0.078	0.069	0.071
Years in the team	−0.005	−0.006	−0.009	−0.016	−0.006	−0.019	−0.013	−0.015	−0.016	−0.023	−0.026
Position	−0.010	−0.007	−0.003	−0.001	−0.011	−0.005	−0.003	−0.002	−0.003	−0.003	−0.003
Type of R&D work	0.050	0.036	0.009	−0.005	0.112*	0.088	0.080	0.041	0.039	0.029	0.030
Reason for project failure	0.084*	0.063	0.080	0.082*	−0.058	−0.044	−0.083**	−0.054	−0.054	−0.052	−0.050
Learning goal orientation		0.150***		0.132**		0.322***	0.248***	0.156***	0.158***	0.156***	0.151***
Performance-approachgoal orientation		0.025		0.084		0.072	0.042	0.039	0.041	0.047	0.046
Performance-avoidancegoal orientation		0.168***		−0.001		−0.069	−0.111**	−0.023	−0.024	−0.033	−0.035
Restoration orientation							0.250***	0.184***	0.180***	0.165***	0.169***
Loss orientation							0.275***	0.242***	0.240***	0.239***	0.243***
Positive grieving								0.330***	0.323***	0.310***	0.321***
Negative grieving								−0.166***	−0.167***	−0.161***	−0.156***
Restoration orientation*Positive grieving									−0.020		0.050
Loss orientation*Positive grieving										−0.084***	−0.118***
R^2	0.008	0.052	0.025	0.058	0.005	0.145	0.332	0.436	0.436	0.447	0.449
ΔR^2		0.044		0.033		0.14	0.187	0.104	0	0.011	0.002
F	1.720	4.622	3.308	5.097	1.484	12.228	28.924	38.615	36.254	37.833	35.955
P	0.090	0.000	0.001	0.000	0.159	0.000	0.000	0.000	0.000	0.000	0.000



How to Keep Sustainable Development Between Enterprises and Employees? Evaluating the Impact of Person–Organization Fit and Person–Job Fit on Innovative Behavior

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High-tech industries often regard workers as their main source of value creation. In order to stimulate their employees' willingness to innovate and their innovative behavior and reduce the turnover intention, companies are now seeking to establish employer–employee relationships in which their employee's willingness to stay is not simply driven by extrinsic motivations. Therefore, it is an important topic in human resources for companies to implement measures that encourage employees to willingly devote themselves to their jobs and consider organizational growth as a component of their career development. This study aimed to investigate the effect of person–organization fit and person–job fit on employees' innovative behavior and turnover intention via the mediators including job satisfaction and organizational commitment. Six hundred ninety-seven employees from China's eight major high-tech industries were examined in this study, and the empirical results were analyzed using partial least squares. Based on the results, it is suggested that the person–organization fit and person–job fit are both crucial factors affecting employees' job satisfaction and organizational commitment, which, in turn, increase employees' willingness to innovate in their jobs and reduce their turnover intentions. Furthermore, this study could serve as a reference for companies in selecting employees, promoting job satisfaction, and developing strategies for sustainable development.

Keywords: person-organization fit, person-job fit, innovative behavior, resilience, partial least squares, high tech-industries, turnover intention

INTRODUCTION

Based on the current condition of the global economy, organizations are required to rapidly respond to changes in the business environment, make timely changes in strategies, and adapt to various circumstances in order to survive. They need to deal with challenges that are internal and external by raising resilience at the organizational level (Ramdani et al., 2020).

As organizational adaptability mainly depends on employee responses to change, organizations also need to focus on the behaviors and attitudes of their members. This is especially the case in the current time, when the COVID-19 (coronavirus disease 2019) pandemic caused a serious economic recession in most sectors and a large number of employees were thus laid off (Heinonen and Strandvik, 2020).

In the traditional recruitment process, talents were mostly recruited based on the duties and qualifications specified in job descriptions, i.e., on person–job (PJ) fit, which assumes that individuals with sufficient knowledge, skills, and abilities would be competent in handling their job tasks, duties, and responsibilities. This PJ fit–based recruitment model, however, fails to consider the fit between employees' personal attributes or values and organizational culture or management concepts, as well as the possibility of employees resigning if they are unable to adapt to their organization. Frequent personnel turnover not only requires massive human and material resources from organizations to replace talents, but also negatively impacts organizational atmosphere and employee morale, which, in turn, hinders organizational development. In practice, companies search for qualified employees, while employees seek to join suitable companies. Therefore, the selection of suitable employees should be based not only on the compatibility between their professional skills and the job requirements, as it is also important to consider person–organization (PO) culture fit and PO value fit. The traditional PJ fit–based human resource management system can no longer meet the requirements for organizational development.

In the past decade, the concepts of congruence and fit have received wide interest in organizational research (Amos and Weathington, 2008). Prior studies have focused on its linkage with job satisfaction and team performance (e.g., Saks and Ashforth, 1997; Verquer et al., 2003; Hoffman and Woehr, 2006; Piasentin and Chapman, 2007; Vilela et al., 2008; Kammerhoff et al., 2019). Recently, various researchers have increasingly turned their attention to the compatibility between an individual and their working environment, instead of focusing only on the fit between an individual's personality traits and a career. Research results may become more objectively accurate if individual factors (such as skills, capabilities, requirements, and values) and organizational factors (such as working conditions, organizational culture, and organizational climate) are simultaneously considered. The concept of PO fit has been widely studied. At the individual and organizational levels, the interactive relationships between individual and organizational behaviors, as well as the role of PO fit in the employment process (selection, hiring decisions, career decisions, etc.) and its effect on individual and organizational results, have become important research topics. Hence, PO fit has opened up sustainable horizons for the research fields of human resources and organizational behavior.

PO fit has attracted significant attention partly due to rapid changes in job characteristics that have led to revised job descriptions, such that organizations now possess sufficient flexibility to actively adapt to various dynamic environments (Sung and Kim, 2020). At the same time, it is essential for

employees to be prepared at all times to make changes to their current tasks, i.e., effortlessly adapt to different work teams or respond appropriately in uncertain and unknown situations. A sole focus on an individual's fit with a certain job fails to account for the possibility of him or her being transferred or retrained if he or she is unable to adapt to changes in his or her job content, which would force an organization to place a greater emphasis on searching for better fitting employees. Hence, PJ fit is no longer the only indicator in the recruitment process, as PO fit implemented throughout the employment and socialization processes is often used to retain employees with flexibility and organizational commitment (Kristof, 1996). It can be seen that PO fit has important significance and effects with respect to individual and organizational variables. However, some researchers have suggested that it is necessary to include PO fit and PJ fit to meet these requirements (Bowen et al., 1991).

In recent years, researchers have focused on organizational teams, and there has been a lack of empirical research on individuals. For instance, in a meta-analysis by Halfhill et al. (2005), more than half of the studies examined had University students as participants, while the rest involved the participation of professional teams. Therefore, the studies that involved professional teams mostly required these teams to complete specific tasks, whereas the studies that recruited University students generally involved only problem-solving tasks. This is because more resources (in terms of manpower, materials, funding, and time) are required to conduct the team-focused studies, which leads to a lack of empirical research and insufficient scientific evidence in this area. Therefore, this study applied partial least squares (PLS) to verify the mediating mechanism of organizational fit through job satisfaction and organizational commitment on employees' innovative behavior and willingness to leave their jobs. Through the collection and collation of relevant literature, analysis, and synthesis, some research hypotheses were derived, and finally the empirical data were analyzed. This study would contribute to provide the research findings to bridge the gaps in the related research field, as well as to provide reference for the industry in selecting team members, promoting job satisfaction, and the strategic development of sustainable development of the team.

THEORETICAL BACKGROUND AND LITERATURE REVIEW

Person–Organization Fit

As the meaning of the word “environment” differs according to various contexts, different scholars have used various constructs to explain the effects of an individual's environment on their behavior (Edwards and Shipp, 2007). The different levels of fit play important roles in employment relationships, and they each emphasize different things (Edwards and Billsberry, 2010). Kristof-Brown et al. (2005) broadly defined the compatibility fit between an individual and an organization when the characteristics of the individual (values, personality, or goals) and the features of the work environment (values, norms, or goals) are well matched (Kristof-Brown et al., 2005).

Schneider (1987) proposed the attraction–selection–attrition (ASA) model and indicated that individuals would be attracted to organizations that have values and goals that are similar to theirs. After willingly joining or after being selected to join an organization, individuals whose attributes differ greatly from those of the organization encounter conflicts within it, which drives them to make a decision on whether they should stay or leave their organization. The ASA model explains that it is the environment that is shaped by individuals and their behaviors and not the other way around. This is an extension of the concept of supplementary fit and emphasizes the importance of a supplementary relationship between individuals and their organization. However, the ASA model lacks specific descriptions as it is based on the concepts of normative theory. Even though it is able to explain the congruence of value fit, it is unable to provide thorough explanations of actual organizational operations as organizations often emphasize attributes other than individual values (such as individual capabilities) during their employment process. It is also possible that employees would rather stay with an organization even when they do not agree with its values or are uninterested in its goals.

In recent years, researchers have proposed approaches based on integrated perspectives to explain PO fit. Kristof (1996) proposed a more complete PO fit model and explained that individuals and organizations not only have basic attributes, but also have respective requirements and available resources. This integrated model incorporates various PO fit concepts and also considers the standpoints of supplementary fit and complementary fit.

Person–Job Fit

The concept of PJ fit was first proposed by Caldwell and O'Reilly (1990), who defined it as the congruence between individual personalities and working environments, or the compatibility between individuals and specific jobs, i.e., the compatibility between the skills and needs of employees and jobs. The PJ fit stresses the level of fit between an individual's attributes or capabilities and a certain job or task (Edwards, 1991; Cable and Judge, 1996; Kristof-Brown, 2000).

After reviewing 92 PJ fit-relevant studies, Edwards (1991) proposed a PJ fit model based on demands and abilities to predict organizational outcomes. PJ fit is generated when the supply of a job satisfies employees' needs or desires, or when employees' abilities are able to meet job demands. Cable and DeRue (2002) later extended the concepts of Kristof (1996) and Edwards (1991) and clarified that the concept of PJ fit is complementary and consists of Needs-supplies (NS) fit and Demands-abilities (DA) fit.

As PO fit and PJ fit are both important topics in human resources management and organizational behavior, and as they have close relationships with work outcomes, PO fit and PJ fit were the main focuses of this study. PJ fit affects an individual's work behavior, performance, and outcomes (such as work performance, organizational identification, job satisfaction, and turnover intention) in an organization (Brkich et al., 2002). Different outcome variables can be predicted by different fit factors. Cable and DeRue (2002) verified that employees

express more organizational identification when they believe that their values fit with organizational values and that the relationship between PJ fit and employees' job satisfaction is statistically significant. Edwards (1991) revealed the positive correlations between PJ fit and behavioral consequences such as job satisfaction, low work stress, performance, attendance rate, and employee retention rate. Most studies have shown the positive effects of high levels of fit, but conversely, some studies have also shown the negative effects of high levels of fit, which affects organizational adaptability and innovative capabilities.

Even though they overlap partially, the concepts of PO fit and PJ fit have no relevance to each other. Researchers believe that individual experiences vary with different jobs or organizations, which result in changes in fit (O'Reilly et al., 1991). PJ fit is basic of the specific compatibility between individuals and jobs, which includes fit in capabilities, job characteristics, interests, or personalities. On the other hand, PO fit is based on the fit between values and goals of employees and organizations. Even if an individual was able to adapt to a specific task and had good PJ fit, changes in the organizational demands of employees would remain unchanged and would not be influenced by the individual's adaptability or competence. PO fit, however, varies according to changes caused by interactions between individuals and their organizational environment and attributes. Therefore, the level of interaction in PO fit is greater than that in PJ fit, and in essence. There is a certain level of difference between these two fits. Furthermore, the effectiveness of distinguishing these two fits has been supported by empirical evidence (Lauver and Kristof, 2001).

Regarding the processes of promotion and recruitment in organizations, Kristof-Brown (2000) pointed out that PJ fit had more explanatory power than PO fit. Kristof-Brown et al. (2002) examined how individuals combined their perceived PO fit, PJ fit, and PG fit while developing job attitudes. They found out that each type of fit influenced distinct impacts on job satisfaction and turnover intentions, respectively, whereas PJ fit had a significant effect on job attitudes. As it is likely for relevant variables to be discussed in studies on fits based on different perspectives, multidimensional measurements should be carried out when researching levels of fit (Westerman and Cyr, 2004). A study may be more complete if multidimensional measurement and research were simultaneously performed when examining fits.

In recent years, many studies on PO fit and PJ fit have used direct measurements of perceived fit (Cable and Judge, 1996; Netemeyer et al., 1997; Lauver and Kristof, 2001; Cable and DeRue, 2002; DeRue and Morgeson, 2007) in lieu of indirect measurements, as empirical evidence has suggested that direct measurements are more capable of explaining variance than indirect measurements (Tepeci and Bartlett, 2002; Hoffman and Woehr, 2006).

Direct measurements were adopted in this study in lieu of indirect measurements, as this approach has better explanatory power regarding the effects of an individual's level of perceived fit on their job attitudes (Kristof, 1996; Cable and Judge, 1997). Research has also shown that participants can self-assess their capabilities with a certain level of accuracy (Atwater et al., 1998),

which proves that individuals are able to clearly identify different types of fit (such as PO fit, DA fit, NS fit) when they conduct measurements of perceived fit.

Job Satisfaction

Job satisfaction is a unitary concept and refers to the overall emotional state of employees as they psychologically and physiologically face factors related to their working environment. In other words, it is formed from the individual subjective responses from employees toward their work scenarios. Robbins et al. (2015) defined job satisfaction as the joyous or positive feelings about one's job derived from one's evaluation of their work experience or job characteristics. Hence, job satisfaction is the subjective emotional response from an individual toward their job, and this feeling is influenced by various factors. These affective descriptions often grow during the process of evaluating an individual's work experience. On these bases, job satisfaction is one's affective response toward their job. Robbins et al. (2015) suggested that job satisfaction not only can be defined as an affective component, but also may be developed into a cognitive component that can be obtained by evaluating job conditions, opportunities, and supply. According to this definition, cognitive job satisfaction includes the process of making comparisons. Therefore, job satisfaction is a relative concept as comparisons can be made based on reference values during appraisals and not simply based on emotional judgments.

Job satisfaction is a term often used around the workplace and is often discussed in the fields of psychology and management studies. Definitions of job satisfaction vary according to different fields of research. The job attitude of an employee that has positive and joyful feelings toward their job can be defined as job satisfaction, whereas the opposite can be defined as job dissatisfaction. Another approach for defining job satisfaction is to compare the gap between employees' expected and actual rewards. Job satisfaction can be viewed as an individual's general attitude toward their job (Robbins, 2005); it represents the level to which workers like or dislike their jobs. Employees reflect their feelings by expressing satisfaction and positive attitudes toward their jobs and organizations.

Organizational Commitment

Organizational commitment is the degree of personal identification with and commitment to a particular organization, which enables members of the organization to internalize the goals of the organization and display behavior beneficial to the organization (Mowday et al., 1982; Naz et al., 2020). Podsakoff et al. (2000) argue that employees will demonstrate organizational citizenship behavior as a reward for organizational support. Staw and Salancik (1982) proposed that organizational commitment allows members to be willing to strive for the organization regardless of the outcomes of their actions. Employees with higher retention commitments are more devoted to their jobs. Deluga (1994) pointed out that individuals with organizational commitment receive similar rewards from their supervisors or organizations, which stimulates their behavior to perform practical actions that contribute to their organizations.

Organizational commitment is an element of employees' work behavior within an organization, an attitude or orientation that links or attaches individuals to the organization as a whole. When employees identify with the organization and its goals and want to be part of the organization, organizational commitment is inversely related to turnover and absenteeism rates; i.e., organizational commitment is an emotion of affiliation, identification, and participation (Robbins, 2005). In other words, when members are highly committed to the organization, they can bring a high degree of centripetal force and competitiveness to the organization, which in turn can create insecurity or turnover risk.

Employee Innovative Behavior

Innovation is a major source of competitive advantages for today's organizations (Drucker, 1999). Employee innovative behavior helps to bring new and feasible solutions and ideas to enterprise related services, products, and business processes. The starting point of organizational innovation is when people demonstrate innovative behaviors in their work, including using creativity, identifying problems, making the most of opportunities, and actively thinking of and then implementing ideas to launch new services, products, and even new markets. Therefore, whether it is to inspire members to develop their creativity or to motivate them to implement their creativity is a subject of concern to scholars of organizational innovation (Yuan and Woodman, 2010; Anderson et al., 2014).

Janssen (2000) stated that employee innovative behavior refers to the generation, implementation, and application of new thoughts in a group or organization. The innovative ideas of employees are important to the organization, not only to increase work efficiency, but also to enhance the performance of the organization (Baer and Frese, 2003). Therefore, how organizations motivate their employees to innovate and create the right environment for them to do so and whether they can support and assist their employees to execute innovative ideas have been the critical theme on the research field of organizational behavior (Tierney and Farmer, 2002).

The impact of organizational social context on workers' innovative behavior is through the members' self-cognition process (Yuan and Woodman, 2010). Employees' self-confidence or sense of innovation are the important roles about efficiency in completing innovative tasks (Tierney and Farmer, 2002). Nowadays, enterprises are facing the dilemma of rapid technological change and harsh business environment. In this study, "employee innovative behavior" is defined as the overall behavioral process of employees' search for, establishment of, execution of, and successful implementation of ideas for new technologies, new processes, new techniques, or new products to turn them into useful products or services.

Turnover Intention

According to social exchange theory, employees who are cared for by their organizations will reciprocate by performing actions that benefit their organizations (Blau, 2017). In contrast, employees will reduce their organizational trust and commitment if they perceive that their organization has lost faith in them. In the

case of repatriates, those who perceive that their parent company has failed to fulfill the psychological contracts and commitments that were established between the two sides would no longer express loyalty or perform mutually beneficial actions for their parent company, nor would they regard their parent company as a working environment filled with support and remain in their positions (Feldman and Thomas, 1992). Therefore, it is inferred that when repatriates perceive that their parent company has lost faith in them, they will feel dejected as the gap between their expectations and reality enlarges (Feldman et al., 2000). As they are dissatisfied with the outcomes after being repatriated (Suutari and Brewster, 2003; Vidal et al., 2007), they would proactively look for other job opportunities and develop higher turnover intentions. An employee with a turnover intention could bring about an operational crisis for his or her company (Karsh et al., 2005).

Based on the turnover intention model proposed by Szilagyi (1979), job satisfaction is an important antecedent variable for turnover intention or behavior. This researcher also believed that the level of job satisfaction can negatively impact turnover intention or behavior. In the subsequent turnover models proposed by Bluedorn (1982) and Michael and Spector (1982), organizational commitment was also considered as an important antecedent variable affecting turnover intention, in addition to job satisfaction, as employees with low organizational commitment may leave their organizations. Karsh et al. (2005) determined that perceived desirable working environments and organizational conditions positively affect workers' commitment and satisfaction, as low commitment and satisfaction negatively affect turnover intention. On the other hand, if a company fulfills its psychological contracts with and commitments to repatriates, or perhaps even performs beyond these expectations, these repatriates would strongly perceive that their parent company supports and cares about them and is worthy of their trust. Based on the principles of a mutually beneficially exchange, these repatriates would display high levels of positive affection and loyalty toward their parent company and would perceive that it would be a huge loss for both parties if they decided to leave a company worthy of their trust.

RESEARCH METHODOLOGY

Research Hypotheses Development and Research Framework

Past studies had shown that PO fit affects an individual's preference for organization, commitment to work, and performance (Piasentin and Chapman, 2007; Anderson et al., 2008; Clercq et al., 2008). One of the reasons why employees leave the company is because individuals and organizations do not fit together (Gooley, 2001). When personal values are consistent with organizational values and their resilience is better, teams and organizations would have a higher level of fit and employee satisfaction with a greater willingness to stay in the organization (Chatman, 1989). Conversely, the incompatibility between the individual and the perception of the work will make the employee consciously have a poor

degree of fit between the work and the actual work and thus have a sense of job frustration and poor job satisfaction and have a negative impact on personal health (Caplan, 1987; Dooley, 2003). In addition, personal and work perceptions do not fit and may allow employees to leave their current jobs to better suit their talents (Bretz and Judge, 1994; Feldman et al., 2002). Therefore, the perception of the individual and the job adaptation assessment are not suitable, which will negatively affect the worker's job satisfaction (Livingstone et al., 1997; Cable and DeRue, 2002).

In addition, Huang and Hsiao (2007) found that the advantageous working conditions would influence the job satisfaction and organizational commitment positively. A higher employee-to-organization fit could also result in better organizational commitment and job satisfaction (Vancouver and Schmitt, 1991; Verquer et al., 2003; Kristof-Brown et al., 2005). It is also possible that employees are unable to understand the company's literacy or integration into the organization and that employees have a lack of ownership of the organization, so employees tend to choose to leave (Autry and Daugherty, 2003). Cable and Edwards (2004) argued that the organizational fit between employees' and organizational values is related to determinants such as organizational identity, organizational citizenship behavior, and turnover intention. Past research results have also found a positive relationship between PO fit and job satisfaction (McCulloch and Turban, 2007; Liu et al., 2010; Abdalla et al., 2018; Jehanzeb and Mohanty, 2018). According to the above discussion, we proposed the following four hypotheses.

Hypothesis 1: Person–job fit positively influences job satisfaction.

Hypothesis 2: Person–organization fit positively influences organizational commitment.

Hypothesis 3: Person–job fit positively influences job satisfaction.

Hypothesis 4: Person–job fit positively influences organizational commitment.

Fu and Deshpande (2014) found that there was a positive correlation among job performance, job satisfaction, and organizational commitment in an investigation of 476 insurance practitioners in China. Plentiful research indicated that job satisfaction also affected organizational commitment significantly (Schwepker Jr, 2001; Tsai and Huang, 2008; Malik et al., 2010; Qureshi et al., 2011; Hira and Waqas, 2012). According to the above discussion, we proposed Hypothesis 5 and Hypothesis 6. According to the above discussion, we proposed Hypothesis 5 and Hypothesis 6.

Hypothesis 5: Job satisfaction positively influences organizational commitment.

Hypothesis 6: Job satisfaction positively influences innovative behavior.

The previous empirical evidence pointed out the significantly positive relationship between organizational commitment and innovative behavior in the retail industry from 80 retail executives (Jafri, 2010). Wiener (1982) argues that organizational commitment is an internalized normative force that encourages

members of the organization to engage in behavior that is consistent with organizational goals and organizational interests. In summary, this study proposed Hypothesis 7.

Hypothesis 7: Organizational commitment positively influences innovative behavior.

Dereliction of duty means that a worker works in a particular organization for a period of time. After some consideration, he or she deliberately wants to open the organization and loses the original position and the rights and benefits it confers. This is a general attitude and attitude toward dereliction of duty and the search for other job opportunities, often used to explore important predictors of misconduct (Hellman, 1997). Therefore, the employee's turnover intention can explain whether the actual behavior of employee misconduct has occurred. In the discussion of the relevant models of the willingness to work, most of the studies agree that job satisfaction is significantly correlated with the willingness to work (Tsai and Wu, 2010; Park et al., 2014; Jehanzeb and Mohanty, 2018; Shah et al., 2020). Schwepker Jr (2001), through an empirical study of 152 salespeople in 26 companies, points out the negative impact of job satisfaction on employee turnover intention through organizational commitment. Previous research also indicated that job satisfaction and organizational commitment were two important determinants that may affect employee turnover intention (Karsh et al., 2005). Besides, Naz et al. (2020) also found the positive linkage between organizational commitment and employee retention. Therefore, we proposed the last two research hypotheses of this study as follows.

Hypothesis 8: Job satisfaction negatively influences turnover intention.

Hypothesis 9: Organizational commitment negatively influences turnover intention.

Based on the discussion of the aforementioned literature, the relevant research hypotheses (Table 1) and research framework (Figure 1) were proposed in this study.

Measurement Items and Sample Structure

PO fit developed by Cable and DeRue (2002) was adopted with a three-item scale in this study to examine. An 18-item Multidimensional Person–Job Fit Scale (MPJS) was developed to examine the level of PJ fit. This scale was developed based on Edwards (1991) definition of PJ fit, the research conducted by Cable and DeRue (2002), and the explanatory and confirmatory factor analyses that were performed in accordance with the scale development procedure suggested by Hinkin (1998). The MPJS consists of five constructs, namely, basic needs, self-esteem and attachment, self-realization, job demands, and capabilities, and can be used to accurately understand the fit between employees and their jobs. Six measurement items were developed by Crossman and Abou-Zaki (2003) in this study to measure job satisfaction toward employees. In this study, hypothesis testing was conducted on 697 valid samples from different industrial organizations and different departments in order to improve the

TABLE 1 | Research hypotheses.

Hypothesis 1	Person–job fit has the positive influence on job satisfaction.
Hypothesis 2	Person–job fit has the positive influence on organizational commitment.
Hypothesis 3	Person–organization fit has the positive influence on job satisfaction.
Hypothesis 4	Person–organization fit has the positive influence on organizational commitment.
Hypothesis 5	Job satisfaction has the positive influence on organizational commitment.
Hypothesis 6	Job satisfaction has the positive influence on innovative behavior.
Hypothesis 7	Job satisfaction has the negative influence on turnover intention.
Hypothesis 8	Organizational commitment has the negative influence on innovative behavior.
Hypothesis 9	Organizational commitment has the negative influence on turnover intention.

external validity of the analysis results. The sample structure of this study is outlined in Table 2.

Ethics Statement

About this research, ethical review and approval were not required for this study on human participants in accordance with the local legislation and institutional requirements. Written informed consent from the participants was not required to participate in this study in accordance with the national legislation and the institutional requirements.

ANALYSIS RESULTS

Outer Model

There were two stages in the PLS analysis and estimation. In the first stage, reliability and validity analyses were performed on the outer model; in the second stage, estimations and tests were performed on the structural model's path coefficient and explanatory power. These two steps were performed to confirm the reliability and validity of the measurement constructs prior to examining the relationship between each construct (Anderson and Gerbing, 1988). The relevant tests for the outer model mainly covered the internal consistency and convergent, as well as the discriminant validity of each construct.

This study applied Cronbach α value and composite reliability of latent constructs to evaluate the internal consistency of each component. Fornell and Larcker (1981) and Hair et al. (2010) recommended a confidence level of 0.7 or higher to meet the criterion of internal consistency. The values of Cronbach α and composite reliability of each construct were all greater than the recommended values, which indicates good internal consistency in this study.

Convergent validity refers to the degree of convergence between multiple scale items estimating single construct. As shown in Table 3, the average variance extracted and reliability are higher than 0.5 and 0.7, respectively. According to the



FIGURE 1 | Research model.

TABLE 2 | Sample structure.

Category		Frequency	Percentage (%)	Category		Frequency	Percentage (%)
Gender	Male	469	67.3	Age of company	2–5 years	60	8.6
	Female	228	32.7		6–10 years	152	21.8
Age	<25	15	2.2		>10 years	485	69.6
	26–30	202	29.0	Organizational department	Research and development	352	50.5
	31–35	226	32.4		Procurement	13	1.9
	36–40	152	21.8		Customer service	5	0.7
	41–45	62	8.9		Sales	20	2.9
	>46	40	5.7		Planning	72	10.3
Work experience	<1 year	10	1.4	Administration	Administration	65	9.3
	2–3 years	163	23.4		Consulting	4	0.6
	4–6 years	234	33.6		Human resources	43	6.2
	7–9 years	132	18.9		Production/manufacturing	113	16.2
	>10 years	158	22.7		Accounting	10	1.4
Company size	<200 employees	122	17.5	High-tech fields	Electronics	151	22.4
	300–500 employees	264	37.9		Biomedicine	34	4.9
	600–1,000 employees	195	28.0		Aerospace and aeronautics	7	1.0
	>1,000 employees	116	16.6		New materials	53	7.6
Educational level	Diploma and below	82	11.8		High-tech service industry	121	17.4
	Bachelor's degree	445	63.8		Alternative energy and energy conservation technology	178	25.5
	Master's degree	138	19.8		Resource and environmental technology	33	4.7
	Doctoral degree	32	4.6		Reconstruction of traditional industries	116	16.6

standard of Fornell and Larcker (1981), the empirical data of this study fulfilled convergent validity.

Discriminant validity is primarily an examination of the degree of difference between the latent variables in the outer model. The comparison of the factor loadings and cross-loadings for each scale items shows that if the factor loadings for each indicator of its specified construct are higher than its loadings on any other construct, it represents that each construct in this study has reasonable discriminant validity (as shown in Table 4). Therefore, the outer model in this study has good discriminant validity (Hair Jr et al., 2016).

Inner Model and Mediation Analysis

After discussing the reliability and construct validity of this study, the inner model is then analyzed. In this study, the estimation results of SmartPLS and the path coefficients of the model are used to determine the relationship between each construct. The results of the hypotheses examination are shown in Table 5 and showed that eight of the nine hypothesized relationships in the proposed model were significant.

This study applied the method of bootstrapping to estimate the confidence intervals of the mediation effect to prevent

TABLE 3 | Reliability and average variance extracted (AVE) of the outer model.

Construct	Cronbach α	Composite reliability	AVE
PJFIT	0.928	0.916	0.688
POFIT	0.845	0.906	0.763
JOBSAT	0.904	0.926	0.675
ORGC	0.908	0.929	0.687
INNO	0.889	0.910	0.530
TURN	0.886	0.911	0.594

the asymmetric indirect path product coefficient (Williams and MacKinnon, 2008; Hayes, 2009). If the confidence interval of the bootstrap does not contain 0, then an indirect effect exists. Incidentally, if an intermediary effect is not significant for one of the paths, the intermediary effect associated with that path is not included in the analysis (i.e., POFIT \rightarrow ORGC) (Table 6).

DISCUSSION AND CONCLUSION

With the rapid development of knowledge-based economies and technological upgrades, organizational environments have brought immense risks and competition pressures, which implies that employees are the main pushing forces for innovation. The current process of recruiting, assessing, and developing talents should not only consider the match between an individual's capabilities and the job requirements, instead, and more importantly, it should also implement effective approaches to measure the fit between individual and organizational characteristics. Therefore, the relevant empirical results achieved in this study are expected to complement the gaps between relevant fields of research. Our findings bear significant meanings in the current time, and the COVID-19 pandemic has affected the society seriously, and many workers were laid off consequently (Heinonen and Strandvik, 2020).

As innovation plays a strategic role in transformation, every organization should pay attention to innovative measures that can continuously enhance their core advantages. As competitors are always ready to imitate, organizations must constantly create new knowledge and engage in innovative behavior (Tsai, 2011). According to Dobni (2008), innovation is a company's long-term competitive advantage. Therefore, managers should understand the importance of innovation and instill innovation in their employees.

In addition, because of social, political, and economical changes, as well as immense international competition, internal reforms frequently occur within organizations, such as shifts in strategies, structural adjustments, and systematic innovations. As organizational functions and task execution become increasingly complex, the replacement of individuals with work teams as the basic organizational structure unit has become crucial for companies to achieve their visions (Mathieu et al., 2008), because team strength can be built from each individual's capabilities and attributes to generate faster responses, task-oriented efforts, and organizational productivity (Montoya-Weiss et al., 2001).

TABLE 4 | Standardized factor loadings and cross-loadings of the outer model.

	INNO	ORGC	PJFIT	POFIT	SAT	TURN
INNO1	0.775	0.456	0.581	0.523	0.447	-0.323
INNO2	0.764	0.409	0.578	0.463	0.379	-0.345
INNO3	0.742	0.474	0.582	0.520	0.436	-0.333
INNO4	0.772	0.489	0.592	0.522	0.448	-0.368
INNO5	0.790	0.460	0.590	0.536	0.443	-0.326
INNO6	0.682	0.445	0.535	0.507	0.436	-0.353
INNO7	0.673	0.342	0.525	0.425	0.325	-0.236
INNO8	0.649	0.260	0.443	0.340	0.240	-0.183
INNO9	0.690	0.402	0.499	0.496	0.377	-0.241
JOBSAT1	0.517	0.765	0.707	0.553	0.846	-0.709
JOBSAT2	0.432	0.685	0.594	0.491	0.797	-0.560
JOBSAT3	0.412	0.666	0.569	0.522	0.808	-0.558
JOBSAT4	0.475	0.685	0.610	0.501	0.792	-0.557
JOBSAT5	0.406	0.780	0.622	0.540	0.846	-0.685
JOBSAT6	0.466	0.789	0.672	0.537	0.838	-0.631
ORGC1	0.478	0.859	0.673	0.540	0.808	-0.700
ORGC2	0.460	0.792	0.583	0.545	0.715	-0.563
ORGC3	0.502	0.875	0.669	0.536	0.785	-0.677
ORGC4	0.455	0.767	0.545	0.485	0.631	-0.524
ORGC5	0.493	0.818	0.634	0.526	0.698	-0.578
ORGC6	0.509	0.855	0.674	0.526	0.768	-0.677
PJFIT1	0.526	0.563	0.721	0.468	0.566	-0.503
PJFIT10	0.493	0.575	0.711	0.526	0.578	-0.424
PJFIT11	0.542	0.486	0.663	0.437	0.462	-0.441
PJFIT12	0.542	0.403	0.628	0.353	0.390	-0.297
PJFIT13	0.458	0.305	0.553	0.291	0.320	-0.203
PJFIT14	0.487	0.407	0.632	0.423	0.456	-0.303
PJFIT15	0.430	0.344	0.539	0.314	0.337	-0.237
PJFIT16	0.491	0.337	0.572	0.338	0.329	-0.188
PJFIT17	0.527	0.366	0.620	0.363	0.358	-0.246
PJFIT18	0.507	0.412	0.612	0.414	0.403	-0.255
PJFIT2	0.506	0.588	0.738	0.500	0.597	-0.498
PJFIT3	0.499	0.588	0.696	0.461	0.608	-0.523
PJFIT4	0.545	0.657	0.760	0.594	0.694	-0.576
PJFIT5	0.520	0.607	0.702	0.575	0.635	-0.521
PJFIT6	0.561	0.606	0.732	0.535	0.610	-0.515
PJFIT7	0.532	0.574	0.730	0.529	0.577	-0.456
PJFIT8	0.505	0.616	0.717	0.548	0.604	-0.483
PJFIT9	0.513	0.603	0.721	0.549	0.577	-0.526
POFIT1	0.519	0.501	0.541	0.845	0.502	-0.370
POFIT2	0.623	0.577	0.637	0.878	0.575	-0.457
POFIT3	0.607	0.580	0.625	0.897	0.592	-0.447
TURN01	-0.259	-0.638	-0.440	-0.397	-0.653	0.778
TURN02	-0.357	-0.636	-0.517	-0.367	-0.609	0.827
TURN03	-0.320	-0.536	-0.436	-0.286	-0.499	0.734
TURN04	-0.317	-0.623	-0.488	-0.358	-0.613	0.810
TURNP1	-0.250	-0.549	-0.434	-0.373	-0.587	0.771
TURNP2	-0.376	-0.515	-0.479	-0.394	-0.520	0.740
TURNP3	-0.421	-0.544	-0.521	-0.462	-0.572	0.732

The bold values are standardized factor loadings and other values are cross loadings for each construct.

The important findings of this study are summarized as follows. First, organizations should implement tests during the recruitment process to check the individual values of job seekers, so that employees with high PO value fit can be selected, which is beneficial for enhancing employees' job satisfaction and organization performance. Next, PJ fit and PO fit were found to be closely related to employees' job satisfaction and turnover intention. In addition to implementing training centered on role familiarization and skills building, the process of socialization should also emphasize organizational culture to enhance interactions between individual and organizational culture, enhance employees' understanding of and identification with organizational values, and increase the fit between individual and organizational values. Not only can this enhance the job competence of employees, but may also increase employees' identification with organizations, thereby boosting their morale and the stability of work teams. Furthermore, managers should consider approaches such as scheduling regular meetings to achieve value identification with employees. Value fit should

also be considered as an important indicator for management performance. Finally, continuous self-assessment of PJ fit and PO fit among organizational members is beneficial for the planning of individual career prospects. If an individual's PJ fit is weak but they identify with organizational values, they should consider transferring to other positions within the same organization, whereas if an individual is competent in a certain job but fails to adapt to the organization, they should consider searching for similar jobs in other organizations. Therefore, job seekers should perform a complete self-assessment, while organizations should develop assessment tools by integrating PJ fit and PO fit to assess employees' level of fit and, accordingly, implement various management practices. This approach allows an organization to effectively supervise and reward employees and also enables it to maintain stable and promising work teams that enhance the competitive advantage of organizations.

Resilience, bounce-back from the failure, matters most in innovative sectors (Liu and Liang, 2015). Innovative sectors, such as high-tech industries, are facing intense competition from global markets and are extremely vulnerable in a volatile business environment (Liu and Liang, 2015). Therefore, the balance between the innovative behavior and resilience should be carefully made in order to achieve the sustainable development of these companies (Todt et al., 2018).

Our findings investigated the relations between PE fit and employees' innovative behaviors. Previous empirical studies have shown that PE fit (PJ fit and PO fit) has statistically significant effects on job satisfaction, organizational commitment, and retention intentions toward employees in the enterprises. A high PJ fit and PO fit not only can increase individual work performance, but also can have distinct effects on long-term organizational outcomes, which closes the gap between individual and organizational values, goals, and characteristics, thereby increasing their compatibilities and creating a harmonious organizational atmosphere that promotes

TABLE 5 | Summary of inner model results.

Hypo.	Path direction	Standardized path coefficient	t value	p value	Result
H1	PJFIT -> JOBSAT	0.625***	13.563	0.000	Supported
H2	PJFIT -> ORGC	0.166***	4.187	0.001	Supported
H3	POFIT -> JOBSAT	0.207***	5.065	0.004	Supported
H4	POFIT -> ORGC	0.057	1.884	0.237	Not supported
H5	JOBSAT -> ORGC	0.725***	19.827	0.000	Supported
H6	JOBSAT -> INNO	0.156*	2.234	0.026	Supported
H7	JOBSAT -> TURN	-0.408***	6.629	0.000	Supported
H8	ORGC -> INNO	0.444***	6.339	0.000	Supported
H9	ORGC -> TURN	-0.390***	6.014	0.001	Supported

Note: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

TABLE 6 | Mediation effect examination.

Mediation path	Path coefficient (O)	Standard deviation (Stdev)	T statistics (O /STDEV)	CI lower bound 2.5%	CI upper bound 97.5%
PJFIT -> ORGC -> INNO	0.074**	0.026	2.876	0.033	0.135
PJFIT -> SAT -> ORGC -> INNO	0.201***	0.030	6.624	0.138	0.260
SAT -> ORGC -> INNO	0.322***	0.046	6.992	0.222	0.411
PJFIT -> SAT -> INNO	0.097*	0.046	2.141	0.012	0.194
POFIT -> SAT -> INNO	0.032*	0.016	2.019	0.005	0.068
PJFIT -> SAT -> ORGC	0.454***	0.035	13.053	0.382	0.520
POFIT -> SAT -> ORGC	0.150***	0.030	5.061	0.094	0.214
PJFIT -> ORGC -> TURN	-0.065**	0.019	3.321	-0.110	-0.032
PJFIT -> SAT -> ORGC -> TURN	-0.177***	0.030	5.975	-0.233	-0.117
SAT -> ORGC -> TURN	-0.283***	0.047	6.034	-0.371	-0.191
POFIT -> SAT -> ORGC -> TURN	-0.059***	0.016	3.701	-0.093	-0.032
PJFIT -> SAT -> TURN	-0.255***	0.044	5.818	-0.346	-0.171
POFIT -> SAT -> TURN	-0.085***	0.020	4.274	-0.124	-0.049

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

organizational development. Hence, relevant studies on PE fit (PJ fit and PO fit) have important theoretical and practical significance for enhancing organizational performance and for constructing harmonious organizations. Thus, results of these studies can provide a new recruitment model for companies to attract new talents while retaining key talents, in addition to providing relevant theoretical and supporting methods for research on personnel recruitment. The level of PJ fit and PO fit has direct effects on the rational utilization of a company's resources and its overall allocation effectiveness, as it is a crucial factor for determining a company's sustainable and stable development. The current process of recruiting, assessing, and developing talents should not only consider the match between an individual's capabilities and the job requirements, but most importantly, also should involve the implementation of effective approaches to evaluate the fit between individual and organizational characteristics. Hence, this study aimed to provide beneficial theoretical support for human resource management by highlighting a novel management concept and strategies for organizational sustainable development.

Even though this study has strived to meet the rigor of social studies research standards, the following limitations have to be considered. First, this research was based on individuals, whereas a complete company should include individuals, departments, and organizations. Activities involving organizational innovation, turnover intentions, and human resource management have many themes that cross over other levels, but as most studies have been based on a single level, future research may produce more accurate results by integrating macro- and micro-crossover-level theories and research. Next, the cross-sectional research approach was adopted in this study, which limits the extent to which the relationships between outcome variables can be inferred. Finally, factors affecting employees' and organizations' innovative behavior were not restricted to those considered in this study. For instance, Germain et al. (2001) suggested that a company's performance level can be determined by understanding the willingness of employees to share their knowledge with other organizational members. Bock and Kim (2002) also revealed that knowledge

sharing cannot be properly promoted simply through cash remuneration alone. Hence, it is suggested that the number of variables may be increased in future studies for the sake of achieving a higher degree of accuracy.

DATA AVAILABILITY STATEMENT

The original contributions presented in the study are included in the article/supplementary material, further inquiries can be directed to the corresponding author/s.

ETHICS STATEMENT

Ethical review and approval were not required for this study on human participants in accordance with the local legislation and institutional requirements. Written informed consent from the participants was not required to participate in this study in accordance with the national legislation and the institutional requirements.

AUTHOR CONTRIBUTIONS

YT conceived and designed the research, wrote, and revised the manuscript. Y-FS, Y-JC, and YM gave guidance throughout the whole research process. All authors contributed to the article and approved the submitted version.

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Understanding the Impact of Social Capital on Entrepreneurship Performance: The Moderation Effects of Opportunity Recognition and Operational Competency

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Social capital, which is derived from psychological research, has an important value in the construction of network relationships in enterprises. It influences the direction and tendency of network connections in start-up enterprises and has gradually become an important factor in the study of entrepreneurship by scholars. However, the relationship between this and the effectiveness of innovation is unclear. In this study, the social capital is divided into bonding social capital and bridging social capital, and specific data of agricultural entrepreneurs are collected through questionnaire surveys. The results show that both bonding and bridging social capital have a significant positive effect on agricultural entrepreneurship performance. The entrepreneurial capacity of agricultural entrepreneurs regulates the relationship between social capital and creative performance. In the relationship between integrated social capital and creative performance, operational competency plays a positive role and opportunity recognition plays a negative role. On the other hand, in the relationship between bridging social capital and creative performance, the opportunity recognition plays a positive role and the operational competency plays a negative role. Finally, based on the above findings, this study proposes theoretical and practical implications and suggestions for follow-up research.

Keywords: entrepreneurship performance, social capital, bonding social capital, bridging social capital, entrepreneurial ability, opportunity recognition, operational competency

INTRODUCTION

Social networking is important for the growth and development of both established and start-up companies, as it is an important channel for individuals, teams, and organizations to access information and resources from outside. New ventures are often born with “new entry defects” and “small size defects” because they are “new” and “small,” and thus face serious resource constraints (Siu and Bao, 2008). In implementing entrepreneurship, entrepreneurs often build and leverage social networks to access valuable information and resources, identify and develop

valuable opportunities, and cultivate core competencies to create a competitive advantage and continuously ensure the sustainability of the new venture. The tendency or attitude to use the Internet to solve entrepreneurial practice problems is called as network orientation (Sorenson et al., 2008). As mentioned earlier, new ventures in China's transitional economy face a number of constraints, a lack of resources, and a lack of credit to access the necessary resources (Long et al., 2016). As a result, they seek network relationships to solve these problems, i.e., new businesses are more network-oriented.

Watson (2007) argues that businesses are embedded in certain social relationships and their development is inevitably influenced by social relationships. When entrepreneurs or new businesses actively build network relationships and develop them for commercial behavior, they exhibit a strong network orientation, which satisfies the basis for building and maintaining a competitive advantage (Strobl and Kronenberg, 2016; Mu et al., 2017). Adler and Kwon (2002) suggest that the social capital theory refers to the existence of social networks in which individuals establish special social relationships through their interactions with others, and the resources or information that actors obtain through these interactions. Through close social interaction, the efficiency, depth, and breadth of knowledge exchange between individuals is increased (Lane and Lubatkin, 1998). According to Sorenson and Stuart (2008), the ability of new enterprises to face changes in the industry environment and grasp business opportunities in the process of operation is a test of whether they can improve the quality and quantity of information they obtain in an open environment and have good thinking, innovation, and responsiveness. If companies can quickly recognize changes in the market and react and act quickly in their operation management, the competitive advantage they build will be enhanced and sustained (Chen, 2019). Therefore, if we can grasp the advantageous structural capital of networking, together with the common cognitive network and the shared trust relationship, we can not only stimulate each other's all-round learning but also increase the knowledge exchange frequency, so the willingness and ability of organization members to share knowledge could be enhanced. In addition, the social capital of reciprocal interest combination has the effect of stimulating the connection and exchange of resources in the organization, which can accelerate the expansion and circulation of knowledge.

At present, many national policies encourage the development of agricultural and rural innovation and entrepreneurship to promote the revitalization of rural areas. Social capital is a special and important asset for agricultural entrepreneurs and has a positive effect on entrepreneurial activities in rural areas and has been widely studied in studies of agricultural entrepreneurship performance. Scholars have explored the impact of differential social capital, such as geographic, kinship, and karma social capital, on entrepreneurship (Lans et al., 2015). With the development of technology and changes in the economic structure of rural societies, social capital for agricultural entrepreneurs has also changed, with more sources and a wider variety (Rezaei-Moghaddam and Izadi, 2019). These social capitals can be divided into bonding social capital, which exhibits strong ties, and bridging social capital, which

exhibits weak ties (Leonard, 2004; Newell et al., 2004; Agnitsch et al., 2006; Coffé and Geys, 2007; Jensen and Jetten, 2015). However, there is a lack of research on these two types of social capital of entrepreneurs and their relationship with entrepreneurial performance in the field of agricultural entrepreneurship. Therefore, this study focuses on the impact of bonding and bridging social capital on agricultural entrepreneurial performance with agricultural entrepreneurs as the research object and uses two different types of entrepreneurial abilities, namely, opportunity recognition and operational competency, as moderating variables to further analyze the role of resources and entrepreneurial factors on agricultural entrepreneurial performance.

LITERATURE REVIEW

Social Capital and Entrepreneurial Performance

Social capital was first introduced by sociologists to explain the use of general interpersonal embedded relationships, such as community, friends, colleagues, and family relationships, to help to create social capital and wealth for individuals (Burt, 1997). Jacobs (2016) defines social capital as an interpersonal relationship that is cultivated over time and that provides a good foundation for group trust, cooperation, and collective action. The social capital theory focuses on how interpersonal relationships cultivated over time can provide a valuable resource for the members of a network.

Social capital is a collection of the most important resources for entrepreneurs including social capital at the individual and social levels. This study focuses on the social capital of entrepreneurs at the individual level. Social capital was first described by Bourdieu (1977), who defined it as "the sum of actual or potential resources associated with an enduring network of more or less institutionalized relationships of mutual understanding and recognition. From a functional perspective, social resources are social capital (Coleman, 1988). Lin (2001) divides social resources into personal resources and social resources. In his view, social resources are embedded in a network of personal relationships and originate from an individual's interpersonal relationships, and only when an individual interacts with other members of society, social resources are generated. Based on this, he proposed the social capital theory, defining social capital as "the social resources that exist in social network relationships and can bring returns". This study draws on the research by Lin (2001) to define the social capital of entrepreneurs as the various networks of relationships and the resulting social resources of entrepreneurs in the process of starting a business.

Two sources consist of social capital for entrepreneurs: internal networks and the resources they bring with them, which have strong relational characteristics, called as bonding social capital; and external networks and relationships, and the resources embedded in them, which have weak relational characteristics, called as bridging social capital (Sajuria et al., 2015; Ceci et al., 2019). The former provides emotional support

through internal interactions, shares information, and promotes trust among internal members; the latter facilitates entrepreneurs to obtain information from outside the organization, identify opportunities, and gain decision-making advantages.

This paper draws on Putnam (2000) and Phua et al. (2017) to classify social capital in social media contexts into bonding social capital and bridging social capital. Among them, bonded social capital refers to the scope of interaction, frequency of interaction, degree of trust, and reciprocity formed by the network of communication and interaction between entrepreneurs and their familiar friends and relatives as well as within the entrepreneurial team through social media. Bridging social capital refers to the social capital formed by entrepreneurs with the help of social media and different relationship networks of suppliers, customers, the public, government departments, service organizations, media, and intermediaries in the external environment, including the breadth of relationships, the depth of relationships, the degree of trust in relationships, and the degree of reciprocity between relationships.

Organizational behavior scholars believe that entrepreneurial performance, or entrepreneurial organizational performance, is a measure of how well an entrepreneurial organization accomplishes its goals and is often used to measure the outcomes and effectiveness of entrepreneurship (Lumpkin and Dess, 2001; Hmieleski and Corbett, 2008; Renko et al., 2015). Morgan et al. (2010) argue that the performance and benefits of farmers' farming-related entrepreneurship can be measured by comparing the performance of farmers before and after starting a business or by comparing the benefits of similar entrepreneurs. The definition of entrepreneurial performance in this study is the results obtained and the extent to which the entrepreneurs has achieved his or her goals after starting a farm-related business.

The Impact of Social Capital on the Performance of Entrepreneurship

Scholars have studied the relationship between social capital and entrepreneurship and found that the social capital of entrepreneurs facilitates the adoption of entrepreneurial behaviors by entrepreneurs (Wang et al., 2019). For example, Li et al. (2021) empirically showed that social capital not only directly promotes farmers' e-commerce adoption but also plays a part in the positive relationship between "prior entrepreneurial experience-farmers' e-commerce adoption behavior" and "prior training experience-farmers' e-commerce adoption behavior." An empirical study by Kobayashi et al. (2006) found that in the e-commerce environment, rural residents gained a heterogeneous and broader social network, reduced affective trust dependence, adapted to market social norms, and developed new and richer social capital, which ultimately facilitated entrepreneurial activities. Therefore, social capital for entrepreneurs is conducive to the innovation and growth of entrepreneurial enterprises and ultimately to the improvement of entrepreneurial performance. The relationship between integrated social capital and bridging social capital and entrepreneurial performance is addressed.

Empirical research has found that bonding social capital can provide information on value creation capabilities (Herrero, 2018). Family, relatives, or friends with whom the entrepreneur interacts regularly provide information on raw materials, capital,

pipelines, and internal production management (Wernerfelt, 1984; Davidsson and Honig, 2003). The bonding social capital formed among familiar members can facilitate the entrepreneurial activities of entrepreneurs in terms of resource provision, emotional support, and psychological enhancement. First, acquaintances or family members provide a source of capital to start a business and make up for the lack of entrepreneurial labor. The start-up capital for small and micro-agricultural entrepreneurial activities in China comes from family members or family capital, and the labor force at the early stage of entrepreneurship is mainly family members, and some micro-entrepreneurs even have only their own people involved. Secondly, the entrepreneurial process is full of hardships and the understanding of family members, relatives, and friends as well as the entrepreneurial team members often serves as a spiritual pillar for the entrepreneur during difficult times, strengthening the entrepreneur's resilience and making him less likely to give up. In summary, it is concluded that

Hypothesis 1: The bonding social capital of entrepreneurs has a significant positive effect on the performance of entrepreneurship.

Previous research has shown that bridging social capital has a positive effect on entrepreneurial performance, specifically in terms of entrepreneurial heterogeneity in resource acquisition, identification and acquisition of entrepreneurial opportunities, and innovative business ideas (Stam et al., 2014; Lee et al., 2019). Bridging social capital can provide entrepreneurs with heterogeneous information about the market (Stam et al., 2014). Entrepreneurs receive entrepreneurial guidance through various channels, informal relationships with people inside and outside the industry, and participation in professional discussions can facilitate the recognition of entrepreneurial opportunities (Spigel, 2017).

In agricultural entrepreneurship, entrepreneurial projects are mostly scattered in large areas of the countryside, and some entrepreneurial activities are carried out in remote rural areas. As a micro and small business start-up, agricultural entrepreneurs themselves often have to personally participate in agricultural production and operation activities and cannot spend too much time and energy to carry out social capital operations. Therefore, in the old closed rural environment, the social capital of farmers was mainly the traditional social capital based on blood, kinship, and locality, and such social capital had few opportunities to obtain heterogeneous resources because they were familiar with each other. In this context, those who have access to more favorable heterogeneous resources in traditional rural societies are often agricultural entrepreneurs whose family members are civil servants in government departments, and they have better entrepreneurial performance because of the heterogeneity of government and business relationship resources. In summary, the second research hypothesis of this study was derived.

Hypothesis 2: The bridging social capital of entrepreneurs has a significant positive impact on the performance of entrepreneurship.

Entrepreneurial Ability and Its Moderating Effect

Entrepreneurial Ability

As an important quality for entrepreneurs, entrepreneurial ability has received widespread attention from academics. In the past, scholars considered as entrepreneurial competencies as qualities and skills necessary for entrepreneurs to carry out the whole process of entrepreneurial activities (Pyysiäinen et al., 2006; Chell, 2013). McElwee and Bosworth (2010) defined family farmer entrepreneurial competencies as those that family farmers should possess to identify and develop family farm entrepreneurial opportunities, obtain the resources needed to start a farm, and implement entrepreneurial activities. In summary, this study considers that the entrepreneurial capacity of agricultural entrepreneurs refers to the various qualities and abilities of agricultural entrepreneurs to give full play to their initiative, identify and develop opportunities for agriculture-related entrepreneurship, and carry out decision-making, resource utilization, and organizational management for the normal operation and management of agricultural projects.

In this study, the entrepreneurial ability of entrepreneurs is divided into two dimensions: opportunity recognition and operational competency. Gatewood et al. (2002) suggest that new firms should identify and develop opportunities and use them to build organizational capabilities to achieve business growth defined as opportunity recognitions. In this study, opportunity recognition refers to the ability of entrepreneurs to identify, through effective information obtained in the process of entrepreneurship, development opportunities that are favorable to their own operations, such as new products and markets with development prospects, and to put these opportunities into practice in entrepreneurship.

Regarding operations management capability, Burke et al. (2002) argue that it is the ability to build and grow an organization and is a timely response that reflects the effectiveness of an organization's operations management process. Alsos et al. (2003) identified operational management capability as part of entrepreneurial capability and the ability of farmers to coordinate and integrate entrepreneurial resources after implementing entrepreneurial activities, to make the best use of existing conditions to operate and manage new ventures, and to strive to improve entrepreneurial performance. It specifically refers to the ability of entrepreneurs to integrate various resources in their entrepreneurial activities, manage the production and services of entrepreneurial activities internally, motivate the leadership of the team, develop social networks externally, communicate and link up, continuously solve various problems that arise in the process of entrepreneurship, and ultimately achieve the expected results of entrepreneurship.

Moderating Effect of Entrepreneurial Ability

Past research has validated the moderating role of entrepreneurial capacity (Huang, 2016). Opportunity recognition can mediate the relationship between network orientation and the competitive advantage of new businesses. The effect of network concern and openness on competitive advantage is more pronounced for new firms with strong opportunity recognition, while the

effect of network cooperativeness on competitive advantage is suppressed (Reed et al., 2012). Past empirical studies have found that the relationship between business models of start-ups and organizational performance is positively influenced by entrepreneurial capabilities (Cucculelli and Bettinelli, 2015). In addition, it has been shown that this positive moderating effect of entrepreneurial competencies also occurs between entrepreneurial relationship network construction and organizational performance relationships (Zahra and Garvis, 2000; Stam et al., 2014).

In entrepreneurial activities, consumer demand for products and services changes rapidly, requiring entrepreneurs to have the ability to dynamically grasp entrepreneurial opportunities, i.e., to both identify opportunities and make full use of them. With the improvement of opportunity recognition, the more entrepreneurs can discover favorable business opportunities through different social capital, including new products popular in the market, innovative business services, and occupy the market at favorable times, thus obtaining better financial performance, innovation performance, and customer satisfaction. Summarizing the above analysis, it is concluded that

Hypothesis 3a: The opportunity recognition of entrepreneurs significantly and positively moderates the positive effect of bonding social capital on entrepreneurial performance.

Hypothesis 3b: The opportunity recognition of entrepreneurs significantly and positively moderates the positive effect of bridging social capital on entrepreneurial performance.

In addition to the opportunity recognition, the operations ability to effectively integrate and organize various resources is also important (Camisón and Villar-López, 2014). A strong operational competency enables the allocation of existing resources to products and services that will enable customers' needs to be more fully met or will enable the business to meet customers' needs at a lower price. In business, the combination of social capital and bridging social capital by entrepreneurs brings rich entrepreneurial resources to the business activities of projects. Once operational competency are in place, these social capital will enable entrepreneurial ventures to be more responsive and flexible in terms of improving quality, reducing costs, and innovating operations (Coltman and Devinney, 2013). With the improvement of operational competency, the positive impact of social capital on the entrepreneurial performance will become stronger and stronger. In summary, the above studies have resulted in

Hypothesis 4a: The operational competency of entrepreneurs significantly and positively moderates the positive effect of bonding social capital on the entrepreneurial performance.

Hypothesis 4b: The operational competency of entrepreneurs significantly and positively moderates the positive effect of bridging social capital on the entrepreneurial performance.

Based on the literature review and the hypothesis proposed, this study proposes the following research model for **Figure 1**.

RESEARCH METHODS

In this study, the social capital of entrepreneurs was classified into bonding social capital and bridging social capital, and the questionnaire was referred to the scales of Subramaniam and Youndt (2005) and Han and Hovav (2013). The measure of entrepreneurial performance was subjective and was based on the scale of Su et al. (2015). We employed the following steps to select scale items. First, the scale items from the prior literature were translated into Chinese. Second, three professors familiar with social capital and agricultural contexts issues in China were asked to examine the Chinese wording of each measurement item and suggest on its content validity. These suggestions were adapted to add, remove, or reword inappropriate scales. Third, the pilot test was conducted prior to the formal investigation to enhance the readability and clarity of all the measurement items. The questionnaire in this study was scored on a 7-point Likert scale. The target of this paper is startup enterprises, but there is no consensus among scholars on the criteria for new enterprises. According to Zahra and Bogner (2000), firms that have been in existence for less than 8 years are start-up enterprisers. Second, in this study, 180 respondents were distributed for pre-test, 166 were returned, and 120 valid questionnaires remained after questionnaire screening. The reliability of the data was examined by internal consistency reliability analysis. The data were subjected to internal consistency reliability analysis for reliability check, and the Cronbach's α values for each dimension ranged from 0.74 to 0.82, which were higher than the reliability

standard of 0.7, indicating that the questionnaire was reliable. The measurement items of social capital scale, the entrepreneurial performance scale, and the entrepreneurial ability scale have KMO values greater than 0.7, the Bartlett sphericity test significance is less than 0.05, and the factor loading of all measured questions is greater than 0.6, which meets the default criteria. Therefore, the scale of this study has good construct validity.

The formal survey of this study, which began in July 2018 and continued through March 2019, was conducted on agricultural entrepreneurs in China and new vocational farmer training classes at agricultural vocational and technical colleges. A total of 326 paper and electronic questionnaires were distributed in this study, and 308 valid questionnaires were analyzed using SPSS and AMOS software after excluding invalid questionnaires. As can be seen from **Table 1**, among the agricultural entrepreneurs in this survey, there are 155 men, accounting for 50.3%, mainly under the age of 40 (89.3%), educated mainly in high school (or secondary school; 52.9%), nearly 80% of the entrepreneurs are married, and the number of those engaged in large-scale agricultural farming or breeding is the highest, reaching 28.6%. The majority of entrepreneurs operate as small and medium-sized individual households, family farms, and large agricultural households, and the team size is generally small, with 59.7% up to 10 people, and 80.8% of the entrepreneurial projects have been operating for less than 5 years.

RESULT

Reliability and Validity Analysis

This study evaluates and revises the CFA measurement model based on the two-stage model. The results of the analysis of

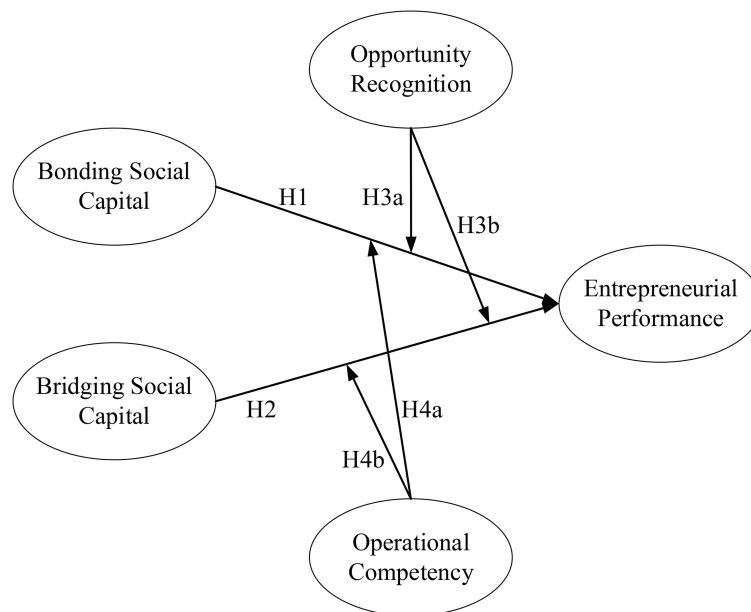


FIGURE 1 | Research model.

TABLE 1 | Basic description of the official survey sample.

Item	Category	Frequency	Percentage	Item	Category	Frequency	Percentage
Gender	Male	155	50.3	Operation form	Family farm	66	21.4
	Female	153	49.7		Large breeders	67	21.8
	Under 30 years old	140	45.5		Cooperatives	50	16.2
	31–40 years old	135	43.8		Agricultural company	36	11.7
Age	41–50 years old	24	7.8	Team size	Small- and medium-sized individual operators	89	28.9
	Over 51 years old	9	2.9		Up to 10 people (inclusive)	153	49.7
	Elementary school and below	4	1.3		11–30 people	99	32.1
Education	Junior high school	44	14.3	Operating time	31–50 people	35	11.4
	High school (or middle school)	163	52.9		51 people (or more)	21	6.8
	University	95	30.8		Less than (including) 1 year	39	12.7
	Graduate students	2	0.6		2–3 years	123	39.9
Marriage	Unmarried	65	21.1	Distance from town	4–5 years	87	28.2
	Married with children	36	11.7		6–7 years	30	9.7
	Married with no children	207	67.2		8–9 years	12	3.9
	Large-scale planting or cultivation	88	28.6		More than 10 years	17	5.5
Area of interest	Distribution of agricultural materials (fertilizers, seeds, agricultural tools, etc.)	43	14.0	Distance from town	Less than 10 km (inclusive)	109	35.4
	Agricultural products processing	39	12.7		11–30 km	137	44.5
	Agricultural products sales	77	25.0		31–50 km	46	14.9
	Leisure agriculture and rural tourism	27	8.8		51 km (inclusive) or more	16	5.2
	Other agriculture-related industries and services	34	11.0				

the measurement model using the extreme likelihood estimation method are shown in **Table 2**. The standardized factor negative loadings ranged from 0.611 to 0.822, all of which met the range, indicating that each question had question reliability; the synthetic reliability of the study constructs ranged from 0.838 to 0.893, all of which exceeded 0.7, all of which met the criteria suggested by scholars, indicating that each construct had good internal consistency; finally, the mean variance extractions ranged from 0.510 to 0.602, all of which were above 0.5, indicating that each construct had good internal consistency. Finally, the mean variance extracted ranged from 0.510 to 0.602, all above 0.5, all of which met the criteria of (Hair et al., 2017). The average variance extracted (AVE) comparison method was used to examine the discriminant validity of the measurement model. The square root of AVE for each variable is greater than the correlation coefficient between the variables, which meets the criteria of Fornell and Larcker, indicating a good discriminant validity between the variables.

Comparing the square root of the AVE of a given construct with the correlations between the construct and the other constructs is the discriminant validity (Fornell and Larcker, 1981). The indicators are more closely related to the construct than the others if the square root of the AVE of a construct is greater than the off-diagonal elements in the corresponding rows and columns.

As shown in **Table 3**, the bold numbers in the diagonal direction represent the square roots of AVEs. Because the square roots of AVEs in the diagonal direction are all greater than the off-diagonal numbers, discriminant validity is satisfactory for all constructs.

The measurement model analysis was performed by the maximum likelihood estimation method. After the correction of the cardinality heteroskedasticity, all the fitted indicators improved significantly and the model fit was adequate as shown in **Table 4**. The goodness-of-fits of the model shows the model meets the criteria, indicating that the model has good fit indices.

Structural Model Analysis

From the results of the path coefficient in **Table 5**, bridging social capital ($b = 0.214$, $p < 0.001$) and bonding social capital ($b = 0.228$, $p < 0.001$) significantly affect entrepreneurial performance, and research Hypothesis 1 and research Hypothesis 2 hold, and the explanatory power of bridging social capital and bonding social capital in explaining entrepreneurial performance is 32.0%. It can be seen that social capital, which is rich in social relationships and social resources, has a significant and important impact on entrepreneurial performance for agricultural entrepreneurs.

Analysis of Moderation Effect

In this study model, opportunity recognition and operational competency are the moderators. As shown in **Table 6**, in terms of opportunity capacity, the moderation effect of bonding social capital*opportunity capacity on entrepreneurial performance is -0.090 ($t = |-0.503| < 1.96$, $p = 0.615 > 0.05$), which means that the moderation effect does not exist. The research Hypothesis 3a is not supported. The moderating effect of bridging social capital*opportunity capacity on entrepreneurial performance is 0.512 ($t = |2.042| > 1.96$, $p = 0.041 < 0.05$), indicating that the moderating effect exists and that the slope

TABLE 2 | Analysis of measurement model results.

Construct	Indicator	Mean (SD)	Standardized factor loading	Composite reliability	Average variance extracted (AVE)
Bridging social capital (BRSC)	BRSC1	5.56 (1.055)	0.781	0.883	0.602
	BRSC2	5.45 (1.101)	0.802		
	BRSC3	5.35 (1.184)	0.733		
	BRSC4	5.38 (1.182)	0.745		
	BRSC5	5.40 (1.139)	0.815		
Bonding social capital (BOSC)	BOSC1	5.63 (1.133)	0.769	0.893	0.582
	BOSC2	5.64 (1.023)	0.777		
	BOSC3	5.70 (1.134)	0.705		
	BOSC4	5.48 (1.029)	0.822		
	BOSC5	5.40 (1.046)	0.785		
	BOSC6	5.53 (1.090)	0.712		
Entrepreneurship performance (EP)	EP1	5.72 (0.873)	0.673	0.867	0.566
	EP2	5.36 (1.106)	0.762		
	EP3	5.17 (1.151)	0.721		
	EP4	4.97 (1.321)	0.817		
	EP5	5.33 (1.195)	0.780		
Opportunity recognition (OR)	OR1	4.95 (1.325)	0.665	0.849	0.585
	OR2	5.02 (1.349)	0.757		
	OR3	4.90 (1.389)	0.821		
	OR4	4.97 (1.363)	0.807		
	OC1	5.40 (1.124)	0.747	0.838	0.510
Operational competency (OC)	OC2	5.43 (1.017)	0.762		
	OC3	5.37 (1.124)	0.752		
	OC4	5.42 (1.087)	0.688		
	OC5	5.83 (1.028)	0.611		

TABLE 3 | Discriminant validity for the measurement model.

	AVE	BOSC	BRSC	EP	CA	OA
BOSC	0.582	0.763				
BRSC	0.602	0.577	0.776			
EP	0.566	0.509	0.494	0.752		
OR	0.585	0.479	0.521	0.741	0.765	
OC	0.510	0.541	0.564	0.678	0.707	0.714

BRSC, bridging social capital; BOSC, bonding social capital; EP, entrepreneurship performance; OR, opportunity recognition; and OC, operational competency. The items on the diagonal on bold represent the square roots of the AVE; off-diagonal elements are the correlation estimates.

TABLE 4 | Model fit.

Fit index	Allowable range	Model fit	Adjusted Model fit
Chi-square test	The smaller the better	256.671	171.021
Degree of freedom	The bigger the better	101.000	101.000
Chi-square test/degree of freedom	Greater than 1 and less than 3	2.541	1.693
Root mean square error of approximation	<0.08	0.071	0.047
Standardized RMR	<0.08	0.042	0.042
Tucker-Lewis index (Non-normed Fit Index)	>0.9	0.931	0.953
Comparative Fit Index	>0.9	0.942	0.961
Fitting Optimization Index	>0.9	0.909	0.939
Adjusted Fitting Optimization Index	>0.9	0.892	0.928

of bridging social capital on entrepreneurial performance increases by 0.512 units for each unit increase in the moderating variable opportunity capacity, and research Hypothesis 3b is supported. This may be because bridging social capital is the sum of social network relationships based on weak ties and the heterogeneous resources they can bring, which can bring more differentiated resources and means more opportunities. Therefore, the stronger the ability of agricultural entrepreneurs to identify and utilize opportunities, the more they tend to look for better entrepreneurial and innovative development opportunities from weak ties rich in bridging social capital, thus bringing better creative performance to agricultural business activities.

In terms of operating capacity, the moderation effect of bonding social capital*operation competency on entrepreneurial performance is 0.724 ($t = |2.628| > 1.96$, $p = 0.009 < 0.05$), indicating the existence of a moderation effect, representing that for every unit increase in the moderation variable operating capacity, the slope of bonding social capital on entrepreneurial performance increases by 0.724 units, and research Hypothesis 4a is supported. The moderation effect of bridging social capital*operation competency on entrepreneurial performance is -0.230 ($t = |-1.315| < 1.96$, $p = 0.188 > 0.05$), indicating that the moderation effect does not exist significantly, and research Hypothesis 4b is not supported. This is probably because the operational competency is more a reflection of the entrepreneur's ability to internally coordinate and manage the business project. The stronger the operational competency of agricultural entrepreneurs, the more they will pay attention to the development of strong relationships for agricultural

TABLE 5 | Structural model results.

Dependent variable	Independent variable	Unstandardized regression coefficients	Standard error	T-value	p-value	Standardized Regression Coefficients	Explained variance
Entrepreneurship performance	Bonding social capital	0.231***	0.055	3.823	0.000	0.293	0.323
	Bridging social capital	0.231***	0.052	4.426	0.000	0.342	

Age (control variable 1): Beta = -0.020 , $p > 0.05$; Education (control variable 2): Beta = -0.012 , $p > 0.05$; Operation form (control variable 3): Beta = 0.016 , $p > 0.05$; Team size (control variable 4): Beta = -0.010 , $p > 0.05$. *** $p < 0.001$.

TABLE 6 | Analysis of the moderation effect.

Variable	Un value	Standard error	T-value	p-value
Bonding social capital*opportunity recognition	-0.090^*	0.179	-0.503	0.615
Bridging social capital*opportunity recognition	0.512^*	0.251	2.042	0.041
Bonding social capital*operation competency	0.724^{**}	0.276	2.628	0.009
Bridging social capital*operation competency	-0.230^*	0.175	-1.315	0.188

* $p < 0.05$; ** $p < 0.01$.

business projects and will focus on existing network relationships and resources to improve the survival and development of agricultural business projects through their integrated operations.

CONCLUSION

New enterprises often have inherent new entry defects and small-scale defects because they are new and small, and thus face serious resource constraints. Therefore, social capital is important for the growth and development of both established and new businesses, as it is an important channel for individuals, teams, and organizations to obtain information and resources from outside sources (Zhou et al., 2020). In the process of implementing entrepreneurship, entrepreneurs typically build and leverage social capital to acquire valuable information and resources, identify and develop valuable opportunities, and cultivate core competencies to create a competitive advantage and continuously ensure the sustainability of the new venture.

The following conclusions were drawn from an empirical study of 308 agricultural entrepreneurs: (1) both bonding social capital and bridging social capital significantly and positively affect the performance of agricultural entrepreneurship and (2) there are differences in the way agricultural entrepreneurs with different abilities use social capital to start entrepreneurial activities and their effectiveness. The use of bridging social capital by entrepreneurs with strong opportunity capabilities will significantly contribute to the improvement of entrepreneurial performance, while entrepreneurs with strong operational competency will achieve better results by using bonding social capital to start agricultural entrepreneurship.

In response to the above findings, the following recommendations were proposed. First, entrepreneurship should win the support of relatives and stakeholders obtain more bonding social capital; on the other hand, it should also obtain heterogeneous resources and accumulate bridging social capital to eventually promote the smooth development of entrepreneurial activities. Second, entrepreneurs objectively understand the differences in their own abilities and make full use of their strengths to carry out entrepreneurial activities. The members of the entrepreneurial team can reasonably divide the work and form complementary capabilities in terms of opportunity capabilities and operational competency, thus promoting the overall improvement of organizational performance.

This study enriches the study of factors influencing the entrepreneurial performance of agricultural entrepreneurs, provides a new idea for the study of social capital of agricultural entrepreneurs, and once again verifies the important role of entrepreneurial ability of entrepreneurs at the individual level in regulating entrepreneurial performance. Social capital is only one of the factors influencing entrepreneurship performance. Future research can combine other factors to conduct a comprehensive analysis of the impact on entrepreneurship performance or to consider the mediating factors of social capital of agricultural entrepreneurs on entrepreneurship performance and reveal the specific path of its role.

Finally, this study has three main research limitations and future research directions. First, since this study focuses on cross-sectional analysis, it cannot be interpreted for a specific period of time. In the future, we may use time series or longitudinal analysis to investigate the relationship between social capital, entrepreneurial performance, and national competitiveness over time with comparing the results of this study. Second, this article uses structural equation modeling as the main statistical analysis method. Structural equation modeling is a statistical methodology of parametric estimation, which aims to use the characteristics of the sample inference matrix. To avoid bias in statistical inference, the data collection must conform to the assumptions of sampling principles. For example, the structural equation model is estimated with the assumption of simple random sampling, i.e., any sampling unit in the parent has an equal chance of being selected as a sample. Due to the difficulty of obtaining a sample list for this study, intentional sampling was adopted for data collection. Therefore, the statistical inferences obtained from the theoretical model can only be generalized to matrices that are similar with the observed samples in this study, but not to general matrices. Third, the selection of relevant factors in this study did not compare the differences in social culture, religion, economic

income, and geographical location. In other words, future studies may adopt different analytical frameworks, including Western and Eastern cultures, high-income and low-income countries, advanced countries and developing countries, etc., and use different frameworks as control variables to investigate the differences in social capital among different groups and their effects on entrepreneurial performance and national competitiveness.

DATA AVAILABILITY STATEMENT

The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

ETHICS STATEMENT

Ethical review and approval was not required for the study on human participants in accordance with the local legislation

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G-hX and L-pW: conceptualization. G-hX: methodology investigation, data curation, and writing – original draft preparation. G-hX, L-pW, and B-fl: validation. B-fl: formal analysis and writing – review and editing. L-pW: supervision and funding acquisition. All authors have read and agreed to the published version of the manuscript.

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The Impact of Social Media Usage on Work Efficiency: The Perspectives of Media Synchronicity and Gratifications

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As prevail of mobile networking, social media became ubiquitous in either work or our personal life. Based on Media Synchronization Theory and transformational framework, this study proposed a research model and examined how the social media' attributes impacting the work effectiveness through the work-oriented or social-oriented usage. The data of 322 valid questionnaires from respondents was analyzed by SmartPLS 3.2.8. The results indicated that the features of social media including availability and symbol variety had the significant influences on their work efficiency through work-oriented usage of social media. Publicness and symbol variety had impact on work efficiency via social-oriented usage of social media. In addition, both social media for work-oriented and social-oriented usage influenced employees' work efficiency. There were different considerations when people selected social media for work or for social purpose. Managers or companies could guide their employees to use the social media in a right way to increase their work features to complete their work efficiency, and create groups for employees so the work information could be shared efficiently.

Keywords: social media, media synchronization theory, permanence, publicness, symbol variety, availability, asynchronicity

INTRODUCTION

Social media were electronic tools that enabled users to communicate and exchange information and facilitate interactions among different users (Zerfass et al., 2011; Criado et al., 2013; Song and Lee, 2016). Social media technologies revolutionized the way people communicate and interact socially within and outside of organizations in relation to the Internet, with considerable impact on people's careers and lifestyles (Correa et al., 2010; Turban et al., 2011; Moqbel et al., 2013; Holland et al., 2016). Social media allowed people to communicate or collaborate online through various platforms, weblogs, blogs, wikis, broadcasts, pictures, and videos (Broughton et al., 2009). Social media changed the ways of communication by enabling two-way communication between users rather than one-way.

The social media use at work attracted numerous attentions (van Zoonen et al., 2014a; Van Zoonen et al., 2017). However, most of the researches were in a single perspective (Villanueva et al., 2008), and focused only on social media use (Trainor et al., 2014; Jiang et al., 2016; Parveen et al., 2016; Drummond et al., 2017), or on social media use at

work (van Zoonen et al., 2014a; Van Zoonen et al., 2017), on the intensity (Charoensukmongkol, 2014), or on the frequency (Bretschneider and Parker, 2016) of social media use. Some scholars investigated social media use at work mainly on the relationship management (Tajudeen et al., 2018), information search and sharing (de Zubielqui et al., 2019), job satisfaction, and job performance (Parveen et al., 2015).

From the perspective of prior organizational behavior research, social media could be divided into two categories: personal social media and enterprise social media (Van Zoonen et al., 2017). This study emphasizes on personal social media than enterprise social media for the following reasons: First, there has been extensive research on the use of enterprise social media in the domain of information systems (IS) over the past decade (Leonardi et al., 2013; Leftheriotis and Giannakos, 2014; Huang et al., 2015; Parveen et al., 2015; Bretschneider and Parker, 2016; Hacker et al., 2017; Wehner et al., 2017; Archer-Brown and Kietzmann, 2018; Bulgurcu et al., 2018; Osch and Steinfeld, 2018; de Zubielqui et al., 2019; Fu et al., 2019; Veeravalli and Vijayalakshmi, 2019; Tamengkel and Rumawas, 2020). Some studies discussed the impact of enterprise social media use in organizations, such as organizational rules, norms, and policies, organization type, and size (Bretschneider and Parker, 2016). The other studies investigated whether the use of enterprise social media in organizations could facilitate internal knowledge management (Behringer et al., 2017; Kane, 2017; Bulgurcu et al., 2018), communication efficiency (Korzynski, 2014), cross-nation social networking (Van Osch and Steinfeld, 2016), strategic vision of communicators (Charoensukmongkol, 2014), perceived values of utilitarianism and hedonism (Leftheriotis and Giannakos, 2014), innovation (Lam et al., 2016; Kapoor et al., 2018; Papa et al., 2018), job satisfaction (Charoensukmongkol and Sasatanun, 2017; Song et al., 2019), relationship satisfaction (Sheer and Rice, 2017), job performance improvement (Charoensukmongkol and Sasatanun, 2017; Song et al., 2019), organizational performance (Garcia-Morales et al., 2018), or corporate performance (de Zubielqui et al., 2019; Nisar et al., 2019). Second, unlike enterprise social media, which is strictly limited used by organizational employees, personal social media was available for everyone. That meant that personal social media could easily bridge the gap between personal and professional lives. The use of personal social media not only allowed employees to communicate and connect with their families or handle family matters at work, but also let employees to receive and complete work assignments after working hour, in the evening or on the weekends when at home (Moqbel et al., 2013). Therefore, in synthesis with above discussion, this study would emphasize to evaluate and explain the impact of different characteristics of social media on work efficiency through the work-oriented and social-oriented usage intention of social media.

LITERATURE REVIEW

Uses and Gratifications Theory

Uses and Gratifications Theory (UGT) was a mass communication theory (Eighmey and McCord, 1998) that

had been applied to traditional media to understand customer behavior. Uses and Gratifications Theory explained the origin of social and psychological needs that generated expectations of the media, thus created different patterns of media exposure or involvement in other activities that lead to satisfaction of needs (Katz et al., 1973). Uses and Gratifications Theory has received considerable attention in social media research, especially in the satisfaction of customer's needs (Dholakia et al., 2004; Porter and Donthu, 2008; Chen, 2010).

In recent years, scholars used the UST to explain individuals' social media use and demand satisfaction. For example, Ali-Hassan et al. (2015) conceptualized demand and satisfaction theory through three dimensions of social media use, including demand, job innovation, social use, hedonic use, and cognitive use, and examined their effects on practitioner performance. Their findings indicated that the use of social and cognitive technologies positively affected employees' daily work and innovative work, while the use of hedonic technologies negatively affected daily work. Based on the UGT, Odoom et al. (2017) found that the use of social media positively influenced the performance gains that companies received, and UGT helped to explain why people choose and respond to different types of media and information when faced with numerous media and messaging options (Xu et al., 2019). The principle of UGT to explain user behavior was that media use was selective and self-conscious, motivated by individuals' rational needs. The expectation of their needs would be met through specific types of media or content (Ruggiero, 2000). Since the UGT provided a link between choice and outcome, therefore, it was appropriate for the study to explore the effects of social media use on productivity.

Social Media Use

Social media could be used for either social or work-related purposes in enterprises (Gonzalez et al., 2013). Social media such as WeChat was widely used for work-related purposes in Chinese enterprises (Zhang et al., 2018). In Taiwan, Apps such as Line or Facebook Messenger are common to be used in the workplace. Based on the UGT, Liang et al. (2020) conceptualized the employee's needs of using social media into two dimensions: work-oriented and social-oriented. Their study confirmed that employees would use social media for social-related or work-related purposes. The use of social-related motives promoted employee job satisfaction, while the use of work-related motives increased employee productivity.

Specifically, social-oriented usage of social media was defined as the use of social media to establish new social relationships like making new friends, to identify individuals with common interests, and to maintain contact with existing friends and customers. Work-oriented usage of social media was defined as using social media to discuss work with colleagues, or to share document and file information within the organization. Since the UGT provides a link between usage choices and their outcomes (Liang et al., 2020), UGT could be considered as a framework for understanding the relationship between motivation and productivity in the media use (Stafford et al., 2004; Ali-Hassan et al., 2015).

According to the UGT, employees achieved satisfaction when they chose a specific media that could meet their needs. Social media had significant impacts on various communication or management in either workplaces or businesses. Previous studies had shown that the use of social media in organizations could facilitate internal knowledge management (Korzynski, 2014; Behringer et al., 2017; Charoensukmongkol and Sasatanun, 2017; Kane, 2017), and increased communication efficiency, and even enhance work performance. Therefore, this study extended the work of Liang et al. (2020) to classify the type of social media use for employees, and explored how the characteristics of social media affected the work efficiency. This would bridge the gap between theory and practice and provide reference for corporate decision making.

Media Synchronicity Theory

Media Synchronicity Theory (MST) by Dennis et al. (2008) suggested that synchronization existed between people when they worked together. Media Synchronicity Theory identifies five objective capabilities that could affect the level of synchronization:

- Transmission speed: the speed at which the media can transmit messages.
- Parallel processing: the degree to which the media can transmit messages from multiple senders simultaneously.
- Symbol diversity: the number of ways in which information can be conveyed.
- Rehearsal: the degree to which the communication media allows senders to rehearse or adjust messages before sending; and
- Re-processing: the degree to which messages can be rechecked or reprocessed by the recipient.

In addition, Dennis et al. (2008) proposed that all tasks were composed of two communication processes: conveyance and convergence. The conveyance process focuses on the exchange of large amounts of new information, while the convergence process involves consensus on the information already processed. Media Synchronicity Theory attempts to determine the ideal match between media capabilities and communication processes in terms of achieving optimal communication performance. In addition to explaining how different media capabilities affected the effectiveness of communication, Media Synchronicity Theory also examined the differences in the communication process and the degree to which individuals must be involved in the transmission and processing of messages in order for communication to be successful.

RESEARCH METHODS

Research Hypotheses

The literature review on enterprise-based social media use indicates that social media use can enhance work performance (Wu, 2016; Brooks and Califf, 2017; Moqbel and Nah, 2017; Tamengkel and Rumawas, 2020), organizational performance (Parveen et al., 2015; Tajvidi and Karami, 2017; Garcia-Morales et al., 2018; Nisar et al., 2019), situational performance (Trainor

et al., 2014; Ng et al., 2016), routine and innovative performance (Ali-Hassan et al., 2015; Kuegler et al., 2015; Ng et al., 2016). For example, prior studies examined the potential social, hedonic, and cognitive outcomes when employees used personal-based social media (Ali-Hassan et al., 2015; Ali et al., 2019; Cao and Yu, 2019). Liang et al. (2020) showed that employees would use personal or corporate social media for work and social-related purposes. The use of social-related motives can promote employee job satisfaction, and work-related motives can increase employee productivity. Therefore, the following hypothesis is proposed:

H1: Work-oriented usage of social media positively affects work efficiency.

Work efficiency is the ratio of labor output to time invested in an event (Sickles and Zelenyuk, 2019). Previous researches focused on productivity increment (Liang et al., 2020; Priyadarshini et al., 2020; Vithayathil et al., 2020), and the factors that influenced productivity (Sutanto et al., 2018). Regarding the relationship between social media use and work productivity, studies have shown that work-related social media use could enhance the quality of communication and information exchange among employees, which in turn positively affected their work productivity (Leftheriotis and Giannakos, 2014).

Social media for social-oriented usage is to exchange personal information in a social manner, and to gain social and emotional support through the expression and connection of one's identity. When employees used social media for social-related purposes, they generated online communication and social interaction. Employees' motivation for using social media was primarily to observe the market (i.e., data collection), and secondarily to maintain contact with customers (i.e., strengthening contacts) (Leftheriotis and Giannakos, 2014). Based on the above discussion, the following hypotheses were proposed:

H2: Social-oriented usage of social media positively affects work efficiency.

Media synchronization theory was used to describe and evaluate physical media functions (Muhren et al., 2009; Davison et al., 2014). This theory identified five physical media functions that may affect media synchronization. They were 1. transmission speed, 2. parallel processing, 3. symbol diversity, 4. rehearsability, and 5. reprocessing. Previous studies found that the functions of social media had impact on work performance (Leftheriotis and Giannakos, 2014; Wang et al., 2016; Salehan et al., 2017). Based on the social media features proposed by Nesi et al. (2018), this study consolidated them into five social media features that may affect the motivation of social media use: asynchronicity, work efficiency, publicness, accessibility, and symbol variety.

The aspect of asynchronicity has long been emphasized in the study of psychology or media influence (Valkenburg and Peter, 2011; McFarl and Ployhart, 2015). Berger (2013) stressed the inherent asynchronous nature of non-verbal communication, which is more prevalent in social media. Social media varied in the response time when communication. For example, video communication provided nearly perfect synchronization, whereas email was in an asynchronous manner, leaving more

time for the user to read or construct the message to be replied to. Although some researches treated instant messaging as a synchronous communication, Münzer and Borg (2008) suggested that social media often could not provide immediate interpersonal feedback (e.g., the time interval in constructing the message).

As described in media synchronization theory (Dennis et al., 2008), the media for communication should have a variety of functions, including the speed at which messages are delivered (transmission speed), the degree to which interactions can occur simultaneously (parallel processing), and the degree to which messages can be crafted (rehearsability). As one of the basic functions of social media was for social-oriented usage, it could fulfill the need for employees to create and maintain social relationships through social networking or communities of interest (Wu, 2013). Social media can connect individuals with family, friends, associates, or colleagues anytime, anywhere. As the number of social relationships embedded in social networks grows, employees might receive a large number of messages from their virtual friends in social media. In order to maintain a large social network for gaining support and belonging, individuals might frequently check their social media to respond messages as quickly as possible (Cao et al., 2016). In light of the above studies, the following hypotheses were proposed:

H3a: Asynchronicity negatively affects social media for work-oriented usage.

H3b: Asynchronicity negatively affects social media for social-oriented usage.

Permanence referred to the extent to which content or messages remained accessible after interaction or posted (McFarl and Ployhart, 2015). Media with permanence feature could automatic record or archive things presented online. User must be aware of the permanence feature of social media before posting content, because social media like Facebook that posted photos could be searched years later. However, social media like Instagram, the posted content would be removed from other users' cellphones in 24 h after it was sent. No matter these posted contents could be retrieved or erased, viewers could easily snapshot the screen and stored it. This study proposed that permanence is a driving force for social media use, because of its searchability (Boyd, 2010), retrievability and replicability (Boyd, 2010; Peter and Valkenburg, 2013). Similarly, permanence gave the users the opportunity to re-examine previously shared content—reprocessing (Dennis et al., 2008), and to examine or verify information—verifiability (McFarland and Ployhart, 2015). Thus, permanence is a broadly encompassing feature of social media that is described in previous discussions (Dennis et al., 2008; Peter and Valkenburg, 2013; McFarland and Ployhart, 2015). The following hypotheses are presented.

H4a: Permanence positively affects social media for work-oriented usage.

H4b: Permanence positively affects social media for social-oriented usage.

Social media allowed information to be shared within a large group of people simultaneously. McFarl and Ployhart (2015) described this phenomenon as interdependent. Since the content was not sent to designated recipients, some studies focused on larger audiences or potentially invisible audiences (Berger, 2013). The function of the social media was referred as publicity because workers could communicate publicly with their supervisory colleagues, customers, or even strangers that could not be done offline. For employees to promote or publicize their personal information might met the expectation of their audiences (Boyd, 2014; Underwood and Ehrenreich, 2017).

It is obvious for some social media activities that has the public nature (e.g., posting photos on Instagram or Snapchat). The public nature can also occur in forums or LINE groups, etc. For example, in thread forums or group chats, people can easily communicate with 10–20 friends or more groups at the same time. For employees, promoting or publicizing their personal information might create audiences and satisfied their expectation (Boyd, 2014; Underwood and Ehrenreich, 2017).

The majority of studies had explicitly declared that computer-mediated communication as a relatively more private way to obtain or provide support for team communication (Wright, 2015). Comparing with online support groups, communication in the community had a higher degree of publicness, in means of that the possibility that one person's behavior will be observed by others or may learn the number of other perpetrators (Leary and Kowalski, 1990).

Public announcements on social media can attract a wider audience, expand the space for interpersonal communication, and redefine the context in which support is sought and given (Treem and Leonardi, 2013). Given the different influences of users on interpersonal relationships, this may further affect the outcome of users seeking support on social media (Bazarova, 2012; Liu and Kang, 2017). In the social media communication environment, publicness could change the way users viewed their empathy or support from their audiences, or affect the likelihood of providing support on social media externally (Liu and Wei, 2018). Under the working environment setting, employees might want to disclose their personal information, moods, etc., on the social media to connect more people or customers. Therefore, the following hypotheses are proposed:

H5a: Publicness positively affects social media for work-oriented usage.

H5b: Publicness positively affects social media for social-oriented usage.

The availability was defined as the ease of posting or sharing content regardless of its physical location. The accessibility provided the possibility of easily initiating connections or joining social networks, which greatly facilitates the ease of social media communication (Valkenburg and Peter, 2011; McFarl and Ployhart, 2015). For example, picking up the phone or sending a text message to friends requires less effort than driving to a friend's house and talk. Similarly, it needs much less effort chatting with strangers online than attending a party to meet

someone new. Employees in certain industries requires extensive and strong social networks. The higher the demand for human interaction, the more frequent the relationships and connections need to be.

The media synchronization theory had emphasized that social media synchronization affects social intimacy (Park et al., 2019). Given the focus on the impact of social media on worker efficiency, this study believed that employees' ability to quickly access or share content with customers was a result of availability. In conjunction with publicness, the availability of specific social media could enable "scalability." That has the potential for content to be highly visible, through reposting a "fast-moving" message or video (Boyd, 2010). Therefore, the following hypotheses were proposed:

H6a: Availability positively affects social media for work-oriented usage.

H6b: Availability positively affects social media for social-oriented usage.

Symbol variety represented the various ways the media have to encode information for communication (Dennis et al., 2008). People use different types of symbols to convey meanings in the communication process. Therefore, symbol variety is of paramount importance. In face-to-face conversations, people could communicate in a variety of ways, such as handshakes, facial expressions, head movements, and tone of voice. However, text-based real-time communication such as SMS services were relatively limited, as cue absence was one of the characteristics of social media (Nesi et al., 2018). Cue absence originated from the theory of cue filtering in computer-mediated communication (Culnan and Markus, 1987) and the concept of anonymity and social presence described in various fields (Subrahmanyam and Šmahel, 2011; Valkenburg and Peter, 2011; Berger and Iyengar, 2013; McFarland and Ployhart, 2015). In social media, the aspects that lack of physical presence such as voice, body touch, gestures, and facial expressions, excluded the possibility of interpersonal cues/clues, and reduced the amount of message or symbol variety.

Media synchronization theory found that the media with higher symbol variety provided higher perceptual interaction during communication because it took the least time and effort to encode and decode messages (Dennis et al., 2008). The symbol variety of social media contains multiple symbols of text, video and audio with a variety of features that provide users with enhanced functionality. It complements the missing cues, thus minimizing confusion and uncertainty in communication. Therefore, people could avoid unexpected misunderstandings and create a harmonious communication environment, thus enhancing inter-personal intimacy (Tang et al., 2013). Thus, the following hypotheses were proposed:

H5a: Symbol variety positively affects social media for work-oriented usage.

H5b: Symbol variety positively affects social media for social-oriented usage.

The purpose of this study is to investigate the effects of social media features on work efficiency. Based on previous

studies, the social media use either for work or for social was summarized. In order to understand the relationship between several configurations, several hypotheses were proposed and examined in **Figure 1**.

Research Subjects and Data Collection

The respondents were those who had experience in using social media such as Facebook, Instagram, Facebook Messenger, Line, Whatsapp, or Wechat in Taiwan. A screening question was set at the beginning of the questionnaire (as shown in Appendix **Table A1**) to ensure that only respondents with experience that using social media at work could participate in the survey. The survey was conducted in the end of 2020, and data were collected anonymously. After removing 7 invalid responses, a total of 322 questionnaires were collected. Partial least square structural equation model (PLS-SEM) was widely used in various research fields and could be used to perform simultaneous cross-construct measurements and structural model tests (Chin et al., 2003). Partial least square structural equation model was suitable for relatively early theoretical development studies, and it was possible to process statistical analyses between study sections and variables with more robust parametric results than other statistical methods, even with small or medium-sized samples (Chin, 1998; Chin et al., 2003). The summarized information of the respondents was shown as **Table 1**.

RESULTS

This study used PLS to conduct a validated factor analysis (CFA) to extract the average variables extracted (AVE) for the construct questions, compose reliability values (CR) and Cronbach's alpha (Gefen et al., 2000) to assess the convergent validity and to measure the reliability of this reliability of the study questions.

Model Reliability and Validity Analysis

The results of the factor loadings and reliability tests for each of the study's constructs were summarized in **Table 2**. The AVE values were greater than the recommended value of 0.5 (Fornell and Larcker, 1981; Gefen et al., 2000), and the Cronbach's alpha values and composite reliabilities for all constructs were >0.7, meeting the criteria for academic studies (Fornell and Larcker, 1981; Nunnally and Bernstein, 1994; Gefen et al., 2000). Therefore, the convergent validity and reliability of the measurement model passed the examination.

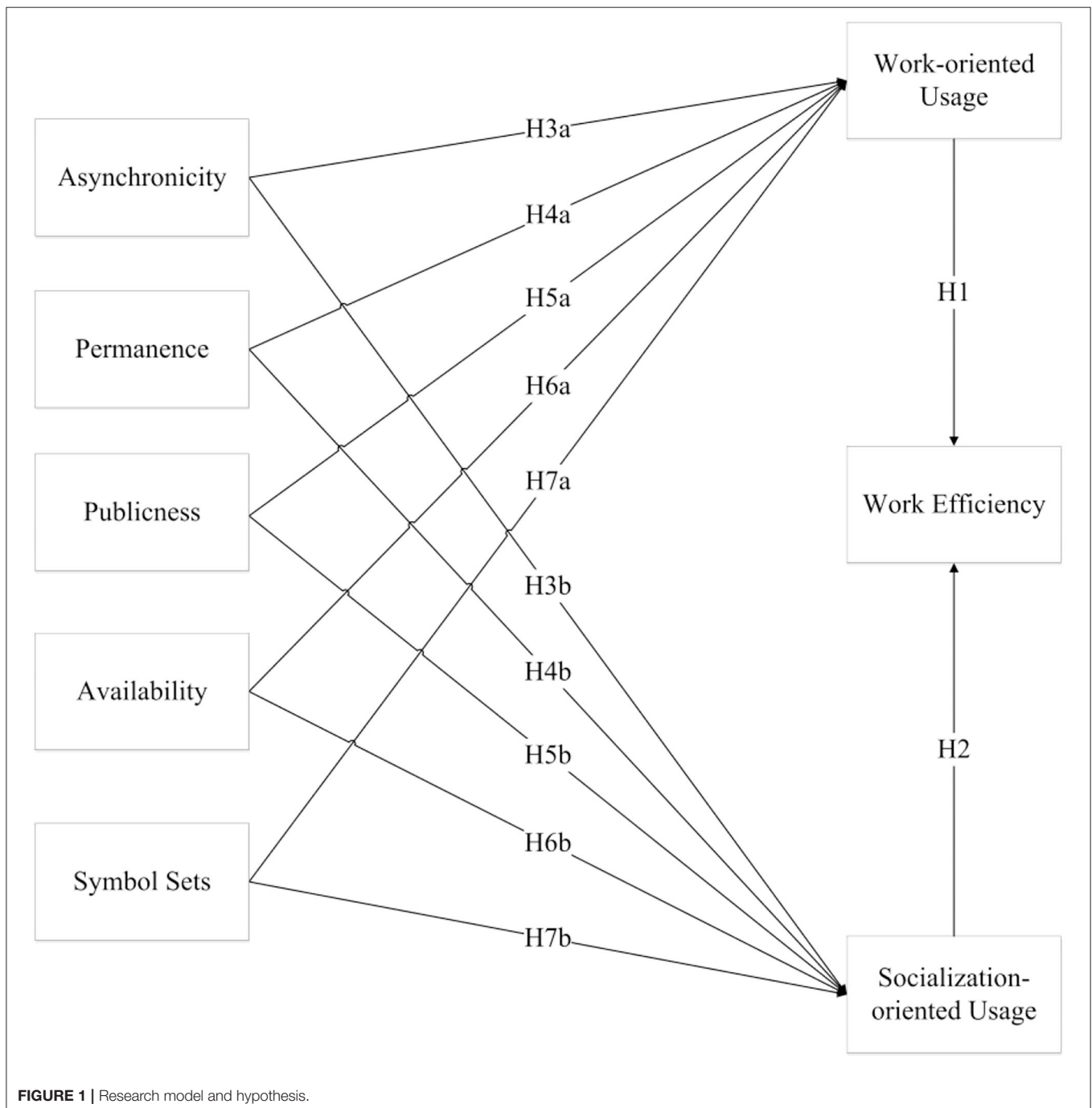
In this study, both convergent validity and discriminant validity tests were conducted. According to Fornell and Larcker (1981), the factor loadings of variables >0.5, the average variable extraction (AVE) must be >0.5, and the reliability must be >0.7. From **Table 3**, it indicated that all constructs in this study had convergent validity. The square root of AVE for each construct was greater than the correlation coefficient between the constructs, therefore all constructs in the measurement model had discriminant validity (Fornell and Larcker, 1981).

Hypothesis Tests and Path Analysis

In this study, SmartPLS 3.2.8 performs structural pattern analysis. The results of the path analyses were shown in **Figure 2**, and the hypothesis test results were in **Figure 1**. At 95% confidence level, 6 of the 12 proposed research hypotheses were supported.

The results showed that all hypotheses were supported except hypotheses 3a, 3b, 4a, 4b, 5a, and 6b, which were not supported (as shown in **Table 4**). Specifically, the impact of work-oriented usage ($t = 12.933$, $p < 0.01$) and social-oriented usage ($t = 2.287$, $p < 0.05$) on work efficiency were positively correlated.

Regarding the effect of social media features on work use, only symbol variety ($t = 4.195$, $p < 0.01$) was positively related to work use, while asynchronicity ($t = 0.390$, $p > 0.10$), permanence ($t = 0.385$, $p > 0.10$), publicness ($t = 1.418$, $p > 0.10$), and availability ($t = 1.455$, $p > 0.10$) had no significant effect on work use. About the effect of social media features on social-oriented usage of social media, only publicness ($t = 2.921$, $p < 0.01$) and symbol diversity ($t = 3.064$, $p < 0.01$) were positively related to social-oriented usage, while asynchronicity ($t = 1.042$, $p > 0.10$), permanence ($t = 1.683$, $p > 0.10$) and availability ($t = 1.455$,



$p > 0.10$) had no significant influence on social-oriented usage of social media.

Research Findings and Discussion

The results supported hypothesis 1 that the social media for work use has a significant impact on work efficiency. This finding suggests that practitioners' work efficiency can be improved when using social media as a workplace tool. This conclusion is consistent with previous research on the use of social media in the workplace (Wu et al., 2006; Mansi and Levy, 2013).

The results of this study indicated that hypothesis 2 is supported. Socially oriented social media use, such as casual conversations with colleagues, can lead to smoother social interactions and increased awareness of social capital (Ali-Hassan et al., 2015), leading to an increase in utilitarian use (Song et al., 2019). Practitioners can use social media to meet new people or even to explore new clients to increase work proficiency.

Hypothesis 5b that publicness has a positive impact on social-oriented usage of social media was supported. Social media users can take advantage of the publicness to present themselves. They can also browse other users' public information to find

communities or groups with similar interests, and make new friends or meet other people who are not easy to meet in real life. Thus, publicness has a positive effect on social media for social usage.

Hypothesis 6a that availability has a positive effect on social media for work use. However, hypothesis 6b that availability

TABLE 2 | Reliability tests for constructs and items.

Constructs	Items	Factor loadings	Cronbach's alpha	Composite validity (CR)	Average variance extracted (AVE)
Asynchronicity	ASY1	0.788	0.723	0.843	0.644
	ASY2	0.757			
	ASY3	0.859			
Permanence	PER1	0.893	0.848	0.908	0.768
	PER2	0.891			
	PER3	0.843			
Publicness	PUB1	0.881	0.885	0.929	0.813
	PUB2	0.925			
	PUB3	0.897			
Availability	AVA1	0.892	0.902	0.939	0.836
	AVA2	0.925			
	AVA3	0.926			
Symbol variety	SYM1	0.850	0.824	0.885	0.660
	SYM2	0.668			
	SYM3	0.875			
	SYM4	0.841			
Social-oriented usage of social media	SOC1	0.877	0.870	0.913	0.724
	SOC2	0.876			
	SOC3	0.907			
	SOC4	0.734			
Work-oriented usage of social media	WOR1	0.833	0.868	0.910	0.717
	WOR2	0.897			
	WOR3	0.864			
	WOR4	0.789			
Work efficiency	WEF1	0.954	0.912	0.945	0.851
	WEF2	0.950			

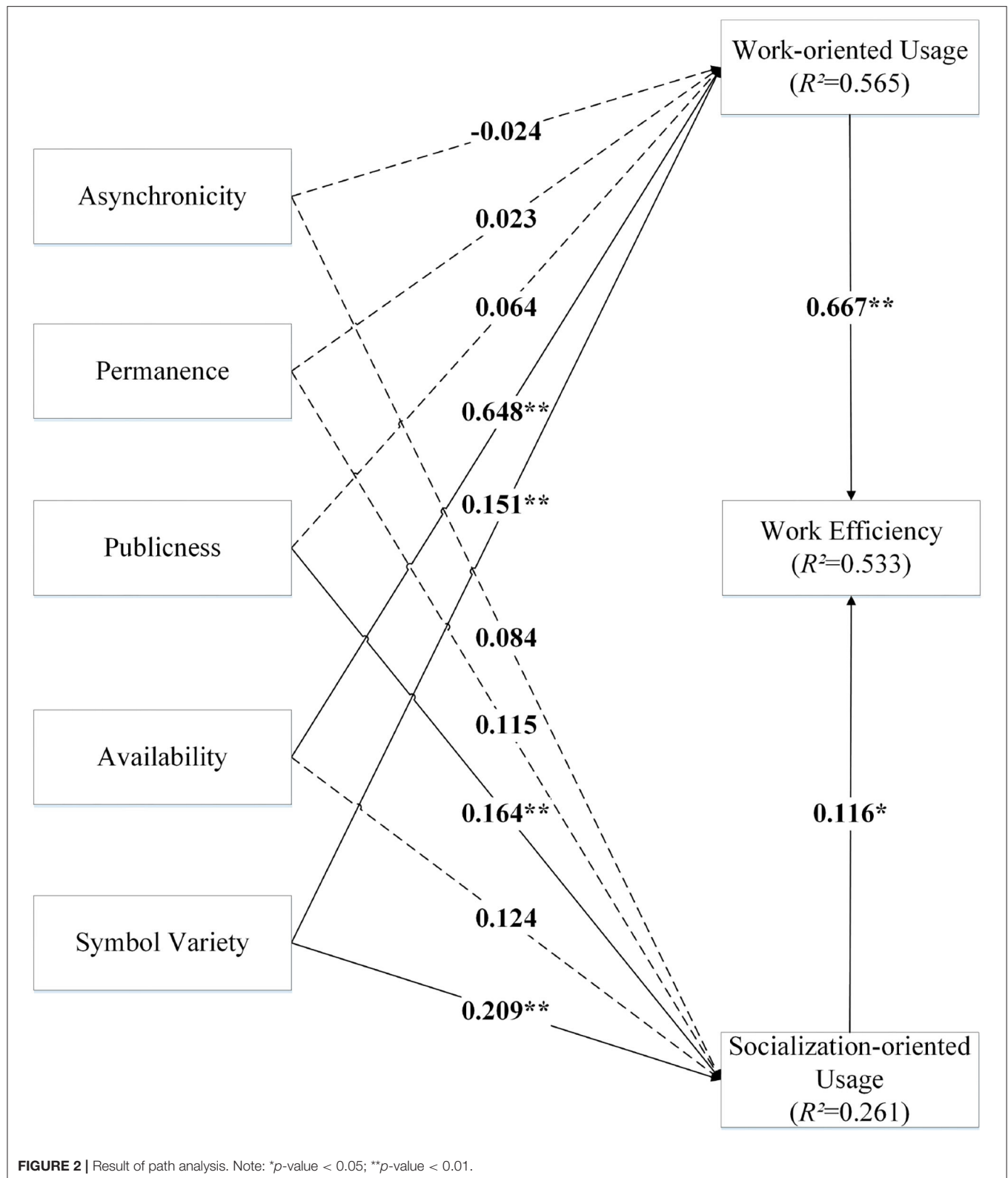
TABLE 1 | Sample demographic.

Attribute	Types	Sample (N = 322)	Percentage (%)
Sex	Male	174	54
	Female	148	46
Age	20 and under	18	6
	21–30	176	54
	31–40	64	20
	41–50	45	14
	51 and above	21	6
Social media used in work	Line app	287	40
	Facebook	158	22
	Instagram	116	16
	Facebook Messenger	98	14
	Wechat	44	6
	Whatsapp	19	3

TABLE 3 | Correlation coefficient matrix between latent variables.

Constructs	Asynchronicity	Permanence	Publicness	Availability	Symbol variety	Social usage	Work usage	Work efficiency
Asynchronicity	0.802							
Permanence	0.623	0.876						
Publicness	0.397	0.225	0.901					
Availability	0.681	0.581	0.402	0.915				
Symbol variety	0.392	0.388	0.282	0.461	0.813			
Social usage	0.387	0.358	0.332	0.411	0.39	0.851		
Work usage	0.516	0.458	0.362	0.74	0.468	0.477	0.847	
Work efficiency	0.593	0.484	0.358	0.744	0.45	0.434	0.723	0.923

The bold diagonal value is the square root of the AVE of each latent variable.



has no positive influence on the social media for social usage. Availability in social media allows practitioners to connect and join other communities easily. However, it is possible that this

social media characteristic of “being able to easily connect with customers” causes some practitioners to view it as part of their job. Therefore, availability has a positive effect on

TABLE 4 | Hypotheses tests.

Hypotheses/Structural path	Path coefficient	t-Value	P-value	95% Confidence interval	Results
H1: Work usage→ work efficiency	0.667**	12.933	0.000	(0.558, 0.759)	Supported
H2: Social usage→ work efficiency	0.116*	2.287	0.022	(0.019, 0.217)	Supported
H3a: Asynchronicity→ work usage	−0.024	0.39	0.697	(−0.145, 0.094)	Not supported
H3b: Asynchronicity→ social usage	0.084	1.042	0.297	(−0.068, 0.251)	Not supported
H4a: Permanence→ work usage	0.023	0.385	0.700	(−0.089, 0.146)	Not supported
H4b: Permanence→ social usage	0.115	1.683	0.092	(−0.026, 0.242)	Not supported
H5a: Publicness→ work usage	0.064	1.418	0.157	(−0.018, 0.151)	Not supported
H5b: Publicness→ social usage	0.164**	2.921	0.004	(0.058, 0.270)	Supported
H6a: Availability→ work usage	0.648**	10.965	0.000	(0.527, 0.753)	Supported
H6b: Availability→ social usage	0.124	1.455	0.146	(−0.036, 0.283)	Not supported
H7a: Symbol variety→ work usage	0.151**	4.195	0.004	(0.056, 0.259)	Supported
H7b: Symbol variety→ social usage	0.209**	3.064	0.002	(0.076, 0.350)	Supported

Note: *p-value < 0.05; **p-value < 0.01.

practitioners for work purposes, but not significantly enough for social use.

Hypothesis 7a and 7b were both supported that symbol variety has significant impact on social media for both work-oriented and social-oriented usage. Different social media provides diverse services. The social media with limited symbol variety can send text-only messages or photos that provide less interpersonal cues (no facial expressions, tone of voice, or gestures). Previous study finds that the level of perceived symbol variety in non-enterprise social media positively influences users' use for both social and work purposes. When people use instant messaging for either personal or business purposes rather than for specific purposes, the use of emojis and photo images can increase social intimacy between the communicating parties (Park and Lee, 2019).

LIMITATIONS

Several research limitations are shown as follows. First, all participants in this study were from Taiwan, and it is uncertain whether our findings can be generalized to other countries. Moreover, the online survey instrument in this study was intended to distribute to the employees who use social media. However, the answers from the respondents might not reflect the situation set by the purpose of the study. Second, the inference of the results may be limited because of the features of different social media. In this study, non-enterprise social media, such as Facebook, Instagram, Line App, etc. were the main social media investigated. However, a more private concerned corporate social media, such as Skype, Slack, etc., which may bring different results due to their different features. Third, although some studies attempted to identify the antecedents and consequences of social media use in enterprise (Parveen et al., 2015; Jiang et al., 2016), most of these studies treat employees as homogeneous entities and ignore the potential group differences (Krasnova et al., 2017). Earlier research has found significant gender differences in IT social media use

patterns (Muscanell and Guadagno, 2012). This suggested that the outcomes of social media use in the enterprise may also differ between male and female employees. Finally, this study categorized social usage and work usage as the application of social media by practitioners. In fact, the motivation of social media use could be divided into different categories, such as hedonic needs and knowledge needs (Ali-Hassan et al., 2015). Future research could explore the multiple effects of social media use for the other purposes and examine the results. Finally, this paper examined the direct relationship between social media use and work efficiency, but did not explore the process between independent variables and outcome variables. Other mediating variables related to the use of social media might influence the results of the study.

DATA AVAILABILITY STATEMENT

The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

ETHICS STATEMENT

Ethical review and approval was not required for the study on human participants in accordance with the local legislation and institutional requirements. Written informed consent for participation was not required for this study in accordance with the national legislation and the institutional requirements.

AUTHOR CONTRIBUTIONS

DJ: conceptualization, methodology, data curation, and writing—review and editing. S-CC: formal analysis, and supervision. Y-HC: investigation. AR: writing—original draft preparation. DJ, S-CC, AR, and Y-HC: validation. All authors contributed to the article and approved the submitted version.

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APPENDIX

TABLE A1 | Measurement items.

Construct	Item	Measurement
Asynchronicity	ASY1	I can receive replies from my clients immediately after sending them a message via social media.
	ASY2	I reply as soon as I receive a message in social media.
	ASY3	Social media can help me communicate with customers immediately.
Permanence	PER1	I can read past messages to clearly understand the previous conversations with customers.
	PER2	I read past messages to help recall previous conversations with clients.
	PER3	If the message is very long and complicated, I can read the message carefully.
Publicness	PUB1	I don't think the personal information disclosed on social media affects my current work.
	PUB2	I don't think the personal information disclosed on social media affects the perception of my customers.
	PUB3	I don't think that public postings on social media affects my professional image.
Availability	AVA1	I think social media can facilitate my work.
	AVA2	I think social media makes it easy for me to contact my clients.
	AVA3	I think using social media makes it easier for my clients to contact me.
Symbol variety	SYM1	I think it is more friendly to have emoticons in conversations with my clients.
	SYM2	Only use text to online talking is not enough to express my emotions or feelings when I use social media.
	SYM3	I use other features in social media (e.g., emoticons, images, video clips) to express emotions when communicating with clients.
	SYM4	When using social media to communicate with clients, I am aware of the options for using other features of social media (e.g., emojis, images, videos).
Social-oriented usage of social media	SOC1	I can make friends in the organization through social media.
	SOC2	I can find like-minded people through social media.
	SOC3	I can meet new friends through social media.
	SOC4	I use social media in order to meet friends/clients I have never met.
Work-oriented usage of social media	WOR1	I discuss work with colleagues through social media.
	WOR2	I use social media to contact customers.
	WOR3	I use social media for work.
	WOR4	For work, I think social media is one of the tools that must be used.
Work efficiency	WEF1	After using social media, my daily work is more efficient.
	WEF2	I am able to communicate with my clients better through social media.
	WEF3	I think it is more efficient to use social media to communicate with clients.



Evaluating the Impact of Information System Quality on Continuance Intention Toward Cloud Financial Information System

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Cloud financial accounting informatization is a product of the combination of accounting work and information technology, a current demand for financial information management in the new era, and a necessary means for enterprises to enhance their core competitiveness. Therefore, this study is based on DeLone and McLean's information system success model, and through theoretical interpretation and derivation, we integrate satisfaction and trust in relationship quality to measure the impact of users' intention to continue using the cloud financial accounting system. A sample of 289 faculty and finance staff with experience in using cloud financial accounting systems was used to test the hypotheses using Partial Least Squares (PLS). The results of the study showed that (1) user participation had a significant positive impact on satisfaction with the system quality, information quality, and service quality of the cloud financial accounting system; (2) the system quality and service quality of the cloud financial accounting system had a significant positive effect on user trust; and (3) the quality of the cloud financial accounting system had a mediating effect on intention to continue using the system through satisfaction and trust. Since there is a lack of research on the antecedents and outcomes of user linkage to cloud financial accounting systems in the literature, especially the empirical results on the mediation relationship from the perspective of relationship quality. Therefore, this study can fill above mentioned research gap and provide specific recommendations for sustainable management practice.

Keywords: relationship quality, cloud financial information system, information quality, system quality, service quality, partial least squares

INTRODUCTION

Due to the rapid development of information technology, the transmission and management of information has become more complex and time-sensitive, and enterprises and government departments have been implementing various information management systems to enhance operational efficiency and organizational effectiveness (Banker and Kauffman, 2004). Cloud financial accounting informatization is a product of the combination of accounting work and information technology, and it is also a current demand for financial information management in the new era, and a necessary means for enterprises to enhance their core competitiveness (Wang et al., 2019). With the gradual popularization of big data technology, on the one hand, it provides new development opportunities for cloud financial accounting informatization, and on the other

hand, it also brings information security issues. Enterprises need to sustainably explore the potential risk prevention for cloud financial accounting informatization in the era of big data to promote the stable and comprehensive development of enterprise financial accounting informatization (Wang et al., 2019).

In the current context of information technology, many companies sign sales contracts with customers through computer networks, thus forming digital sales contracts. The finance staff can verify the authenticity of the customer's identity by examining the validity and legality of the contract. Unlike traditional paper-based contracts, electronic contracts are digitally stored in such a way that various documents and books of accounts cannot be directly identified by the human eye and need to be examined with the help of a computer (Dai and Vasarhelyi, 2017; Song et al., 2018). In addition, when finance staff query the results of business processing, sometimes they can only query the results of business processing, and it is difficult to find the source of the business, and the inability to determine the reliability of the source of the business will increase the risk of cloud financial and accounting information work. In the cloud financial accounting information work, if the financial staff modify the financial information due to operational errors, it is often difficult to verify.

The financial accounting system to the cloud version, its conversion process is bound to cause users in the use of the positive and negative views, mainly because the original system if the stand-alone version, to the cloud version can be operated in places where there is a network, you can work at home, however, the cloud version is not necessarily more stable than the stand-alone version, and must have a network to operate, there is the problem of network connection speed, and applicable to more objects once the hardware and software systems must be strengthened, the investment costs are bound to be considerable. Costly failures on the implementations of information systems continued to be reported in the prior empirical studies (Bourne, 2005; Gargeya and Brady, 2005). In the context of changing and updating information system requirements, organization members must have positive feelings about the information quality, system quality, and service quality features provided by the information system in order to be willing to use it continuously (Roky and Al Meriouh, 2015; Hariguna et al., 2017; Aldholay et al., 2018; Verma et al., 2018; Jeyaraj, 2020). Therefore, it is important to study how to make the cloud financial accounting system work successfully, enhance the satisfaction and trust of members and bring overall benefits to the organization.

With the advancement of technology, the service industry has gradually shifted from a service type that requires a high degree of interpersonal contact in the early days to a service type with a lot of technological intervention, and the type of service contact has also changed. Early research on service encounters focused on the dynamics and characteristics of service worker-customer interactions; in recent years, prior studies have actively explored the important role of technology in service encounters (Bitner et al., 2000; Dabholkar and Bagozzi, 2002; Chen et al., 2009; Lin et al., 2011). Although technology involved services have become common, it does not mean that technology access is

widely accepted by the public. Therefore, the continued adoption of cloud financial accounting systems by users can be considered a fundamental issue for the success of the platform, especially in today's competitive enterprise resource planning industry, where users can quickly change their preferred service provider in a cost-effective manner. In addition, since cloud financial accounting systems not only require continuous use by users, but also rely on their trust in the information provided by the system.

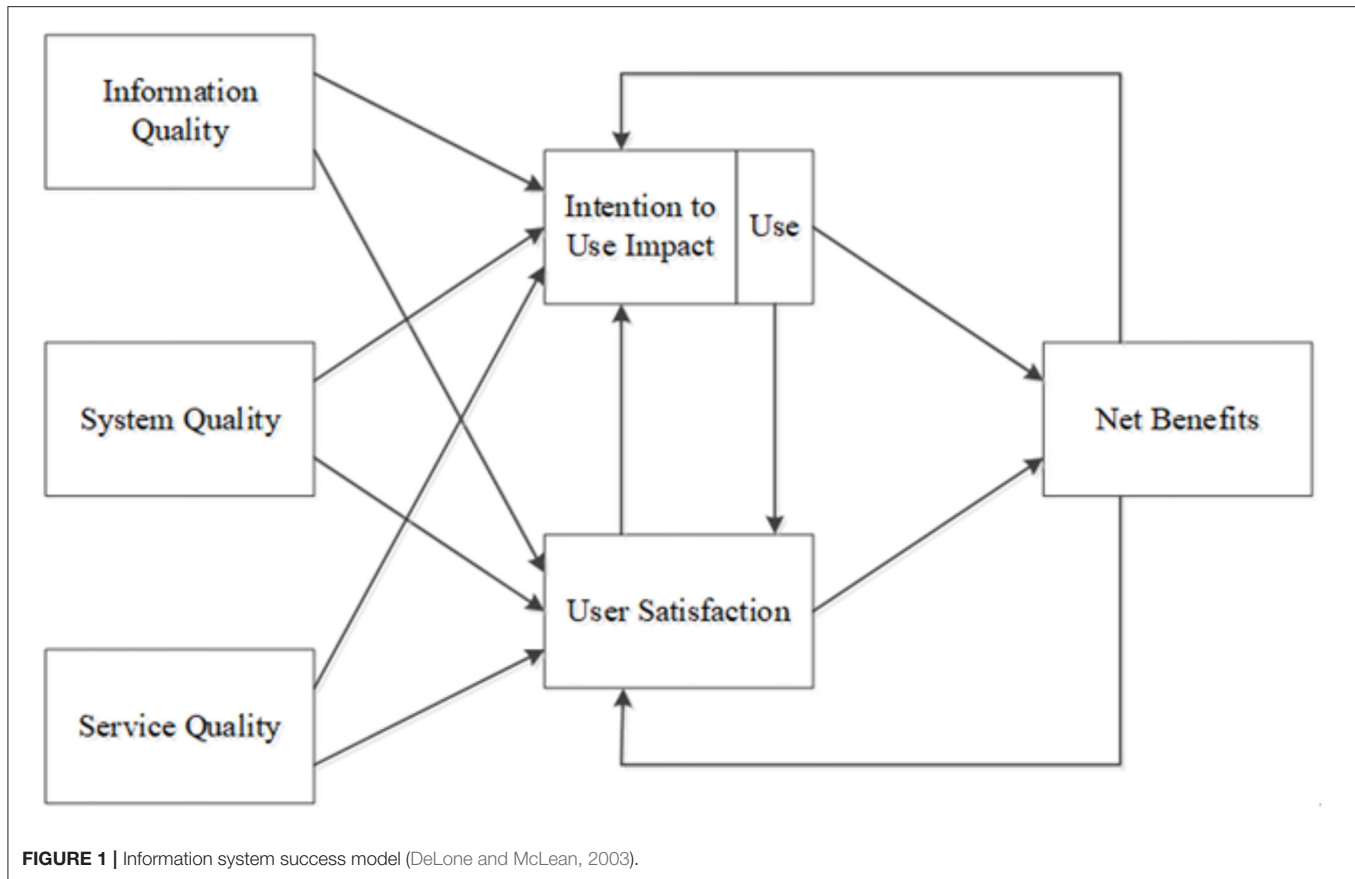
In the current business context, enterprises are increasingly to implement information systems to fulfill long-term competitive advantage, performance growth, and opportunities to ensure sustainable success (Ghobakhloo and Tang, 2015; Al-Okaily et al., 2020). Implementing information systems into enterprises can furnish extensive benefits, especially for developing countries (Solaymani et al., 2012). In effect, some recent studies have shown that enterprises in developing countries are investing substantially in information systems to sustain their competitive position (Tang and Ghobakhloo, 2013; Ghobakhloo and Tang, 2014). Reviewing the past literature, the information systems success model (DeLone and McLean, 2003) provided the direction of academic and practical research in information systems success performance measurement and causality model to explain the impact and evaluation of information system quality on user satisfaction and trust (Roky and Al Meriouh, 2015). Therefore, this study adopts the information system success model from DeLone and McLean's (2003) to investigate the technical (information quality, system quality, and service quality) and relevant factors (satisfaction, trust, and continuance intention) as the main axes of the study.

THEORETICAL BACKGROUND AND LITERATURE REVIEW

Information System Quality

DeLone and McLean (1992) proposed six components to evaluate a successful information system: system quality, information quality, use, user satisfaction, individual impact, and organizational impact. To evaluate the success of information system operations, this evaluation model should include the quality characteristics of the information system itself (i.e., system quality), the quality of the information system output (i.e., information quality), the consumption of the information system output (i.e., use), the response of information system users to the information system (i.e., user satisfaction), the impact of the information system/information technology on user behavior (i.e., individual impact), and the impact of the information system on organizational performance (i.e., organizational impact). System quality and information quality influence positively the users' usage and satisfaction of the information system, and the users' usage and satisfaction affect each other and then affect their personal behavior, which in turn affects the performance of the organization.

After DeLone and McLean (1992) developed Information Systems Success Model, many scholars have adopted this model to explore the issue of organization-led information



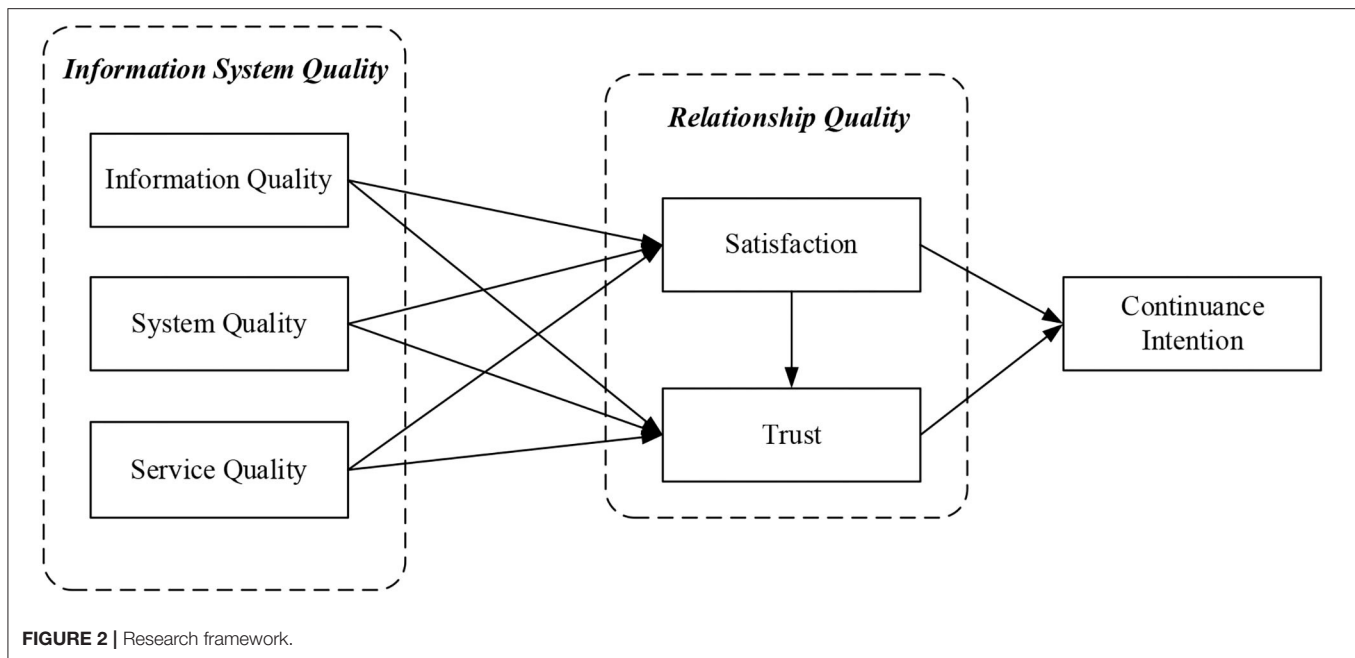
systems (Seddon and Kiew, 1996; Myers et al., 1997; Seddon, 1997; Kulkarni et al., 2006). Pitt et al. (Pitt et al., 1995) conducted a survey on service quality of information systems and found that changing the attitude of information department personnel, changing the attitude of information system users, setting expectations of information personnel, improving communication with customers, and improving information system services (i.e., customer- and user-oriented) would improve the service quality of information systems. Service Quality and Continuity of Use: The importance of service quality in information systems has also been identified in empirical studies by several scholars (Kettinger and Smith, 2009). In 2003, DeLone and McLean supplied the service quality as a component and modified the model to include system quality, information quality, and service quality as dimensions affecting the user satisfaction and successful usage of the information system, as subsequent indicators to illustrate the success of the information system from a cause-and-effect perspective. System benefits are also assessed by the feedback relationship between system usage, user satisfaction and system benefits, and are considered as indicators of the success framework of the information system (as shown in **Figure 1**).

When users are satisfied with the system quality and information quality of the information system, it is beneficial to individual performance, and through the use of the system, it can promote the efficiency and ability of work,

and individual efficiency improvement leads to enhance organizational development. Most of the previous studies examined the effectiveness of information systems from a product perspective, ignoring the service quality factor (Pitt et al., 1995). Subsequently, DeLone and McLean (2003) proposed a revised information systems success model to address the queries, criticisms, and extensions of the 1992 model in other studies, and added a “service quality” dimension in response to changes in the information systems environment, especially the emergence and rapid development of e-commerce. The usefulness of this updated information success model is evaluated by the e-business system, and the feedback relationship between system usage, user satisfaction, and net benefits is used to estimate the information effectiveness, which is considered as the success indicator of the information processing system.

Relationship Quality

Relationship quality is a critical issue that is often discussed and studied in relationship marketing. Crosby et al. (1990) define relationship quality as a comprehensive assessment of the strength of the relationship between buyer and seller that meets both their needs and expectations. These needs and expectations are based on the past successes and failures of both buyers and sellers, and good relationship quality can reduce service uncertainty. Although relationship quality has since been summarized as the treatment of intangible values,



it does not embody the true meaning of relationship quality. However, as the research progresses, based on the study of the relationship between relationship quality and relationship benefits and their derivative behaviors, it is concluded that relationship quality is an appropriate level of satisfying the needs of the customer relationship. Based on the synthesis of current studies, relationship quality is defined as a high-level structure that contains various positive relationship outcomes, reflecting the influence of the relationship and the level of satisfaction of the relationship's needs and expectations.

Further, Hennig-Thurau and Klee (1997) demonstrate that relationship quality and product quality share the same concept and can both be considered as the degree to which consumer needs are met. In summary, relationship quality is a high-level concept that combines multiple positive relationship outcomes and reflects the overall strength of a relationship while meeting expectations and needs (Smith, 1998).

In recent years, the rapid development of the relevant research on the relationship between information system users and organizations. Among them, relationship quality is seen as an important mediating factor in inter-firm relationships (Chen, 2012; Chen et al., 2013b, 2014; Masri et al., 2020). Since there are many factors involved in the quality of corporate relationships, it is especially important to have multiple points of contact and key relationships between the two sides of the transaction in the process of developing closer relationships with customers. Although there is still debate in the past literature on how to measure relationship quality metrics, the current literature discusses at least two metrics in general, namely customer satisfaction and trust (Lin and Ding, 2009; Lin et al., 2011; Chen, 2012; Chen et al., 2013b, 2014; Masri et al., 2020). Therefore, this study uses two indicators of user satisfaction and trust in the cloud financial accounting system to measure the

attitude of customers toward the financial accounting system, that is, the extent to which users perceive the quality of the relationship with the cloud financial accounting system. The two dimensions of satisfaction and trust in the relationship quality are described below.

Satisfaction

Satisfaction refers to the degree to which customers feel happy or disappointed with the product expectations, that is, if the goods or services provided by the company can be greater than what customers expect, then customer satisfaction can be increased. After the implementation of an information system, enterprises, or organizations often use various methods to evaluate the benefits of the system in order to fully understand its use. However, there are many factors used to estimate the performance of system implementation. In recent years, in the field of information system usage, the most common factors used to measure system implementation results include user satisfaction, system usage, user involvement, user acceptance, etc. Among them, user satisfaction is the most widely accepted and used factor (Hennig-Thurau and Klee, 1997; DeLone and McLean, 2003; Woodroof and Burg, 2003; Liao et al., 2007; Chen et al., 2009, 2013a; Chen and Lin, 2019).

Trust

In any relationship, trust is inevitably an important part of the relationship. Trust between two individuals is what makes a relationship sustainable and long-lasting. Trust is a necessary factor for building forceful market share and customer relationships (Urban et al., 2000). Before gaining the loyalty of customers, it is necessary to gain their trust (Reichheld and Scheffer, 2000). The first field of research on trust is psychology, where psychologists investigate whether trust has an impact on

interpersonal relationships. Trust is a concept often used in relationship marketing (Dwyer et al., 1987). Morgan and Hunt (1994) define trust as when a party to a transaction has confidence in the reliability and integrity of its counterparty, while Moorman et al. (1993) define trust as the willingness to rely on a confident counterparty in an exchange relationship and to have confidence in it, both of which mention the importance of the concept of confidence; therefore, in the transaction process, trust is generated because the buyer has confidence in the counterparty, which leads to the completion of the transaction. Trust is an important medium of connection between two individuals, and its existence can reduce the risk of mutual cooperation and ensure future benefits (Chow and Holden, 1997). Moorman et al. (1993) defined trust as the willingness to rely on a partner one trusts.

Continuance Intention

The adoption of information systems has been one of the most common measures of information system success, especially as a behavioral proxy for information system effectiveness. In the literature related to information system behavior, ECM is often used to assess and measure consumer satisfaction with a product or service and as an infrastructure for post-purchase behavior (Bhattacharjee, 2001). In recent years, many different studies have attempted to investigate the continuous use of information systems or evaluate the performance of information system use in different contexts, including E-learning (Lin, 2011, 2012), mobile banking (Chen, 2012; Zhou, 2013), online shopping (Al-Maghrabi and Dennis, 2011; Lu et al., 2017), educational services and knowledge sharing (Fang and Chiu, 2010; Cheng et al., 2015), adoption of e-books (Chen et al., 2018), adoption of wireless technologies and mobile networks (Chen et al., 2013a), adoption of social networking sites (Kim, 2011; Chen et al., 2012; Chen and Lin, 2019), and Enterprise Mobile Applications, among others. Therefore, in this study, the relationship between satisfaction of using cloud financial accounting system and continuous use intention was included in this research model.

Prior studies applied continuance intention as dependent variables because an effective and efficient quality improvement for continuance intention requires the understanding of specific quality dimensions that considerably influence continuance intention because service quality has multiple dimensions (Park et al., 2012; Kim et al., 2019). Therefore, this research evaluates the enhancement of an influential quality dimension improves continuance intention more effectively and efficiently than enhancing a less influential one from information system success perspective.

RESEARCH METHODOLOGY

Research Hypotheses Development

In the research field of information systems and information technologies, information quality, system quality, and service quality are often considered as the result of the use of a system. Thus, information quality can be considered as the ability of a financial accounting system to handle information in terms of accuracy, timeliness, relevance, completeness, and understandability (DeLone and McLean, 2004), while system

quality is the ability of a system to be reliable, responsive, and flexible to maintain the operation of a cloud financial accounting system (Seddon, 1997); and service quality represents the overall service quality is the overall ability of a financial accounting system to provide good service (Pitt et al., 1995). According to DeLone and McLean (2003), information quality, system quality, and service quality have a positive impact on user satisfaction. Melchor and Julián (2008) followed the IS success model to measure decision information systems and found that information quality and system quality were influential factors in decision satisfaction. In addition, Negash et al. (2003) found that information quality and system quality had a positive effect on user satisfaction, but service quality didn't provide the significant effect on user satisfaction. Lee et al. (2007) found the direct effect of information quality and service quality on trust in a sample of 233 SMEs with ASP service experience, and Lee and Chung (2009) confirmed the significant effect of information quality and system quality on trust in an empirical study of mobile payment.

On the other hand, the information system model of DeLone and McLean (2003) is one of the most distinguished in the IS field (Petter et al., 2008). Prior research also indicated the information system model of DeLone and McLean (2003) can be used to evaluate accounting information system success (Al-Hattami, 2021). In this vein, cloud financial information system can be counted as information system, where information system quality is an important aspect of accounting information system. Through the above discussion, this study establishes the following hypotheses:

- H1: Information quality has the positive impact on satisfaction.
- H2: Information quality has the positive impact on trust.
- H3: System quality has the positive impact on satisfaction.
- H4: System quality has the positive impact on trust.
- H5: Service quality has the positive impact on satisfaction.
- H6: Service quality has the positive impact on trust.

Bhattacharjee (2001), in a study on the intention of continuous use of information systems, states that the satisfaction level that results from actual use will determine whether the user continues to use the system or not. Through the empirical results of ECM, we can find a link between satisfaction and continuance intention (Thong et al., 2006; Lee, 2010; Chen et al., 2013a; Li et al., 2019; Ruangkanjanases et al., 2020). In addition, previous related studies point to a positive relationship between satisfaction and trust (Flavián et al., 2006; Sanchez-Franco et al., 2009; He et al., 2012; Moreira and Silva, 2015). Therefore, through the above discussion, we deduced that H7 and H8 of this study:

- H7: Satisfaction has the positive impact on trust.
- H8: Satisfaction has the positive impact on continuance intention.

Chen et al. (2014) showed that users' trust level in adopting information systems positively influences the intention to continue using them. Previous scholars have also demonstrated in mobile payment service studies that persistent usage intention is significantly influenced by user trust (Zhou, 2013; Cao et al.,

2018; Handarkho, 2020). Through the above empirical results, the H9 of this paper is as follows:

H9: Trust has the positive impact on continuance intention.

According to the discussion of hypotheses development, we proposed our research model and summary of research hypotheses (as shown in **Figure 2** and **Table 1**). This study was conducted by three stages to develop the measurement items. First, the questions in this study were designed with reference to the relevant literature and were revised by three experts in the field and a professional consultant with knowledge of cloud financial accounting systems after the design was completed. Second, the structure and content of the questionnaire were designed based on domestic and foreign literature, re-search frameworks and their operational definitions, and the Likert seven-point scale was used to explore the information system measurement structure from the perspective of system users to measure the attitude and current situation of using cloud financial accounting systems. The questionnaire design consists of six main components. Information system quality is primarily a measure of what users of a system consider to be a successful information system. The factors analyzed by Lee et al. (2007) for system, information, and service quality dimensions were used as benchmarks to investigate the impact of the “information system measurement dimensions” of system quality, information quality, and service quality on satisfaction and trust. Satisfaction measurement items are mainly used to measure system users’ satisfaction with using the cloud financial accounting system refers to the views of scholars such as Bhattacharjee (2001) and Limayem et al. (2007). The measurement items of trust and intention to continue using the system are mainly from Chen et al. (2013b). Third, this study was conducted in China to collect data and questionnaires from instructors and finance staffs who had used the cloud financial accounting system for reimbursement in the past. Five universities in China, having implemented cloud financial accounting systems accessible to all faculty members, agreed to participate voluntarily in the research. The subjects were those who owned the usage experiences of cloud financial accounting information systems 2 years at least, rather than those without usage experience, to ensure the external validity of this research. The investigation was issued using an online instrument in the spring and fall semesters of 2020. A total of 326 questionnaires were collected, and 289 valid respondents were returned after deducting 37 invalid questionnaires.

EMPIRICAL DATA ANALYSIS RESULTS

In this study, Partial Least Square (PLS) was applied to evaluate our proposed model and SmartPLS 3.3.3 was used as the analysis tool (Ringle et al., 2015). Fornell and Bookstein (1982) showed that PLS is a highly suitable method for dealing with complex causal relationships. Partial Least Square is highly practical and superior to the general linear structural relationship model analysis techniques and is more lenient on the assumption of multivariate normal distribution, and sample size of the variables that must be met (Hair et al., 2016; Lin et al., 2020). In order

TABLE 1 | Research hypotheses.

Research hypothesis description	Direction	Source
H1: Information quality has the positive impact on satisfaction	INQ → SAN	Lee et al., 2007; Fang et al., 2011; Aparicio et al., 2017
H2: Information quality has the positive impact on trust	INQ → TR	Lee et al., 2007; Zhou, 2013
H3: System quality has the positive impact on satisfaction	SYQ → SAN	Lee et al., 2007; Fang et al., 2011; Aparicio et al., 2017
H4: System quality has the positive impact on trust	SYQ → TR	Lee et al., 2007; Zhou, 2013
H5: Service quality has the positive impact on satisfaction	SERVQ → SAN	Lee et al., 2007; Fang et al., 2011; Aparicio et al., 2017
H6: Service quality has the positive impact on trust	SERVQ → TR	Lee et al., 2007; Zhou, 2013
H7: Satisfaction has the positive impact on trust	SAN → TR	Flavián et al., 2006; He et al., 2012
H8: Satisfaction has the positive impact on continuance intention	SAN → CINT	Bhattacharjee, 2001; Hsu et al., 2006; Liao et al., 2007; Chen et al., 2014; Ma et al., 2019
H9: Trust has the positive impact on continuance intention	TR → CINT	Zhou, 2013; Chen et al., 2014; Cao et al., 2018; Handarkho, 2020

INQ, information quality; SYQ, service quality; SERVQ, service quality; SAN, satisfaction; TR, trust; CINT, continuance intention.

to find the stability of each variable estimation, a bootstrap resampling procedure was used with 5,000 cycles (Hair et al., 2012). Therefore, PLS was used to analyze hypotheses 1–9 and to examine the effect of mediation.

Outer Model Estimation

This study assessed the construct validity of the selected measures in relation to the constructs, and the validation factor analysis will help to further examine the convergent validity and discriminant validity of the scales. Before estimating construct validity, this study performed Harman’s single-factor test to detect the potential influence from the estimation of exploratory factor analysis (EFA) with all the variables produces eigenvalues whether the first factor accounts for higher than 50% of the variance among variables (Podsakoff and Organ, 1986; Podsakoff et al., 2003). The EFA test of our data indicated the first factor accounted for 25% of the total variance. The results also showed that each principal component explained similar amounts of the total variance of 69.1%, ranging from 10.5 to 19.2%. This result revealed that our data did not suffer seriously from common method bias. In this study, Cronbach’s alpha, composite reliability (CR), rho A, and average variance extracted (AVE) were used to assess the internal consistency of the constructs. According to Fornell and Bookstein (1982) and Fornell and Larcker (1981), the CR and AVE values should be higher than 0.60 and 0.50. In the present study, the CR values ranged from 0.84 to 0.93, and the AVE values ranged from 0.64 to 0.82 (as shown in

TABLE 2 | Convergent validity.

Construct	Cronbach's alpha	rho_A	Composite reliability	Average variance extracted (AVE)
Information quality	0.732	0.773	0.844	0.644
System quality	0.861	0.862	0.916	0.783
Service quality	0.832	0.854	0.887	0.664
Satisfaction	0.887	0.893	0.930	0.817
Trust	0.717	0.718	0.841	0.639
Continuance intention	0.805	0.814	0.885	0.720

TABLE 3 | Confidence intervals of correlations.

Pairs of correlation	Correlation	Lower bound of CI (2.50%)	Upper bound of CI 97.50%
(INQ, SYQ)	0.297	0.189	0.411
(INQ, SERVQ)	0.260	0.163	0.364
(INQ, SAN)	0.347	0.26	0.443
(INQ, TR)	0.595	0.521	0.67
(INQ, CINT)	0.501	0.426	0.581
(SYQ, SERVQ)	0.321	0.208	0.431
(SYQ, SAN)	0.422	0.308	0.534
(SYQ, TR)	0.493	0.388	0.589
(SYQ, CINT)	0.370	0.251	0.484
(SERVQ, TR)	0.498	0.411	0.585
(SERVQ, SAN)	0.531	0.445	0.613
(SERVQ, CINT)	0.499	0.409	0.586
(SAN, TR)	0.714	0.65	0.773
(SAN, CINT)	0.793	0.739	0.841
(TR, CINT)	0.763	0.705	0.818

CI, confidence interval; INQ, information quality; SYQ, service quality; SERVQ, service quality; SAN, satisfaction; TR, trust; CINT, continuance intention.

Table 2). In addition, both Cronbach Alpha and rho A are higher than the previous scholars' requirements for internal consistency (Nunnally and Bernstein, 1994; Dijkstra and Henseler, 2015). From the above results, all four indicators are higher than the above criteria, indicating a high level of internal consistency in the measurement of the dimensions about this research.

The purpose of the discriminant validity analysis was to verify whether there were significant differences between the two different constructs. In this study, three methods were used to verify the discriminant validity. First, we checked whether the correlation coefficients between all potential constructs were significantly smaller than 1. As the results of the analysis in **Table 3** show, none of the confidence intervals (correlation \pm two standard errors) contained 1, indicating that they had discriminant validity (Bagozzi and Yi, 1988). Secondly, according to Fornell and Larcker (1981) and Hair et al. (2013), the diagonal element is the square root of the AVE for each construct and the criterion of discriminant validity is satisfied if any diagonal element is larger than the horizontal and vertical elements of the lower triangular matrix (i.e., the correlation coefficient between two constructs) (as shown is **Table 4**). Third, as shown in **Table 5**,

TABLE 4 | Discriminant validity.

Construct	INQ	SYQ	SERVQ	SAN	TR	CINT
Information quality	0.803					
System quality	0.297	0.885				
Service quality	0.260	0.321	0.815			
Satisfaction	0.347	0.422	0.531	0.904		
Trust	0.595	0.493	0.498	0.714	0.799	
Continuance intention	0.501	0.370	0.499	0.793	0.763	0.848

INQ, information quality; SYQ, service quality; SERVQ, service quality; SAN, satisfaction; TR, trust; CINT, continuance intention.

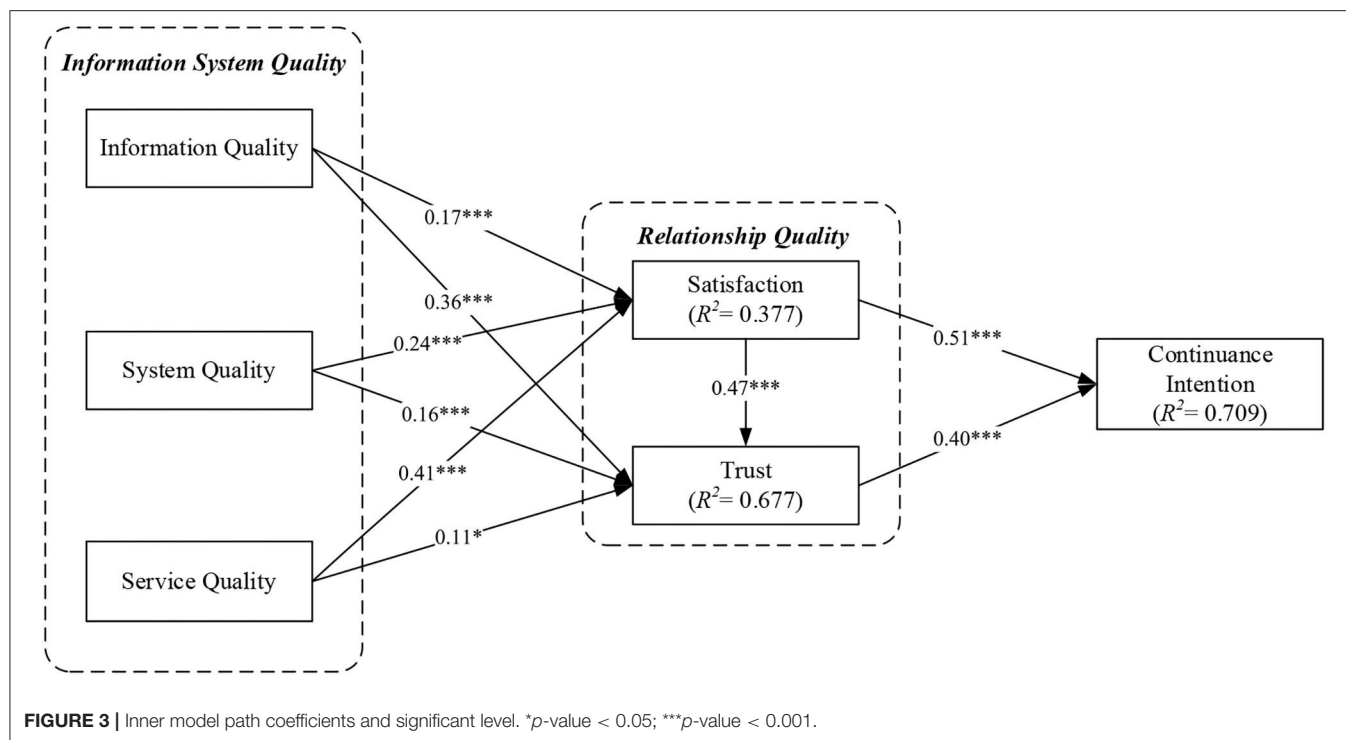
TABLE 5 | Factor loadings and cross loadings.

Indicator	Information quality	System quality	Service quality	Satisfaction	Trust	Continuance intention
INQ1	0.707	0.120	0.082	0.132	0.321	0.268
INQ2	0.875	0.344	0.213	0.303	0.532	0.459
INQ3	0.816	0.211	0.281	0.346	0.530	0.436
SYQ1	0.273	0.903	0.276	0.401	0.438	0.310
SYQ2	0.239	0.895	0.300	0.378	0.401	0.359
SYQ3	0.276	0.857	0.277	0.340	0.469	0.314
SERVQ1	0.230	0.294	0.846	0.558	0.440	0.484
SERVQ2	0.182	0.304	0.854	0.451	0.415	0.420
SERVQ3	0.212	0.262	0.848	0.399	0.404	0.391
SERVQ4	0.232	0.161	0.703	0.268	0.358	0.301
SAN1	0.285	0.328	0.490	0.875	0.633	0.690
SAN2	0.356	0.387	0.547	0.942	0.698	0.752
SAN3	0.297	0.431	0.394	0.893	0.600	0.706
TR1	0.398	0.341	0.493	0.604	0.807	0.543
TR2	0.519	0.554	0.375	0.589	0.769	0.554
TR3	0.504	0.289	0.335	0.523	0.821	0.723
CINT1	0.374	0.319	0.496	0.722	0.576	0.825
CINT2	0.359	0.339	0.343	0.589	0.602	0.823
CINT3	0.529	0.290	0.425	0.701	0.754	0.895

the indicator loadings of each item on its own construct (in bold) are larger than the cross-loadings formed by the items and the other construct. This result indicates that there is acceptable with the effect of discriminant validity of the questions used in the two constructs of this study (Chin, 1998; Hair et al., 2016).

Inner Model Analysis

This section focuses on the analysis of the internal model, using SmartPLS 3.3.3 software to analyze and validate the causal relationships between the potential variables of the structural model and to investigate the explanatory power of the model using R^2 judgments (Pavlou and Fygenon, 2006). The R^2 -value is the percentage of variance explained by exogenous variables to endogenous dimensions and demonstrates the predictive power of our proposed model, ranging from 0 to 1. The larger the R^2 -value, the better the explanatory power of the model.



According to the nine hypotheses proposed in the research framework and the results of the overall pattern relationship path check presented in **Figure 3** (statistically significant as solid lines), all nine path relationships were significant. The results of the hypothesis validation are organized as shown in **Table 6**. The results of this study revealed that the satisfaction level of cloud financial accounting system adoption was positively and significantly affected by the quality of information quality, system quality, and service quality, and the explanatory power of these three important dimensions on the variation of satisfaction level was 37.7%. In addition to the three dimensions of information system quality, user satisfaction also has a positive and significant impact on trust, resulting in 67.7% of variance explanation power. Finally, the positive effect of information system quality through satisfaction and trust on the continuous use intention of the cloud financial accounting system resulted in an explanatory power of 70.9% of the variance on continuance intention toward cloud financial information system. The results showed that the explanatory power of this model is quite good and meets the criteria suggested by Cohen (1988).

Due to the small sample size in this study, scholars suggest using bootstrap analysis to examine the effects of mediation (MacKinnon et al., 2002; Shrout and Bolger, 2002). Bootstrap is a widely used method for repeatedly extracting a large number of samples when the source of the data is unknown (no independent observations can be established) and the number of data is limited, providing a more accurate approximation than the commonly used limit approximation. This can be handled even when the parent body is not suitable to be described by a normal assignment (MacKinnon et al., 2002;

TABLE 6 | Inner model analysis result.

Path direction	Standardized path coefficient	Standard deviation (STDEV)	T-statistics	P-values
INQ → SAN	0.170***	0.046	3.677	0.000
INQ → TR	0.359***	0.047	7.562	0.000
SYQ → SAN	0.240***	0.054	4.485	0.000
SYQ → TR	0.155***	0.037	4.187	0.000
SERVQ → SAN	0.410***	0.050	8.271	0.000
SERVQ → TR	0.107*	0.043	2.515	0.012
SAN → TR	0.467***	0.046	10.168	0.000
SAN → CINT	0.506***	0.064	7.894	0.000
TR → CINT	0.402***	0.066	6.052	0.000

INQ, information quality; SYQ, service quality; SERVQ, service quality; SAN, satisfaction; TR, trust; CINT, continuance intention.

* p < 0.05; *** p < 0.001.

Shrout and Bolger, 2002). Accordingly, in this study, we used this method to verify the effect of in-formation system quality through relational quality on the intermediation of ongoing use intentions by replicating 5,000 samples and obtaining the confidence interval for each parameter in this model, and then determining its significance based on the above principles. According to **Table 7**, the 95% confidence interval for all intermediary paths was significantly larger than 0 ([0.141, 0.491]), suggesting that three different information system qualities play a full intermediary role between ongoing adoption of cloud financial ac-counting systems and relationship quality (Shrout and Bolger, 2002).

TABLE 7 | Mediation effect result.

Mediation path	Effect size	95% confidence interval	T-statistics
INQ → SAN → TR	0.079**	(0.039, 0.128)	3.409
INQ → SAN → CINT	0.086**	(0.040, 0.148)	3.103
INQ → TR → CINT	0.144***	(0.079, 0.021)	3.964
SYQ → SAN → TR	0.112***	(0.066, 0.166)	4.390
SYQ → SAN → CINT	0.122***	(0.075, 0.181)	4.492
SYQ → TR → CINT	0.062***	(0.038, 0.094)	4.312
SERVQ → SAN → TR	0.191***	(0.134, 0.256)	6.095
SERVQ → SAN → CINT	0.207***	(0.140, 0.288)	5.458
SERVQ → TR → CINT	0.043*	(0.011, 0.086)	2.279
SAN → TR → CINT	0.188***	(0.122, 0.259)	5.324
INQ → SAN → TR → CINT	0.032**	(0.016, 0.056)	3.201
SYQ → SAN → TR → CINT	0.045***	(0.022, 0.077)	3.180
SERVQ → SAN → TR → CINT	0.077***	(0.047, 0.116)	4.393

INQ, information quality; SYQ, service quality; SERVQ, service quality; SAN, satisfaction; TR, trust; CINT, continuance intention.

* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$.

DISCUSSION

The results obtained from the above analysis showed that all the hypotheses of this study were valid. Based on the results of the analysis, the findings of this study are summarized and discussed as follows. First, the information quality of the accounting system had a positive and significant effect on satisfaction and trust (INQ → SAN: $\beta = 0.170$, $t = 3.677$, $p < 0.001$; INQ → TR: $\beta = 0.359$, $t = 7.562$, $p < 0.001$). The results of this study are consistent with previous findings (Lee et al., 2007; Rahi and Ghani, 2019). In addition, in this study, it was found that information quality has a significantly higher impact on trust than satisfaction. It is also found from previous studies that data security is a well-known and challenging issue (Dawson and Thomson, 2018; Kang et al., 2019). Therefore, the risk arising from information quality is a key factor in choosing a cloud financial and accounting system (Demirkan et al., 2020). Moreover, users face high operational and business risks in selecting and maintaining the services of cloud financial accounting systems. The development of information system and the provision of information quality will facilitate the rapid collection, storage, and exchange of knowledge with the improvement of communication and cooperation in organizations (Gold et al., 2001; Hossain and Wigand, 2004; Appelbaum et al., 2017). Therefore, the higher the quality of information in the financial and accounting system, the more positive the impact on trust building.

Second, through user satisfaction and trust, system quality will have a positive and significant effect on the intention of continued use of the cloud financial accounting system (SYQ → SAN: $\beta = 0.240$, $t = 4.485$, $p < 0.001$; SYQ → TR: $\beta = 0.155$, $t = 4.187$, $p < 0.001$). With the advancement of information technology, the demands of users are diversifying. The service providers of financial/accounting systems should maintain close contact with users, design methods, and procedures to track their demands, and respond to customers' questions quickly and

correctly (Taipaleenmäki and Ikäheimo, 2013). In addition, the cloud service providers should pay attention to the customer's usage of the financial/accounting system and the perception of the company's service, regularly consult the customer to see if their needs have been met, and immediately seek improvement and propose solutions to address dissatisfaction (Bhattacharjee and Park, 2014).

Third, this study found that the influence and importance of service quality components on satisfaction was significantly higher than the influence on trust (SERVQ → SAN: $\beta = 0.410$, $t = 8.271$, $p < 0.001$; SERVQ → TR: $\beta = 0.107$, $t = 2.515$, $p < 0.05$). Bitner et al. (2000) mentioned in their study that the infusion of technology enhances the flexibility and efficiency of service delivery. Therefore, if the user sees the information system as an aid rather than a complete replacement for the human interface, the aid of the information system can indeed make the interaction with the service provider more convenient, thus increasing the user's perceived satisfaction with the service.

CONCLUSION

This research has important practical implications that could help the system developers and solution providers to ameliorate and improve user's continuance intention to use cloud financial accounting system via satisfaction and trust. The integration of information system success model and relationship quality showed significant impact on continuance intention to adopt cloud financial accounting system. The findings also imply that system developers and solution providers seeking satisfaction and trust of users should focus on information quality, system quality service quality to improve users' continuance intention to adopt cloud financial accounting system.

This research focuses on the D&M information system success model as the theoretical basis to investigate the continuous use behavior and intention of cloud financial accounting systems. Trust has recently received much attention in the literature of knowledge management systems and has been conceptually explored in the literature from many different perspectives. The conceptual literature has explored many different perspectives. For instance, Resource Based Theory (RBT), Transaction Cost Economics, Social Network For example, RBT, Transaction Cost Economics, Social Network Theory, etc. Regardless of the views of the foundations, the issue of trust is seen as an important factor in the success of information systems (Chowdhury, 2005). Unfortunately, however, empirical studies are still lacking. This study incorporates trust into the D&M IS Success Model as a systematic measure, which not only corroborates and echoes previous conceptual theories with empirical evidence. It also shows that user psychological factors are much more important than information system factors. The D&M IS Success Model has been included as a measure of the service quality of information systems, but it fails to identify the interaction between system quality, information quality, and service quality. This study uses relational quality to interpret the causal relationship between information system quality and continuous use intention and supports this inference with empirical results. In other words,

if users can perceive that the service quality of IS has improved, they will agree that the quality of system hardware, software, data, and reports have improved (Li et al., 2021). Therefore, in order to successfully implement the cloud financial accounting system, to enhance the performance and service quality should be from the first priority information department.

This research denoted effort to be rigorous and thorough in all aspects of this study, with the hope of providing a referable and trustworthy result. However, there was still room for improvement in the research due to time and manpower constraints. First, PLS required that the sample size must be larger than the total number of samples collected, preferably 10 times larger (Hair et al., 2016). Although the sample size of this study was already higher than this standard, this study was mainly based on the use of financial and accounting systems by instructors in the universities of China, which still limited the generalization and external validity of the findings and theoretical models. It was suggested that subsequent researchers can extend the study to other organizations and enterprises with other types of cloud system services to conduct cross-country or cross-culture comparative studies of cloud system adoption behaviors.

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DATA AVAILABILITY STATEMENT

The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

AUTHOR CONTRIBUTIONS

YL and JW: conceptualization, writing—original draft preparation, and writing—review and editing. YL: methodology, formal analysis, and investigation. JW: visualization. All authors have read and agreed to the published version of the manuscript.

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Entrepreneurial Learning, Self-Efficacy, and Firm Performance: Exploring Moderating Effect of Entrepreneurial Orientation

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Although the impact entrepreneurial learning on firm performance has attracted significant attention, a comprehensive understanding by integrating entrepreneurial orientation and individual self-efficacy remain poorly understood. We fill this void by integrating the above variables into a model and examine these relations. Findings from a sample of 411 nascent entrepreneurs support that entrepreneurial learning is positively related to firm performance, and this relationship is fully mediated by entrepreneurial self-efficacy (ESE). We also found entrepreneurial orientation strengthens the positive impact of entrepreneurial learning on ESE. The findings indicate that ESE must be in place to maximize the effect of entrepreneurial learning on performance, and entrepreneurial orientation is an important contingency in shaping entrepreneurial learning's impact on nascent entrepreneur's self-efficacy.

Keywords: entrepreneurial learning, entrepreneurial self-efficacy, entrepreneurial orientation, firm performance, formal organizational learning, intergenerational learning, social network learning

INTRODUCTION

It is widely acknowledged that entrepreneurship is the vigor and vitality of economy (Cope, 2005; Jin et al., 2021; Yousaf et al., 2021) and the entrepreneur is the catalyst for entrepreneurial activity (Cope, 2005; Parker, 2013; Feng and Chen, 2020). Therefore, it is vital to research entrepreneur who represents the essence of entrepreneurship. Although more and more young graduates join the entrepreneurship boom, thousands of entrepreneurs fail each year and the new venture mortality rates remain relatively high (Klimas et al., 2021; Lattacher et al., 2021). Some statistics indicate only two-thirds of small businesses survive at least 2 years while 50% fail to sustain operations beyond their fifth year (Jawula, 2021). The startup's demise may be caused by a lack of entrepreneurial preparedness. New ventures are difficult to cope with high-level uncertainty of market environment due to lack of sufficient entrepreneurial preparedness. Fortunately, scholars have begun to emphasize that entrepreneurial learning is a key ingredient for firm survival and success, especially a new business in its early developmental stages.

Entrepreneurial learning is becoming a hot research topic at the interface between learning and the entrepreneurial context (Harrison and Leitch, 2005; Casillas et al., 2015; Liu et al., 2019). Accumulating research has explored the significant influence of entrepreneurial learning in entrepreneurship. It is noted that substantial research has been focused on entrepreneurial intention formation of young adults (Wilson et al., 2007; Hu et al., 2018; Shi et al., 2019). These

studies, however, pay more attention to individuals' behavior whether to start a business, but ignore the impact of entrepreneurial learning on established new ventures. Moreover, extant research has provided insight into organizational learning of mature entrepreneurs and corporate performance (Zhao et al., 2011; Real et al., 2014), but little is known about the learning behavior of new entrepreneurs and the entrepreneurial process. Therefore, it is necessary to explore how entrepreneurial learning influences business performance of start-ups.

The relationship between entrepreneurial learning and firm performance has received increasing attention in recent years (Zhao et al., 2011; Tseng, 2013; Sinha et al., 2019). Most studies have documented that firms engaging in more entrepreneurial learning perform better, while several studies have found that entrepreneurial learning has no or even negative effect on venture performance under certain circumstances. These mixed findings indicate that simply examining the direct relationship between entrepreneurial learning and firm performance is incomplete. Thus, this relationship requires a wider analysis of intermediate steps between them. Entrepreneurial self-efficacy (ESE) reflects the level of an individual's confidence in entrepreneurial capability (Chen et al., 1998), and can be influenced by mastery experiences (Zhao et al., 2005). In this respect, entrepreneurial learning contributes to enhancing individuals' ESE. Yet, few studies have considered the mediating effect of ESE on entrepreneurial learning and corporate performance, leaving a "black box" in understanding. In addition, the process of entrepreneurial learning is affected by the firm environment. Nonetheless, there are little studies that test the joint impact of entrepreneurial learning and entrepreneurial orientation on ESE.

Extant research asserts that entrepreneurs encounter different challenges during each particular phase (Lewis and Churchill, 1983; Sullivan, 2000). Especially, startups are fragile and fickle during the conception and survival phases (Wani, 2018). A nascent entrepreneur, a person who initiates actions that are intended to culminate in a viable new firm (Reynolds, 1994), generally face high levels of causal ambiguity and complexity and suffers from a liability of newness (Muñoz-Bullon et al., 2015). At the same time, nascent entrepreneurs generally have less entrepreneurial experience and weaker entrepreneurial capabilities in comparison with mature entrepreneurs, leading to survival rate of new enterprises is quite low. These challenges specific to inception stage can drive nascent entrepreneurs to receive entrepreneurial learning, thereby improving their entrepreneurial skills and helping the nascent venture to successfully move toward an operating entity. Consequently, it is necessary to research the early entrepreneurial learning efforts by the nascent entrepreneur. In our study, based on social cognitive theory, we focus on nascent entrepreneurs as research objects and propose a research model that unlocks the influence of entrepreneurial learning on firm performance by examining the mediating effect of ESE. Moreover, the role of entrepreneurial orientation in moderating this relationship is explored.

To sum up, we contribute to the literature in three ways. First, this study extends the research of the early stage of new ventures

by focusing on the entrepreneurial learning behavior of nascent entrepreneurs. Second, we enrich entrepreneurship literature by offering insights into how and where entrepreneurial learning take place. Our study specifies the entrepreneurial learning process by incorporating ESE as a mediator and entrepreneurial orientation as a moderator. Finally, we contribute to the entrepreneurial learning literature by putting emphasis on the importance of the entrepreneurial orientation, cultural values of firm, in changing people's initiative, and effectiveness of entrepreneurial learning on ESE.

THEORY AND HYPOTHESIS

Entrepreneurial Learning and Firm Performance

Entrepreneurial learning involves "the complex ways in which entrepreneurs learn to adapt their role and develop new behavior in order to negotiate the management and growth of their business" (Cope, 2005). Specifically, entrepreneurial learning involves how new knowledge is created and how it is embodied and utilized (Cope, 2005). There is a consensus that knowledge is an essential source of opportunity and can positively influence new venture performance (Lattacher et al., 2021). Consequently, entrepreneurial learning always has a positive impact on entrepreneurial outcomes through helping entrepreneurs accumulate and update knowledge (Minniti and Bygrave, 2001). For example, Politis (2005) proposed that entrepreneurial learning can enhance the ability to recognize and act on opportunities, as well as handle liabilities of newness, which are generally considered to be essential for successful entrepreneurs (Politis, 2005).

Entrepreneurship research has found that entrepreneurial learning processes may take on a variety of forms, such as congenital learning, experiential learning, vicarious learning, and so on (Kolb, 1984; Huber, 1991; Cegarra-Navarro and Wensley, 2009; Sullivan et al., 2021). Congenital knowledge refers to knowledge available at the organization's birth, which is mainly from founders (Huber, 1991). Cegarra-Navarro and Wensley (2009) emphasized that congenital learning is the process of learning from organizational founders, which is able to successfully guide the firm through its early stages. Experiential learning is considered an important means of updating knowledge stock. Entrepreneurs can get a higher-level learning from critical events through deep reflection and mental models changes (Lattacher et al., 2021). Besides, entrepreneurs can also compensate for their lack of knowledge via observing the behavior of others or listening to the experiences shared by others (Mansoori, 2017). Many studies have found that vicarious learning is seen as an effective knowledge acquisition means especially in unfamiliar and uncertain fields (Holcomb et al., 2009; Casillas et al., 2015).

Given the liabilities of newness and smallness, the understanding of the learning process relating to nascent entrepreneurs is of great importance (Yusuf, 2012; Cosenz and Noto, 2018). Following the perspective of entrepreneurial

learning channels, the existing research indicates entrepreneurial learning for nascent entrepreneurs mainly includes formal organizational learning, intergenerational learning, and social network learning (Wang et al., 2018; Wu, 2018; Sullivan et al., 2021; Yousaf et al., 2021). Formal organizational learning refers to entrepreneurship education or training program during school or in start-ups usually covering both business skills and entrepreneurship attitudes (Sun, 2020). It has emerged as a primary way of learning for entrepreneurs to meet the complex demands and performance associated with the changing world of work. Besides formal entrepreneurial education, vicarious learning represented by intergenerational learning and social network learning also plays an important role in entrepreneurial progress. Many studies have underlined that business family offspring have stronger entrepreneurial ability and business parents play significant roles in supporting their children's entrepreneurial learning (Edelman et al., 2016; Wang et al., 2018). In addition, social network learning is an indispensable learning channel which can help entrepreneurs gain access to key resources, information, and even political capital from colleagues, customers, suppliers, competitors, advisory agencies, support services, and so on (Davidsson and Honig, 2003; Wu et al., 2018).

Numerous studies have demonstrated that entrepreneurial learning has a positive halo effect on new venture's continuity and success (Cope, 2005; Wang, 2008). There is increasing consensus that entrepreneurial learning is critical for improving performance and creating value (Cope, 2005; Sullivan et al., 2021). Firstly, entrepreneurial learning can provide ample knowledge and skills to boost the growth of new ventures. Knowledge are major strategic resources and crucial to venture's competitive advantage in a dynamic environment (Baum et al., 2001; Harrison and Leitch, 2005). For example, Sullivan et al. (2021) argued that learning different domains activities, such as customer leaning, financial learning, technology learning, and so on, can shape individual an (initial) stock of entrepreneurial knowledge to cope with business challenge. Cope (2005) proposed that entrepreneurial learning enables entrepreneurs to access to technological know-how and gain a clearer picture of internal business needs, requirements for growth and future strategic directions. Secondly, entrepreneurial learning contributes to opportunity identification and search, and lay the path for entrepreneurs' effective decision-making. Entrepreneurs can obtain important market and policy information by learning from social network partners, which is conducive to opportunity exploration and exploitation (Ardichvili et al., 2003; Cooper et al., 2016; Xiang et al., 2017; Sullivan et al., 2021; Wu et al., 2021a). In addition, through entrepreneurial learning, entrepreneurs can accumulate their skills and abilities, shape their attitudes, and beliefs (Harvey and Evans, 1995). These improved cognitive capabilities can help firm to recognize current and potentially future opportunities and formulate an effective differentiation strategy that works to foster firm growth (Xiang et al., 2017). Accordingly, we hypothesize that:

Hypothesis 1. *Entrepreneurial learning is positively associated with firm performance.*

The Mediating Effect of Entrepreneurial Self-Efficacy

According to social cognitive theory, self-efficacy is defined as an individual's belief in his or her own capability to accomplish certain tasks (Bandura and McClelland, 1977). Specifically, a person with high self-efficacy perceive himself as capable of mobilizing the motivation, cognitive resources, and courses of action to meet given situational demands (Bandura and Wood, 1989). Self-efficacy predominantly stems from performance accomplishments, vicarious experience, social persuasion, and physiological states (Bandura and McClelland, 1977). Self-efficacy is considered as a motivational mechanism that not only enables people to set higher goals but also strengthens the likelihood of goal achievement, which positively affects performance (Bandura, 1991). Bandura (2010) stressed the cornerstone role of self-efficacy in human motivation, performance accomplishments, and emotional well-being (Bandura, 2010). For instance, researchers concur with this and observe that people with high self-efficacy can create positive expectations regarding future performance and motivate themselves to strive for goals even if in undesirable circumstances (Bandura, 1997; Baumgartner et al., 2008).

Following generalized self-efficacy, entrepreneurship scholars proposed the construct of ESE, an individual's cognitive estimation of capability for successfully performing given tasks in entrepreneurship context (Chen et al., 1998). Entrepreneurial self-efficacy reflects perceived feasibility and plays a crucial role in behavioral choices and performance outcomes (McGee and Peterson, 2019; Newman et al., 2019). The existing literature shows that ESE is effective in influencing goal commitment, aspiration levels, task persistence, and work attitude (Krueger and Dickson, 1994). For example, Individuals with high ESE tend to carry out risk-taking or opportunity recognition behavior (Izquierdo and Buelens, 2011). Substantial research remains focused on the effectiveness of ESE in pursuing entrepreneurial careers and initiating a new venture (Newman et al., 2019).

There is growing evidence that entrepreneurial learning fosters ESE. In line with social cognitive theory, entrepreneurial learning provides opportunities to influence motivation and behavior through the pathways of mastery experiences, vicarious learning, social persuasion, and physiological state (Zhao et al., 2005; Newman et al., 2019). For example, enactive mastery experiences feed into persons' ESE expectancy and these can be enhanced through professional courses, business case competition, entrepreneurship training projects, simulated or real business exercises, etc. (Zhao et al., 2005; Wilson et al., 2007). Vicarious learning take place by means of observing successful role models such as prestigious entrepreneurs who are successfully managing enterprise (Zhao et al., 2005). Entrepreneurship instructors also use social persuasion to give feedback on one's abilities to cope successfully (Wilson et al., 2007). Finally, entrepreneurial learning also involves the work and lifestyle of successful entrepreneurs and teaches psychological coping strategies, which will help cope with anxiety and build self-confidence (Zhao et al., 2005).

Entrepreneurial learning can equip potential entrepreneurs with knowledge and skills, thus foster ESE level to achieve desired outcomes. First, entrepreneurial learning provides chances to advance in business tactics, which will lead to the growth of self-efficacy in individuals. Yousaf et al. (2021) argue that individuals who receive entrepreneurial education will be more confident to identify opportunities, allocate resources, and even conduct an enterprise. Second, the impact of entrepreneurial learning on entrepreneurial performance becomes effective when self-efficacy is affected. There is increasing consensus that ESE is a robust predictor of entrepreneurial intention and firm performance. Researchers find that entrepreneurs possessed higher in ESE can lead their firms to higher levels of revenue and employment growth (Baum and Locke, 2004). In sum, we argue that entrepreneurial learning, such as formal organizational learning, intergenerational learning, social network learning, etc., enhances the self-efficacy of individuals, thereby improving their entrepreneurial performance.

The preceding analysis posits that entrepreneurial learning improves the ESE by enhancing knowledge acquisition and creation. In turn, ESE can motivate entrepreneurs to create higher performance. Thus, entrepreneurial learning is assumed to foster and enhance ESE, and also is expected to improve venture performance outcomes through its effect on ESE. Therefore:

Hypothesis 2. *Entrepreneurial self-efficacy will mediate the impact of entrepreneurial learning on firm performance.*

The Moderating Effect of Entrepreneurial Orientation

Although we hypothesize that entrepreneurial learning contributes to prompting ESE of nascent entrepreneurs, certain conditions may augment or constrain those effects. Organizational environment, such as entrepreneurial orientation, is an important contingency in shaping entrepreneurial learning's impact on nascent entrepreneur's self-efficacy.

Entrepreneurial orientation is a firm-level strategic orientation and holds a central position in the domain of entrepreneurship (Palmer et al., 2019). Entrepreneurial orientation construct initially reflects the strategic postures of established organizations (McGee and Peterson, 2019), which provides a basis for decision-making practices, managerial behavior, and entrepreneurial actions (Rauch et al., 2009). Specifically, it embodies the management-related preferences, beliefs, behaviors, and certain firm-level outcomes that corporate executives hope to express (Covin et al., 2006). There is a general consensus that the dimensionality of entrepreneurial orientation is predominantly includes innovativeness, risk-taking, and proactiveness (Miller, 1983; Covin and Slevin, 1989). Another widely-used dimensional view of entrepreneurial orientation expands competitive aggressiveness and autonomy on the basis of three core dimensions above (Lumpkin and Dess, 1996).

Previous scholars have emphasized that entrepreneurial orientation is a strong predictor of firm performance (Covin and Slevin, 1989; Zahra and Covin, 1995; Wiklund and Shepherd,

2005; Palmer et al., 2019). Firms with high entrepreneurial orientation tend to develop product-market innovations, take risks, and behave proactively in pursuit of new opportunities and growth (Miller, 1983). These characteristics help firms identify and exploit valuable opportunities and create a first-mover advantage than rivals, thus improving firm performance (McGee and Peterson, 2019). However, some scholars argue that entrepreneurial orientation as a performance enhancing predictor may fail in certain situations and it may even have a negative effect on performance (Wiklund and Shepherd, 2005; Covin et al., 2006; Moreno and Casillas, 2008). For example, Frank et al. (2010) proposed that the effect of entrepreneurial orientation on performance is affected by environmental dynamism and resource availability (Frank et al., 2010). Schepers et al. (2014) demonstrated that the positive impact of entrepreneurial orientation on financial performance decreases when the level of socioemotional wealth preservation increases in a family business context (Schepers et al., 2014).

The combination of entrepreneurial orientation and learning perspective received increasing attention in recent years (Covin et al., 2006; Wang, 2008; Real et al., 2014; Jiang et al., 2016). Extant literature has explicitly or implicitly examined firm's performance cannot be interpreted solely with entrepreneurial orientation or learning orientation (Sinha et al., 2019). Several studies have illustrated that learning can be an important mechanism through which entrepreneurial orientation is able to affect business performance (Wang, 2008; Zhao et al., 2011; Sinha et al., 2019). For instance, Wang (2008) argued that organizational learning plays an important role in entrepreneurship and learning-oriented values must be in place to maximize the effect of entrepreneurial orientation on performance. Real et al. (2014) suggested that organizational learning partially mediates the relationship between entrepreneurial orientation and performance, and fully mediates the link between learning orientation and performance. Whereas, much is known about the relationship between entrepreneurial orientation and learning at the organizational level, too little is known about individual learning behavior under entrepreneurial oriented environment. Therefore, we explore entrepreneurial learning behavior of nascent entrepreneurs in an entrepreneurial oriented context.

As mentioned above, entrepreneurs expect to improve their self-efficacy through entrepreneurial learning. High entrepreneurial orientation implies that focal firm may have an innovative, risky and proactive environment (Miller, 1983). In such context, firms encourage individuals to access to external new knowledge and resources, make continuous entrepreneurial efforts to improve skills. In other words, entrepreneurs in high entrepreneurial orientation companies, are more open to new information and more willing to engage in entrepreneurial learning activities (Jiang et al., 2016). Consequently, entrepreneurs' learning initiative and effectiveness can be increased, which can intensify the entrepreneurship capability and enhance ESE. In addition, an innovation-friendly organizational culture grant entrepreneur flexibility and freedom to exercise their creativity and champion promising ideas. In this respect, entrepreneurs' ESE can be enhanced as such environments provide greater opportunities for enactive master,

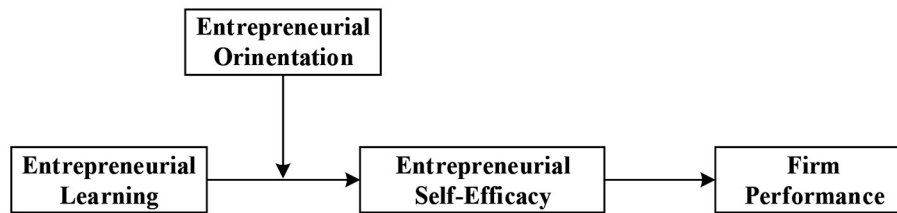


FIGURE 1 | Conception framework of this study.

vicarious learning, and lead to more positive physiological states (Cooper et al., 2016).

In sum, we propose that entrepreneurial learning's positive effect on ESE becomes more evident when focal firms have a higher entrepreneurial orientation. Thus:

Hypothesis 3. *The association between entrepreneurial learning and entrepreneurial self-efficacy is stronger in firms with high entrepreneurial orientation.*

Based on the foregoing hypotheses, conception model is presented in **Figure 1**.

MATERIALS AND METHODS

Data and Sample

To analyze the influence of entrepreneurial learning on early-stage entrepreneurship performance, we focus our study on nascent entrepreneurs. A nascent entrepreneur is a person who seriously attempts to transform business ideas into a viable new firm (Reynolds, 1994; Cassar and Craig, 2009). With the rapid economic growth and the development of entrepreneurial education in China, an increasing body of college graduates follows the trend of starting up a new venture and has become new entrants in the market. Based on Tian et al. (2018), college students who have graduated from college within the past 3 years belong to the start-up stage. Also, to encourage college students to start their own businesses, the Chinese government has issued college students venture interest free loans, which apply to university students or individuals graduated from universities for no more than 2 years. Consequently, given that national situation in China, this paper adopts a purposeful and convenient sampling (Robson, 1993), and selects young entrepreneurs who just graduated from universities within 1–2 years as the research object.

We mainly collected data from Zhejiang Province of China, which has a developed private economy and is a hotbed of entrepreneurship and innovation. As one of the most progressive provinces in the economic reform, Zhejiang Province has a relatively high entrepreneurship dynamics, which contributes to a large number of small and medium enterprises and technology start-ups in the local region (Wang et al., 2019; Zhou and Li, 2020). As stated in the Hengda Institute (2020), Zhejiang Province ranks second in the country in terms of the number of newly established market entities per 10,000 people. What's more, Zhejiang Province attaches importance to innovation and entrepreneurship education (Wu and Chen, 2015) and the

construction of entrepreneurial service platforms (Chen and Pan, 2019), so that college students' start-up rates of Zhejiang rank among the top in China (Lyu et al., 2021). Therefore, we selected nascent entrepreneurs of Zhejiang Province in China as the research sample.

Universities, science parks and business incubators are believed to provide an effective vehicle to foster the creation of start-up firms (Phan et al., 2005; Ratinho and Henriques, 2010). To obtain data from multiple sources, a total of 600 questionnaires were randomly distributed to individuals from universities, science parks, and incubators in Zhejiang Province of China. The respondents were requested to fill out and return the questionnaires on site. After deleting observations with missing data, we obtain a final sample totalling 411 observations with a response rate of about 68.5%.

As shown in **Table 1**, the sample consist of 275 (66.9%) male entrepreneurs and 136 (33.1%) female entrepreneurs, similar to the gender distribution among young start-ups. Two hundred and eighty-seven respondents (69.8%) are entrepreneurs with vocational education background, and 124 respondents (30.2%) are entrepreneurs holding a bachelor degree or above. With respect to firm age, 90 respondents (21.9%) are in the preparatory stage of starting a new business, 252 respondents (61.3%) have established a business for <2 years, 69 respondents (16.8%) have established businesses for more than 2 years. With respect to the start-up investment scale, 204 respondents (49.6%) invested below 100 thousand, 169 respondents (41.1%) invested 100 thousand to 1 million, and 38 respondents (9.2%) invested more than 1 million.

Measurements

The survey items were drawn from existing validated scales, and they were revised after extensive consultations with senior executives to fit the Chinese context for face validity. The measures used in this study are given in **Supplementary Material**. Key variables were measured on five-point Likert scales, which the range of response was 1 = strongly disagree and 5 = strongly agree.

Entrepreneurial Learning

Entrepreneurial learning construct was measured with its separate dimensions of formal organizational learning (six items), intergenerational learning (seven items), and social network learning (five items) using the 18 items, five-point scale developed expressly for this research. The measure

of formal organizational learning comprehensively evaluates the entrepreneurship education through formal organizational learning, including course teaching, entrepreneurship training, business simulation competition, and other entrepreneurship practices. The measure of intergenerational learning evaluates the learning interactions among family members in respect to entrepreneurship knowledge, especially young entrepreneur's social learning from parents. The measure of social network learning was developed to assess the usefulness of social ties in exploring entrepreneurship knowledge and skills. The respondents rated their attitude to each statement against the five-point Likert scales, in which 1 = strongly disagree; 5 =

strongly agree. To obtain the overall entrepreneurial learning, the scores of the 18 items were averaged and standardized.

Entrepreneurial Self-Efficacy

Based on Wilson et al. (2007), a total of six questions were designed to capture the respondents' level of ESE. The respondents were asked to self-report their confidence on their problem-solving ability, opinion/support solicitation ability, leadership, creativity, and decision-making ability. The measure of ESE consists of six items. The respondents rated their attitude to each statement against the five-point Likert scales, in which 1 = strongly disagree; 5 = strongly agree. To obtain the overall ESE, the scores of the six items were averaged and standardized.

Entrepreneurial Orientation

Entrepreneurial orientation was investigated with its separate dimensions of innovativeness (three items), proactiveness (three items), and risk-taking (three items) using the nine items, five-point scale proposed by Covin and Slevin (1989) and Real et al. (2014). To obtain the overall entrepreneurial orientation, the scores of the nine items were averaged and standardized. Higher overall scores on this scale indicate a more EO.

Firm Performance

Firm performance is a multidimensional construct in nature (Artz et al., 2003; Wu et al., 2021b), so its measurement needs to integrate different dimensions in empirical research (Wiklund and Shepherd, 2005). Past research has also obtained relative firm performance by measuring a firm's financial standing compared with competitors in its industry (Palmer et al., 2019). Hence, we measured four dimensions of performance relative to competitors in terms of market share, operating profits, sales volume, and employee growth in accordance with these past measures.

Control Variables

We controlled for factors that can potentially affect firm performance. In the context of the present study, founders' characteristics might relate to their ability to successfully engage

TABLE 1 | Description of sample.

Gender		
Male	275	66.9%
Female	136	33.1%
Education Background		
Higher vocational degree	35	8.5%
Junior college degree	252	61.3%
Bachelor degree	98	23.8%
Master degree	18	4.4%
Doctoral degree	8	1.9%
Firm Age		
Still in preparation period	90	21.9%
0–6 months	76	18.5%
6–12 months	110	26.8%
1–2 years	66	16.1%
More than 2 years	69	16.8%
Firm Size (The Start-Up Investment Scale)		
Below 100 thousand	204	49.6%
100–500 thousand	89	21.7%
500–1,000 thousand	80	19.5%
1,000–5,000 thousand	26	6.3%
Above 5,000 thousand	12	2.9%

TABLE 2 | Descriptive statistics and correlation.

Variable	N	Mean	SD	1	2	3	4	5	6	7	8	9	10	11	12
1. Gender	411	0.67	0.47	1											
2. Education background	411	2.30	0.77	−0.08	1										
3. Professional pertinence	411	2.71	0.97	0.09	0.15*	1									
4. Family business background	411	0.44	0.50	0.09	0.05	−0.22*	1								
5. Prior work experience	411	0.56	0.50	0.06	0.06	−0.12*	0.21*	1							
6. Firm age	411	2.87	1.37	0.04	0.22*	0.08	0	0.13*	1						
7. Industry prosperity	411	2.56	1.02	−0.11*	0.33*	0.18*	0.07	0.06	0.50*	1					
8. Firm size	411	1.91	1.10	−0.18*	0.36*	0.12*	−0.02	0.08	0.29*	0.50*	1				
9. Entrepreneurial self-efficacy	411	0	1	0.06	0.09	0.06	0.02	0.03	0.10*	0.18*	0.07	1			
10. Entrepreneurial orientation	411	0	1	−0.09	0.04	0	0.05	−0.09	0.01	0	0	−0.05	1		
11. Entrepreneurial learning	411	0	1	0.01	−0.08	0.25*	0	−0.04	−0.09	0.13*	0.10*	0.59*	−0.01	1	
12. Firm performance	411	0	1	−0.04	0.26*	0.14*	0.03	0.15*	0.30*	0.45*	0.34*	0.28*	0.02	0.21*	1

* $p < 0.05$.

in learning activities and it might relate to firm performance. Consistent with the previous literature, we controlled for gender, educational background, professional pertinence, family business background, and prior work experience. Besides individual level factors, firm level antecedents may affect entrepreneurship learning process and entrepreneurial outcomes. Following prior literature, we controlled for firm age and firm size. Since industry also affect firm performance, industry prosperity was controlled by dummy variables.

Common Method Variance

Harman's one-factor test of all variables, including entrepreneurial learning, ESE, entrepreneurial orientation, and firm performance, was conducted to check for common method variance (Doty and Glick, 1998; Podsakoff et al., 2003). The results showed that seven factors with eigenvalues >1.0 accounted for 64.2% of the total variance, with the first factor accounting for only 25.2% of the total variance. These results show that common method bias is not an issue in the survey responses.

RESULTS

Before formal regression, several reliability tests were carried out on variable constructs. The Cronbach's alpha for the measures of formal organizational learning, intergenerational learning and social network learning is 0.8705, 0.9098, and 0.8581, respectively, indicating the high reliability of the measurement of these constructs. The Cronbach's alpha for the measure of ESE and entrepreneurial orientation is 0.8571 and 0.8570, showing high reliability of the measurement of ESE and entrepreneurial orientation.

The descriptive statistics and correlation matrix are shown in **Table 2**. The results show that the entrepreneurial learning is positively associated with ESE and firm performance. Similarly, educational background, professional pertinence, prior work experience, firm age, firm size, and industry prosperity are also positively associated with firm performance.

The Main Effect of Entrepreneurial Learning

According to Baron and Kenny's suggestion, hierarchical regression analysis was used to test the hypotheses. In all equations, the control variables were entered before the other independent variables to partial out their effects from the relationships of principal interest. The results are presented in **Table 3**.

Our first analysis explored the predictions for the relationship between entrepreneurial learning and firm performance. Model 5 is the base model, containing only the control variables. Model 6 contains results pertaining to the main effect of entrepreneurial learning on firm performance. Model 6 shows that there is a positive relationship between entrepreneurial learning and firm performance (coefficient = 0.302, $p < 0.01$) is significant and positive. These results offer evidence confirming H1, which means engaging in entrepreneurial learning contribute to enhancing firm performance.

The Mediating Effect of Entrepreneurial Self-Efficacy

As shown in **Table 3**, Model 2, Model 7, and Model 8 examine the mediation effect of ESE. Model 2 suggests entrepreneurial learning has a positive impact on ESE (coefficient = 1.108, $p < 0.01$). Model 7 shows that self-efficacy is significantly and positively associated with entrepreneurial performance (coefficient = 0.201, $p < 0.01$). Model 8 shows that entrepreneurial learning is not significant, while ESE is significantly and positively associated with firm performance (coefficient = 0.156, $p < 0.01$). Taken together, these results support H2, which means ESE mediates positive relationship between entrepreneurial learning and corporate performance.

The Moderating Effect of Entrepreneurial Orientation

Table 3 also reports the results of testing H3, which predict positive moderation of entrepreneurial orientation on the entrepreneurial learning and ESE. Models 4 and Model 11 contain the interaction terms around which the hypotheses were offered. The results of Model 4 suggest that the interactive effect of entrepreneurial learning and entrepreneurial orientation on ESE is significant and positive (coefficient = 0.159, $p < 0.05$). In Model 11, the result shows that the interaction term is still significant and positive after adding all variables (coefficient = 0.144, $p < 0.05$). Hence, the results support H3 that entrepreneurial orientation strengthens the positive relationship between entrepreneurial learning and ESE.

DISCUSSION

Theoretical Contributions

First, this study extends the entrepreneurial learning research to the early stage of new ventures by focusing on nascent entrepreneurs' learning behavior. Most of the previous research has focused on organizational learning and knowledge management of large companies (Zhao et al., 2011; Real et al., 2014). However, entrepreneurial learning in the context of nascent entrepreneurship has rarely been studied. Extant research has primarily examined the impacts of entrepreneurial learning on entrepreneurial intentions (Wilson et al., 2007; Hu et al., 2018; Shi et al., 2019), while little attention has been paid to understanding its impacts on established firms' outcomes. College graduates as new market entrants play an increasing role in the entrepreneurial field. This study considers college graduates entrepreneurs as the main subject, which contributes to the understanding of how nascent entrepreneurs' entrepreneurial learning influences the outcomes of the nascent entrepreneurship process.

Second, this study contributes to the entrepreneurial learning-firm performance research stream focusing on the intermediate links. It is a widely held belief that entrepreneurial learning increases firm performance, but we know little about mediation effect in such a link (Real et al., 2014; Chen and Pan, 2019). Specifically, our study explains this relationship by an indirect effect through ESE. Our results

TABLE 3 | The hierarchical regression results.

	Entrepreneurial self-efficacy				Firm performance						
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8	Model 9	Model 10	Model 11
Control variable											
Gender	0.152 (0.108)	0.129 (0.085)	0.121 (0.085)	0.109 (0.085)	0.012 (0.094)	0.006 (0.093)	−0.019 (0.092)	−0.015 (0.092)	0.013 (0.093)	0.000 (0.093)	−0.015 (0.092)
Education background	0.046 (0.070)	0.189*** (0.056)	0.191*** (0.056)	0.184*** (0.056)	0.117* (0.061)	0.156** (0.061)	0.108* (0.060)	0.127** (0.061)	0.155** (0.061)	0.147** (0.061)	0.121** (0.061)
Professional pertinence	0.025 (0.054)	−0.146*** (0.044)	−0.146*** (0.044)	−0.140*** (0.044)	0.060 (0.047)	0.013 (0.048)	0.055 (0.046)	0.036 (0.048)	0.013 (0.048)	0.019 (0.048)	0.039 (0.048)
Family business background	0.011 (0.104)	−0.061 (0.082)	−0.054 (0.082)	−0.041 (0.082)	−0.018 (0.091)	−0.037 (0.090)	−0.020 (0.089)	−0.028 (0.089)	−0.042 (0.090)	−0.029 (0.089)	−0.023 (0.089)
Prior work experience	0.040 (0.102)	0.046 (0.080)	0.037 (0.081)	0.036 (0.080)	0.238*** (0.089)	0.240*** (0.088)	0.230*** (0.087)	0.233*** (0.087)	0.247*** (0.088)	0.246*** (0.087)	0.241*** (0.087)
Firm age	0.003 (0.042)	0.098*** (0.034)	0.098*** (0.034)	0.093*** (0.033)	0.050 (0.037)	0.076** (0.037)	0.050 (0.036)	0.061* (0.037)	0.075** (0.037)	0.069* (0.036)	0.056 (0.037)
Industry prosperity	0.179*** (0.063)	0.056 (0.050)	0.055 (0.050)	0.053 (0.050)	0.296*** (0.055)	0.263*** (0.055)	0.260*** (0.054)	0.254*** (0.054)	0.263*** (0.055)	0.261*** (0.054)	0.253*** (0.054)
Firm size	−0.026 (0.054)	−0.083* (0.043)	−0.084** (0.043)	−0.085** (0.042)	0.105** (0.047)	0.089* (0.046)	0.110** (0.046)	0.102** (0.046)	0.090* (0.046)	0.089* (0.046)	0.101** (0.046)
Independent variable											
EL		1.108*** (0.070)	1.108*** (0.070)	1.112*** (0.070)		0.302*** (0.076)		0.130 (0.096)	0.303*** (0.076)	0.307*** (0.076)	0.148 (0.096)
Mediator variable											
ESE							0.201*** (0.042)	0.156*** (0.054)			0.144*** (0.054)
Moderator variable											
EO			−0.041 (0.039)	−0.061 (0.040)					0.033 (0.043)	0.012 (0.043)	0.021 (0.043)
Interaction terms											
EL×EO				0.159** (0.062)						0.167** (0.068)	0.144** (0.068)
_cons	−0.715*** (0.230)	−0.371** (0.182)	−0.368** (0.182)	−0.339* (0.181)	−1.657*** (0.200)	−1.563*** (0.198)	−1.513*** (0.197)	−1.505*** (0.197)	−1.565*** (0.198)	−1.534*** (0.197)	−1.486*** (0.197)
N	411	411	411	411	411	411	411	411	411	411	411
R-Square	0.041	0.410	0.411	0.421	0.248	0.276	0.288	0.291	0.278	0.288	0.301

EL, entrepreneurial learning; ESE, entrepreneurial self-efficacy; EO, entrepreneurial orientation.

* $p < 0.10$ ** $p < 0.05$ *** $p < 0.01$.

show that ESE fully mediates the relationship between entrepreneurial learning and firm performance. It takes into account the fact that entrepreneurial learning can prompt entrepreneur's confidence in coping with entrepreneurial tasks and stimulate firm to create a better performance. Therefore, entrepreneurial learning can be viewed as a long investment on individuals' ESE and firm performance. These findings specify how entrepreneurial learning take place, which enrich entrepreneurship learning literature.

Finally, we contribute to the entrepreneurial learning literature by identifying the significance of the entrepreneurial orientation. Prior research has explored the relationship between entrepreneurial orientation and learning at the organizational level (Wang, 2008; Zhao et al., 2011; Real

et al., 2014), but there are few studies on individual learning behavior under entrepreneurial oriented environment. Along this line, we explore entrepreneurial learning behavior of nascent entrepreneurs in an entrepreneurial oriented context. Regarding the influence of entrepreneurial orientation as a moderating variable, entrepreneurial learning seems to have a greater impact on ESE in firms with high entrepreneurial orientation. High entrepreneurial orientation firm constantly seek out new opportunities, positively engage in product-market innovation, bravely undertakes somewhat risky investment. Such characteristics are associated with improved willingness and effectiveness of entrepreneurial learning on ESE. In this respect, the positive relationship between entrepreneurial learning and ESE will be strengthened if firms have a high entrepreneurial

orientation. Our results advance previous research by noting that entrepreneurial orientation as an import entrepreneurial cultural environment of firms can affect the relationship between entrepreneurial learning on ESE.

Managerial Implications

Two key managerial implications are evident in our research findings. First, much importance should be attached to entrepreneurial learning if we want to cultivate individuals' ESE or prompt business performance. Specifically, entrepreneurs should make full use of entrepreneurial learning channels, such as formal organizational learning, intergenerational learning, and social network learning, to enhance their entrepreneurial competencies and achievements. Second, it is necessary to create a favorable entrepreneurial oriented cultural environment. Entrepreneurial orientation is a managerial attitude that must be supported by certain organizational conditions that facilitate learning. Entrepreneurs as the leader of the enterprise, should positively cultivate entrepreneurial orientation and create a desirable cultural environment for entrepreneurial learning.

Limitations and Future Research

This study has several limitations that future should address. First, we acknowledge that the geographical limitation of data collection would affect the generalizability of the results, although Zhejiang Province plays an essential role in the entrepreneurship development in China. Future research could be conducted with large-scale samples from more coastal and inland provinces so that the sample can be more representative for the Chinese context. Besides, future research is expected to utilize a cross-national sample to further explore the generalizability of the model, because Chinese entrepreneurship environments are different from those in a Western context.

Second, one limitation of this study is that we only focus on nascent entrepreneurs with firms that were still in business. For those nascent entrepreneurs that had discontinued entrepreneurship, it is difficult to collect data from them. In addition, we explored the relationship between entrepreneurial learning and firm performance in a limited time, but we did not include a time sequence in our cross-sectional data. Thus, future studies should collect panel data to trace the entrepreneurship process of these nascent entrepreneurs and longitudinal research is need to clarify the effect over time of entrepreneurial learning.

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Third, future work could link ESE to overconfidence and over-optimism. Although we found ESE has a positive effect on firm performance, but we know there exists “the too much of a good thing effect,” which means their relationship may have negative or curvilinear effects in some circumstances. Finally, more research is needed on the firm characteristics construct such as strategic orientation and assess these factors which led to the development of entrepreneurial learning process.

DATA AVAILABILITY STATEMENT

The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

ETHICS STATEMENT

Ethical review and approval were not required for the study on human participants in accordance with the local legislation and institutional requirements. The patients/participants provided their written informed consent to participate in this study.

AUTHOR CONTRIBUTIONS

All authors listed have made a substantial, direct and intellectual contribution to the work, and approved it for publication.

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SUPPLEMENTARY MATERIAL

The Supplementary Material for this article can be found online at: <https://www.frontiersin.org/articles/10.3389/fpsyg.2021.731628/full#supplementary-material>

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Influence of Prosocial Motivation on Employee Creativity: The Moderating Role of Regulatory Focus and the Mediating Role of Knowledge Sharing

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Stimulating and improving the creativity of employees are both theoretically and practically important. The relationship between prosocial motivation and creativity has gradually gained attention in recent years; however, in the context of controlling for intrinsic motivation, the influence process and results between the two are not yet clear. Based on the motivated information processing model, componential theory of creativity, and regulatory focus theory, this study analyzed the mediating role of knowledge sharing and the moderating role of regulatory focus in the relationship between prosocial motivation and the creativity of employees. For this, we used the PROCESS program and the bootstrap method to test the theoretical hypotheses. Consequently, a survey of 320 Chinese employees revealed that, under the condition of controlling for intrinsic motivation, the prosocial motivation of employees was positively related to creativity and partially mediated by knowledge sharing. Furthermore, regulatory focus negatively moderated the correlation between prosocial motivation and knowledge sharing. Specifically, we found that the higher the prevention focus was, the weaker the effect prosocial motivation had on knowledge sharing. Contrary to the hypothesis, promotion focus also played a negative moderating role. Thus, the results revealed the mechanism and boundary conditions of prosocial motivation on creativity. This study expands the research on prosocial motivation and provides guidance on how managers can enhance the creativity of their employees.

Keywords: prosocial motivation, employee creativity, knowledge sharing, promotion focus, prevention focus

INTRODUCTION

In the context of the increasingly fierce global market competition of today, the innovation ability of an enterprise is related to its survival and development. In particular, one of the important sources for improving innovation ability is the creativity of organization members (Zhou and Hoever, 2014). Therefore, effectively stimulating and releasing the creativity of employees is particularly important and urgent. Motivation has long been a psychological process that stimulates, guides, and maintains human behavior (Gillmore, 2013). Understanding the motivational basis of creativity is one of the long-term goals of creativity research (Amabile and Pillemer, 2012). Among these goals,

prosocial motivation, which is defined as the willingness to work hard for the well-being of others, has attracted much attention in the field of creativity research because it helps employees go beyond the limitations of their own perspectives and enhance individual empathy and creative thinking (Grant and Berry, 2011; Li and Bai, 2015a; Liu et al., 2016). In particular, the theme of prosocial motivation as a “social glue” for the harmonious coexistence of different classes and ethnicities has more contemporary significance in the context of indifferent interpersonal relationships.

The relationship between prosocial motivation and creativity has gradually attracted the attention of scholars (De Dreu et al., 2011; Grant and Berg, 2011; Grant and Berry, 2011; Li and Bai, 2015a); however, the results are not sufficient. On the one hand, when current scholars discuss the relationship between prosocial motivation and employee creativity, they often regard prosocial motivation as a boundary condition in the relationship between intrinsic motivation and creativity (Bechtoldt et al., 2010; De Dreu et al., 2011; Grant and Berry, 2011). Although some studies have verified the influence of prosocial motivation on creativity, the role of intrinsic motivation has been ignored (Li and Bai, 2015b; Zhang and Liu, 2018). In fact, prosocial motivation still plays an important role in creativity after controlling for intrinsic motivation (Liu et al., 2016). Therefore, it is necessary to further clarify the relationship between prosocial motivation and creativity from an empirical perspective under the condition of controlling for intrinsic motivation. On the other hand, there is no consensus on the relationship between prosocial motivation and employee creativity. Grant and Berry (2011) and Li and Bai (2015a,b) confirmed a positive correlation between prosocial motivation and creativity. In contrast, an experiment performed by Boeck (2015) on young people showed that prosocial motivation had no positive effect on creativity. However, few empirical studies have explored and analyzed the aforementioned inconsistent conclusions. Studies have also confirmed that there are cultural differences in creativity performance (Morris and Leung, 2010). At present, most research objects are from Western culture, whereas, in the typical collectivist culture of China, the prosocial behaviors of helping and considering the interests of others have always been encouraged (Hofstede, 2001; Li et al., 2012). Thus, the relationship between prosocial motivation and creativity and its mechanism of action are worthy of further discussion.

According to the componential theory of creativity, domain knowledge is an indispensable element of creativity (Amabile, 1996). Specifically, knowledge sharing is crucial for employees to exchange knowledge and jointly create new knowledge (Van den Hooff and De Ridder, 2004). As a kind of helping behavior, the occurrence of knowledge sharing is mainly affected by internal motivation (Lombardi et al., 2020). Whether an individual is a juvenile or an employee, their prosocial motivation may prompt them to show more knowledge sharing behaviors (Asterhan and Bouton, 2017; Jin et al., 2020). In fact, employees are not only knowledge sharers, but also potential beneficiaries when they share knowledge. To effectively share knowledge, sharers not only generate new ideas about existing knowledge by reorganizing it but can also deepen their understanding of shallow knowledge

in the process of communicating with others, all of which provide knowledge for the generation of creativity reserves (Bhatti et al., 2020). In recent years, studies have deeply explored the mediating effects of knowledge sharing on different outcomes based on different theoretical perspectives. In particular, studies have found that knowledge sharing is an important path in the formation of employee creativity and organizational innovation (Zhu and Chen, 2013; Bhatti et al., 2020), which provides a theoretical basis for this study to introduce knowledge sharing as a mediating variable to deeply explore the “black box” of prosocial motivation and creativity.

The process of prosocial motivation-stimulating behavior is essentially a process of behavior regulation, which is affected by individual regulatory focus (Chen et al., 2016). The so-called regulatory focus includes two dimensions, namely, promotion focus and prevention focus, where the former emphasizes success, while the latter focuses on risk aversion (Higgins, 1989). The regulatory fit theory suggests that, when individuals complete tasks in ways or behaviors that are consistent with their regulatory focus orientation, this kind of internal fitting enables them to experience the joy of the tasks more. The consistency of mood and behavior also promotes their recognition of the behavior. Thus, they are more willing to show behavior in line with their focus orientation (Higgins, 2000a). Meanwhile, the active tendency of prosocial motivation also has a different degree of compatibility with the approach and avoidance strategies of the regulatory focus. Studies have shown that regulatory focus not only affects knowledge sharing behavior (Shin et al., 2016), but also affects individual information processing and behavioral orientation (Werth and Foerster, 2007), which, in turn, lead to differences in individual behavior under the influence of behavioral motivation. For example, compared with employees with a high prevention focus, it has been shown that higher prosocial motivations of employees with low prevention focus lead them to exhibit more accelerative voice behaviors (Chen et al., 2016). Furthermore, in the context of time constraints, employees with high regulatory focus are more likely to share knowledge to achieve team goals (Ju et al., 2019). Overall, because knowledge sharing is proactive and difficult to enforce, a subconscious recognition can better motivate an employee to share their knowledge with others. The above analysis provides the theoretical enlightenment for this study to bring the individual regulatory focus into the research framework and explore the moderating role of regulatory focus between prosocial motivation and knowledge sharing.

In summary, to answer the question on how prosocial motivation affects creativity, the purpose of this research was to rely on the motivational information processing theory to explore the mechanism and boundary conditions of the aforementioned relationship. Specifically, under the condition of controlling for intrinsic motivation, this study verified the influence of the prosocial motivation of employees on creativity, the mediating role of knowledge sharing between these two variables, and the moderating role of regulatory focus in the impact of prosocial motivation on knowledge sharing. Theoretically, this study revealed the unique role of prosocial motivation in creativity and its influencing processes, which bridges the gap in existing

research. In practice, the discussion of these questions can help managers improve employee creativity in a targeted manner.

THEORETICAL FRAMEWORK AND HYPOTHESES

Prosocial Motivation and Creativity

According to the motivated information processing model, social motivation affects the content and direction of information processing. The desire of the employees also determines, to some extent, how they process information (Nijstad and De Dreu, 2012). Prosocial motivation, in particular, describes the desire to benefit others or expend effort out of concern for others (Grant, 2008). It helps employees go beyond the limitations of their own perspectives, improve their sensitivity to the views and needs of others, and perform tasks to the best of their abilities (De Dreu et al., 2011), all of which are crucial for generating creativity (Li and Bai, 2015a,b). Specifically, Zhang and Bartol (2010) suggested that the degree of individual participation in the creative process depends on the degree of concern regarding the problem. Prosocial employees who are driven by the greater interests of others, the organization, or groups are more concerned about the well-being and needs of others (De Dreu, 2006). Therefore, they are more involved in creative work (Le, 2015) and often invest more time, energy, and resources in their work to absorb and master domain and creative skills and form more flexible cognitive structures and in-depth strategies to deal with challenging problems, thereby enhancing creativity. It is also because of the concern for the well-being of others that employees with prosocial motivation are able to better perceive the value of their work for others or for the organization. This helps to enhance their sense of mission and self-identity, makes them more inclined to seek multiple solutions to solve problems (Ma and Zhao, 2015), and helps them show greater perseverance and persistence in the process of solving a problem (Grant, 2008). At the same time, prosocial motivation drives employees to consider problems and obtain information from the perspective of others, which means that they will filter useless information when thinking about solutions and generate useful ideas that are not only novel, but also suitable for solving the problems or meeting the needs of others (Grant and Berry, 2011). In addition, some scholars have pointed out that individuals with high prosocial motivation usually show more compassion and generosity to generate more positive emotions (Hoever et al., 2012; Carmeli et al., 2014), which consequently help to increase creativity. This shows that employees driven by prosocial motivation expect their work to contribute to the well-being of others; therefore, they are able to think from the perspective of others, enhance the degree of individual participation and the ability to integrate viewpoints, and thus promote the enhancement of creativity. Given that the study of prosocial motivation is still in its infancy, current studies have initially confirmed the positive impact of intrinsic and prosocial motivations on creativity (Grant and Berry, 2011; Li and Bai, 2015a). However, a meta-analysis found that prosocial motivation has a unique contribution to creativity, and controlling for intrinsic motivation is more conducive to

investigating the exclusive role of prosocial motivation (Liu et al., 2016). Based on the above analysis, we proposed the following hypothesis:

Hypothesis 1. Under the condition of controlling for intrinsic motivation, prosocial motivation is positively related to the creativity of employees.

The Mediating Role of Knowledge Sharing

While some studies have shown that prosocial motivation has a positive impact on employee creativity, scholars are also exploring the underlying mechanisms of the aforementioned relationship (Li and Bai, 2015b; Pan and Bai, 2017). Today, in the knowledge society, knowledge sharing is a process whereby people exchange knowledge and create new knowledge (Van den Hooff and De Ridder, 2004); it is also a process of continuous interaction and generosity. It focuses on providing information to facilitate problem-solving, creativity, innovation, or change (Wang and Noe, 2010). In this study, we proposed that prosocial motivation facilitates knowledge sharing, which, in turn, nurtures employee creativity.

On the one hand, based on the motivated information processing theory, the desires of individuals can shape the way they react to information (De Dreu, 2006). In particular, individuals with prosocial motivation are more likely to connect the experiences of others with their own and empathize with others, show concern for others, and identify with the experiences of others (Aron et al., 1991; Sun et al., 2020a). Therefore, employees with higher levels of prosocial motivation may prioritize the needs of their coworkers (Grant, 2008) and be more inclined to respond favorably to requests for assistance. Empirical studies have shown that prosocial motivation is correlated with help-giving (Rioux and Penner, 2001) and help-seeking behaviors, employees experiencing the meaningfulness of their work, and resource and information sharing (Utz et al., 2014). In organizational knowledge management, knowledge contributors with higher prosocial motivation exhibit a high level of knowledge sharing and, consequently, a low level of knowledge hiding (Škerlavaj et al., 2018). In addition, employees driven by prosocial motivation often strive to build good relationships with their colleagues and develop positive perceptions and attitudes to create a harmonious working environment for themselves (Bolino et al., 2012). In collectivist societies such as China, individuals are particularly concerned about the interrelationships among people (Takeuchi et al., 2015). Therefore, when other members of the organization need help, prosocial individuals actively express their ideas and opinions because of their willingness to help others, thus promoting the transmission of information and knowledge. Knowledge sharing is an extra-role behavior that is conducive to the development of organizations (Srivastava et al., 2006), which focuses on providing information to facilitate problem solving or change (Wang and Noe, 2010). It is also, therefore, regarded as a prosocial behavior (Bolino and Grant, 2016). Thus, it can be inferred that the prosocial motivation of an individual has a significant positive impact on knowledge sharing. In fact, some studies have confirmed that prosocial motivation can promote organizational citizenship behavior (Takeuchi et al., 2015) and

a series of prosocial behaviors in the Chinese context, such as helping and giving advice (Chen et al., 2016; Lu et al., 2017).

On the other hand, the componential theory of creativity proposes that individual knowledge is conducive to the generation of creativity (Amabile, 1996). Thus, employees who share their knowledge can enhance their own creative thinking and knowledge, thereby enhancing their own creativity. In terms of the sharing process, individuals must reorganize their knowledge so that they can transfer knowledge accurately. This knowledge may have been neglected before; however, once it is extracted from the mind and related to other information, the sharing process itself may become a source of inspiration (Zhong et al., 2015). From the social exchange and learning perspectives, knowledge recipients are more willing to pass on knowledge and information to the sharers based on the principle of reciprocity (Jin, 2013), which means that sharers can also learn from the experience and techniques of others. In addition, by assisting others in solving problems, employees can acquire new insights and skills themselves (Shah et al., 2015). The basic knowledge and professional skills of employees are one of the components of creativity (Amabile, 1997) that are conducive to the creation of new ideas. Moreover, several studies have also proven that knowledge sharing is positively related to employee creativity (Khazanchi and Masterson, 2011; Zhang et al., 2016).

According to the above analysis, based on the motivated information processing theory, employees with prosocial motivation expect their work to contribute to the well-being of others and are often more willing to display helpful behaviors, such as knowledge sharing, out of kindness toward others and responsibility to the organization. According to the componential theory of creativity, employees driven by prosocial motivation can exchange ideas and process information in the sharing process; thus, knowledge sharers can deepen not only their understanding of existing knowledge but also update their own knowledge and skills, which is a prerequisite for creative ideas. Based on this, we can assume that prosocial motivation affects creativity through the mediating role of knowledge sharing. Therefore, we proposed the following hypothesis:

Hypothesis 2. Knowledge sharing mediates the positive relationship between prosocial motivation and the creativity of employees.

The Moderating Role of Regulatory Focus

Employees driven by prosocial motivation often exhibit organizational citizenship behaviors, such as knowledge sharing (Škerlavaj et al., 2018). However, the process of prosocial motivation in stimulating behavior is, essentially, a process of behavioral regulation, which is affected by individual regulatory focus (Chen et al., 2016). The regulatory focus theory proposes a self-regulation process in which individuals associate themselves with goals (Higgins, 1997). This process consists of two dimensions: promotion focus and prevention focus. Promotion focus is a self-regulation tendency related to growth needs (e.g., ambitions, ideals, desires, etc.). Specifically, individuals with promotion focus are sensitive to positive results and more often adopt approach strategies to pursue their own goals. Research has found that individuals with high promotion focus are more

concerned about hope and achievement, sensitive to rewards and losses, and have a higher risk appetite. Such individuals often show stronger internal driving forces in their work, are open and optimistic in the face of problems, strive to pursue breakthroughs in the status quo instead of sticking to conventions, and are more willing to exceed their duties (Friedman and Förster, 2001; Luan and Zhang, 2020). On the contrary, prevention focus is a self-regulation tendency related to safety requirements (e.g., self-protection, protection from harm, etc.). In particular, individuals with high prevention focus are more concerned about duties and obligations, are more sensitive to the occurrence and absence of punishment, and have lower risk appetites. They also tend to adopt avoidance strategies to achieve their goals in their work and focus on preventing mistakes and losses. Compared with individuals with a high promotion focus, these individuals exhibit more vigilant behaviors at work, are less optimistic when facing problems, and tend to avoid challenges and maintain the status quo (Crowe and Higgins, 1997; Brockner and Higgins, 2001; Friedman and Förster, 2001). Furthermore, individuals usually adopt behaviors that fit their own orientation types and levels (Lanaj et al., 2012; Cao and Xu, 2017; Mao, 2017). Therefore, when people are faced with the difficult choice of sharing their knowledge, the individual regulatory focus will lead to differences in the actual behaviors of individuals under the influence of behavioral motivations (Ju et al., 2019). Based on the above discussion, we believe that regulatory focus may moderate the relationship between prosocial motivation and knowledge sharing.

Knowledge is an important resource for employees to stand out from their peers. Employees who share their knowledge are likely to feel worthy and gain the favor of others (Lin, 2007). However, sharing knowledge also means the loss of knowledge ownership, which may threaten the status and power of an individual in an organization (Wang et al., 2020). Therefore, knowledge sharing is a behavior in which both risks and opportunities coexist (Huo et al., 2016; Park et al., 2017). For instance, promotion-focused individuals may pursue their ideals and personal values, or they may be eager to achieve team goals; therefore, they are more inclined to engage in more knowledge-sharing behaviors (Li et al., 2013; Shang et al., 2016). With this, individuals can also strengthen the relationship between their motivation and knowledge-sharing behavior due to the fitting effect of their own regulatory focus and internal motivation. On the one hand, when behaviors guided by prosocial motivation are consistent with the preference of the employees for promotion focus, prosocial motivation promotes the formation of the regulatory fitting. Specifically, individuals with prosocial motivation break through the principle of self-centered interests and often think about problems from the perspective of others, consequently showing more extra-role behaviors (Zhu and Chen, 2013). Furthermore, individuals with a high promotion focus often use approach strategies to achieve their goals; thus, they are more likely to receive support from others and show higher returns and helpful behaviors (Gorman et al., 2012; Lanaj et al., 2012), which fits the extra-role behavior guided by prosocial motivation. According to regulatory fit theory, this consistent adjustment and the sense of fitting

these employees have enabled them to further strengthen their cognition or motivation for sharing (Higgins, 2000b; Lei et al., 2015). On the other hand, the other orientation of prosocial motivation makes employees pay more attention to the well-being of others and the collective, thus making them regard themselves and the organization as a community of interests (Sun et al., 2020b). To match this, employees with high promotion focus have a higher emotional commitment and form strong emotional attachments and identification with the organization (Gorman et al., 2012). Therefore, this fitting may strengthen the prosocial motivation of these employees to pay attention to the common interests of the organization. This, in turn, stimulates the willingness of employees to contribute to the organization, thus showing more knowledge sharing and other behaviors that are beneficial to the organization (Zhou et al., 2016). Therefore, we proposed the following hypothesis:

Hypothesis 3. Promotion focus positively moderates the relationship between prosocial motivation and knowledge sharing. Compared with employees with a low promotion focus, employees with prosocial motivation and high promotion focus are more likely to show knowledge sharing.

Individuals with a high prevention focus pay more attention to negative results, strive to avoid risks, and adopt avoidance strategies to achieve their goals (Mao, 2017). To them, the process of knowledge sharing is not only accompanied by a series of time and emotional costs, but may also lead to the loss of the dominant position of the sharer in an organization (Chen et al., 2018). Such a “dangerous” signal is easily detected by prevention-focused individuals. Therefore, they are more inclined to regard knowledge sharing as an uncontrollable risk. To avoid potential losses, they subsequently generate conservative response mechanisms, which may result in greater knowledge hiding (Shang et al., 2016). Therefore, individuals with high prevention focus, who are afraid of losing to their competition, are not very willing to share their knowledge and skills with others. It has also been proven that such employees are less likely to support others or receive support from others (Gorman et al., 2012; Lanaj et al., 2012; Righetti and Kumashiro, 2012). These characteristics are mutually exclusive with the characteristics of organizational citizenship behavior, such as helping others, driven by prosocial motivation. In addition, individuals with a high prevention focus are more likely to fulfill their tasks and responsibilities in accordance with the system rules and set the lowest performance standards for themselves (Cao and Xu, 2017). However, knowledge sharing is an extra-role behavior beyond the minimum job requirements (Peng et al., 2019). This mismatch between behavioral patterns and regulatory orientation further weakens previous cognition and motivation (Higgins, 2000a), also consequently weakening the promoting effect of prosocial motivation on knowledge sharing. In addition, from the perspective of emotion and cognition, individuals with high prevention focus are afraid of failure and adopt avoidance strategies to achieve their goals more often. However, prosocial motivation also makes individuals willing to help others. This contradiction makes it difficult for these individuals to choose between helping others and avoiding them, which, in turn, leads to negative emotions, such as anxiety and irritability.

The mood-congruent theory proposes that individuals tend to obtain information that is consistent with their own mood and show corresponding behaviors (Bower et al., 1978; Wei et al., 2019). Therefore, when employees experience negative emotions, they will make negative comments on their colleagues and organization, thereby reduce their willingness to help others and make more contributions to the organization (Borman et al., 2001), such as knowledge sharing (Troughakos et al., 2015; Wei et al., 2019). In conclusion, the self-maintenance tendency of a prevention focus does not fit the other-oriented tendency of prosocial motivation. When the two types of potential consciousness conflict, prevention focus weakens the effect of prosocial motivation on knowledge-sharing behavior to some extent. Based on the above analysis, the following hypothesis was proposed:

Hypothesis 4. Prevention focus negatively moderates the relationship between prosocial motivation and knowledge sharing. Compared with employees with a high prevention focus, prosocial employees with a low prevention focus are more likely to show knowledge sharing.

Based on the above theoretical derivation, the theoretical model for this study is shown in **Figure 1**. In summary, this study combined the motivated information processing model, componential theory of creativity, and regulatory focus theory to construct a moderated mediation model to analyze the effect of prosocial motivation on creativity (**Figure 1**). First, the current study explored the influence of prosocial motivation on the creativity of employees in the context of controlling for intrinsic motivation to analyze the unique role of prosocial motivation. Second, the study focused on knowledge sharing as a mediating variable to explore the mechanism by which prosocial motivation affects creativity. In this regard, we also constructed a main logical analysis framework based on the “motivation-behavior result.” Finally, based on the perspective of regulatory fitting and combined with regulatory focus theory, the study analyzed the moderating role of regulatory focus in the relationship between prosocial motivation and knowledge sharing. We also clarified the boundary factors of the prosocial motivation of employees that affect knowledge sharing.

METHODS

Data and Sample

The data for this study were obtained from employees in China who were mainly working in the real estate, technology, manufacturing, trade, construction, and financial industries. The samples were selected mainly through random sampling. First, we contacted the enterprise managers through an enterprise service center. Then, through face-to-face or telephonic interviews with the enterprise managers, the research purpose and the objective of the study were explained in detail. Through the same methods, we also promised that the data filled in by employees would only be used for research and not for other commercial purposes. Finally, after obtaining the consent of the managers, according to the list of employees provided by each enterprise, we adopted a random sampling method to select employees for the questionnaire survey. At the same

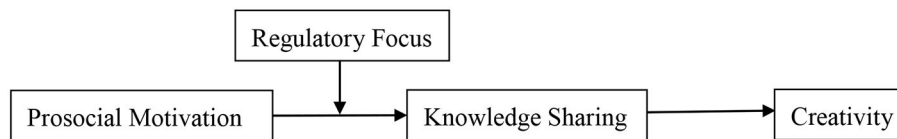


FIGURE 1 | Research framework.

time, to expand the samples, we used convenience sampling as a supplement and collected data mainly from MBA (Master of Business Administration) students who were employees in the companies and acquaintances working in the enterprises. The questionnaire survey was conducted from September 2020 to January 2021.

To improve the recovery rate and quality of the questionnaire responses, the survey was conducted anonymously. Before administering the questionnaire, the employees were explained that the anonymity and confidentiality of the survey and results would only be used for academic purposes and had nothing to do with any assessment. At the same time, to avoid possible psychological implications caused by variable names, specific variable names were hidden in the questionnaire. In addition, we also requested the employees to answer the questionnaire carefully according to the actual situation to improve the quality of the responses. Regarding the sample size, it was required that the sample size of the model should be 5–10 times of the parameters to be estimated (Everitt, 1975). The model in this study included 38 observation variables; thus, 360 questionnaires were sent out, while 358 questionnaires were returned. To improve the accuracy and rigor of the survey, 38 invalid questionnaires were removed, leaving 320 valid questionnaires, with an effective recovery rate of 88.9%. The survey included 48.75% male and 51.25% female respondents. Most of the participants were below 30 years of age (90%) and 75% of them had a bachelor's degree or above. Their work experience was mainly within 5 years (80.63%). The overall distribution of jobs was even, with relatively many technical research and development positions (40.62%). Most of the employees were also labor staff (59.69%).

Measures

The scales used in this study were adapted from scales that have been used by many scholars and validated in the Chinese context. Suitable modifications were made to fit the context of the current study. To improve the reliability of the measurement tools, the original English scale was translated into Chinese by a professional English language translator and a doctor studying abroad in the field of creativity research through a standard “translation-back translation” procedure before the formal distribution of the questionnaires. We then invited professors in the field of creativity research for repeated discussions about the questionnaire content and measurement tools. We also revised and adjusted the language expression of the questionnaire several times to ensure the rationality, standardization, and comprehensibility of the questions. Next, we interviewed five

employees on their opinions about the readability and clarity of the language expression of the questionnaire to ensure the respondents fully understood the survey content. Finally, we developed the final questionnaire for the study. It should be noted that since the employees have a clearer perception of their own behaviors and motivations than their supervisors, and that the evaluations of supervisors or colleagues may be influenced by personal preferences or deluded by superficial behaviors, this study adopted an employee self-evaluation method. All items were scored on a five-point Likert scale, ranging from 1 (strongly disagree) to 5 (strongly agree).

Prosocial motivation was measured, using a five-item scale adapted from Grant and Sumanth (2009), which includes items such as “I get energized by working on tasks that have the potential to benefit others” and “I prefer to work on tasks that allow me to have a positive impact on others.” We measured knowledge sharing using the scale produced by the Chinese scholars Cao and Xiang (2014), including four items (for example, “I often share my work experience with colleagues or collaborators”), which were more suitable for the Chinese context. Regulatory focus was measured based on the 12-item scale of Mao (2016) adapted from Johnson and Chang (2008), in which promotion focus (for example, “I see work as a way to realize my wishes and ambitions”) and prevention focus (for example, “I am concerned about my failure experience at work”) were assessed using six items for each. The creativity of employees was also assessed based on the seven-item scale of Chen (2006), which was adapted from Tierney et al. (1999). One item was “I often come up with some creative ideas at work.”

Previous studies have shown that intrinsic motivation has an impact on employee creativity (Grant and Berry, 2011; Li and Bai, 2015a,b). Therefore, intrinsic motivation was used as the control variable in this study. It was measured using the scale developed by Grant (2008), including four items (for example, “I enjoy my job”). In addition, individual characteristics may affect employee creativity in the workplace. Therefore, the gender, age, education, and tenure of the employees were also considered as control variables (Wang, 2018; Ma and Yan, 2020).

Reliability and Validity Analysis

Different forms of instrument validity and reliability were assessed for this study. Based on the criteria suggested by Fornell and Larcker (1981), Cronbach's α and composite reliability (CR) should be >0.7 and the average variance extracted (AVE) >0.5 . **Table 1** shows that Cronbach's α and CR for all constructs were >0.7 and the AVE of each construct was larger than 0.5, which are all higher than the values recommended by Fornell and Larcker

TABLE 1 | Reliability and convergent validity.

Variable	Cronbach's α	CR	AVE
Prosocial motivation	0.867	0.870	0.573
Creativity	0.890	0.891	0.539
Knowledge sharing	0.794	0.804	0.514
Promotion focus	0.857	0.858	0.502
Prevention focus	0.866	0.867	0.521

(1981). Thus, the construct reliability and convergent validity of our instrument were acceptable.

To investigate the discriminative validity of the discussed variables, this study used AMOS 24.0 to conduct a confirmatory factor analysis on the measured data and compare the fitting degrees of various nested models. **Table 2** indicates that the five-factor model exhibited an optimal fit, demonstrating desirable discriminant validity among the constructs in this study.

Common Method Variance

Since each employee knows themselves best, all data were based on the self-reports of the employees. However, we took some measures to reduce the common method bias. On the one hand, the employees were asked to answer the questions according to the actual situation as their answers were only for academic purposes before administering the questionnaire. On the other hand, all variable names were hidden to prevent the employees from guessing what was being investigated. After questionnaire collection and selection, several statistical methods were used to test the potential common method bias, which normally exists in self-reported data (Podsakoff et al., 2003). First, we used a single-common-method-factor approach. The results showed that, after the common method deviation latent variable (CMV) was added to the theoretical model, the variation ranges of the fitting indices, such as RMSEA, CFI, and GFI of the model, were all below 0.006 (as shown in **Table 2**), indicating that potential common method bias was unlikely to occur in this study. Second, we examined the correlation coefficient between variables. If the correlation coefficient is higher than 0.9, it means that the common method deviation problem is serious (Liu et al., 2021). The analysis results of this study showed that the highest correlation coefficient between the main variables was 0.553, which was lower than the critical value of 0.9. In addition, we also conducted collinearity diagnostics and found that the VIF value of all the variables was not more than 2.268, which is much lower than the critical value of 10 (Zhang et al., 2020). In summary, there was no serious common method bias in the research data, and no serious collinearity occurred among any of the constructs.

Analytic Strategy

In this study, SPSS26.0, which was used to analyze the reliability and bivariate correlations between all factors, and AMOS 24.0 were used to analyze the validity of the data. We tested our model and hypotheses using the computer program PROCESS, which has been accepted and applied by many scholars because it is more scientific, effective, and convenient. This program

provides standard tests and bootstrap confidence intervals (CIs), which were based on 5,000 samplings, for individual regression. Furthermore, if the lower and upper limits of the confidence interval in our study did not include zero, the corresponding effect was significant (Chen et al., 2013).

RESULTS

Descriptive Statistics

Table 3 presents the means, standard deviations, and correlations among the variables. Prosocial motivation, employee creativity, regulatory focus, and knowledge sharing had high correlations. There was a significant positive correlation between prosocial motivation and employee creativity ($\beta = 0.478$, $p < 0.01$). Prosocial motivation was also positively correlated with knowledge sharing ($\beta = 0.451$, $p < 0.01$), while knowledge sharing was positively correlated with employee creativity ($\beta = 0.553$, $p < 0.01$), which provided preliminary evidence for the subsequent exploration of the relationships of the variables.

Main Effect and Mediating Effect

First, Model 4 in the PROCESS program (Model 4 is a simple mediation model) was used to test the main effects and mediating effects of knowledge sharing after controlling for intrinsic motivation, gender, age, etc. As shown in **Tables 4, 5**, the results showed that Hypothesis 1 (H1) and Hypothesis 2 (H2) were supported. Specifically, from M2 in **Table 4**, prosocial motivation significantly and positively affected creativity [effect = 0.350, CI (95%) = (0.249, 0.451)]. Thus, H1 was verified. From M1 in **Table 4**, the regression coefficient of prosocial motivation on knowledge sharing was significant [effect = 0.339, CI (95%) = (0.241, 0.438)]. From M3 in **Table 4**, the regression coefficient of knowledge sharing on creativity was also significant (effect = 0.404, CI (95%) = (0.299, 0.510)]. From **Table 5**, the indirect effect of prosocial motivation on creativity was 0.137, with the bootstrap CI for this coefficient being [CI (95%) = (0.079, 0.214)], while the direct effect of prosocial motivation on creativity after controlling for the mediator variable was also significant (effect = 0.213), with its bootstrap confidence interval being [CI (95%) = (0.113, 0.313)]. Thus, H2 was supported, indicating that knowledge sharing plays a mediating role between prosocial motivation and creativity.

Moderating Effect

We used Model 7 in the PROCESS program to test the moderating effects of regulatory focus after controlling for

TABLE 2 | Confirmatory factor analysis results of the competition model.

Model	χ^2/df	GFI	CFI	TLI	RMSEA	SRMR
Single-factor ^a	6.417	0.565	0.563	0.528	0.130	0.124
Two-factor ^b	5.237	0.624	0.659	0.631	0.115	0.113
Three-factor ^c	4.096	0.690	0.752	0.730	0.099	0.102
Four-factor ^d	3.513	0.715	0.801	0.781	0.089	0.095
Five-factor ^e	1.845	0.877	0.934	0.926	0.051	0.053
CMV model	1.800	0.881	0.937	0.930	0.050	0.052

^aProsocial motivation + knowledge sharing + promotion focus + prevention focus + creativity.

^bProsocial motivation + knowledge sharing + promotion focus + prevention focus, creativity.

^cProsocial motivation, knowledge sharing + promotion focus + prevention focus, creativity.

^dProsocial motivation, knowledge sharing, promotion focus + prevention focus, creativity.

^eProsocial motivation, knowledge sharing, promotion focus, prevention focus, creativity.

CMV represents the common method variance.

TABLE 3 | Means, standard deviations (SD), and correlations.

Variables	1	2	3	4	5	6	7	8	9	10	11	12
Gender	1											
Age	−0.146**	1										
EDU	−0.009	−0.290**	1									
Tenure	−0.137*	0.681**	−0.468**	1								
Post	0.182**	−0.012	−0.172**	−0.027	1							
Position	−0.074	0.024	0.003	−0.046	0.217**	1						
IM	−0.080	0.095	−0.047	0.093	−0.012	0.047	1					
PSM	−0.040	0.134*	0.042	0.058	−0.050	−0.045	0.407**	1				
KS	−0.044	0.084	−0.078	0.100	−0.040	0.009	0.376**	0.451**	1			
PRO	0.023	0.069	0.037	0.017	−0.074	0.016	0.404**	0.500**	0.526**	1		
PRE	−0.066	−0.034	−0.017	−0.070	0.128*	0.029	0.139*	0.106	0.281**	0.339**	1	
CR	−0.161**	0.078	0.004	−0.011	−0.132*	0.060	0.472**	0.478**	0.553**	0.515**	0.161*	1
Mean	1.51	1.89	2.92	1.97	3.89	1.92	3.524	4.147	3.942	4.241	3.671	3.698
SD	0.501	0.751	0.817	0.998	2.083	1.416	0.994	0.734	0.678	0.629	0.764	0.751

* $p < 0.05$, ** $p < 0.01$.

IM, intrinsic motivation; PSM, prosocial motivation; CR, creativity; KS, knowledge sharing; PRO, promotion focus; PRE, prevention focus; EDU, education.

intrinsic motivation, gender, age, etc. First, we checked the moderating effect of promotion focus. From M1 in **Table 6**, we found that the interaction between prosocial motivation and promotion focus was significant [effect = -0.129 , CI (95%) = $(-0.243, -0.014)$], indicating that promotion focus had a negative moderating effect on the relationship between prosocial motivation and knowledge sharing, which is the opposite of Hypothesis 3 (H3). As shown in **Table 7**, when the level of promotion focus was low, the effect of prosocial motivation on knowledge sharing was significant [effect = 0.111 , CI (95%) = $(0.049, 0.191)$]. However, when the promotion focus level was high, the effect of prosocial motivation on knowledge sharing was not significant [effect = 0.045 , CI (95%) = $(-0.016, 0.120)$], which also indicated that promotion focus had a negative moderating effect on the relationship between prosocial motivation and knowledge sharing.

We then examined the moderating effect of prevention focus. From M2 in **Table 6**, the interaction between prosocial motivation and prevention focus was significant [effect =

-0.132 , CI (95%) = $(-0.231, -0.033)$], indicating that prevention focus negatively moderated the relationship between prosocial motivation and knowledge sharing. Thus, Hypothesis 4 (H4) was verified. **Table 7** also shows that, when the level of prevention focus was low, the effect of prosocial motivation on knowledge sharing was significant [effect = 0.162 , CI (95%) = $(0.088, 0.259)$]. However, as the level increased, the effect of prosocial motivation on knowledge sharing decreased (from 0.162 to 0.081). The difference in the conditional effects of prosocial motivation on knowledge sharing also indicated that prevention focus had a negative moderating effect.

To clearly explain the moderating effect of regulatory focus on the relationship between prosocial motivation and knowledge sharing, we plotted simple slopes to show the relationship between prosocial motivation and knowledge sharing at high (mean + SD) and low (mean − SD) levels of regulatory focus (**Figures 2, 3**). **Figure 2** illustrates that, compared with the employees with a high promotion focus, the regression slope between prosocial motivation and knowledge sharing is greater

TABLE 4 | Main effects and mediation effects.

Variables	Outcome, knowledge sharing			Outcome, creativity					
	M1			M2			M3		
	Effect value	se	95% CI	Effect value	se	95% CI	Effect value	se	95% CI
Constant	2.232***	0.305	[1.632, 2.832]	2.017***	0.314	[1.400, 2.634]	1.115***	0.313	[0.499, 1.731]
Gender	−0.004	0.069	[−0.139, 0.131]	−0.159*	0.071	[−0.298, −0.020]	−0.157*	0.065	[−0.285, −0.029]
Age	−0.042	0.061	[−0.162, 0.079]	0.068	0.063	[−0.055, 0.192]	0.085	0.058	[−0.029, 0.199]
Education	−0.064	0.047	[−0.157, 0.028]	−0.065	0.049	[−0.161, 0.030]	−0.039	0.045	[−0.127, 0.049]
Tenure	0.036	0.050	[−0.062, 0.134]	−0.117*	0.051	[−0.218, −0.017]	−0.132**	0.047	[−0.225, −0.039]
Post	−0.012	0.017	[−0.046, 0.021]	−0.044*	0.018	[−0.079, −0.010]	−0.039*	0.016	[−0.071, −0.008]
Position	0.013	0.024	[−0.035, 0.061]	0.037	0.025	[−0.012, 0.087]	0.032	0.023	[−0.013, 0.077]
IM	0.150***	0.037	[0.078, 0.222]	0.245***	0.038	[0.170, 0.319]	0.018***	0.036	[0.114, 0.255]
PSM	0.339***	0.050	[0.241, 0.438]	0.350***	0.052	[0.249, 0.451]	0.213***	0.051	[0.113, 0.313]
KS							0.404***	0.054	[0.299, 0.510]
F		13.508***			21.926***			29.262***	
R ²		0.258			0.361			0.459	

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

PSM, prosocial motivation; CR, creativity; KS, knowledge sharing; PRO, promotion focus; PRE, prevention focus.

TABLE 5 | Results of the hypothesized relationships between prosocial motivation, knowledge sharing, and creativity.

	EFFECT	SE	LLCI	ULCI
Total effect	0.350	0.052	0.249	0.451
Direct effect	0.213	0.051	0.113	0.313
Indirect effect	0.137	0.034	0.079	0.214

for the employees with low promotion focus. Similarly, **Figure 3** shows that, compared with the employees with a high prevention focus, the regression slope between prosocial motivation and knowledge sharing is greater for the employees with a low prevention focus.

DISCUSSION AND IMPLICATIONS

Discussion

Based on the motivated information processing model, componential theory of creativity, and regulatory focus theory, this study attempted to explore the relationship between prosocial motivation and employee creativity and its mechanisms. Through an empirical analysis of the data of 320 employees, we tested the relationship between prosocial motivation and creativity, the mediating role of knowledge sharing in the aforementioned relationship, and the moderating role of regulatory focus on the relationship between prosocial motivation and knowledge sharing under the condition of controlling for intrinsic motivation. Several key findings can be derived from the results of this study.

First, after controlling for intrinsic motivation, prosocial motivation was positively correlated with creativity, a result that supported H1. This conclusion deepened the research conclusion of Li and Bai (2015a,b) that prosocial motivation has a significant impact on creativity when exploring the relationship between

intrinsic motivation and creativity. This finding also verified the conclusion of Liu et al. (2016) that prosocial motivation has a unique effect on creativity through meta-analysis. This shows that employees with prosocial motivation are willing to engage in work that is beneficial to others, participate in projects that can bring benefits to others, and can get sufficient energy from these helping jobs. Consequently, to better create well-being and benefits for others in the future, they often come up with creative ideas or try new ideas, procedures, or methods in their work to effectively promote the interests of others. Therefore, from an empirical perspective, this conclusion further demonstrated that prosocial motivation is an important predictor of creativity after controlling for intrinsic motivation.

Second, knowledge sharing played a partially mediating role in the relationship between prosocial motivation and creativity, with the direction of this relationship being consistent with our H2. This conclusion clarified the previous fuzzy conclusion that prosocial value orientation may positively affect knowledge sharing (Jadin et al., 2013), further confirmed that prosocial motivation has a positive effect on knowledge sharing, and verified once more that knowledge sharing is an important path for the formation of employee creativity (Zhu and Chen, 2013; Bhatti et al., 2020). This shows that prosocial motivation encourages employees to actively pay attention to the interests and needs of others and seek opportunities to do their best to help others. With this, employees become willing to share new

TABLE 6 | Results of the hypothesized relationships between prosocial motivation, knowledge sharing, promotion focus, prevention focus, and creativity.

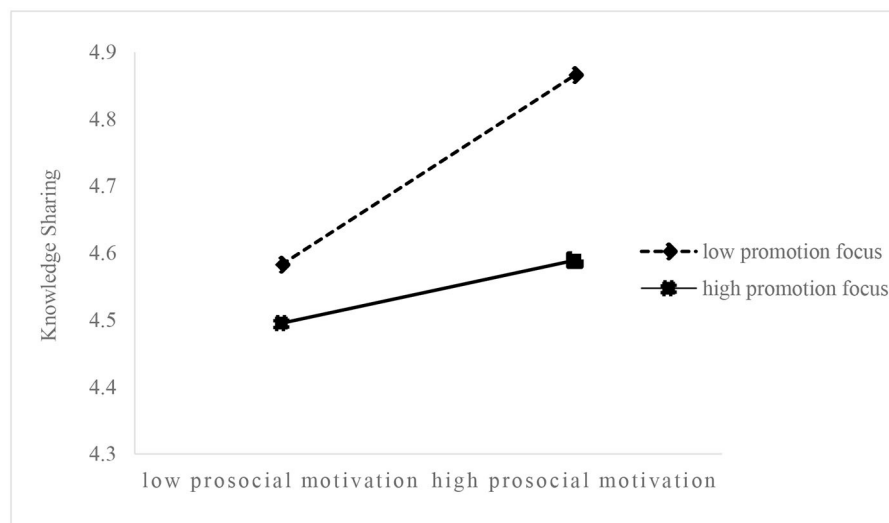
Variables	Outcome, knowledge sharing						Outcome, creativity		
	M1			M2			M3		
	Effect value	se	95% CI	Effect value	se	95% CI	Effect value	se	95% CI
Prosocial motivation	0.193***	0.051	[0.093, 0.293]	0.301***	0.049	[0.205, 0.397]	0.213***	0.051	[0.113, 0.313]
Knowledge sharing							0.404***	0.054	[0.299, 0.510]
Promotion focus	0.353***	0.062	[0.230, 0.476]						
PSM×PRO	−0.129*	0.058	[−0.243, −0.014]						
Prevention focus				0.211***	0.043	[0.127, 0.296]			
PSM×PRE				−0.132**	0.050	[−0.231, −0.033]			
R		0.602			0.568			0.678	
R ²		0.362			0.323			0.459	
F		17.566***			14.725***			29.262***	

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

PSM, prosocial motivation; CR, creativity; KS, knowledge sharing; PRO, promotion focus; PRE, prevention focus.

TABLE 7 | Conditional effect of prosocial motivation on knowledge sharing based on regulatory focus.

	Moderator: promotion focus	EFFECT	SE	LLCI	ULCI
Outcome: knowledge sharing	−1SD (−0.65)	0.111	0.036	0.049	0.191
	M (0)	0.078	0.029	0.028	0.143
	+1SD (+0.65)	0.045	0.034	−0.016	0.120
	Moderator: prevention focus	EFFECT	SE	LLCI	ULCI
	−1SD (−0.78)	0.162	0.044	0.088	0.259
	M (0)	0.122	0.031	0.069	0.194
	+1SD (+0.78)	0.081	0.037	0.020	0.168

**FIGURE 2 |** Moderating effect of promotion focus on the relationship between prosocial motivation and knowledge sharing.

information and accumulated experience at work when their collaborators or colleagues need them and often express their suggestions and opinions in group discussions. Furthermore, in the process of sharing, these employees become more aware of

the practical needs of their colleagues, which, in turn, leads to their creative solutions for the difficulties of these colleagues. In addition, after these employees express their opinions, the suggestions of others may make up for what may have been

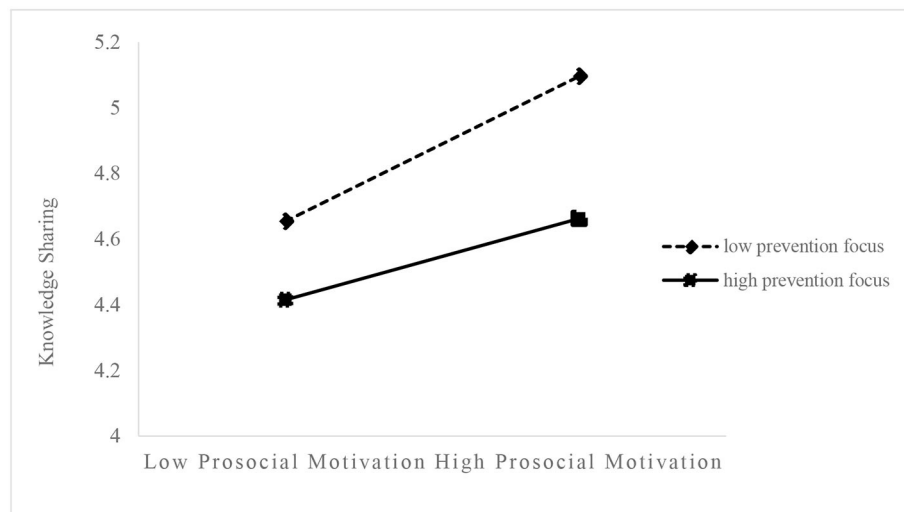


FIGURE 3 | Moderating effect of prevention focus on the relationship between prosocial motivation and knowledge sharing.

lacking in previous thinking, which provides a reference for them to come up with other creative ideas later on.

Third, promotion focus negatively moderated the relationship between prosocial motivation and knowledge sharing, with H3 not being supported. This suggests that the positive effect of prosocial motivation on knowledge sharing weakens when employees excessively pursue success and consider the benefits of work, which is contrary to our research hypothesis. This may be because employees with a high promotion focus mainly meet the needs of self-growth at work, have a strong ideal self, are very sensitive to rewards, and regard work success as the most important achievement in life (Higgins, 1998). However, prosocial motivation reflects care for other of individuals. Specifically, prosocial individuals tend to move beyond the limitations of their own perspectives, expect their work to bring welfare to others, are willing to participate in work beneficial to others, and try their best to make sure that their work contributes to the well-being of others (Grant, 2008). The high attention of employees with high promotion focus on self-interest does not match the prosocial motivation of interest appeal aimed at the welfare of others. Therefore, although employees with prosocial motivation want to share knowledge or help others, they are likely to reduce the degree of knowledge sharing or even hide knowledge based on self-interest and their pursuit of success. Thus, H3 was not supported.

Finally, prevention focus had a negative moderating effect on the relationship between prosocial motivation and knowledge sharing, with this result supporting H4. Individuals with high prevention focus are always worried about negative results at work (e.g., losing their jobs) and often feel anxious, irritable, and other negative emotions, consequently making them more likely to adopt avoidance strategies at work (Higgins, 1998). This does not match with prosocial motivation, which is characterized by the willingness to help others and the desire to create well-being for others. Therefore, when the prevention focus of an

individual is high, prosocial motivation will conflict with the behavioral tendency of prevention focus. This leads to prevention focus weakening the prosocial motivation to promote knowledge sharing behavior to some extent. It is worth noting, however, that **Table 6** shows a positive relationship between prevention focus and knowledge sharing. The possible reasons for this are as follows. First, individuals with a prevention focus often set challenging goals at work, pay more attention to existing problems, and try to avoid those problems (Li and Zhong, 2020). Studies have found that, to reduce the risk of failure in the market environment and prevent the occurrence of mistakes, they will constantly monitor, summarize, and reflect on their internal and external environments, workflows, and methods, form their own experience, and communicate with others (He and Liu, 2021). Koopmann et al. (2019) also found that prevention focus was positively correlated with voice behavior. In fact, individuals with a prevention focus will point out and stop unrealistic suggestions for the interests of their enterprise and show extra-role behaviors (e.g., prohibitive voice behavior and knowledge sharing) to maximize the effect of timely loss stopping (Lin and Johnson, 2015; MacMillan et al., 2019). Second, individuals with a prevention focus are more sensitive to negative information, such as being scolded by leaders and ostracized by colleagues, which they try to avoid (Lanaj et al., 2012; Hamstra et al., 2014). Such a perception tendency also makes them more concerned about their own reputations and avoids the formation of bad images (Pfafftheicher, 2015). Therefore, if prevention-focused employees do not share knowledge, they are prone to negative perceptions (Cho, 2006), such as being labeled as stingy and even losing the trust of others (Connelly et al., 2012; Guo et al., 2020). In response, they will exhibit more knowledge-sharing behaviors to avoid damaging their images and reputations. It is worth noting that, while the results of this study did show that prevention focus was positively correlated with knowledge sharing, some scholars have found that the two are not correlated (Li et al., 2014a). This

also provides a new direction for future research to explore the relationship between the two.

Theoretical Contributions

Our study on the mechanisms in the relationship between prosocial motivation and creativity has some theoretical contributions. First, we validated the unique relationship between prosocial motivation and creativity under the condition of controlling for intrinsic motivation. On the one hand, this result explained the inconsistency between the research results on the relationship between prosocial motivation and creativity and supported the discussion of scholars on the positive relationship between the two (De Dreu et al., 2011; Grant and Berg, 2011; Grant and Berry, 2011; Li and Bai, 2015a,b). On the other hand, unlike the previous belief that prosocial motivation can enhance the relationship between intrinsic motivation and creativity (Grant and Berry, 2011; Li and Bai, 2015a), we controlled for intrinsic motivation and concluded that prosocial motivation and creativity are positively correlated, which enhanced our understanding of prosocial motivation. In addition, individuals living in the Chinese traditional culture are influenced by collectivism, which emphasizes the spirit of “helping others to be happy.” With such social norms, individuals attach great importance to prosocial behavior (Li et al., 2012) and are more susceptible to prosocial motivation. Furthermore, this study examined the relationship between prosocial motivation and creativity to verify the motivational information processing theory in the Chinese context, thus providing a new empirical basis for the applicability of the theory to Eastern cultures.

Second, this study introduced knowledge sharing into the theoretical framework and discussed the mechanism of prosocial motivation in employee creativity, which compensates for the lack of attention given to the mediation mechanism in the existing literature. Scholars have proposed that, to better understand the process of prosocial motivation-stimulating creativity, more attention should be paid to the unique mechanism of prosocial motivation (Liu et al., 2016); however, previous studies have rarely discussed this in depth. In this regard, this study extensively analyzed the mediating role of knowledge sharing in the relationship between prosocial motivation and creativity, thus making up for the lack of existing research and expanding relevant theories. Specifically, knowledge sharing is a risky and autonomous behavior that often requires strong internal motivation (Brockner et al., 2005). Additionally, scholars have called for the imperative application of motivational theories from psychology to knowledge sharing (Wang and Noe, 2010). Therefore, we applied the motivated information processing model to find out the impact of employee prosocial motivation on knowledge sharing. Our study not only enriched previous studies on the relationship between altruism and knowledge sharing (Wang and Hou, 2015) but also promoted the application of this theory in the Chinese context and opened a new perspective for subsequent research. More importantly, based on the componential theory of creativity, this study explored the importance of knowledge sharing in enhancing employee creativity and verified the conclusions of previous studies on the relationship between knowledge sharing

and creativity (Zhu and Chen, 2013; Zhang et al., 2016). As a result, a complete transmission mechanism of the “motivation-behavior result” has been formed (Liu and Chi, 2019), indicating that knowledge sharing is one of the important paths for the formation of employee creativity (Zhu and Chen, 2013; Bhatti et al., 2020) and consequently revealing the “black box” between prosocial motivation and creativity.

Finally, this study also introduced the regulatory focus theory to explore the boundary conditions between the prosocial motivation and knowledge sharing of employees, thus enriching the research on the relationship between regulatory focus and knowledge sharing. When analyzing the relationship between regulatory focus and knowledge sharing, existing literature focused on the direct role of regulatory focus on knowledge sharing (Li et al., 2014b) and examined the moderating role of regulatory focus between organizational elements and knowledge sharing (Ju et al., 2019). However, little attention has been paid to the moderating role of regulatory focus in the relationship between individual motivational factors and knowledge sharing. Therefore, this study investigated the moderating effect of regulatory focus on the relationship between prosocial motivation and knowledge sharing, which can compensate for the deficiencies in existing literature to a certain extent. At the same time, this study responded to the call of Brockner and Higgins (2001) to apply the regulatory focus theory to organizational research. In connection with this, from the perspective of regulatory fitting, this study introduced the employee regulatory focus as a moderating variable, which more comprehensively reflects the complex process of prosocial motivation affecting employee knowledge sharing. As a result, it was confirmed that, because of the mismatch between promotion and prevention focus and the interest demands of prosocial motivation, both promotion focus and prevention focus can weaken the influence of prosocial motivation on knowledge sharing when employees are faced with the difficult choice of whether to share the knowledge they own. In conclusion, this study not only deepened the research on the influencing factors of knowledge sharing, but also expanded the theory of regulatory focus in organizational behavior to a certain extent.

Managerial Implications

Our research findings have several important managerial implications. First, our study showed that prosocial motivation increases the creativity of employees. Given the fact that behaviors that consider the interests of others are encouraged in China (Hofstede, 2001), we should pay attention to the stimulation of the prosocial motivation of employees not only to improve their creativity, but also to promote the harmonious development of society. Concretely, it is necessary to properly conduct talent selections and establish reasonable talent standards in the early stages of hiring. For instance, when the personnel department recruits new employees, in addition to emphasizing the necessary work skills, they should also pay attention to the selection of employees with prosocial motivation and the ability to think from the perspectives of others. If necessary, the traits of employees should be tested using certain evaluation forms. Specifically, in employee training,

managers should pay attention to stimulating and shaping prosocial values gradually, guiding employees to develop the habit of perspective taking, and laying a good psychological and behavioral foundation for releasing creativity. In the actual production, design, service, and other processes during employment, managers should try to let employees think from the perspective of others (e.g., customers, colleagues, and organizations) (Grant and Berry, 2011) and understand the characteristics of their service objects and the meaning of their work to help others (Grant, 2008). These can enhance the prosocial motivation of employees, thereby promoting employee creativity and generating better ideas and solutions.

Second, this study strengthens the advocacy of employee knowledge-sharing behavior by revealing that knowledge sharing is an important mechanism through which prosocial motivation affects employee creativity and further clarifying the role of knowledge sharing in organizations. Promoting employee knowledge sharing has become an important topic of practical concern. Specifically, organizations can encourage employees to share knowledge from two aspects: willingness and the path of knowledge sharing. On the one hand, knowledge sharing is not only an active behavior, but also an organizational citizenship behavior or a prosocial behavior outside of the responsibilities of employees (Bolino and Grant, 2016; Peng et al., 2019). Consequently, making such a behavior “voluntary” rather than “coercive” is the most significant feature (Zhao, 2013). Therefore, the management strategy of an organization for employee knowledge sharing should be encouraged rather than mandatory. In this regard, companies can develop and use incentives to promote employee knowledge sharing. The coordinated implementation of material and spiritual rewards can effectively stimulate knowledge sharing among employees. At the same time, organizations can create a shared or diversified organizational atmosphere and culture to reduce group prejudice behavior, increase emotional trust among members, and guide employees to participate in knowledge sharing, thus improving employee creativity. On the other hand, organizations should also improve knowledge-sharing channels and create conditions for knowledge sharing, which can be done by designing appropriate organizational structures and strengthening cognitive learning through the optimization of technical systems. In general, motivating employee knowledge sharing is a systematic process that needs to be promoted from multiple perspectives. Based on an in-depth study of the micro mechanism of knowledge sharing, an organization can systematically construct a knowledge governance system from the organizational structure, working relationships, cognitive learning, incentive mechanism, organizational culture, and other aspects so as to form a conducive environment where employees have both the willingness and the opportunity to share, thereby enhancing the level of organizational creativity.

Finally, managers can focus on exerting an influence on the individual behavioral tendencies of employees. This research showed that both promotion and prevention focus play a negative moderating role in the relationship between prosocial motivation and knowledge sharing. Specifically, employees with high promotion focus place too much emphasis on their

own success, are too utilitarian, and take knowledge and experience as their own in order to achieve their own goals regardless of the needs of others, with the behaviors not being conducive to knowledge sharing and creativity. Meanwhile, employees with high prevention focus fear failure and are timid, worrying that knowledge sharing will threaten existing interests. Therefore, organizations can avoid hiring candidates with high prevention focus or promotion focus, using a scale to measure the focus orientation of candidates when necessary. Furthermore, individuals with high regulatory focus place too much emphasis on their own interests, thus forming strong self-interest-centered principles. In this regard, organizations can also guide the regulatory focus of employees through reinforcement and training (Johnson et al., 2015; Song et al., 2019); for example, through publicity and education, the organization of activities, and increasing team performance evaluations to make employees realize that knowledge sharing is not only a contribution, but also a mutually beneficial and win-win process, with collective success being conducive to the individual development of employees. At the same time, attention should be paid to avoiding polarization during training, which also fits the Chinese traditional culture of the doctrine that states that everything has a degree, and that if you go too far, you cannot get enough. In addition, a team leader can show not only the behavior that focuses on collective interests, but also avoid selfish behaviors that sacrifice the interests of their subordinates during work. Such a role model can reduce the guard and utilitarianism of members so that the regulatory focus of employees can be maintained at a proper level.

Limitations and Future Research Directions

In this study, we controlled for intrinsic motivation and confirmed the relationship and mechanism between prosocial motivation and creativity. The above results are generally meaningful, but there are also some shortcomings. (1) All the cross-sectional data of the variables were collected in the same period, which limited the discussion of causality between the variables. In the future, longitudinal research should be considered as much as possible, and the different data of the variables should be obtained at different time points. (2) The research method was a single-questionnaire survey method. By using the form of questionnaires, employee self-reporting was, inevitably, a social applicability problem. In the future, we should combine various research methods as much as possible, such as a field experiment, and combine self-reporting with the evaluation. (3) In this study, promotion focus played a negative moderating role, which was contrary to the research hypothesis. Although this seems to relate to the unique situation in China, it needs to be verified further in future research.

Finally, it should be pointed out that this study was only a preliminary discussion of the mechanisms of prosocial motivation and creativity. There is still a large research space on the mechanisms between the two. For example, in the context of complex motivation, it may be interesting to study how the prosocial motivation, intrinsic motivation,

approach motivation, and avoidance motivation of employees together affect creativity. In addition, complex creative activities in real life are mostly group activities; thus, the effect of individual prosocial motivation on group creative performance can become a new direction of research. However, the research object of group creation activities involves two levels: the creative performance of a group and the individual creative performance in the group. In a follow-up study, when discussing the role of prosocial motivation in group creation, it is necessary to evaluate the creative performance of the group together with individual performance. Therefore, we need to explore more deeply the relevant theories of prosocial motivation.

DATA AVAILABILITY STATEMENT

The original contributions presented in the study are included in the article/supplementary

material, further inquiries can be directed to the corresponding author/s.

AUTHOR CONTRIBUTIONS

XQP and XZT recruited the participants, collected the data, and prepared the draft. XPP performed the data analysis. XZT reviewed the data critically and gave important advice. All authors contributed to the article and approved the submitted version.

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Entrepreneurship Resilience: Can Psychological Traits of Entrepreneurial Intention Support Overcoming Entrepreneurial Failure?

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Entrepreneurial failure (EF) can occur due to aspects beyond the control of an entrepreneur, even if planning and calculations have been thorough. This research proposes a framework to illustrate how entrepreneurs cope with failure, based on the psychological characteristics that lead them to become entrepreneurs. Entrepreneurial self-efficacy and internal locus of controls measure the perceived learning from failure and recovery ability that can support continued entrepreneur engagement and new opportunity recognition after a failure. This study applied Partial Least Square to calculate and evaluate data from 146 respondents to an online questionnaire survey. The analysis shows that the psychological characteristics represented by entrepreneurial self-efficacy and internal locus of control can influence the willingness of entrepreneurs to learn from failure and increase their ability to recover. This can increase the willingness to continue in entrepreneurship and help them to recognize new opportunities. However, recovery ability does not support entrepreneurial self-efficacy or new opportunity recognition because the ability to recover may vary among the entrepreneurs, depending on many factors.

Keywords: psychological traits, learning from failure, recovery capabilities, entrepreneurial engagement, opportunity recognition, entrepreneur failure

INTRODUCTION

Entrepreneurial failure (EF) is very likely to occur due to factors beyond the control of an entrepreneur, despite planning and calculations beforehand (Ucbasaran et al., 2013; Yamakawa and Cardon, 2015; Khelil, 2016). Therefore, the ability of an entrepreneur to come back from failure should be better understood. This behavior represents the ability of an entrepreneur to learn from failures. It also illustrates the resilience of a person to remain an entrepreneur and continue in business development, despite a failure.

Entrepreneurial failure has emerged as an important research topic (Jenkins and McKelvie, 2016). In general, researchers define EF as under-expected business performance that drives the entrepreneurs into the failure condition psychologically. Cope (2011) mentions that EF is a continuum that spans from causes to consequences. Previous research has discussed how an entrepreneur should behave after failure, providing a comprehensive and critical study of EF concepts (Ucbasaran et al., 2013) and theoretical viewpoints (Dias and Teixeira, 2017). Researchers

have also found the relation of EF on young entrepreneurs (Khelil, 2016), specifically on Small-Medium Enterprises (SMEs) (Michael and Combs, 2008), and start-up businesses (Artinger and Powell, 2016). However, there has been a less qualitative examination of entrepreneurial behavior after a failure and entrepreneurial resilience after failure.

Internal individual factors can influence the EF (Yamakawa and Cardon, 2015; Walsh and Cunningham, 2017), and they can be attributed to the entrepreneur on a personal basis. In contrast, previous research has widely explored factors underlying the intention of a person to be an entrepreneur, especially psychological factors. Strong empirical results emphasize that entrepreneurial self-efficacy and internal locus of control play a critical role as a personal basis underlying entrepreneurial intention (Shinnar et al., 2014; Hsiao et al., 2016; Tsai et al., 2016; Farrukh et al., 2017; Asante and Affum-Osei, 2019). These traits are inherent in behavior, beliefs, and cognitive models of entrepreneurs as internal personalities. Moreover, Felin and Foss (2006) pointed out that EF may be influenced by internal factors of individual-level variables. Thus, this research considers entrepreneurial self-efficacy and internal locus of control as psychological traits that need to be proven, as both a foundation when people start as entrepreneurs and as a foundation for resilience after failure.

The impact and transition of failure include steps taken by entrepreneurs after a failure (Omoredede, 2020) as they look for ways to recover by understanding what factors led to that failure. The mechanism of recovery from failure is highly influenced by feelings and emotional reactions (Cope, 2011). Furthermore, entrepreneurs learn from their previous failures through sense-making and reflection. They also may consider the importance of not making the same mistakes or making the same choices that led to their previous failure before embarking on new ventures (Omoredede, 2020). Thus, the constructs of recovery capabilities and perceived learning from failure are considered a result of failure of an entrepreneur.

Actions taken after the entrepreneurs have accepted and come back from their failures are part of the outcomes of failure. Having learned from the failure, entrepreneurs can go on to consider other business opportunities and exploit new opportunities using their existing knowledge and networks (Omoredede, 2020). This may allow entrepreneurs to better take advantage of new business opportunities (Amankwah-Amoah et al., 2016). The process of launching a new venture plan is a means for an entrepreneur to recover from past failures (Amankwah-Amoah et al., 2016; Walsh and Cunningham, 2017). Moreover, launching a new venture or enterprise shows they want to continue as an entrepreneur by leveraging their experience.

This study integrates the construct to produce useful implications for parties or stakeholders related to entrepreneurs and to address the limitations of previous research. Yu et al. (2014) stated that some individual characteristics influence learning outcomes. At the organizational level of analysis, those characteristics and the learning outcomes can influence future behavior, entrepreneurial choices, and results. This study considers personality traits that represent the internal locus

of control and entrepreneurial self-efficacy of an entrepreneur as the traits that underlie the entrepreneurs when they faced failure. It then evaluates how they will affect their capacity to derive learning from mistakes and their ability to recover. It also investigates their influence on failure outcomes, which can support new opportunity recognition and continuance of entrepreneurship engagements. Overall, this study provides insight into physiological traits that underlie the intention of an individual to be an entrepreneur and may also underlie the ability of an entrepreneur to rise from failure.

LITERATURE REVIEW

EF

Entrepreneurial failure is explained as a psychological and economic phenomenon arising due to underperformance of an organization or falling below the expectations of an entrepreneur, so the entrepreneur enters psychological conditions of failure (Khelil, 2016; Dias and Teixeira, 2017). EF refers to the process of entrepreneurial failure from the perspective of entrepreneurs, because they are the main ones affected by the failure (Klimas et al., 2020). EF is an important aspect of the entrepreneurial process (McGrath, 1999; Zahra and Dess, 2001), which is a personal endeavor (Stevenson and Jarillo, 1990), so the focus of EF is on the individual level. Otherwise, the term “exit” refers to the failure of a corporation (Jenkins and McKelvie, 2016). Also, EF may be caused by internal factors such as a lack of experience and making unrealistic decisions, as well as external factors such as financial constraints (Larson and Clute, 1979; Pretorius, 2008; Ucbasaran et al., 2013).

Psychological Traits

The driving factors of the decision of an individual to start a business are personality traits (McClelland, 1961; Brockhaus, 1980; Krueger et al., 2000), and differences in personality traits between entrepreneurs and non-entrepreneurs are assumed to be important preconditions for entrepreneurship (Utsch and Rauch, 2000). According to Learned (1992), some people have a combination of psychological characteristics and background factors that make them more likely to attempt to start a company. Internal locus of control and entrepreneurial self-efficacy are psychological traits that underlie the intention of an individual to be an entrepreneur in a variety of contexts and settings (Hsiao et al., 2016; Tsai et al., 2016; Farrukh et al., 2017; Asante and Affum-Osei, 2019). Accordingly, these variables have been proven to be strong predictors for entrepreneur intention.

Moreover, entrepreneurial self-efficacy is a key indicator in addition to personality traits “because it refers to cognitive evaluations of personal capabilities in the specific task of entrepreneurship, both individual and contextual” (Chen et al., 1998; McGee et al., 2009). Furthermore, entrepreneurial efficacy has been recognized as a key driver for the intentions and success of entrepreneurs, particularly for start-up entrepreneurs (Naktiyok et al., 2009; Drnovšek et al., 2010; Shinnar et al., 2014; Tsai et al., 2016).

Meanwhile, regarding the internal locus of control, Rotter (1990) argued that the internal locus of control is the perception

of an individual about an event that occurs, and it depends on the behavior or the characteristics of the individual. Internal locus of control has been proven to be a favorable predictor of entrepreneurial intention in numerous studies (Baldegger et al., 2017). Brunel et al. (2017) found that individuals with an internal locus of control feel they will succeed in entrepreneurship. Therefore, psychological characteristics, such as locus of control, play an important role in developing entrepreneurial intention.

Entrepreneurial self-efficacy and internal locus of control are considered important in personality theories of entrepreneurship. Thus, this research regards internal locus of control and entrepreneurial self-efficacy as strong factors that underlie the entrepreneurship intention of an individual, and it needs to be proven whether these factors can maintain the engagement of entrepreneurs to seek new opportunities.

Self-Efficacy

Self-efficacy was proposed by Bandura (1977) to describe the belief of a person in his/her ability to complete tasks. The development of intentions is thought to be preceded by self-efficacy. Individuals who believe that they have the potential to accomplish a task are more likely to develop the desire to accomplish it. In contrast, individuals who feel that they lack the potential to accomplish an objective are less likely to make plans to pursue that goal.

According to Scherer et al. (1989), people who believe that their parents are high achievers are more likely to believe that they should launch their own company than those who believe that their parents are low achievers or who have no such role models. Offspring of entrepreneurs often assume that they have a higher degree of competence when it comes to performing the tasks necessary to start a company.

Other studies argue that self-efficacy can be linked to entrepreneurship education as a predictor of entrepreneurial intention (Marques et al., 2012; Ndofirepi, 2020), behavioral approach (Ferreira et al., 2012), familial factors (Altinay et al., 2012; Farrukh et al., 2017), demographic characteristics (Nga and Shamuganathan, 2010; Shinnar et al., 2014), and as applied from the point of view of students (Dinis et al., 2013; Nasip et al., 2017).

Internal Locus of Control

Rotter (1954) used the viewpoint of locus of control to investigate personality traits. He considered that people who have an internal locus of control feel that their destiny is determined by their efforts and that they can control their fate. Conversely, people with an external control position believe that their fate is determined by chance or luck and is beyond their control (Lii and Wong, 2008). In addition, Luthans et al. (2006) indicated that people with an internal locus of influence are more likely to face difficulties and obstacles positively, finding meaningful solutions to overcome problems. Individuals with an internal locus of control are more motivated to succeed than those with an external locus of control, so when faced with a challenge, they are more motivated to learn and develop their skills and expertise.

Empirical studies on how locus of control affects entrepreneurial activities, particularly the motives to launch a business, have found conflicting results. For example, there have

been studies on the entrepreneurial intentions of a small group of MBA students, showing that there is no difference between those with an entrepreneurial inclination and those without an entrepreneurial inclination (Chye Koh, 1996). Furthermore, some studies have found that there is no statistically significant relationship between entrepreneurial intention and locus of control (Gurel et al., 2010). Nevertheless, some previous studies have found that the inner locus of control is a driving factor for entrepreneurship (Ang and Hong, 2000).

The Impact of Failure

When an entrepreneur fails, he/she incur a variety of outcomes, including social, financial, and physiological costs (Cope, 2011; Shepherd and Haynie, 2011; Shepherd et al., 2011). The perception of failure of an individual occurs when he/she thinks he/she has failed (Khelil, 2016; Dias and Teixeira, 2017), and this is an individual perception (Jeng and Hung, 2019). Through the psychological learning process, entrepreneurs can understand and learn from circumstances that bring about failure. Entrepreneurs engage in sense-making when they examine the failure to determine why and how their company failed. Therefore, this process could lead them to learn from failure by paying attention to the decisions, aspects, or competencies leading to EF (Omorede, 2020).

This study considers perceived learning from failures and recovery capability as the impact from failure. The recovery phase is the process of healing, which necessitates some psychological distance to overcome failure emotions (Klimas et al., 2020). As a result of an unsuccessful business plan, entrepreneurs can gain new knowledge, skills, and experience, and it is critical to recognize failure as a part of the learning process and understand it as a part of the mechanism that underpins the dynamic sense-making process (Shepherd et al., 2011). Singh et al. (2007) used multiple frameworks to analyze rich interview data and find evidence for grief recovery following EF. Furthermore, entrepreneurs can learn valuable lessons from their failures when they try to focus on and make sense of them to make adjustments and enhancements to their attitudes so as to prevent them from repeating the past errors (Cannon and Edmondson, 2001; Politis and Gabrielsson, 2009).

Failure Outcomes

Entrepreneurs who learn from their mistakes and gain new experience can take advantage of new opportunities or launch a new business after their EF (Yamakawa and Cardon, 2015). Entrepreneurs who have learned from failures and gained new ideas can look for other market prospects with the skills and networks that they have developed (Amankwah-Amoah et al., 2016). Such entrepreneurs can progress to see new niches and areas for development (Atsan, 2016).

Many entrepreneurs who have experienced and learned from failures use this experience to start a new firm, and a better method of forming an organization helps ensure that they will use their past failures to recover (Amankwah-Amoah et al., 2016; Walsh and Cunningham, 2017). Entrepreneurs should learn to emerge from the haze of EF, recognize that the company has

TABLE 1 | Operational definition.

Construct	Definition	References
Entrepreneurial self-efficacy	Confidence in one's ability to complete a task	Bandura, 1977
Internal locus of control	Individuals who have an internal locus of control think that the amount of effort they put in determines their success or failure and that they have control over their fate	Rotter, 1954
Perceived learning from failure	The cognitive capacity of entrepreneurs to gain new insights from prior experiences of failure to find and exploit new opportunities	Corbett, 2007
Recovery capabilities	The individual's ability to quickly process thoughts about the company's losses no longer elicits negative emotional reactions	Shepherd, 2003
Continuance of entrepreneurship engagement	Entrepreneurs' ability to move forward and seek other business opportunities by leveraging their existing knowledge and networks	Omorede, 2020
New opportunity recognition	Being aware of potential business ideas and gathering information on new product or service ideas	Kuckertz et al., 2017

closed down, avoid stigma, and then recover. **Table 1** provides the operational definition of each construct involved in this research.

DEVELOPMENT OF HYPOTHESES

Emotional reactions and consequences are frequently associated with firm failure. The psychological and emotional experience following failure is a significant aspect of the experience (Omorede, 2020). When they fail, they experience anger, grief, disappointment, despair, sadness, regret, and other negative emotions. This research showed that the failed business exacted an “emotional toll” on the entrepreneurs. Nevertheless, after they had failed, hope, pride, and confidence were expressed by some entrepreneurs (Cope, 2011). For example, their loss may have provided them with a deeper perspective on their failure (Byrne and Shepherd, 2015). Therefore, this study assumes that the emotional state of an entrepreneur after experiencing failure is created or appears to be based on the psychological characteristics of each individual.

Omorede (2020) identified that the process of recovery from failure is primarily influenced by emotions and emotional reactions. Furthermore, they were able to learn from their previous experiences because of the emotional cost. They also emphasized the importance of not making the same mistakes or

similar decisions that led to the failure of their previous business when starting new ventures. In this study, entrepreneurial self-efficacy and internal locus of control are the psychological characteristics of every entrepreneur that initially support their intention to become entrepreneurs. Thus, this research proposes H1–H4 as follows:

H1: Entrepreneurial self-efficacy has a positive impact on the perceived learning from failure.

H2: Entrepreneurial self-efficacy has a positive impact on recovery capability.

H3: Internal locus of control has a positive impact on perceived learning from failure.

H4: Internal locus of control has a positive impact on recovery capability.

Entrepreneurs claim that they learned from their past experiences through reflection and sense-making through the recovery process (Omorede, 2020). They learned more about their business and the reasons for their failure, as well as their external relationships and networks, and how to run a business more effectively in the future. Thus, H5 is proposed as follows:

H5: Recovery capability has a positive impact on perceived learning from failure.

Many entrepreneurs who suffer and learn from failures use their unsuccessful experiences to start up a new firm, and these findings suggest that one way for entrepreneurs to recover from previous failures is to start a new business (Amankwah-Amoah et al., 2016; Walsh and Cunningham, 2017). Entrepreneurs need to separate themselves from the emotion of EF, accept the fact that the company has failed, and avoid stigma, in order to successfully launch a new business (Walsh and Cunningham, 2017). Furthermore, entrepreneurs believe that their past failures have helped them to direct their potential business and career paths, as well as the decisions that led to them (Dias and Teixeira, 2017). Thus, this research proposes H6 and H7 as follows:

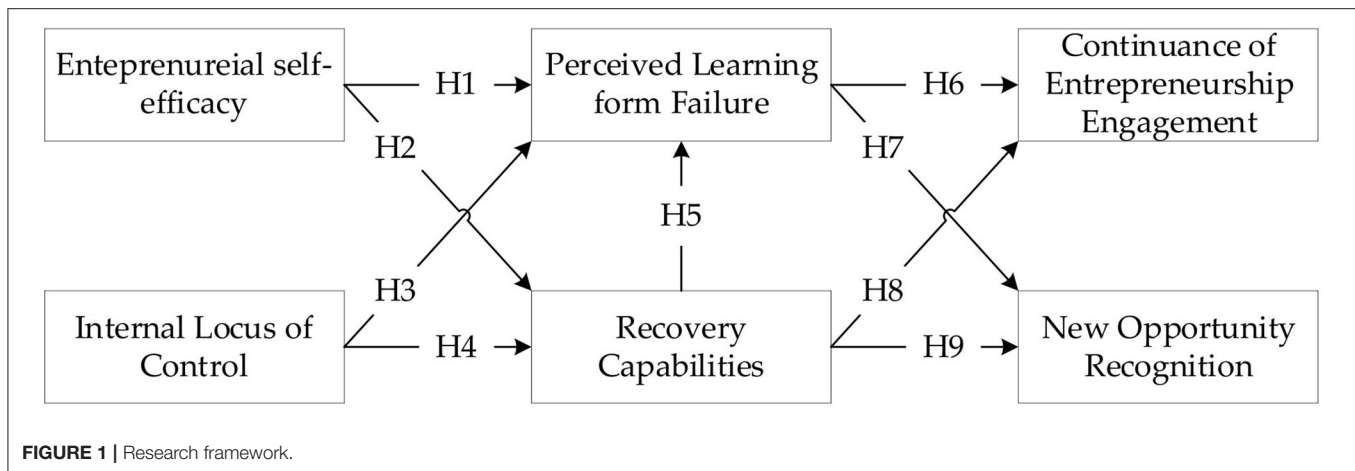
H6: Perceived learning from failure has a positive impact on the continuance of entrepreneurship engagement.

H7: Recovery capability has a positive impact on the continuance of entrepreneurship engagement.

After gaining new experiences and learning from failure, many entrepreneurs go on to pursue other business opportunities by exploiting their existing expertise and networks. This enabled the entrepreneurs to capitalize on new business opportunities (Amankwah-Amoah et al., 2016). Furthermore, venture capitalists are interested in investing in entrepreneurs who have been unsuccessful because they believe that the ability of entrepreneurs to find new business opportunities is more important than the past failure (Cope et al., 2004). In other words, venture capitalists seek entrepreneurs who made a full recovery from a failure and find new opportunities that leverage their experience. Thus, this research proposes H8 and H9 as follows:

H8: Perceived learning from failure has a positive impact on new opportunity recognition.

H9: Recovery capability has a positive impact on new opportunity recognition.



RESEARCH METHOD

This study used a questionnaire to collect responses from former unsuccessful failed entrepreneurs. This research limits itself to the individual level of analysis, which means that the event of failure is experienced only by the entrepreneur, not as an organization or a company. The initial questions were asked to make sure that all the participants meet our criteria, “Have you experienced failure in entrepreneurship?” and “what kind of costs of business failure affect you? The financial cost, social cost, and/or psychological cost?” If the participants answered “No” in the first question, the assessment form will stop since these participants did not meet our criteria. The second question was developed from the findings of Ucbasaran et al. (2013), which state that the three types of aftermath to EF are financial, social, and psychological. This questionnaire aims to make the participant recall that event of failure and to ensure that they understand what is the “failure” that we mean.

The questionnaire had two sections for demographic information and measurement questions. The overall framework is based on the model previously studied, as shown in **Figure 1**, and the items in the questionnaire are based on verified past research scales. The questionnaire was verified by several researchers with extensive experience in entrepreneurship. The validity of the contents of the questionnaire was then double-checked by them. The seven-point Likert scales were used to improve the accuracy of the scales (Churchill and Peter, 1984). **Table 2** shows the measurement items adopted in this study.

To increase the willingness and motivation of participants, this study provided rewards (such as mobile credit or e-wallet balance) to the first 20 participants who submitted valid questionnaires. Users were required to provide an e-mail address to ensure that they did not participate in the survey more than once. Data filtering was used to eliminate invalid responses. A total of 146 samples were collected in a valid final survey. **Table 3** summarizes the descriptive statistics of the sample.

DATA ANALYSIS

Two measures of evaluating and measuring partial least squares (PLS) were conducted. In the initial step, the validity and

reliability analyses were carried out. Then, the coefficient path and the explanatory power of the structural model were tested. The goal of these two steps was to confirm the validity and reliability of the construct and to check the relationship between the constructs (Anderson and Gerbing, 1988; Hulland, 1999). PLS has been implemented and considered as the best tool for describing the causal interaction between construct variables and hence can concurrently handle model constructs and measurement items (Petter et al., 2007). In addition, since PLS has relatively simple parameters for variable normality and randomness, it is ideal for discussing relationships between variables in an irregular distribution of results. It can also evaluate dynamic prediction models (Chin and Newsted, 1999). Thus, PLS is more acceptable for this research than other SEM approaches to evaluate relationships between variables, eliminate measurement errors, and avoid collinearity.

Outer Model and Scale Validation

The related external model measurements include the reliability and the internal consistency of each item, convergent validity, and discriminatory validity of each design. Appropriate question loading tested the reliability of the products. Factor loading was the expressive degree of determination, and a threshold value of 0.6 was used for individual reliability (Hair et al., 2016). Both observed variables follow the criteria after the elimination of any model. **Table 4** indicates the composite reliability of each construct. For each construct, any composite-reliability (CR) rating higher than 0.7 (Chin, 1998) suggests that the construct was internally acceptable.

Furthermore, the convergent validity test and the discriminant validity test were used to verify the construct validity. Fornell and Larcker (1981) proposed that the convergence validity could be verified when the factor loads of the metrics are >0.5 , the average variance derived (AVE) is >0.5 , and reliability is >0.7 . **Table 5** indicates that all constructs conform to the recommendations of Fornell and Larcker (1981), suggesting favorable convergent validity. Additionally, the discriminant validity was determined by comparing the square root of AVE to the correlation coefficient of the constructs. **Tables 3, 4** show that the construct had discriminant validity.

TABLE 2 | Measurement items.

Item	Questions
Entrepreneurial self-efficacy (McGee et al., 2009)	
ESE1	I am able and confident in brainstorming (coming up with new ideas for a product or service)
ESE2	I can make a plan and estimate customer demand for a new product or service
ESE3	I can clearly and concisely explain verbally or in writing my business idea in everyday terms
ESE4	I can deal with and solve effectively day-to-day problems and crises
ESE5	I can manage the financial assets of my business
Internal locus of control (Mueller and Thomas, 2001; Indarti and Krinstiansen, 2003)	
ILC1	My life is determined by my actions
ILC2	When I get what I want, it is usually because I worked hard for it
ILC3	Whether or not I am successful in life depends mostly on my ability
ILC4	I feel in control of my life
ILC5	Diligence and hard work usually lead to success
Perceived learning from failure (Shepherd et al., 2011; Boso et al., 2019; Liu et al., 2019)	
PLF1	I am applying what I learned from my previous failure experience in my new business
PLF2	I realize the mistakes that we made that led to the failure of our last venture
PLF3	I have learned to better manage the new venture since the last failed venture
PLF4	I am now alert to the performance feedback
PLF5	I have learned to better execute a business's strategy
Recovery capabilities (Argentzell et al., 2017)	
REC1	My experiences have changed me for the better
REC2	I have been able to come to terms with things that have happened to me in the past and move on with my life
REC3	I am strongly motivated to get better
REC4	I can recognize the positive things I have done
REC5	I can make sense of my distressing experiences (dropped)
Continuance of entrepreneurship engagement (Liñán and Chen, 2009)	
CEE1	I am ready to do anything to re-start/ continue my business
CEE2	I will make every effort to re-start/ continue my business
CEE3	I am determined to create/continue a firm in the future
CEE4	I have very seriously thought of starting a firm
CEE5	I have the firm intention to start a firm someday
New opportunity recognition (Kuckertz et al., 2017)	
NOR1	I am always alert to business opportunities (dropped)
NOR2	I research potential markets to identify business opportunities
NOR3	I search systematically for business opportunities
NOR4	I look for information about new ideas on products or services
NOR5	I regularly scan the environment for business opportunities

Common Method Variance Testing

Common method variance (CMV) could be a major challenge for any self-reported data and SEM, which is used in this research data collection methodology. The existence of the CMV in the dataset means that the findings are not empirically correct. To control this issue, this research adopts Harman's one-factor test to test the existence of the CMV (Podsakoff and Organ, 2016). The exploratory factor analysis was conducted to verify that the first factor was <50% on all observed indicators. Explanatory variance for the first factor was 37.9%, indicating that CMV is not an issue in this research.

Inner Model

The internal PLS model analysis was applied to analyze the hypotheses. The path coefficients are the direction and strength

of the connection between the variables that imply cause and effect between the measured variables and the potential ones. Moreover, the *R* square value corresponds to the percentage of predictor variables that represent the predictive capacity of the model. Bootstrapping was used to estimate the degree of any path coefficient. The estimation was made by re-sampling data and the estimated values were more precise than the commonly used limit approximate value (Purvis et al., 2001). This study, therefore, used this approach to determine the significant relationship between variables.

Table 6 shows that entrepreneurial self-efficacy has a positive effect on perceived learning from failure, supporting H1 (ESE → PLF: $\beta = 0.200$, t -value = 2.835); however, it has no significant effect on recovery capability (ESE → REC: $\beta = 0.017$, t -value = 0.128), means H2 not supported. Thus, the internal locus of

TABLE 3 | Sample demographics.

Characteristic	Items	Frequency	Percentage
Gender	Male	66	45.2%
	Female	80	54.8%
	Total	146	100%
Age	16–20	15	10.3%
	21–25	43	29.5%
	26–30	39	26.7%
	31–35	21	14.4%
	>36	28	19.1%
	Total	146	100%
Education level	High school	35	24%
	Diploma/Bachelor	104	71.2%
	Master's	4	2.7%
	Doctoral	3	2.1%
	Total	146	100%

control significantly impacts both perceived learning from failure and recovery capability, so H3 and H4 supported ($ILC \rightarrow PLF: \beta = 0.554, t\text{-value} = 7.435$; $ILC \rightarrow REC: \beta = 0.732, t\text{-value} = 5.998$). In contrast, recovery capability significantly affects perceived learning from failure, which supporting H5 ($REC \rightarrow PLF: \beta = 0.233, t\text{-value} = 5.585$). H6 and H7 were supported because perceived learning from failure has a positive effect on continuance entrepreneurship engagement and new opportunity recognition ($PLF \rightarrow CEE: \beta = 0.388, t\text{-value} = 2.993$; $PLF \rightarrow NOR: \beta = 0.355, t\text{-value} = 2.434$). Finally, recovery capability has a significant impact on continuance entrepreneurship engagement, supporting H8 ($REC \rightarrow CEE: \beta = 0.333, t\text{-value} = 2.496$), but does not have a significant impact on new opportunity recognition ($REC \rightarrow NOR: \beta = -0.065, t\text{-value} = 0.542$), so H8 was not supported. **Figure 2** illustrates the overall results of the inner model.

Mediation Test

In this study, mediation tests were carried out to find out more about possible important effects of the proposed model. This study adopts the bootstrapping approach with bias-corrected confidence estimations to assess the effects of the mediators (Hayes and Preacher, 2014). Bootstrapping provides an empirical representation of the sampling distribution of the indirect impact by considering the generated sample of size n as a small representation of the population, which is continually resampled throughout the analysis to imitate the original sampling process (Hayes, 2009). Thus, bootstrapping is a valid and effective method for testing the mediation effect.

The results of mediation tests are presented in **Table 7**. There was a 95% CI of the specific mediating effects with 10,000 bootstrap resamples. The decision of the mediation effect is significant if the t -values and p -values are >1.96 and 0.05 , respectively. Moreover, to obtain further results on the mediation analysis, a 95% bootstrapped CI bias is needed. The mediation

TABLE 4 | Reliability analysis and convergent validity.

Construct	Measurement item	Factor loading	Cronbach alpha	Composite reliability	AVE
Entrepreneurial self-efficacy	ESE1	0.926	0.964	0.972	0.875
	ESE2	0.956			
	ESE3	0.946			
	ESE4	0.919			
	ESE5	0.929			
Internal locus of control	ILC1	0.921	0.956	0.966	0.85
	ILC2	0.935			
	ILC3	0.902			
	ILC4	0.929			
	ILC5	0.921			
Perceived learning from failure	PLF1	0.915	0.93	0.948	0.786
	PLF2	0.940			
	PLF3	0.930			
	PLF4	0.884			
	PLF5	0.750			
Recovery capability	REC1	0.929	0.917	0.942	0.801
	REC2	0.813			
	REC3	0.941			
	REC4	0.892			
	REC5	(deleted)			
Continuance entrepreneurship engagement	CEE1	0.874	0.903	0.929	0.723
	CEE2	0.890			
	CEE3	0.885			
	CEE4	0.869			
	CEE5	0.721			
New opportunity recognition	NOR1	(deleted)	0.948	0.963	0.866
	NOR2	0.941			
	NOR3	0.942			
	NOR4	0.950			
	NOR5	0.887			

effects exist if the indirect effect 95% bias-corrected bootstraps do not straddle a 0 in between (Preacher and Hayes, 2008).

The bootstrapping analysis shows that the relationship of entrepreneurial self-efficacy to continue entrepreneurship engagement through perceived learning from failure ($ESE \rightarrow PLF \rightarrow CEE$) was supported. However, other entrepreneurship self-efficacy relationships ($ESE \rightarrow REC \rightarrow CEE$; $ESE \rightarrow PLF \rightarrow NOR$; $ESE \rightarrow REC \rightarrow NOR$) are not supported. Furthermore, the relationships between the internal locus of control to continuance entrepreneurship engagement through perceived learning from failure and recovery capability ($ILC \rightarrow PLF \rightarrow CEE$; $ILC \rightarrow REC \rightarrow CEE$) are both supported.

TABLE 5 | Correlation matrix.

	CEE	ESE	ILC	NOR	PLF	REC
CEE	0.850					
ESE	0.513	0.935				
ILC	0.568	0.874	0.922			
NOR	0.083	0.276	0.268	0.93		
PLF	0.647	0.837	0.903	0.305	0.887	
REC	0.635	0.656	0.746	0.212	0.778	0.895

CEE, continuance entrepreneurship engagement; ESE, entrepreneurial self-efficacy; ILC, internal locus of control; NOR, new opportunity recognition; PLF, perceived learning from failure; REC, recovery capability.

TABLE 6 | Summary of the inner model result.

	Hypothesis	Path coefficient	t-value	Result
H1	ESE → PLF	0.200**	2.838	Supported
H2	ESE → REC	0.017	0.128	Not supported
H3	ILC → PLF	0.554***	7.435	Supported
H4	ILC → REC	0.732***	5.998	Supported
H5	REC → PLF	0.233***	5.585	Supported
H6	PLF → CEE	0.388**	2.993	Supported
H7	PLF → NOR	0.355*	2.434	Supported
H8	REC → CEE	0.333*	2.496	Supported
H9	REC → NOR	−0.065	0.452	Not supported

CEE, continuance entrepreneurship engagement; ESE, entrepreneurial self-efficacy; ILC, internal locus of control; NOR, new opportunity recognition; PLF, perceived learning from failure; REC, recovery capability.

* $p < 0.05$; ** $p < 0.01$; and *** $p < 0.001$.

Number of bootstrap samples = 10,000.

Moreover, the relationship of internal locus of control to new opportunity recognition through perceived learning from failure (ILC → PLF → NOR) is also supported. But the relationship of internal locus of control to new opportunity recognition through recovery capability (ILC → REC → NOR) is not supported.

DISCUSSION

This study considered how psychological characteristics underpin the desire of an individual to be an entrepreneur, can affect the ability of an entrepreneur to stay in business, and find new opportunities in the future. Internal locus of control and entrepreneurial self-efficacy were used as psychological traits and combined with perceived failure learning and recovery capability as the post-failure behavior of entrepreneurs. Furthermore, as a result of entrepreneurship failure, continued entrepreneurship engagement, and new opportunity recognition were adopted. The empirical findings and contributions of this study have significant implications for both academics and practitioners.

Theoretical Implications

This study adds to the knowledge system about entrepreneurship resilience in several ways. First, we presented a comprehensive conceptual model for the outcomes, which include continued

entrepreneurship engagement and recognition of new opportunities following entrepreneurship failure. Despite increased research interest in entrepreneurship, there has yet to be developed a holistic model that qualitatively explains entrepreneur failure and resilience. Second, this is the first study to link psychological characteristics of entrepreneurship intention to entrepreneur behavior after failure, which leads to failure outcomes. By utilizing the new data form, this study makes several contributions to the related field of research.

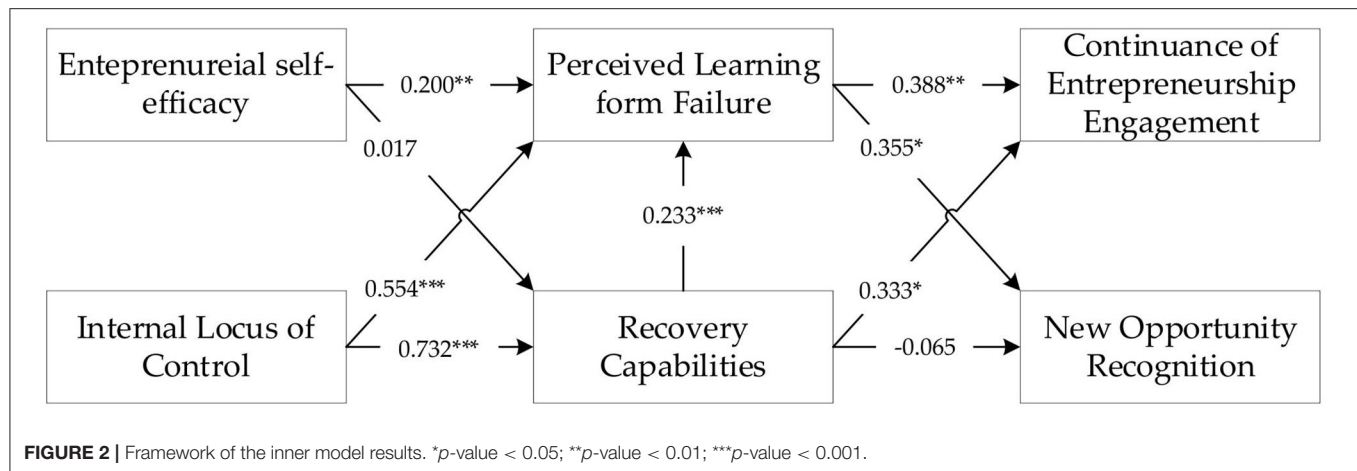
Managerial Implications

The findings shed light on how entrepreneurs manage their psychological characteristics by concentrating on what they should do in the event of a failure. The findings suggest that entrepreneur stakeholders, such as investors, suppliers, employees, and customers, should pay attention to the psychological traits that underpin entrepreneurship, particularly internal locus of control and entrepreneurial self-efficacy. These psychological traits can be used by stakeholders to assess the ability of an entrepreneur to respond to a failure to anticipate stakeholder losses. Thus, the findings of this study show that positive emotions are also important in coping with and recovering from failure.

The hypothesis 1 test found that entrepreneurial self-efficacy significantly impacts perceived learning from failure. Then, the internal locus of control has a positive influence on perceived learning from failure and recovery capability, so hypotheses 3 and 4 are supported. This finding suggests that entrepreneurs keep their positive self-efficacy and internal locus of control because these psychological traits indicate their ability to learn from failure and recover after failure. The stakeholders of an entrepreneur can indicate the confidence of an entrepreneur and their belief that every effort by them will support their ability to learn from failure in support of recovery. However, the result indicates that entrepreneurial self-efficacy has no significant impact on recovery capability. This is because once failure occurs, confidence will decrease, and individuals need time to recover. Omorede (2020) found that positive emotions can either expedite or hinder recovery from failure. In other words, entrepreneurs may still be recovering from a failure that has occurred so that it is difficult to recover.

The test results of hypothesis 5 show that recovery capability significantly impacts perceived learning from failure. Amankwah-Amoah et al. (2016) discovered that the start of their learning process was the phase of grief for entrepreneurs who have failed. This result indicates that entrepreneurs will learn effectively from their failure experience after they have fully recovered. The stakeholders of an entrepreneur can evaluate the recovery process of an entrepreneur, and the faster the entrepreneur recovers, the sooner they will learn from their failures and will open up other opportunities.

According to the findings, entrepreneurs generally either look for potential business opportunities or invest in a related business after failure. This is in line with the testing result of hypotheses 6, 7, and 8 that state perceived learning from failure supports returning to entrepreneurship and seeking new

**TABLE 7 |** Mediation test.

Relationship	Std. beta	Std. error	t-value	Confidence interval (bias-corrected)		Decision
				LL	UL	
ESE → PLF → CEE	0.078	0.036	2.135*	0.025	0.169	Supported
ESE → REC → CEE	0.006	0.048	0.118	-0.092	0.102	Not supported
ESE → PLF → NOR	0.071	0.042	1.672	0.008	0.178	Not supported
ESE → REC → NOR	-0.001	0.021	0.053	-0.056	0.036	Not supported
ILC → PLF → CEE	0.215	0.077	2.799**	0.086	0.388	Supported
ILC → REC → CEE	0.244	0.103	2.356*	0.056	0.469	Supported
ILC → PLF → NOR	0.197	0.086	2.297*	0.024	0.360	Supported
ILC → REC → NOR	-0.047	0.110	0.431	-0.270	0.168	Not supported

CEE, continuance entrepreneurship engagement; ESE, entrepreneurial self-efficacy; ILC, internal locus of control; NOR, new opportunity recognition; PLF, perceived learning from failure; REC, recovery capability; LL, lower level; UL, upper level.

* p < 0.05; and ** p < 0.01.

Number of bootstrap samples = 10,000.

opportunities, and that recovery capability supports continued entrepreneurship. This result suggests to the stakeholder that the ability of an entrepreneur to learn from failure and their recovery capability can be an indication of their commitment to entrepreneurship, either creating a new business or restarting the failed one. Moreover, their ability to learn from failure also enhances the chance to find a new opportunity that can support a future business. Entrepreneurs need to increase their ability to learn from failure because even the equity funds want to invest in companies that have failed before (Cope, 2011). However, the testing results of hypothesis 9 shows that recovery ability has a non-significant impact on new opportunity recognition. This study argues that the recovery process may distract the thinking process of entrepreneurs, which restricts their ability to find new opportunities.

CONCLUSION AND FUTURE STUDY

This study proposes a model to explain how entrepreneurs react to failure based on their psychological characteristics

and why the psychological characteristics that underlie the intention of an individual to be an entrepreneur remain as the basis for them to recognize new opportunities and continue their engagement and entrepreneurship. In general, results show that psychological characteristics represented by an internal locus of control and entrepreneurial self-efficacy can support the willingness of entrepreneurs to gain from failure and raise their recovery capabilities, increasing their willingness to continue entrepreneurship and helping them to recognize new opportunities. If entrepreneurs can better understand the failure experience and process, they may derive more insight into methods they can adopt in future ventures and new opportunities. However, recovery capability will not be influenced by entrepreneurial self-efficacy and will not influence new opportunity recognition. This may be because positive emotions do not necessarily speed up the recovery process from failure (Omoredede, 2020), so recovery ability may vary among entrepreneurs depending on many factors.

This study enriches the literature on entrepreneurship failure, which is currently dominated by qualitative studies, rather than the quantitative approach in this study.

Furthermore, this research guides stakeholders related to entrepreneurship on how to conduct an early assessment of their partners, and as a result, they can minimize the risk of a future failure.

Despite the efforts to develop a comprehensive conceptual model and analyze new, various flaws could guide future studies. First, this research only focuses on the internal locus of control and entrepreneurial self-efficacy, although there are many other psychological traits that influence the intention of an entrepreneur. Future research could consider other psychological traits for more comprehensive results. The psychological traits in this research describe only the internal factors of the entrepreneur, and future research could explore external factors that influence entrepreneurial intention. Third, although the methods employed in this research are adequate, other methods also need to be explored to find more impactful conclusions. Fourth, future research could adopt other research methods to explain reciprocal or opposite direction relationships between the variable and deepen the findings both theoretically and managerially. Finally, future studies should look at how positive emotions can speed up or slow down the recovery process from failure, as well as under what conditions positive emotions lead to positive results after a failure experience.

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DATA AVAILABILITY STATEMENT

The original contributions presented in the study are included in the article/**Supplementary Material**, further inquiries can be directed to the corresponding author/s.

AUTHOR CONTRIBUTIONS

Conceptualization, methodology, writing—original draft preparation, and validation by HZ. Formal analysis, investigation, visualization, writing—review, and editing by AW. Both authors have read and agreed to the published version of the manuscript.

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SUPPLEMENTARY MATERIAL

The Supplementary Material for this article can be found online at: <https://www.frontiersin.org/articles/10.3389/fpsyg.2021.707803/full#supplementary-material>

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The Effect of CEO on Bank Efficiency: Evidence From Private Commercial Banks

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The main purpose of this study was to analyze the effects of Chief Executive Officer (CEO) Key attributes on the financial performance of banks. Current literature gives little attention to the important characteristics of CEOs, therefore, this paper investigates the effects of characteristics of CEOs, such as education, experience, nationality, military background (MTB), and political connectedness (PC), on the financial (return on assets) performance of listed private commercial banks in Pakistan. This research sample included 20 private commercial banks of Pakistan and used Secondary data that was derived from 2011 to 2020, which contained 200 sample observations. This paper used the Fixed effect model, Normality test, Breush–Pagan, white test, multi-collinearity, and Augmented Dickey–Fuller test to investigate the study hypotheses. The main results revealed that CEO MTB and PC significantly and positively affected the financial performance of the bank. It is also found that the CEO's education and Experience have a significant and positive relationships with bank profitability. In contrast, the nationality of the CEO has no significant relationship with the financial performance of the bank.

Keywords: Corporate Governance, CEO attributes, financial performance, CEO, banking

INTRODUCTION

Financial and economic crises in Asian countries and few organizational scandals turn the concentration of researchers toward Corporate Governance (CG). The performance of organizations depends on their governance, and an economy is financially stable when all the enterprises in that economy are better organized and have a good CG. Many organizations fail due to poor CG because CG attracts the concentration of investors and controllers. An efficient and effective regime becomes a primary variable to contend with and endure in the world of competition. Good CG practices assure the achievements of individual firms and strengthen economic advancement (Vinten, 2000). Therefore, economies are engaged in advancing high-quality CG and making different approaches and strategies to manage the importance of governance structure. Previous studies (Claessens et al., 2002) add the identification and solution of different issues related to CG. As suggested by Shleifer and Vishny (1997), governance mechanisms become more complicated with technological advancements, and globalization also creates more complexity in CG, increases business size, and needs more intermediaries, creating more problems (Fernandes and Marlius, 2018). Keep in view the CG issues and the requirement for regulations,

various countries issue their standards of governance as per their conditions and requirements. At the end of the economic crisis in 1998, every country gives special attention to CG. They presented different authorities to control the corporate area with the World Bank (WB) assistance and its supervision. Like different states, Pakistan also focused on the efficiency of the CG in January 1999, the Security and Exchange Commission of Pakistan (SECP) officially began operations the first time. SECP started operation under the umbrella of the SEC Act, 1997, in March 2002; Pakistan initially announced a broad code of CG. The Code incorporated particular amendments in SECP Ordinance, 1969, 1997, and Companies Ordinance, 1984 with the help of different controllers, such as the State Bank of Pakistan (SBP), WB, Asian Development Bank, and Stock trades. Specific revisions related to the Code of CG were made in 2012 and 2013 in the SECP act. For better and efficient control, the Commission is divided into subdivisions, departments, and wings. Other than SECP, different authorities direct and control specific organizations, e.g., the stock exchange directs listed organizations in specific angles. SBP gives direction to the banking organizations and financial institutions. SECP, as a team with the Economic Affairs Division of Pakistan and UNDP, launched a scheme in August 2002 to ensure the Code of CG performance. In 2007, SECP, in a joint effort with the Pakistan Institute of Corporate Governance (PICG) and International Finance Corporation (IFC), led a survey to investigate Pakistan CG. The survey included some financial institutions, locally scheduled firms in the stock market, and several non-scheduled organizations. The survey results show that there is a lack of knowledge among organizations concerning CG. Therefore, to increase the awareness about the benefit of the Code of CG, SECP with IFC, and PICG held some training sessions for the organization's governing body.

Board diversity is a significant part of CG, and much literature exists on the correlation between board variables and the financial performance of a bank, e.g., (Pearce and Zahra, 1992; Bhagat and Black, 2001; Adams et al., 2010; Khan and Wang, 2021). However, there is no research about the relationship between Chief Executive Officer (CEO) characteristics and the financial performance of the bank (Nicholson and Kiel, 2007). Jackling and Juhl (2009) found that the relationship between the characteristics of a CEO and the financial performance of the bank is vital in understanding CG practices. This investigation aims to explore the effect of CEO characteristics on the financial performance of the private commercial bank. Those people who run the firms choose their objective, e.g., gain or loss. The "CEO" is the most dominant and forceful among the people who run the organization. Being a pilot of an Airplane, the CEO is responsible for improving and diminishing the financial performance of the bank. CEO does a vital job in a bank (Hambrick and Mason, 1984; Rahman et al., 2017), especially in choosing whether a corporation remains in a present market or changes to other targeted markets (Stoller, 2009). In this way, "swimming" or dropping of an organization relies upon CEOs (Westerberg et al., 1997). It is reasonable to concentrate on CEOs as an investigation subject (Rahman et al., 2017). Numerous investigations have shown that the relationship between CEO military background (MTB) and Corporate performance. Sunder

et al. (2017) explore that patent declarations by MTB CEOs boost abnormal returns below those by non-military CEOs. Additionally, Benmelech and Frydman (2015) find a negative impact of MTB CEO on corporate performance. You et al. (2020) discover a lower yield on sales when the CEOs are with MTB. Most likely as conformity, regulation, and bureaucratic conduct, which are encouraged in military service; debilitate entrepreneurial conduct and innovativeness (Avrahami and Lerner, 2003) in this way yielding and lower incomes than firms led by non-MTB CEOs. The relationship between politics and trade has been clarified by the advantages produced for both politicians and traders. As indicated by Brogaard et al. (2015), political power in a corporation enables its executives and directors to influence laws and regulations. It gives them admittance to internal information, which empowers them to imagine economic changes and decrease uncertainty. Earlier studies have analyzed political connectedness (PC) effects on the performance of the corporation (Gilabert, 2011; Li et al., 2015). Ling Zhou examines the impact of firms' PC on outside financing, company investment, and economic performance (Ling et al., 2016); the findings of the examination show that political relationships are negatively identified with ROA (Return On Asset). Politically connected directors negatively affect the bank performance. Hung et al. (2017) found a positive effect on the bank performance (AlQudah et al., 2019).

Prior investigations have found the importance of the education of a CEO on the bank performance (Darmadi, 2013b; Phan, 2016), which show that the education level influences the decision-making ability of a CEO. As per Hambrick and Mason (1984), education indicates a CEO's knowledge, intellectual, and other human resource abilities. Darmadi (2013b) proves that the educational qualifications of a CEO decide productivity and bank value. As the education level increases, a CEO becomes more engaged and had practical experience in their field. Gupta and Mahakud (2020) show that the education of CEO increases bank performance. Elsharkawy et al. (2018) found a positively insignificant relationship between CEO's education and bank performance.

Experience of the CEO is needed in the classic business domains (e.g., financial, advertising, operations, or HR). Hambrick and Mason (1984) arranged practical experience dependent on whether it is oriented toward yield, throughput (financial and production), or peripheral behavior (law, finance, and HR) (Datta and Rajagopalan, 1998; Barker and Mueller, 2002). Experience may give valuable, relevant knowledge and social relationships; however, it may also secure a CEO in a specific way of understanding and interpreting problems. It could be significant in stable economic conditions; however, it is less important for CEOs of banks to confront financial discontinuities (Hambrick and Mason, 1984). Earlier studies show experience of a CEO is positively connected with corporate performance (Wang et al., 2016; Chou and Chan, 2018). Appointment of foreign CEOs upgrades the value of the decision-making in bank board (Ibrahim and Hanefah, 2016) because the overseas CEOs bring diverse knowledge and perspectives, for example, language, job experiences, customs, behaviors, and rules of the economies, which strengthening the decision-making process

(Ruigrok et al., 2007; Ibrahim and Hanefah, 2016). Upper echelon theory contends that the presence of foreign CEOs helps the organization obtain and allocates assets that are critical to the organization's prosperity. Pfeffer and Salancik (2003) show that the foreign CEOs can bring new experiences and diverse ideas to the bank to manage foreign issues. This study uses the performance measurement ROA of an organization. ROA is the proportion used to determine the management capacity of an organization in getting profit by using the total assets owned (Attar and Islahuddin, 2014). ROA measures how successfully an organization can convert revenue from the return on investment into assets. The higher the ROA of an organization, the better the performance of the bank. As per our approach, there is no study on this relationship in Pakistani private commercial banks. Therefore, the motive of this investigation is to spot the impact of the CEO on financial performance regarding Pakistani private commercial banks. Additionally, with the developed research model, the study tends to the accompanying research question:

RQ: what attributes of CEOs could affect the private commercial bank's performance?

This research contributes to the literature in numerous ways. We do not get any broad study in the literature that takes such like CEO attributes at, e.g., the effect of CEO on bank profitability of private commercial banks in Pakistan. We include the exogenous literature changes in CG by concentrating on crisis-initiated regulatory changes in the banking area. Our sample covers the post-crisis, large sample size, and a broader era of the time difference to explore the effect of a CEO on bank profitability under normal and in crisis financial conditions. Past studies focused on board size (Bsize), board meetings, and other board structure variables. Still, the present research incorporates CEO attributes accordingly, from which expected to give new knowledge. This study concentrated on all the private commercial banks listed in the SECP, expected to give an overall image of the private investment in the banking industry. A lot of work has been done on the CEO characteristic, but no one can use such a variables combination, especially in Pakistan. In 2002, an objective was assigned to SECP for the background of good CG structure for all corporations in Pakistan, whereby CEOs monitor and control devices under best CG practices to accomplish the goals of investors. When these reforms were implemented in the corporate sector, its performance increased (Mir and Nishat, 2004). In this implementation period, performance evaluation research studies are considered to be performed from time to time to examine its effect. Some investigations have already been conducted in this sector, but their research focuses on different variables, and they have used different data analysis techniques and models. However, there is still a need to perform more investigations in this sector with increases in data sample size and further developed analytical methods to explore whether the different CEO characteristics significantly affect bank performance. The objective of this investigation is to explore this issue in the Pakistani context. Pakistan as an emerging economy gives a stimulating context to investigate the effect of CEO's attributes on bank performance because of some dependably unusual social elements. For example, Pakistan is identified as a state dependent on ethnic affiliations. The investors suffer from

a general circumstance known as favoritism or "Wasta." These wonders put the focus of investors and decision-makers to select CEOs based on relationships, for example, family, clan, kinship, and companionship regardless of attributes, such as, capabilities, experience, education level, and health to perform the work (Omran et al., 2008), which may adversely affect the viability of the management and on translucent financial exposure. We analyze all of these variables to acknowledge the fundamental contributions to this study and plan research gaps. This investigation aims to add to this meager literature by investigating CEO political ties' effect on banks' performance. Pakistan is a fascinating case for investigating this association for a few reasons. First, CEO's political ties typically impact on corporate sector of Pakistan (Khwaja and Mian, 2005; Saeed et al., 2014). Second, the development of financial markets, insufficient institutional help, overall legislative control, and interference generate business obstacles. The continuation of this paper is sorted out as follows.

In section "literature review and hypotheses development", we described the literature review and hypotheses development. The section "theoretical perspectives" shows the methodology and definition of variables. Section "Methodology" comprises results and discussion. The section "Results and Discussion" describes the conclusion and policy implication of this research.

LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

CEO With an MTB and Bank Performance

Military service can change the behavior of people in different manners that could influence behavior and decision after they become CEOs in the future (Benmelech and Frydman, 2015). In contrast, psychological literature shows that MTB CEOs are related to boldness, aggressiveness, and adventuresome behavior (Elder, 1986). A couple of ongoing studies found that organizations operating by CEOs with MTB are less inclined to perform better (Benmelech and Frydman, 2015; You et al., 2020). For instance, Benmelech and Frydman (2015) find that CEOs with an MTB put less in Research and Development (R&D) and follow less organization performance. Continuously, You et al. (2020) show that organizations led by military CEOs are more likely to make small R&D expenditures than their non-MTB counterparts in China. This proof can be clarified by the logic that military training and service values subordination to political authority, obligation, commitment, and kindness, prompting corporate literature that inspires little risk-taking and conservative investment behavior (Franke, 2001; Benmelech and Frydman, 2015). Therefore, we hypothesizes that:

H1: A CEO with an MTB in private commercial banks is significantly and negatively related to bank performance.

Political Connected CEO and Bank Performance

However, when an organization cannot use the available resources efficiently, it may negatively affect organizational performance. Political intervention of a CEO in the organization

and a weak administrative ability of politicians can decrease organizational performance (Boubakri et al., 2012). For example, Asquer and Calderoni (2011) found a negative impact of political associations on Italian corporation performance. Similarly, Bertrand et al. (2007) show that organizational and political connection prompts a negative impact on ROA. A study by Faccio (2010) indicates that politically connected organizations have lower performance than non-political connected firms. Crook et al. (2011) found that the effect of Politically connected CEOs (PCCEOs) is low investment effectiveness and organizational performance. Furthermore, Boubakri et al. (2008) indicate that politically connected organizations show a weak financial performance compared to their non-connected counterparts. Finally, Disli et al. (2013) found that politically associated CEOs in Turkish corporations slow down investors' motivating monitor and control of their banks. Briefly, it concluded that politically connected CEOs might decline bank performance. Therefore, we suggest the following hypothesis:

H2: Politically connected CEO in private commercial banks is significantly and negatively related to bank performance.

CEO Level of Education and Bank Performance

Human capital comprises the arrangement of abilities and information obtained through education and experiences that empower workers to play out their obligations, which deliver their economic values (Jansen et al., 2013). Therefore, the education level of the CEOs is vital for the corporation as it influences performance and decides its gain or loss (Pennings et al., 1998). The personnel of a firm is also called intangible assets that an organization cannot copy or substitute. They give a base to an organization's competitive advantages (Barney, 1991; Carpenter et al., 2001). Therefore, the education level of a director and training are comprised of their knowledge, aptitudes, and capacities—which include an intangible asset for the corporation (Crook et al., 2011). Individuals with higher formal education levels have more critical information and learn organization-specific knowledge (Hitt et al., 2001). Higher education levels also grow individuals' cognitive difficulty and are connected with innovation (Hambrick and Mason, 1984). Furthermore, education increases the self-confidence of an individual and positively impacts the degree of risk tolerance and the capacity to manage uncertainty (Mitchell et al., 2005; Jansen et al., 2013). The education level is considered a crucial part of upgrading an organization's performance (Makhlouf et al., 2017). Past investigations, e.g., (Carpenter and Westphal, 2001; Darmadi, 2013a), show that the education level of a CEO considers a personal cognitive capacity and abilities. For example, when CEOs have an advanced education level, they obtain good strategic ideas and decision-making skills because this advanced education quit access to original ideas. In addition, executive bodies with an advanced level of education have a more intellectual, scholarly influence, creative thoughts, and distinctive perspectives, all of which enable them to manage various problems effectively. This shows that an increase in education level enhances organization management competence

and increases competition in the industry. Therefore, we hypothesize that the higher level of education, the higher the performance of the bank.

H3: CEO with a higher level of education in private commercial banks is significantly and positively related to bank performance.

CEO Experience and Bank Performance

According to the study of Hambrick and Mason (1984), experience means skills, and it is regardless of education. In his evaluation, the effect of the board of directors' education on corporate performance, he also recommends that experience is a more potent variable in the board of director's capabilities. This idea may increase from the realistic experience compared with the conceptual and workbook methodology of formal education. It is found that the experience of an outside director positively affects the financial and market performance of an organization—previous experience of the CEO positively affects the financial performance of a bank in an unstable industry. Experience positively impacts the performance of a bank in a stable industry (Hambrick and Mason, 1984). Specialized experience of a CEO has been found to affect a CEO's activities positively and efficiently in leading organizations (Hambrick and Mason, 1984; Herrmann and Datta, 2006; Crossland et al., 2014). In summing up, CEOs would be empowered to get more knowledge and ability with more experience, which would interpret more tactical decision-making and enhanced bank performance. Therefore, we hypothesize that the higher the experience of the CEO will be higher the performance of the bank.

H4: Experience of a CEO in private commercial banks is significantly and positively related to bank performance.

Foreign CEO and Bank Performance

Chief Executive Officer global experience helps organizations in making international competitiveness through worldwide diversification. Such experience grooms directors for adapting to unexpected problems and new issues. Therefore, global experience has become a requirement for a CEO (Bass and Bass Bernard, 1985; Black, 1999). With increasing globalization, the organization will change the framework of its management by having more foreigners on its top management (Sanders and Carpenter, 1998; Oxelheim et al., 2013). In such a manner, organizations try to draw foreign directors to add managerial abilities and particular skills (Sanda et al., 2008). Suppose that CEOs with different backgrounds, especially nationality, can encourage organizations to understand comprehensive sensitivities, which help them in entering new international markets (Carter et al., 2003; Hillman and Dalziel, 2003; Pfeffer and Salancik, 2003; Abu et al., 2016; Scheppink, 2018). As a result, both CG and corporations prefer to assign directors with overseas nationality or experience (Oxelheim and Randøy, 2003; Masulis et al., 2012; Rose, 2016; Ware, 2016; Rahman, 2018). Past studies found that overseas executives have a positive correlation with the financial performance of an organization (Rosenstein and Wyatt, 1997; Carter

et al., 2003; Oxelheim and Randøy, 2003; Müller, 2014) in the Netherlands (Overveld, 2012), Nigeria (Abu et al., 2016), Korea (Choi et al., 2007), and Kenya (Karani, 2015). Conversely, it is found that foreign directors have low participation and a feeble monitoring role because of their home abroad. Furthermore, language differences and newness to or little learning of the neighborhood culture, market, and economy also diminish their effectiveness. Therefore, foreign CEOs have no binding impact on the stock exchange and organization market value in rising economies, such as Turkey, Indonesia, and Pakistan. As a result of the dissimilar and rare literature that concentrates on the developed economies, this study further investigates the relationship between foreign CEO and bank performance in rising countries, such as Pakistan. Additionally, examine the investigation builds up the accompanying hypothesis.

H5: Foreign CEO in private commercial banks is significantly and positively related to bank performance.

THEORETICAL PERSPECTIVES

According to the study of Bathula (2008), three significant theoretical perspectives support the discussion on board attributes and CG systems. However, Upper Echelons Theory (UET) is used in this paper as a framework.

Upper Echelons Theory

In exploring the effect of CEOs on bank performance, this paper explores the UET, as devised by Hambrick and Mason (1984). This theory describes that managerial background attributes can reflect tactical decisions. The basic principles of UET are derived from leap rationality theory, which expresses that the decision-making of an individual is not entirely based on rational motives because these cannot capture all relevant information about the subject (March, 1978). Consequently, people generally rely upon their emotional and behavioral factors in decision-making (Hambrick and Mason, 1984), which means that the study of executive decision-making must consider the difficulties in measuring the psychological components of CEOs. Researchers work on UET and additionally contended that directors' apparent demographic indicators (for example, education level, business degree, age, gender, ethnicity, political background, and tenure length, etc.) could suggest to their characters; these are objective and measurable (Marcel, 2009; Abdullah and Said, 2018). By drawing on UET, a few studies have revealed that how different attributes of executives, for example, gender (Kassinis et al., 2016), age (Lee et al., 2018), education (Manner, 2010), ethnicity (Louis and Osemeke, 2017), and political belief system (Chen, 2015), can affect the financial performance of a firm. Generally, our UET-based investigation concentrated on noticeable attribute indicators of CEOs, which comprises education, experience, nationality, political association, and MTB, to clarify the level of effect they have on corporate financial performance.

METHODOLOGY

Research Design

This research uses a quantitative approach because this manuscript aims to investigate the relationship of independent variables, such as military, political connection, education, experience, and nationality of a CEO, with the dependent variable as ROA. The sample of this research includes 20 private commercial banks of Pakistan. Secondary data have been derived from 2011 to 2020. This period covers the post-crisis and the latest data, and the latest data improve bank governance policies. Next, this is a large sample size and a broader era of the time difference to explore the effect of a CEO on bank profitability in different financial conditions. The total number of observations is 200. Data associated with CEO attributes and financial performance (ROA) are collected from the audited published annual reports and balance sheets of the chosen banks, just as from SBP and LinkedIn publications. Political data were collected from the certified webpage Election Commission of Pakistan (ECP), which holds elections for the National and Provincial Assemblies. A few banks were excluded because the data were not extensively accessible.

Dependent Variable

ROA is a dependent variable that shows bank performance. ROA is known as the income produced by the bank according to its resource base. It is calculated to control the operating performance of a bank (Yim, 2013; Serfling, 2014). This methodology is also implied by Mishra and Nielsen (2000) and Peng et al. (2007). ROA is measured as net profit after tax to total assets by 100.

Independent Variables

Chief Executive Officer with an MTB: In this research, an MTB of CEO is represented by MTB, a dummy variable that takes one if a CEO is an MTB in a given year and zero if otherwise. Some past investigation has also used these variables (Benmelech and Frydman, 2015; You et al., 2020). **CEO PC:** A CEO is considered politically connected when he stands in the national or provincial election, held from 2011 to 2020. These measures are used in a few different investigations (Asquer and Calderoni, 2011; Saeed et al., 2014). **CEO education:** Education level of a CEO, for example, holding a higher degree, considers a vital asset for banks and gives a combination of capabilities, expertise that help in applying the governance rules (Ujunwa, 2012). Therefore, in this investigation, the CEO education level is calculated by the percentage of CEOs holding an advanced degree, such as a Master's or Ph.D. degree. This indicated variable has shown up in some past studies (Bhuiyan et al., 2010; Ujunwa, 2012). **CEO experience:** CEO experience is a significant independent variable. We can measure it in several years. Some past studies also used the experience as an independent variable (Stimpert et al., 2010; Phan, 2016). **Foreign CEO:** This variable is measured by the proportion of foreign CEOs on the bank boards. In various past investigations, nationality was used as an independent variable (Darmadi, 2011; Ibrahim and Hanefah, 2016).

Control Variables

To control the effect of economic conditions, this paper used the following control variables. Bank size (BSZ) is an important control variable because large banks are ideal for increasing their performance by guaranteeing proficient usage of their considerable assets (Cheung et al., 2007). Subsequently, financial investors favor large banks that expand their market worth. Bank size is determined by taking the common logarithm of total assets some past investigations also used (Abdullah, 2005; Murtaza and Azam, 2019). Leverage measure as total obligations divided by total assets (Ilmas et al., 2018; Khan and Wang, 2021). Measurement of each variables are exist in **Table 1**.

The Model

The statistical technique of EvIEWS was applied in the process of data analysis. To test the study hypothesis, we followed the FE model (Jensen and Murphy, 1990; Hermalin and Weisbach, 2006; Buck et al., 2008; Ausat, 2018; Khan and Wang, 2021). The following is the regression equation of this study:

$$ROA_{it} = \beta_0 + \beta_{1it}MTB + \beta_{2it}PC + \beta_{3it}CEOEDU + \beta_{4it}CEOEXP + \beta_{5it}CEOFR + \beta_{6it}Bsize + \beta_{7it}LVR + \mu_{it} \quad (1.1)$$

Where *i* refers to the cross-section, *t* is time, and μ_{it} is an error term. β_0 is the Constant coefficient of regression. β_1 – β_5 refer to the regression coefficient of independent variables. β_6 and β_7 are control variables.

Estimation Strategy

We know that simple Ordinary Least Squares (OLS) model cannot be a perfect estimator. Every board data model is not viewed as the equivalent of time series and cross-section data since it labels to have pairs of subscripts-*i* and *t*—where *i* shows the unit of investigation and *t* demonstrates time measurement (Baltagi, 2008). The error term of the Pool model comprises of three mechanisms—individual (μ_i), time-specific effect (λ_t), and other disorder (ν_{it}).

$$Y_{it} = \alpha_{it} + \beta_{it}X + U_{it}$$

Where $U_{it} = \mu_i + \lambda_t + \nu_{it}$ μ_i = cross-section property λ_t = time-specific property ν_{it} = other random errors

Based on these kinds of impacts of pool data, two distinct models are presented to manage cross-sectional effects:

Fixed Effect Model

The FE model investigates the relationship between predictor and response variables inside an entity (country, individual, and organization). Every organization has its separate attributes that may affect the independent variables. For example, being a male or female could affect the thinking toward a particular problem, or the political structure of a specific state could have a few impacts on business or GDP, or the trade approaches of a corporation may affect its stock price. When using FE, we accept that something within the individual may affect or bias the independent or dependent variables, and we have to control for this. The justification behind the presumption of the

TABLE 1 | Definition of key variables.

Variables	words	The measurement unit of variable
Return on assets	ROA	$= \frac{\text{NetProfitAfterTax}}{\text{TotalAssets}} \times 100$
CEO military background	MTB	Military background CEO = 1, Non-military background = 0
Political connection	PC	A CEO is considered as connected when he stood in the national or provincial election, held from 2011 to 2020
CEO education	CEOEDU	Percentage of CEO's holding an advanced degree, e.g., Master or PhD
CEO Experience	CEOEXP	Experience in a number of years
Foreigner CEO	CEOFR	Proportion of foreign CEO's on the bank boards
Board size	Bsize	Total number of directors on the board
Leverage	LVR	The ratio of total financial debt to total assets

relationship between the error term and independent variables of the organization. The FE model eliminates those time-invariant characteristics to assess the net effect of the independent variable on the result variable.

RESULTS AND DISCUSSION

Descriptive Statistics

Table 2 shows the descriptive statistic of all variables implied in this research. These results are beneficial to explain the individual variables and their contribution. The secondary data are collected from different banks working in Pakistan, which contain 200 sample observations. In this study, the financial performance of the bank measured by ROA is considered a dependent variable, and all other variables are considered independent variables. These measurements describe the shape, location, and variation of each variable included in this study. Most of the regression models need some basic assumptions, and this information provides essential information about these assumptions. In this table, skewness and kurtosis provide information about the distribution of each variable. The majority of the variables do not precisely follow the normal distribution but using the theory of central limit theorem, as we increase the sample size, these variables approach a normal distribution. It can be perceived that the average value of the response variable is 0.01, its minimum and maximum values are 0.04 and -0.07 , respectively.

Table 3 shows a correlation between predictor and response variables, and a robust measurement implied in assessing the relationship between pair of variables. It has values between -1 and $+1$, where the positive figure shows that both variables proceed in a similar direction while the negative value shows their opposite direction. It can be observed that MTB, leverage and ROA, CEO education and MTB, leverage and CEO experience, political connection, CEO education, CEO nationality, and

TABLE 2 | Descriptive statistics.

	ROA	MTB	PC	CEOEDU	CEOEXP	CEOFER	BSIZE	LV
Mean	0.01	0.07	0.11	0.65	31.24	0.94	9.05	0.90
Median	0.01	0.00	0.00	1.00	31.00	1.00	9.00	0.92
Maximum	0.04	1.00	1.00	1.00	65.00	1.00	18.00	0.98
Minimum	−0.07	0.00	0.00	0.00	15.00	0.00	4.00	0.24
Std. Dev.	0.01	0.26	0.31	0.48	8.28	0.25	2.05	0.08
Skewness	−2.05	3.37	2.49	−0.63	0.45	−3.53	1.01	−4.29
Kurtosis	10.91	12.36	7.21	1.40	3.77	13.45	5.42	29.91
Probability	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sum	1.51	14.00	22.00	130.00	6247.00	187.00	1810.00	179.83
Sum Sq. Dev.	0.04	13.02	19.58	45.50	13643.96	12.16	839.50	1.23
Observations	200	200	200	200	200	200	200	200

TABLE 3 | Correlation analysis.

	ROA	CEOEDU	CEOEXP	CEOFER	MTB	PC	BSIZE	LV
ROA	1.00							
CEOEDU	0.01	1.00						
CEOEXP	0.03	−0.31	1.00					
CEOFER	0.19	0.02	−0.11	1.00				
MTB	−0.01	0.12	−0.10	−0.01	1.00			
PC	0.04	−0.01	0.09	−0.04	0.15	1.00		
BSIZE	0.05	−0.08	0.08	−0.32	−0.03	0.02	1.00	
LV	−0.18	0.12	−0.26	−0.04	0.04	−0.01	−0.02	1.00

CEO experience have a negative correlation. In contrast, return on assets, political connection and Bsize, CEO education, experience, nationality are positively correlated. CEO education and ROA have the highest correlation, and their value of correlation coefficient is 0.01. The weakest correlation is between CEO experience and CEO political connection ($r = 0.09$).

Table 4 shows a complete estimation of formulated hypotheses, their significant values, and all measures used for model specifications. Our findings show that military and non-MTB CEOs differ from one another. Regression analyses show a significant negative relationship between CEO with an MTB and bank financial performance. The beta coefficient and its P -values are $\beta = -0.0121$, $P = 0.0012$, respectively. When the CEO of a bank has an MTB, the financial performance of a bank is low. The beta coefficient and its P -values are significant at the 01% level. Hence, the financial performance of banks led by CEOs with MTB is lower contrasted with those managed by the CEO with a non-MTB. The results also show that a CEO with military experience conditionally has a negative effect on the performance of a bank. The effect of politically connected CEOs on bank performance is shown in **Table 4**. The coefficient of PC is negatively significant at the 01% level, which shows that banks with politically connected CEOs have lower financial performance than those non-political relations. The results also show that the banks led by politically connected CEOs are underperforming instead of non-political banks. These suggest that PC intensifies agency problems by influencing the management to be busy in selfish activities that secure the

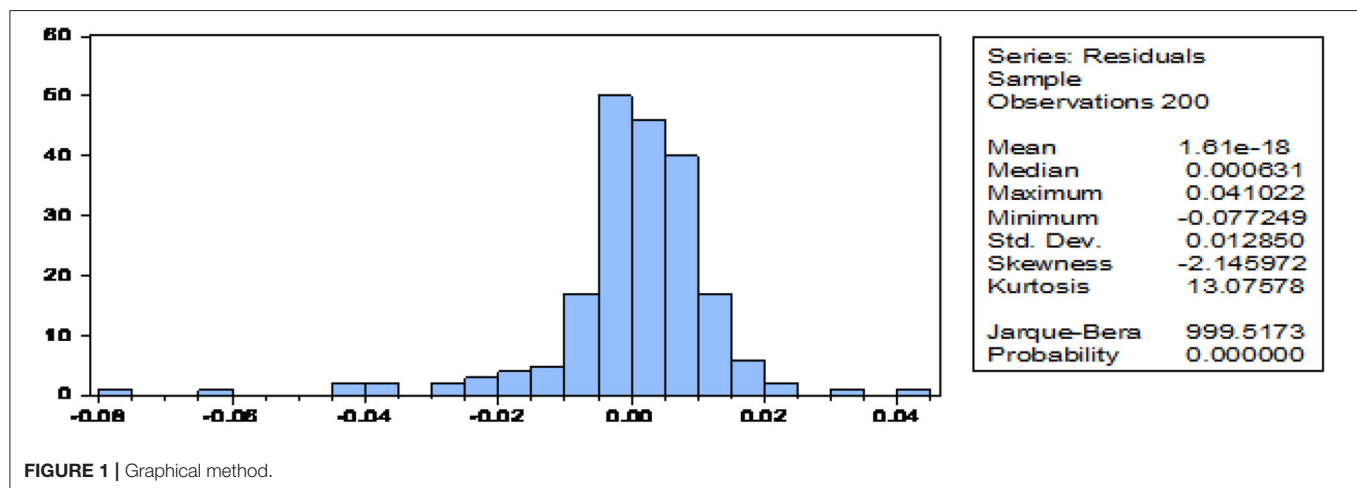
interests of PC CEOs, decreasing bank performance. Our results are consistent with the results of the studies by Faccio (2006, 2010), Fan et al. (2008), and Khawaja and Mian (2009), each of whom shows a low performance of PC banks. The results show that the correlation between the CEO level of education and bank performance is significantly positive under the first hypothesis. The beta coefficient and P -values are, respectively, $\beta = 0.0060$, $P = 0.0044$. This result is related to the required results. These results confirm and accept the first hypothesis **H3** of the study. A significant positive impact suggests that a CEO with a higher education level (Ph. D. or Master Degree) in a board gives more significant bank profitability levels. This study is consistent with past research studies (Mohamed Yunos, 2011; Pulungan and Sadat, 2014). Besides, when a CEO has a higher education level, they acquire good tactical thinking and decision-making skills. Finally, this study guesses that all Pakistani listed private commercial banks must have a qualified CEO and have an advanced education degree. Furthermore, **Table 4** shows that the beta coefficient and P -values of experience and education are, respectively, $\beta = 0.0001$, $P = 0.00372$ and $\beta = 0.0060$, $P = 0.0044$; experience values is less than education level. Even though both descriptive variables are positively and statistically significant, but education is stronger in deciding ROA. Therefore, we can accept the fourth hypothesis, **H4**. However, it cannot support the recommendation of Phan (2016), and the reason is that experience is a strong variable than education for management capabilities. Formal education is required for the development of information, aptitude, and

TABLE 4 | Regression analysis.

Constructs	Coefficient	Std. error	t-statistics	Probability
C	−0.002049	0.014732	−0.139065	0.8895
MTB	−0.012183	0.003712	−3.282453	0.0012***
PC	−0.003106	0.003010	−1.031923	0.0334***
CEOEDU	0.005925	0.002058	2.878555	0.0044***
CEOEXP	0.000184	0.000123	1.492602	0.0032***
CEOFR	0.014144	0.003993	3.542240	0.3405
Bsize	0.001251	0.000479	2.614037	0.0097***
LVR	−0.026711	0.012268	−2.177278	0.0307***
R^2	0.5052	Mean dependent variable		0.0076
Adjusted R^2	0.4373	SD dependent variable		0.0141
SE of regression	0.0106	Akaike info criterion		−6.1395
Sum squared Resid	0.0197	Schwarz criterion		−5.7272
Log likelihood	638.9486	Hannan-Quinn criteria		−5.9726
F-statistic	7.4445	Durbin-Watson stat		1.1901
Probability (F-statistic)	0.0000			

*, **, ***Indicates significance at the 10, 5, 1% levels.

MTB, Military background; PC, Political Connectedness; CEOEDU, CEO Education; CEOEXP, Experience; CEOFR, CEO Foreigner; Bsize, board size; LVR, leverage; ROA, Return on Assets.

**FIGURE 1 |** Graphical method.

attitude. Regression analysis in **Table 4** shows that foreign CEOs (CEON) have an insignificant relationship ($\beta = 0.0141$, $P = 0.3405$) with bank performance. However, according to the past literature, the foreign experience of a CEO contributes to the management abilities and other specialized talents, which guarantees the efficiency and expertise lead of the organizations, which improves financial performance (Black, 1999; Carpenter et al., 2000; Daily et al., 2000; Sanda, 2011). Nevertheless, our findings cannot support the fifth hypothesis, **H5**. Therefore, we can reject the fifth hypothesis, **H5**; it means that the nationality of the CEO has no relationship with the financial performance of a bank. However, our findings are consistent with the findings of Arioglu and Borak (2015) and Vania and Supatmi (2014). Nevertheless, the rejection might be because of contextual dissimilarities as the investigations are led in Turkey and Indonesia. The control variable Bsize is significantly positive at

the 0.1% level; it means that the large Bsize of a bank has more assets, board members, and market strength to show higher performance. Next, bank leverage shows a significant negative impact on bank performance, representing that positive leverage exercise negatively affects bank performance.

The negative effect could be attributed to the high borrowing costs of the Pakistani markets. In regression analysis, R^2 is used for the model's goodness, but statisticians preferred adjusted R^2 , which is 43.73% in multiple regressions. To measure the overall significance of the model, the F-statistic is used. The F-statistic P -value is 0.000, demonstrating that the overall model is highly significant and well-fitted. The adjusted R^2 value of 0.43 in the regression model shows that 43% of the reported variability in ROA can be described by the differences in variables to be specific CEO attributes. The remaining 57% is not explaining, implying that the remaining 57% of the ROA shift is associated with

TABLE 5 | Breush-Pagan test.

Variable	Coefficient	Std. error	t-statistic	Prob.
Dependent Variable: RESID^2				
Method: Least squares				
C	0.0016	0.0043	2.1106	0.0355
CEOEDU	−8.8505	8.9805	−0.9823	0.3254
CEOEXP	−1.0105	5.3806	−1.8778	0.0620
CEOFER	−0.0028	0.0074	−0.7377	0.4623
MTB	−1.4105	0.0062	−0.0890	0.9308
PC	−5.4505	0.0031	−0.4191	0.6785
LV	−0.0050	0.0035	−0.6502	0.5134
BSIZE	−4.2205	2.0905	−2.0215	0.0446
R^2	0.041029	Mean dependent var		0.000164
Adjusted R^2	0.156067	S.D. dependent var		0.000572
SE of regression	0.000571	Akaike info criterion		−12.06042
Sum squared resid	6.25E-05	Schwarz criterion		−11.92848
Log likelihood	1214.042	Hannan-Quinn criter.		−12.00702
F-statistic	1.353529	Durbin-Watson stat		1.594052
Prob (F-statistic)	0.609742			

TABLE 6 | White tests.

F-statistic	0.850601	Prob. $F_{(31,168)}$	0.6946
Obs* R^2	27.13259	Prob. Chi-Square (31)	0.6655
Scaled explained SS	150.9798	Prob. Chi-Square (31)	0.0000

variables not represented in this model. The results of this paper are not free from a small number of limitations. We derived (secondary) data of private commercial banks for this research, from 2011 to 2020, that restricted our model size to ensure data accessibility. We used 20 private commercial banks in Pakistan. If other banks have chosen, then the consequences should be more attractive. The data relating to just a single country and banking sector of the economy, the relationship between CG and financial performance, can be investigated by taking multiple countries' data and including other significant variables of the CEO's attributes and ownership structures.

Heteroscedasticity

When the size of the error term contrasts across values of independent variables, then heteroscedasticity is present in the data.

The normality test results in **Figure 1** show that all variables for the study were consistently distributed as exposed by the all probability in the histogram are smaller than the significance values of 0.05.

Table 5 exhibits that the F-statistic value is 35, and Prob (F-stat) is 60%, which is more than 10%, so there is no heteroscedasticity.

Table 6 shows that the probability value (F-statistic) is 69%, which is more than 10%; therefore, we can say no heteroscedasticity is present.

Table 7 shows that the values of Variance inflation factor (VIF) are <10%, so we can say that there is no multi-collinearity among the variables.

TABLE 7 | Multi-collinearity.

Variable	Coefficient Variance	Centered VIF
Variance inflation factors		
MCEOEDU	4.2406	1.126163
MCEOEXP	1.5208	1.211306
MCEOFE	1.5905	1.132390
MTB	1.3805	1.147951
PC	9.1606	1.136456
LV	0.1451	1.180726
BSIZE	2.2907	1.123439

Augmented Dickey-Fuller test (test for data Stationery)

The fact that Prob(F-statistic) is <0.05 indicates that these study variables are stationary, as shown in **Table 8**. These results demonstrate that the data in this analysis are stationary and cannot deviate from data stationery assumptions.

CONCLUSION AND POLICY IMPLICATIONS

Board is one of the significant components of CG. CEOs are responsible for the overall bank performance to ensure the interest of the shareholders and stakeholders. This paper examines the effect of CEO attributes on the financial performance of private commercial banks regarding a rising and developing economy like Pakistan. This investigation finds a significant and negative relationship between CEO MTB and politically connected CEOs with the financial performance of private commercial banks, which raises questions on the role of CEO MTB and politically connected CEOs on the board of Pakistani banks. The presence of such CEOs in a board becomes at risk, and there should take place an occurrence

TABLE 8 | Augmented Dickey-Fuller tests.

Null Hypothesis: ROA has a unit root

Exogenous: Constant

Lag length: 4 (Automatic - based on AIC, maxlag = 5)

			t-statistic	Prob.*
Augmented Dickey-Fuller test statistic			-5.643228	0.0000
Test critical values:	1% level		-3.463924	
	5% level		-2.876200	
	10% level		-2.574663	
*MacKinnon (1996) one-sided <i>p</i> -values.				
Augmented Dickey-Fuller Test Equation				
Dependent Variable: D(ROA)				
Method: Least squares				
Variable	Coefficient	Std. error	t-statistic	Prob.
ROA (-1)	-0.444227	0.078719	-5.643228	0.0000
D [ROA(-1)]	0.030810	0.086393	0.356626	0.7218
D [ROA(-2)]	0.056119	0.081947	0.684816	0.4943
D [ROA(-3)]	0.046523	0.076421	0.608773	0.5434
D [ROA(-4)]	0.199967	0.070154	2.850412	0.0049
R^2	0.235539	Mean dependent var		8.05E-05
Adjusted R^2	0.215315	S.D. dependent var		0.012444
SE of regression	0.011024	Akaike info criterion		-6.147267
Sum squared resid	0.022967	Schwarz criterion		-6.046560
Log likelihood	605.3586	Hannan-Quinn criter.		-6.106492
F-statistic	11.64658	Durbin-Watson stat		1.987048
Prob (F-statistic)	0.000000			

of the poor financial performance of a bank. These findings show consistency with the past research that if a CEO with an MTB and politically connected CEOs working on top of the bank boards, it will negatively affect the investors and lead the bank performance toward a decline in Pakistan. The findings set up a new perspective for Pakistani investors to look at CG practices of banks while making investment decisions. This investigation results reveal that the negative effect of MTB and politically connected CEO states that there is a need to have transparency in the appointments of CEOs. The sample result also finds a significant and positive relationship between the education level of a CEO and experience with the financial performance of private commercial banks. This study recommends that Pakistani private commercial banks consider the appointment of experienced and well-qualified CEOs in the future. In contrast, Foreign CEO does not show any significant relationship with bank financial performance. Based on the insignificant relationship with bank financial performance, this study recommended decreasing foreign CEOs in Pakistani private commercial banks and giving opportunities to local CEOs. Moreover, this study suggests that Pakistani banks should give opportunities to Pakistani CEOs by conveying their international goals and coursework. Banks suggested increasing their human capital investment by providing conventional education and training. Besides, Pakistani banks suggested

considering experience and education when arranging board members and providing more opportunities to the local CEO instead of foreigners.

Implications

This research has updated regulators and various policymakers with essential bits of knowledge to improve future strategies and performance. This study is more important for Pakistan and for all those countries where there are decisive political and military interventions in the corporate policies; in Pakistan, there is a strong presence of political and military approaches. Next, this study recommends that policymakers further endorse CEO characteristics in Pakistan and other developing countries and limit the political and military interventions in corporate policies, such as India, Bangladesh, other Asian countries, etc.

DATA AVAILABILITY STATEMENT

The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

AUTHOR CONTRIBUTIONS

All authors listed have made a substantial, direct and intellectual contribution to the work, and approved it for publication.

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Openness and Entrepreneurial Performance During COVID-19 Pandemic: Strategic Decision Comprehensiveness as an Inconsistent Mediator

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The COVID-19 pandemic severely hit small and micro-businesses. In the face of the impact of the pandemic, how to help entrepreneurs, especially small- and micro-businesses that are more sensitive to the impact of the pandemic, make decisions to reduce losses has become an issue worth paying attention to. From the perspective of personality approach, this article studied openness, which is the strongest predictor of entrepreneurial performance among the big five personality traits, and explored the impact of entrepreneurs' openness on entrepreneurial performance during the COVID-19 pandemic, as well as the inconsistent mediating role of strategic decision comprehensiveness on entrepreneurial performance. An online questionnaire survey was conducted among 238 entrepreneurs of small- and micro-businesses when China was recovering from the pandemic and starting to resume work and production (February 18 – February 26, 2020). Entrepreneurial performance during the COVID-19 pandemic was measured by comparing the business conditions before and after the pandemic. The results showed that entrepreneurs' openness positively impacted strategic decision comprehensiveness and entrepreneurial performance during the COVID-19 pandemic. Among the two competing hypotheses proposed by summarizing previous research, the results supported that strategic decision comprehensiveness negatively affected entrepreneurial performance. It indicated that entrepreneurs who tend to collect and analyze information extensively and then make decisions during the pandemic could not seize opportunities and improve their entrepreneurial performance. The results further supported that strategic decision comprehensiveness was an inconsistent mediator between openness and entrepreneurial performance, showing that entrepreneurs with low openness can also reduce the loss of entrepreneurial performance during the pandemic by making incomplete but rapid strategic decisions. This study found that the openness of entrepreneurs had a positive impact on strategic decision comprehensiveness for the first time and provided more empirical evidence for the negative effect of strategic decision comprehensiveness on entrepreneurial

performance in the context of information uncertainty and unanalyzable situations. The inconsistent mediating effect of strategic decision comprehensiveness revealed in this study also has practical significance for helping entrepreneurs make correct decisions to reduce the losses caused by the pandemic.

Keywords: COVID-19, openness, entrepreneurial performance, strategic decision comprehensiveness, inconsistent mediation

INTRODUCTION

The COVID-19 crisis broke out at the end of 2019 and became a pandemic on March 11, 2020, as the World Health Organization (WHO) declared. Since small- and medium-sized enterprises (SMEs) were heavily dependent on upstream and downstream supply chains, buyers and employees, they were severely affected by the pandemic (Etemad, 2020), and Chinese SMEs were no exception. According to a questionnaire survey conducted by the SMEs operation index research group of Postal Savings Bank of China on February 6 and 7, 2020, more than 90% of the SMEs delayed the start of business after the Spring Festival holiday. Nearly 80% of the SMEs' performance deteriorated compared with the normal state (Zhang et al., 2020). Small, rapidly growing startups are particularly vulnerable to disruptions, including the generic risks peculiar to the entrepreneurial environment (Picken, 2017). Thus small- and micro-business entrepreneurs seem to suffer the most under the influence of the pandemic.

The personality approach is one of the classical and early approaches to entrepreneurship (Rauch and Frese, 2007). With the general acceptance of the five-factor theory of personality by researchers and the development of meta-analysis methods, the theory of personality has returned to the stage of entrepreneurial research in recent years (Zhao et al., 2010; Brandstätter, 2011). The entrepreneur is defined as the founder who owns and manages a small business (Zhao et al., 2010). The meta-analysis results showed that entrepreneurs' extraversion, conscientiousness, emotional stability (low neuroticism), and openness to experience were significantly positively correlated with entrepreneurial performance, and openness appeared to be the most strong predictor of entrepreneurial performance among the five personality constructs (Zhao et al., 2010). But it is worth noting that most entrepreneurs, especially the more vulnerable entrepreneurs of small and micro enterprises, are more concerned about how to reduce losses in time in the face of the impact of the pandemic. During the great financial crisis (GFC) of 2008–2010, the proportion of innovating firms fell by around a third in the United Kingdom and took around four to 6 years to recover (Roper and Turner, 2020). Therefore, from the perspective of the personality approach, how to help entrepreneurs of small and micro businesses reduce their losses during the pandemic has become a problem worthy of attention.

Another key factor affecting performance is the process of strategic decision-making. Rajagopalan et al. (1993) developed an integrative framework of strategic decision-making processes by reviewing the past literature. Guo and Chen (2010) complemented this framework according to the research literature in the 15 years after 1993. They believed that

the characteristics of the strategic decision process have a direct impact on the economic outcomes of strategic decisions. Furthermore, as one of the organizational factors, the characteristics of the top management team affect the strategic decision process and indirectly affect the economic outcomes. Strategic decision comprehensiveness is considered one of the most fundamental and enduring characteristics of strategic decision-making in an organization (Heavey et al., 2009). It is defined as the degree to which an organization is extensive, exhaustive and inclusive in gathering information from the external environment and making strategic decisions (Fredrickson and Mitchell, 1984; Forbes, 2007).

A systematic literature review conducted by Mendes et al. (2019) reviewed the relationship between personality and decision-making. However, little researches focused on the relationship between the Big Five personality, especially openness, and strategic decision comprehensiveness.

What's more, there are two perspectives on the impact of strategic decision comprehensiveness on performance in an uncertain environment. One view is that environmental dynamism increases the benefits gained through comprehensiveness (Miller, 2008). And another perspective is that environmental dynamics decreases the benefits gained through comprehensiveness (Fredrickson and Mitchell, 1984), for the pursuit of comprehensiveness increases the cost. Thus a key question is whether strategic decision comprehensiveness enables firms to make better performance (or lose less) in the unstable environments caused by the pandemic.

The purpose of this study is to take entrepreneurs of SMEs as the research object and explore the influence of entrepreneurs' openness personality on entrepreneurial performance during the COVID-19 pandemic and the special role played by strategic decision comprehensiveness. Given that most prior research on entrepreneurial performance focused on benefits, how to assist SMEs in reducing losses in the context of COVID-19 lockdown may be a unique contribution of this study as compared to other studies.

LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

Openness and Entrepreneurial Performance

Meta-analysis studies show that entrepreneurs' Big Five personality traits are different from managers' (Zhao and Seibert, 2006) and can predict their entrepreneurial intention and

entrepreneurial performance (Zhao et al., 2010). Openness to experience appears to be the most strong predictor of entrepreneurs' performance among the five personality constructs (Zhao et al., 2010).

Openness to experience is defined as "proactive seeking and appreciation of experience for its own sake, and as toleration for and exploration of the unfamiliar" (Piedmont, 1998). People high on openness can be described as "creative, innovative, imaginative, reflective, and untraditional" (Zhao and Seibert, 2006). The openness of individuals and teams is positively correlated with creativity (Schilpzand et al., 2011). To those high in openness, their creative ability has a positive linear relationship with accomplishments (King et al., 1996). For entrepreneurs, producing innovative products is very important to capture the market and grow the business. Therefore, entrepreneurs' openness can positively predict their entrepreneurial performance.

On the other hand, openness is closely related to opportunity recognition. Studies have shown that genetic factors can largely explain the variance in opportunity recognition by influencing the probability that people are open to experience, and the phenotypic correlation coefficient between openness and opportunity recognition is 0.37 (Shane et al., 2010). Recognizing good opportunities is the beginning of the foundation of a new business. The small and medium-sized enterprises with high opportunity recognition ability tend to achieve higher firm performance through the innovation of the business model (Guo et al., 2017).

Hence, we posit the first hypothesis.

H1: Openness has a positive effect on entrepreneurial performance during COVID-19.

Openness and Strategic Decision Comprehensiveness

According to strategic leadership theory, top managers' field of vision, selective perception of information, and interpretation of information are affected by their values, cognitions, and personality (Cannella and Monroe, 1997). People high on openness can be characterized as intellectually curious and tending to seek novel ideas and embrace new experiences (Zhao and Seibert, 2006). According to the information-seeking theory of openness, people with higher openness/intelligence show general sensitivity to any type of new information; they are more sensitive to the rewarding value of information and are more motivated to seek out information (DeYoung, 2013, 2014). In addition, openness was positively correlated with update/monitoring in executive function, which is the ability to monitor and update information in working memory (Murdock et al., 2013). Strategic decision comprehensiveness just means the extent to which organizations want to search for more comprehensive and more information in the decision-making process.

Hence, we posit the second hypothesis.

H2: Openness is positively associated with strategic decision comprehensiveness.

Strategic Decision Comprehensiveness and Entrepreneurial Performance

Based on previous literature, there are two contradicting perspectives on how the relationship between strategic decision comprehensiveness and firm performance is affected by environmental dynamics (Forbes, 2007).

The first view holds that environmental dynamism increases the benefits gained through comprehensiveness because unstable environments require collecting and analyzing a large amount of information. Then managers can improve their strategic understanding of the environment by being more comprehensive. Studies have shown that the comprehensiveness of strategic decision-making for family firms is positively associated with decision-making quality and firm performance (Carr et al., 2020). Miller (2008) study showed that, in a turbulent environment, both linear and non-linear relationships between comprehensiveness and performance are significantly positive. Specifically, comprehensiveness has a significant positive effect on performance, which is not significant in the case of low comprehensiveness.

The second view holds that environmental dynamics increase the cost of comprehensiveness and decrease the benefits gained through comprehensiveness. Because the pursuit of comprehensiveness increases the time and resources consumed by the decision-making process, the loss outweighs the gain. In a word, a company with low comprehensiveness is more suitable for an unstable environment. Its decision speed and flexibility allow for rapid, low-cost action to capture a changing set of opportunities that cannot be fully understood. Fredrickson and Mitchell (1984) found a consistently negative correlation between comprehensiveness and performance in an unstable industry environment. For new technology ventures, the strategic decision comprehensiveness of the top management team is significantly negatively correlated with financial performance (Souitaris and Maestro, 2009).

Therefore, we propose two competitive hypotheses:

H3a: Strategic decision comprehensiveness is positively associated with the entrepreneurial performance during COVID-19.

H3b: Strategic decision comprehensiveness is negatively associated with the entrepreneurial performance during COVID-19.

Strategic Decision Comprehensiveness as a Mediator

In the process of enterprise management, strategic decision-making is closely related to the characteristics of top managers (Mendes et al., 2019) and firm performance (Guo and Chen, 2010; Yun, 2011) and always plays a mediating role. For example, the flexibility of strategic decision-making plays a mediating role between the Big Five personalities and enterprise performance (Nadkarni and Herrmann, 2010; Shalender and Yadav, 2019). And the positive effect of top management teams' polychronicity on venture performance is partially

mediated by strategic decision speed and comprehensiveness (Souitaris and Maestro, 2009).

Based on the above review of previous literature, we hypothesized that strategic decision comprehensiveness is a mediator between entrepreneurs' openness and entrepreneurial performance during the pandemic. Since we have previously proposed two competing hypotheses about the relationship between strategic decision comprehensiveness and entrepreneurial performance, it is reasonable to speculate that there are also two competing hypotheses about the mediating role of strategic decision comprehensiveness. If strategic decision comprehensiveness positively impacts entrepreneurial performance, then strategic decision comprehensiveness plays a consistent mediating role. If strategic decision comprehensiveness negatively affects entrepreneurial performance, then strategic decision comprehensiveness may play an inconsistent mediating role, also known as the suppression effect.

Unlike consistent mediating effect, the sign of the direct and indirect effect of the independent variable on the dependent variable is opposite in suppression effect (MacKinnon et al., 2000). The relationship between the independent variable and the dependent variable is suppressed by the third variable (i.e., the inconsistent mediator variable). If the inconsistent mediator is not controlled, the regression coefficient between the independent variable and the dependent variable will become smaller or become an inverse relationship (Cohen et al., 2013).

Therefore, this paper proposes two competitive hypotheses:

H4a: Strategic decision comprehensiveness is a consistent mediator between openness and entrepreneurial performance during COVID-19.

H4b: Strategic decision comprehensiveness is an inconsistent mediator between openness and entrepreneurial performance during COVID-19.

MATERIALS AND METHODS

Participant

Two hundred thirty-eight entrepreneurs from small and micro businesses were recruited from "wjx," an online crowdsourcing platform in mainland China, which provides functions similar to Amazon Mechanical Turk. They completed the questionnaire between February 18, 2020, and February 26, 2020. At the time of our survey, the pandemic in the Chinese mainland had been effectively controlled, and all provinces had resumed work, production, and businesses, except for the worst-hit areas, such as Hubei province, where Wuhan is located. However, the severity of the pandemic situation and the policies for resuming work and production varied from place to place, and enterprises were faced with the dual pressure of pandemic prevention and control and resuming business operations to reduce losses.

Measurement

Openness

Openness was measured by the Open-Mindedness subscale of the short form of the BFI-2 (the BFI-2-S) (Soto and John, 2017),

which contains three facets with a total of six 5-point Likert items (1 = Disagree strongly, 2 = Disagree a little, 3 = Neutral, 4 = Agree a little, 5 = Agree strongly). The questionnaire and scoring information is provided in the **Supplementary Material**. A mean score of the six items (after reverse coding) was created as the indicator for openness. The higher the average score, the higher the openness level of the participants. The result of second-order confirmatory factor analysis showed that the Chinese version of the questionnaire had good structural validity (RMSEA = 0.070, CFI = 0.977, TLI = 0.943, SRMR = 0.039).

Strategic Decision Comprehensiveness

Strategic Decision Comprehensiveness was assessed by Miller et al. (1998) five 7-point Likert scale items (1 = Disagree strongly, 2 = Disagree, 3 = Disagree a little, 4 = Neutral, 5 = Agree a little, 6 = Agree, 7 = Agree strongly). The questionnaire and scoring information is provided in the **Supplementary Material**. A mean score was created as the indicator for strategic decision comprehensiveness. The result of confirmatory factor analysis showed that the Chinese version of this questionnaire had good structural validity (RMSEA = 0.054, CFI = 0.982, TLI = 0.965, SRMR = 0.027).

Entrepreneurial Performance During COVID-19 Pandemic

Participants were asked to rate on a scale of 1–10 for the entrepreneurial performance of their business before and after the COVID-19 pandemic. Then we got the score of entrepreneurial performance during the COVID-19 pandemic by subtracting the pre-pandemic score from the post-pandemic score, which ranged from –9 to 8. The higher the score, the better the entrepreneurial performance. Higher scores were mainly manifested as lower losses of entrepreneurial performance during the COVID-19 pandemic but also meant higher gains for a small group of participants.

Control Variables

Previous studies have demonstrated that gender (Coleman, 2016), age (Zhao et al., 2021), education level (Dickson et al., 2008), number of employees (Liu, 2010), entrepreneurial phase (Peng et al., 2018), entrepreneurial experiences (Tian and Xu, 2009), and the degree of home office realization of their businesses (Tønnessen et al., 2021) were relevant with performance. Thus we controlled these variables in the present research. The entrepreneurial experiences of the participants were also reported by answering in which year they started their business, and we subtracted the year they answered from 2020. The degree of home office realization of their businesses was measured by asking, "To what extent can your business achieve "home office"? Please use 1–10 to score."

Analyses

The reliability of constructs was assessed using Cronbach's alpha with SPSS 22.0. And to examine the validity of the data, the measurement model was evaluated by confirmatory factor analysis (CFA) using Mplus 8.3 with the maximum likelihood estimation method. The composite reliability (CR) and average variance extracted (AVE) of the variables were

calculated with the factor loadings. Given that openness has a second-order construct, we followed Nunkoo et al. (2017) in CFA analysis and used the factor loadings of the subscales of openness to calculate CR and AVE. Then, we used descriptive statistical analysis, correlation analyses and multiple regression analyses on the data with SPSS 22.0. Referring to Burton (2021), the assumptions of linear regression (non-multicollinearity, no autocorrelation, homoscedasticity and normality) were also tested for the regression models used SPSS 22.0. We inspected the variance inflation factors (VIFs) of all the regression models to check whether multicollinearity affected the data, applied the Durbin-Watson test to examine the no autocorrelation assumption. The scatterplots of the studentized residuals plotted against the unstandardized predicted values and the P-P plots of the regression models were constructed to test the assumption of homoscedasticity and normality, respectively. The PROCESS macro for SPSS (Hayes, 2017) was used to test the proposed mediation model.

RESULTS

The sample characteristics were presented in Table 1.

The Cronbach's alpha of openness and strategic decision comprehensiveness (see Table 2) were both above the recommended threshold of 0.70. The results of CFA showed a good data fit ($\chi^2 = 72.76$, $df = 40$, $p < 0.01$, $\chi^2/df = 1.82$, CFI = 0.94, TLI = 0.91, RMSEA = 0.059, SRMR = 0.056). All items loaded significantly on the corresponding constructs. The AVE of openness was 0.76, while the AVE of strategic decision comprehensiveness was 0.34, below the recommended level of 0.5. According to Fornell and Larcker (1981), the AVE may be a more conservative estimate for the validity, and "on the basis of ρ_{η} (composite reliability) alone, the researcher may conclude that the convergent validity of the construct is adequate, even though more than 50% of the variance is due to error" (p. 46). As the CRs exceeded the suggested threshold value of 0.70 (Bagozzi and Yi, 1988) (see Table 2), the convergent validity of the construct can be adequate. Furthermore, the square roots of the AVE values were greater than the zero-order correlation coefficients between openness and strategic decision comprehensiveness (Zaiř and Berteà, 2011).

Means, standard deviations, and correlations among the research variables in this study were analyzed and presented in Table 3.

The results of regression analysis were shown in Table 4. The highest VIF value for the regression models is 1.59 (presented in Table 4), which was less than 10, reflecting non-multicollinearity in the proposed model. The Durbin-Watson test value of the regression models ranged from 1.97 to 2.14 (presented in Table 4), which were very close to 2, indicating that there was little or no autocorrelation in the data and the residuals were independent of each other. The assumption of homoscedasticity

TABLE 1 | Sample characteristics.

		Frequency	Percent (%)
Gender	Male	156	65.55
	Female	82	34.45
Education	Junior high school and below	7	2.94
	Senior high school	6	2.52
	Junior college	19	7.98
	Bachelor degree	168	70.59
	Master degree and above	38	15.97
Number of employees	10 or fewer employees	48	20.17
	10–19 employees	33	13.87
	20–29 employees	37	15.55
	30–39 employees	23	9.66
	40–49 employees	22	9.24
	50–99 employees	36	15.13
	100–299 employees	39	16.39
Entrepreneurial phase	The phase of foundation	53	22.27
	The phase of growth	142	59.66
	The phase of maturation	36	15.13
	The phase of transition	7	2.94
Entrepreneurial performance during COVID-19 pandemic	Post-pandemic entrepreneurial performance lower than before the pandemic	203	85.29
	Basically the same	17	7.14
	Post-pandemic entrepreneurial performance higher than before the pandemic	18	7.56



FIGURE 1 | The mediation model with standardized regression coefficients. * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$.

TABLE 2 | Results of the confirmatory factor analysis and validity test.

Construct	Item	Standardized loadings	CR	AVE	Cronbach's α
Openness			0.90	0.76	0.73
Facet 1		0.67			
	opn1	0.71			
	opn4	0.80			
Facet 2		1.10			
	opn2	0.57			
	opn5	0.46			
Facet 3		0.78			
	opn3	0.58			
	opn6	0.78			
Strategic decision comprehensiveness			0.72	0.34	0.72
	sd1	0.52			
	sd2	0.55			
	sd3	0.57			
	sd4	0.63			
	sd5	0.65			

opn = openness, facet 1 = Aesthetic Sensitivity, facet 2 = Intellectual Curiosity, facet 3 = Creative Imagination; sdc = strategic decision comprehensiveness.

and normality of the models were met according to the scatterplots of the studentized residuals plotted against the unstandardized predicted values (**Supplementary Figures 1–3** presented in the **Supplementary Material**) and the P-P plots (**Supplementary Figures 4–6** presented in the **Supplementary Material**).

After controlling for participant's gender, age, education level, number of employees, entrepreneurial phase, entrepreneurial experiences, and the degree of home office realization of their businesses, the total effect of openness on entrepreneurial performance during the COVID-19 pandemic (model 1) was significantly positive ($\beta = 0.17$, $t = 2.56$, $p < 0.05$). Hypothesis 1 was supported.

On this basis, we further tested the mediating effect of strategic decision comprehensiveness (see **Figure 1**). As shown in **Table 4**, the effect of openness on strategic decision comprehensiveness (model 2) was significantly positive ($\beta = 0.25$, $t = 3.85$, $p < 0.001$). Hypothesis 2 was supported. The effect of strategic decision comprehensiveness on entrepreneurial performance during COVID-19 pandemic (model 3) was significantly negative

($\beta = -0.18$, $t = -2.78$, $p < 0.01$). Thus, Hypothesis 3b was supported. The direct effect of openness on entrepreneurial performance during COVID-19 pandemic after controlling the mediator (model 3) was also significantly positive ($\beta = 0.21$, $t = 3.19$, $p < 0.01$).

Then, we applied Model 4 with 5,000 bootstrap samples in PROCESS macro to examine the mediation effect. The result showed that 95% bootstrap confidence intervals of the completely standardized indirect effect did not include zero [$Effect = -0.05$, 95% Boot CI = $(-0.095, -0.002)$]. The indirect effect was significantly negative, and the standardized direct effect was significantly positive [$Effect = 0.21$, 95% Boot CI = $(0.002, 0.314)$]. The sign of the direct and indirect effect was opposite, and the direct effect was larger than the total effect, indicating that strategic decision comprehensiveness played an inconsistent and partial mediating role between openness and entrepreneurial performance during COVID-19 pandemic. Therefore, Hypothesis 4b was supported.

DISCUSSION

General Discussion

Taking entrepreneurs of SMEs as research objects, this study explores the impact of entrepreneurs' openness personality on their entrepreneurial performance during the COVID-19 pandemic and the inconsistent mediating role of strategic decision comprehensiveness.

The research result showed that entrepreneurs' openness had a significantly positive impact on their entrepreneurial performance, consistent with previous research results (Zhao et al., 2010; Araujo-Cabrera et al., 2016). People with high openness tend to come up with novel ideas, be more creative, and find alternative values and ideas more easily. They have high flexibility in strategic decision-making, which often enables them to improve performance in such alternate competitive and technologically changing environments (Shalender and Yadav, 2019). Garretsen et al. (2020) also showed that cities with higher levels of openness tended to be more resilient during the national recession in the United Kingdom.

The relationship between the openness of entrepreneurs and strategic decision comprehensiveness was significantly positive.

TABLE 3 | Means, standard deviations, and correlations among research variables.

Parameters	$M \pm SD$	1	2	3	4	5	6	7	8	9
Gender (male = 1 female = 0)	—	—								
Age (years)	33.77 \pm 6.29	0.07	—							
Education	3.94 \pm 0.78	0.05	−0.08	—						
Realization of home office	5.24 \pm 2.80	0.01	−0.13*	0.31***	—					
Number of employees	3.85 \pm 2.17	0.03	0.04	0.29***	0.24***	—				
Entrepreneurial phase	1.99 \pm 0.70	0.01	0.17**	0.01	−0.02	0.28***	—			
Entrepreneurial experiences (years)	5.82 \pm 4.14	0.06	0.48***	−0.25***	−0.25***	0.02	0.32***	—		
Openness	3.84 \pm 0.60	0.05	−0.09	0.27***	0.30***	0.22***	0.04	−0.05	—	
Strategic decision comprehensiveness	5.67 \pm 0.66	−0.04	−0.05	0.13*	0.14*	0.31***	0.11	−0.13*	0.30***	—
Entrepreneurial performance during COVID-19 pandemic	−2.50 \pm 2.32	−0.00	−0.08	−0.08	0.33***	0.00	0.04	0.00	0.21***	−0.10

* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$.

TABLE 4 | Multiple regression results of the mediation model.

	Entrepreneurial performance during COVID-19 pandemic (model 1)	Strategic decision comprehensiveness (model 2)	Entrepreneurial performance during COVID-19 pandemic (model 3)
Control variables			
Gender (male = 1 female = 0)	0.00	−0.05	−0.01
Age	−0.07	0.03	−0.07
Education	−0.20**	−0.04	−0.21**
Realization of Home Office	0.37***	−0.02	0.37***
Number of employees	−0.08	0.25***	−0.03
Entrepreneurial phase	0.05	0.08	0.07
Entrepreneurial experiences	0.07	−0.17*	0.04
Independent variable			
Openness	0.17*	0.25***	0.21**
Mediator			
Strategic Decision Comprehensiveness			−0.18**
Model fit statistics			
F	6.34***	6.12***	6.66***
R ²	0.18	0.18	0.21
VIF	1.55	1.55	1.59
Durbin-Watson test value	1.99	2.14	1.97

Standardized regression coefficient were shown. ** $p < 0.01$; *** $p < 0.001$.

To our knowledge, this is the first time that the openness personality trait has been found to relate to strategic decision comprehensiveness. This may be due to the high openness individuals are more motivated to seek out information and are more sensitive to any type of new information and their rewarding value (DeYoung, 2013, 2014). A facet of openness, trait curiosity, was also positively associated with information-seeking (Jach and Smillie, 2020).

Another critical question this study focused on was whether strategic decision comprehensiveness enables firms to make better performance in unstable environments. The research result supported H3b rather than H3a of the two competitive hypotheses in this study. That is, the relationship between strategic decision comprehensiveness and performance was significantly negative. This result can be explained by the model proposed by Forbes (2007). He presented that, environmental instability which was also used as environmental dynamism (Heavey et al., 2009) and turbulence (Miller, 2008) in previous researches, should be divided into two conditions, uncertainty and ambiguity, according to the “quantity” and “determinacy” of the available information in the organizational information environment.

Uncertainty means that decision-makers know a range of possible outcomes and the probability of each outcome. And the “quantity” and “determinacy” of available information, which are the two key dimensions of the organizational information environment, are both high in the condition akin to uncertainty (Forbes, 2007). Therefore, the organizational information environment is unstable but analyzable, so more information is helpful in making strategic decisions to improve overall performance. However, in the case of ambiguity, decision-makers are uncertain about the probabilities of outcomes and the processes leading to those outcomes. At least one of the “quantity” and “determinacy” of available information is relatively low in conditions akin to ambiguity (Forbes, 2007).

Thus the environment is not analyzable, and decision-makers are less likely to gather and analyze information (Dean and Sharfman, 1993; Sharfman and Dean, 1997; Shepherd and Rudd, 2014). Pursuing a high quantity of information costs a lot of time and resources and is likely to lead to misdirection. Therefore, strategic decision-making comprehensiveness will have a negative impact on performance.

The object and background that this study focused on just match the characteristics of ambiguity. On the one hand, The amount of information may exponentially in a short period because of a specific incident such as the COVID-19 pandemic. In this so-called “infodemic” situation, misinformation and rumors, as well as information with questionable intentions that can be manipulated, keep popping up (Garcia and Duarte, 2020; Zarocostas, 2020). And this phenomenon can be amplified and spread further and faster through social networks, just like the virus (Zarocostas, 2020). Therefore, even if a large amount of information can be obtained, when the accuracy of the information cannot be ensured, excessive or even contradictory information will increase the burden of information assessment and decision-making. On the other hand, the investigation was at the beginning of China’s resumption of work and production. The severity of the pandemic varies in different regions, and the policies for the resumption of work and production were not consistent. The upstream and downstream industrial chains and product sales had been greatly affected (Lu et al., 2020). Besides, the pandemic had the possibility of a rebound at that time. Therefore, the uncertainty of information obtained by small- and micro-businesses entrepreneurs was high, and decision-makers were unable to make comprehensive and thoughtful decisions. The higher the comprehensiveness of their strategic decisions, the higher the costs of the decision process (time and resources), and the more likely it was to bring negative effects.

Furthermore, the results supported H4b of the two competitive hypotheses, namely, the strategic decision

comprehensiveness played an inconsistent mediating role between openness and entrepreneurial performance during the pandemic. On the one hand, high openness had a direct and positive impact on entrepreneurial performance during the pandemic period. On the other hand, individuals with low openness could also reduce their time losses through incomprehensive and rapid strategic decisions.

Theoretical Implications

First, this study demonstrates the positive effect of entrepreneurs' openness on strategic decision comprehensiveness. To our knowledge, the openness personality trait has been found to associate with strategic decision comprehensiveness for the first time. Secondly, it provides more empirical data to support the negative impact of strategic decision comprehensiveness on entrepreneurial performance in the context of uncertainty and unanalyzable information. The entrepreneurial performance was measured by comparing before and after the pandemic to make the results more convincing. Finally, the study demonstrated the inconsistent mediating effect of strategic decision comprehensiveness between entrepreneurs' openness and entrepreneurial performance during the pandemic.

Practical Implications

Firstly, considering that high openness is one of the personality characteristics that distinguishes entrepreneurs from managers (Zhao and Seibert, 2006), entrepreneurship education can focus on cultivating entrepreneurs' openness personality. Even in the face of an unstable environment, high openness entrepreneurs can show their advantages.

In addition, when faced with sudden and uncertain dangerous situations such as the COVID-19 pandemic, entrepreneurs with high openness need to give full play to their advantages of being creative and able to identify opportunities. However, entrepreneurs with low openness are not sensitive to the reward value of information. They don't need to make great efforts to search for more information and should make decisions quickly instead of thinking ahead and backward.

Limitation

This study is a cross-sectional study, and since the data is collected through the online crowdsourcing platform, it is not easy to track the entrepreneurs we recruited. However, future studies should consider using longitudinal data to examine the inconsistent mediating role of the comprehensiveness of strategic decisions, especially for firms recovering from COVID-19.

Furthermore, entrepreneurial performance before and after the COVID-19 pandemic was assessed by the subjective evaluation of entrepreneurs. Although the subjective evaluation method has good discrimination validity for measuring entrepreneurial economic return (Chen et al., 2014), it is also valuable to apply the other objective indicators that can be used to measure the entrepreneurial performance and economic recovery across industries.

Finally, previous studies have shown that decision-makers' risk-taking propensity and proactiveness are important moderating variables between strategic decision

comprehensiveness and corporate entrepreneurship (Heavey et al., 2009). Subsequent studies can further explore their moderating effects on the mediation model in the present study.

CONCLUSION

The present research extends prior literature by investigating the impact of entrepreneurs' openness personality trait on entrepreneurial performance during the COVID-19 pandemic, as mediated by strategic decision comprehensiveness. Our evidence highlights the positive effect of openness on strategic decision comprehensiveness and the negative relationship between strategic decision comprehensiveness and entrepreneurial performance in the unstable and unanalyzable organizational environment. Furthermore, we demonstrate the inconsistent mediating role of strategic decision comprehensiveness. No matter whether the openness of entrepreneurs is high or low, they can reduce the losses caused by the pandemic by adopting strategies suitable for them. Moreover, the negative impact of strategic decision comprehensiveness on enterprise recovery after the pandemic may be of particular concern.

DATA AVAILABILITY STATEMENT

The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

ETHICS STATEMENT

The studies involving human participants were reviewed and approved by Ethical Review Board of the Institute of Psychology, Chinese Academy of Sciences. Written informed consent from the participants' legal guardian/next of kin was not required to participate in this study in accordance with the national legislation and the institutional requirements.

AUTHOR CONTRIBUTIONS

MZ and JX developed the research project. WM, JX, and FL carried out the data collection. WM, SL, and XL carried out the data analysis. WM wrote the first draft. WM and MZ revised the manuscript. All authors contributed to the article and approved the submitted version.

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SUPPLEMENTARY MATERIAL

The Supplementary Material for this article can be found online at: <https://www.frontiersin.org/articles/10.3389/fpsyg.2021.806756/full#supplementary-material>

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Study on the Relationship Between Confucian Filial Piety Culture and Chinese Youth's Entrepreneurial Intention

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As an important part of entrepreneurial environment, Culture directly or indirectly affects individual entrepreneurial intention. Taking young students as the survey object, this paper uses empirical research methods to explore the relationship between Confucian filial piety culture and Chinese youth's entrepreneurial intention. The results show that there is a positive correlation between Confucian filial piety culture and Chinese youth's entrepreneurial intention, achievement motivation, risk-taking tendency and self-efficacy; Confucian filial piety culture has not only a direct effect on Chinese youth's entrepreneurial intention, but also an indirect effect with achievement motivation, self-efficacy and risk-taking tendency as intermediary variables.

Keywords: Chinese Confucian filial piety culture, entrepreneurial intention, achievement motivation, self-efficacy, risk-taking tendency

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INTRODUCTION

Youth is the hope of the country and the nation. Entrepreneurship is an important way to promote economic and social development and improve people's livelihood. The whole society should attach importance to and support young people's innovation and entrepreneurship, provide more favorable conditions, and build a broader stage (Xi, 2013). In order to encourage Chinese youth to engage in innovation and entrepreneurship activities, the government has issued a number of supporting policies to create a good entrepreneurial environment, but the introduction of these supporting policies has not significantly improved the entrepreneurial participation rate and success rate of Chinese youth. It can be seen that there are still many factors restricting the development of Chinese youth entrepreneurship. Previous studies have shown that environment is one of the important factors affecting individual entrepreneurship, which restricts or promotes individual entrepreneurship (Chen and Zhao, 2019). Economic environment, institutional environment and cultural environment are the most important dimensions. Existing researches mainly related to the impact of the economic and institutional environment on individual entrepreneurial intention, and these studies have achieved significant results (Kong and Zhao, 2018; Klein et al., 2019). Among them, some scholars have studied the relationship between cultural environment and entrepreneurship, but most of them take entrepreneurial culture or entrepreneurial atmosphere as the main variables, while there are few studies on entrepreneurial culture from the perspective of Chinese traditional culture (Burt and Burzynska, 2017; Sha and Ding, 2021).

The Chinese nation has a continuous civilization history of more than 5,000 years and has created a broad and profound Chinese culture (Xi, 2018). Chinese traditional culture has

accumulated the deepest spiritual pursuit of the Chinese nation, and contains rich spiritual concepts and philosophical wisdom such as patriotism, striving and enterprising, morality and self-cultivation, respecting teachers and education. The Chinese excellent traditional culture represented by Confucianism has a proven historical calculation in the culture of behavior habits (Jin, 2020). Confucian filial piety, as the gene of Chinese traditional culture, has been implicitly implanted into China's social and political structure and Chinese people's lifestyle and spiritual temperament (Liu, 2019). Xi (2018) also stressed that the fine traditional culture of the nation has always exerting a subtle influence on the way of thinking and behavior of the Chinese people. At some point, Chinese children grow up under filial piety education, and their behavior patterns will inevitably be affected by filial piety culture. However, most Chinese researchers do not pay enough attention to Chinese traditional culture, overemphasize the impact of economic and institutional environment on entrepreneurship, and ignore the power of Chinese traditional culture. Because of this, this paper takes the Confucian filial piety culture as the background, selects college students who are convenient to contact and investigate as the research object, analyzes the impact of the Confucian filial piety culture on young people's entrepreneurial intention, so as to explore the role of Chinese traditional culture on the entrepreneurial will of Chinese youth.

Entrepreneurship is a systematic project. Although it is an individual decision, the decision-making process is affected by many factors. This paper chooses Chinese Confucian filial piety culture to explore its role in individual entrepreneurial intention. The contribution of this paper mainly lies in the following two aspects. First, it preliminarily discusses the mechanism of Confucian filial piety culture on the individual entrepreneurial intention of Chinese youth. Culture will not only directly affect the individual behavior decision-making mode, but also affect individual decision-making through family environment. The second is to study the practical problems of Chinese Entrepreneurship from the perspective of traditional culture. Almost the behavior patterns of Chinese all over the world are inevitably affected by Chinese traditional culture. The role of this cultural element can't be ignored in the study of current problems. This paper enriches the research results in this field.

LITERATURE REVIEW

Confucian Filial Piety Culture

Traditional Chinese society is based on filial piety, so filial piety is widely respected by people. Filial piety is not only the cornerstone of Chinese ethics, but also the spiritual basis for the formation of Chinese politics and law. After thousands of years, the ethics with filial piety as the core has been deeply rooted in the Chinese nation. It still has important value in today's society. It plays an important role in the construction of contemporary ideology and culture, and has an important impact on people's behavior, the generation of emotion and the formation of thinking. Filial piety is one of the important contents of Chinese traditional culture. Chinese traditional social structure

takes the family as a basic unit. An important value of filial piety is to maintain the harmony, unity and happiness of the family. Zhao (2014) summarized that the content of Confucian filial piety culture includes eight aspects: raising relatives, respecting relatives, obeying relatives, admonishing relatives, returning relatives, extending relatives, following relatives, and showing relatives. Confucian filial piety emphasizes supporting parents based on blood relationship, that is, children should support their parents. Wang (2002) believes that both filial piety and righteousness are ideas vigorously advocated in the Confucian filial piety culture, emphasizing that people should be loyal to their country and respect their relatives. With the changes of the times, this concept has gradually evolved into a personal achievement thought for fame and wealth or glory. Gan and Feng (2020) found that the Confucian filial piety makes children show the concept of "showing their parents." Children get more love from their parents and bear higher expectations, so they show a stronger willingness to repay their parents. Taken together, children's support and respect for their parents are the basis of filial piety. Child generation should not only provide their parents with basic material needs, but also meet their spiritual needs. Through their continuous efforts, they can make achievements in a certain field and make their parents feel proud.

Entrepreneurial Intention and Influencing Factors

Intention is a psychological vocabulary, which usually refers to an individual's views or thoughts on things. Intention can be divided into will and wish. Will refers to the mind and the direction of the heart; Wish refers to desire and motive force. Therefore, intention is to achieve a specific goal and direction, and then use your ability to achieve that goal and direction. Entrepreneurial intention is the product of the integration of entrepreneurship and psychology. With the development of entrepreneurship, entrepreneurial intention is gradually used to measure the entrepreneurial aspirations of entrepreneurial individuals or organizations. In the field of individual entrepreneurship research, entrepreneurial intention usually refers to a subjective attitude of potential entrepreneurs to engage in entrepreneurial activities (Kong et al., 2019).

The formation of entrepreneurial intention is affected by many factors, including not only the internal factors such as entrepreneurs' own characteristics and previous entrepreneurial experience, but also external factors such as economy, society and policy. Wilken (1979) found that the need of self-actualized and the self-confidence and desire of individuals have a significant impact on the entrepreneurial intention by analyzing the personality differences between entrepreneurs and non-entrepreneurs. The higher the need of self-actualized and self-confidence of individuals, the easier it is to produce positive entrepreneurial intention. Individual entrepreneurial ability, financial support, support provided by the school, encouraging policies issued by the government and macroeconomic environment have a certain impact on College Students' entrepreneurial intention. Shen et al. (2013) found that college students can learn entrepreneurial

knowledge, improve their entrepreneurial ability and generate entrepreneurial intention by receiving entrepreneurship education in schools. Dou and Bao (2016) believes that the entrepreneurial knowledge and experience accumulated by individuals from their previous entrepreneurial experience will affect their subsequent entrepreneurial intention and behavior.

Based on the above analysis, we can find that entrepreneurial intention was affected by many different factors. As a combination of behavior mode and psychological thinking, personality characteristics can directly affect the generation of entrepreneurial intention. Meanwhile, the impact of cultural environment on people will be reflected in the formation of individual personality characteristics. Therefore, as a bridge connecting traditional culture and entrepreneurial intention, the research on personality characteristics is of positive significance. According to the collation and induction of literature, this paper summarizes personality characteristics into three dimensions: achievement motivation, self-efficacy and risk-taking tendency.

THE RELATIONSHIP BETWEEN CONFUCIAN FILIAL PIETY CULTURE AND CHINESE YOUTH'S ENTREPRENEURIAL INTENTION

Confucian Filial Piety Culture and Entrepreneurial Intention of Chinese Youth

Confucian filial piety culture includes supporting, respecting and inheriting parent's ambition. Supporting is the lowest level of filial piety, the basic requirement of filial piety, and ensures the material needs of parents. However, maintenance is only reflected in the material level, which can't reflect the humanistic characteristics of filial piety. Filial piety is not only to be able to support, but also to respect parents. Inheriting ambition is the highest level of filial piety and the inheritance of reasonable politics. Existing studies also show that children whose parents are entrepreneurs are more likely to start businesses in the future. China is experiencing economic transition, and innovation and entrepreneurship are more important than ever before. Therefore, the state has successively issued many policies and measures to promote Innovation & Enterprise and protect entrepreneurship, and the social attitude toward entrepreneurship have gradually changed. Nowadays, independent entrepreneurship has not only become an important way for college students to realize their self-worth, but also a successful entrepreneurship has become a way to honor their elders. Successful entrepreneurs such as Jack Ma, Tao Huabi, Pony Ma, and Ren Zhengfei have been recognized and respected by the state, society and villagers, bringing glory to their families. Therefore, we may believe that Chinese youths with filial piety are more willing to try entrepreneurship in order to make their parents live a better life and add luster to their parents. Therefore, this paper puts forward the following hypothesis:

H1: Confucian filial piety culture is positively correlated with Chinese youths' entrepreneurial intention.

Confucian Filial Piety Culture and Personality Characteristics of Chinese Youth

As an internal driving force, achievement motivation will encourage individuals to make continuous efforts to achieve success. Confucian filial piety plays an important guiding role in people's moral cultivation and the formation of code of conduct. After thousands of years, filial piety is still an important code of conduct and an important standard to measure people. The thought of "settling down and walking the Tao and becoming famous in the world is the destination of filial piety" was put forward in the book of filial piety. That is, individuals should continue to work hard, make achievements in their fields, become famous and shine in the family. Under the influence of this concept, Chinese youths have a strong desire to succeed and show their parents. Therefore, we propose the following hypothesis:

H2a: Confucian filial piety culture is positively correlated with Chinese youth achievement motivation.

Self-efficacy is an individual's confidence and expectation that he can effectively complete a task. It is an individual's self-evaluation of his own ability (Yang et al., 2021). Confucian filial piety not only advocates respecting and supporting parents, but also inheriting parents, that is, children inherit their parents' correct and reasonable wishes and career. The formation of children's values is deeply influenced by family education, and family education influenced by filial piety culture is full of the thought of merit and fame. It emphasizes that the purpose of learning is to shine on the family. As a result, most parents define the quality of a job by social status, fame, wealth and reputation, which will virtually enhance their children's confidence and expectation in completing a job. Therefore, we propose the following hypothesis:

H2b: Confucian filial piety culture is positively correlated with Chinese youth self-efficacy.

Risk-taking tendency refers to an individual's acceptance of risk when making decisions. Confucian filial piety has always advocated supporting parents based on blood relationship, and the most basic thing to support parents is to give them corresponding help at the economic and material level. The concept of being kind to parents formed by Chinese youth from childhood has been deeply rooted in their minds. The idea of supporting parents with better material security and living environment through their own efforts after growing up has a positive effect on the formation of individual risk-taking tendency, which will make them not afraid of risks and dare to challenge all kinds of difficulties. Based on this, we propose the following hypothesis:

H2c: Confucian filial piety culture is positively correlated with Chinese youth's risk-taking tendency.

Personality Characteristics and Entrepreneurial Intention

Achievement motivation is the internal drive of individuals to actively and unrelentingly complete an activity in order to achieve a certain goal. People with stronger achievement motivation are often more actively face various difficulties and challenges. They are also more impossible make some changes and innovations, and try their best to achieve their goals, so as to obtain higher achievements and glory. Liu (2017) found that College Students' personality characteristics is positively correlated with entrepreneurial effectiveness, and the internal motivation of college students can induce them to make some behavior. Wu (2018) found that improving students' achievement motivation can stimulate their desire for success, make them sprout entrepreneurial ideas and be more willing to devote themselves to entrepreneurship. Based on the above analysis, we propose the following hypothesis:

H3a: Achievement motivation is positively correlated with entrepreneurial intention.

Self-efficacy refers to the confidence that you can achieve your goals and successfully complete tasks. Many studies have shown that people with high self-efficacy can produce higher job performance. Ordinarily, the youth have higher self-efficacy than other groups, they can better complete challenging tasks and have a stronger willingness to start a business. Ding et al. (2009) found that entrepreneurial self-efficacy has a positive and direct relationship with entrepreneurial intention. Ye and Zhu (2019) proposed that individuals with personality characteristics such as self-confidence, independent spirit and sense of cooperation, firm will and sharp judgment actively engage in entrepreneurship. Accordingly, we propose the following hypothesis:

H3b: Self-efficacy is positively correlated with entrepreneurial intention.

Risk-taking tendency refers to the individual's acceptance of risk and the tendency to take risks. Individuals with high risk-taking tendency have more courage to take risks. When they face risks, they often choose to accept rather than avoid. Entrepreneurship is an activity with high risk and high return. If an individual is willing to bear the high risk, he will have the opportunity to obtain the high return brought by entrepreneurship, and he will engage in entrepreneurial activities. Glaeser et al. (2009) believes that entrepreneurs are people who dare to take risks. Based on this, we can make the following hypothesis:

H3c: Risk-taking tendency is positively correlated with entrepreneurial intention.

The Intermediary Role of Personality Characteristics Between Confucian Filial Piety Culture and Chinese Youth's Entrepreneurial Intention

Confucian filial piety plays a great role in promoting family harmony and supporting spiritual belief. Filial piety belief can

guide individuals to make certain actions according to the connotation and principles of filial piety. Influenced by the Confucian filial piety, young people are eager to provide better material conditions for their parents. This will lead them to have high entrepreneurial willingness. Although Confucian filial piety has always advocated the idea of parents' standard, it does not advocate foolish filial piety, but pay attention to "strategic filial piety." Children can advise their parents' orders and discuss with their parents on some important matters. In this case, children's decision-making is often encouraged and supported by their parents, which leads them to be full of self-confidence and positive action, which makes them have a high sense of self-efficacy and enthusiasm for entrepreneurship. Furthermore, Confucian filial piety emphasizes standing up and becoming famous, so that they are not afraid of failure, have a high tendency to take risks, and are more willing to carry out entrepreneurial activities. It can be seen that personality characteristics may play a mediating role between Confucian filial piety and entrepreneurial intention. Based on this, this paper puts forward the following hypothesis:

H4a: achievement motivation plays an intermediary role between Confucian filial piety culture and Chinese youth's entrepreneurial intention;

H4b: self-efficacy plays an intermediary role between Confucian filial piety culture and Chinese youth's entrepreneurial intention;

H4c: risk-taking tendency plays an intermediary role between Confucian filial piety culture and Chinese youth's entrepreneurial intention.

The above hypothesis constitute the research framework of this paper (see **Figure 1**).

VARIABLE MEASUREMENT AND DATA COLLECTION

Variable Measurement

In order to measure the Confucian filial piety culture, this paper sets up three items based on the study of Wu (2012) and Jiang (2013). On the base of research conclusion of Zhan (2008), this paper uses four items to measure individual achievement motivation. This paper designs six items to measure individual self-efficacy based on the study of Tang (2009). This paper adopts the research conclusions of Qian (2007), and uses four items to measure individual risk-taking tendency. For the measurement of entrepreneurial intention, three items are set based on the research results of Qian (2007) and Jiang (2013) (see **Table 1**).

Data Collection

On the basis of the variable measurement items, this paper designs a questionnaire to collect the information of Confucian filial piety culture and Chinese youth's entrepreneurial intention. When designing the questionnaire, we add two variables: gender and grade to measure personal information. A total of 300 questionnaires were distributed in this survey. When distributing

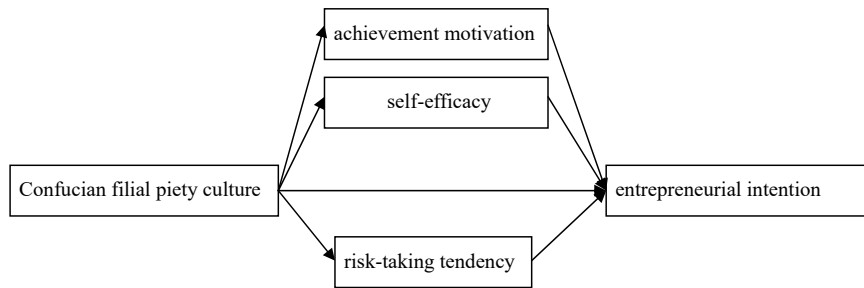


FIGURE 1 | Research framework.

TABLE 1 | variable and measurement items.

Variable	Measurement items
Confucian filial piety culture	1. In order to make my parents live a better life, I will choose entrepreneurship. 2. For the family happiness, I am willing to devote time and energy to entrepreneurship. 3. My parents have certain requirements for my career development.
Achievement motivation	1. I don't think finding a stable job is more important than becoming an entrepreneur. 2. I will persevere in solving the problems I am not sure to solve. 3. I will become more confident when I finish a very difficult job. 4. In case of failure, I will not lose the confidence and courage to achieve my goals.
Self-efficacy	1. I am good at analyzing the external environment to find opportunities and potential problems. 2. I like to solve problems in my own way. 3. I am willing to accept new things. 4. I can put forward new ideas and suggestions. 5. I have strong innovation ability. 6. I'm used to thinking twice before I make a decision.
Risk-taking tendency	1. I am not a routine. 2. For higher career achievements, I dare to take some risks. 3. I like challenging work. 4. For my future career, I tend to those with high risks and benefits.
Entrepreneurial intention	1. I had the idea of starting a business. 2. I have learned about entrepreneurship. 3. I am very eager to create my own enterprise.

the questionnaires, the respondents should be balanced in terms of gender and grade to the greatest extent, so as to ensure the effectiveness of the research results 206 valid questionnaires were finally recovered, and the recovery rate was 68.7%.

RELIABILITY AND VALIDITY TEST

Reliability Test

This paper uses spss25.0 and Cronbach α the reliability coefficient index tests the reliability of the questionnaire, and the results are shown in **Table 2**.

It can be seen from **Table 2** that the reliability coefficient of each variable is greater than 0.8, which meets the statistical requirements, indicating that the scale has good reliability.

TABLE 2 | Questionnaire reliability test results.

Variable	Confucian filial piety culture	Achievement motivation	Self-efficacy	Risk-taking tendency	Entrepreneurial intention
α	0.856	0.896	0.901	0.887	0.823

Validity Test

The validity test results of entrepreneurial intention is shown in **Table 3**. The commonality of all items are higher than 0.4, indicating that the item can be extracted effectively. The value of KMO is 0.736, greater than 0.6, which means that the data is valid. Bartlett's spherical test value is 392.4693 and the degree of freedom is 3, reaching the significance level, indicating that the sample is suitable for factor analysis. The cumulative variance of the factor is 79.004%, and the cumulative variance after rotation is 76.025 > 50%, which means that the items can be extracted effectively. Based on this, it can be considered that the validity analysis of entrepreneurial intention passed.

The validity of other variables is also tested by the same method, and the test results meet the statistical requirements, which will not be repeated here.

TABLE 3 | Validity test results of entrepreneurial intention.

	Factor load	Commonality
	Factor1	
I had the idea of starting a business	0.878	0.768
I have learned about entrepreneurship	0.886	0.801
I am very eager to create my own enterprise	0.825	0.769
Characteristic root	2.327	–
Variance%	77.256%	–
Cumulative variance%	77.256%	–
Characteristic root (rotation)	2.286	–
Variance % (rotation)	77.126%	–
Cumulative variance % (rotation)	77.126%	–
KMO	0.741	–
Bartlett spherical test	352.652	–
Degree of freedom	3	–

EMPIRICAL TEST RESULTS

Correlation Analysis

In this paper, the person coefficient is used to test the correlation between variables. The result is expressed in *R*. The higher the *R*, the higher the correlation between the variables. When *R* is negative, it indicates that there is a negative correlation between variables; When *R* is positive, it indicates that there is a positive correlation between variables. The results are shown in **Table 4**.

As can be seen from **Table 4**, there is a significant correlation between all variables, and regression analysis can be carried out. In order to test the relationship between variables, we constructed regression models corresponding to hypothesis H1, H2a, H2b, H2c, H3a, H3b, and H3c, named model 1, model 2a, model 2b, model 2c, model 3a, model 3b, and model 3c. Simple linear regression method is adopted, and the regression results are shown in **Table 5**.

It can be seen from **Table 5** that the values of *F* test of all models are less than 0.05, indicating that the regression model is significant. Therefore, hypothesis H1, H2a, H2b, H2c, H3a, H3b, and H3c are verified.

Mediation Role of Personality Characteristics

This paper uses the method proposed by Baron and Kenny (1986) to test the mediating effect of personality characteristics between Confucian filial piety culture and entrepreneurial intention.

Mediation Role of Achievement Motivation

In order to test the intermediary role, this paper makes a regression analysis between Confucian filial piety culture, achievement motivation and entrepreneurial intention. The specific steps are as follows: firstly, regression analysis is carried out on the independent variable Confucian filial piety culture and the intermediary variable achievement motivation;

Then, regression analysis is made on the intermediate variable achievement motivation and dependent variable entrepreneurial intention; Finally, the intermediary variable achievement motivation is added, and then the independent variable Confucian filial piety culture and the dependent variable entrepreneurial intention are regressed. The analysis results are shown in **Table 6**. After adding the intermediary variable of achievement motivation, the influence of Confucian filial piety culture on entrepreneurial intention is still significant, but the significance is significantly reduced, indicating that achievement motivation plays a partial intermediary role in the relationship between Confucian filial piety and Chinese youth entrepreneurial intention. Therefore, hypothesis H4a is verified.

Mediation Role of Self-Efficacy

Using the same method, the mediating effect of self-efficacy is tested, and the results are shown in **Table 7**. After adding the mediating variable of self-efficacy, the effect coefficient of Confucian filial piety on entrepreneurial intention is reduced from 0.463 to 0.262. The impact is still significant, but the effect path coefficient and significance are significantly reduced, indicating that self-efficacy plays a partial mediating role in the relationship between Confucian filial piety and Chinese youths' entrepreneurial intention. Therefore, hypothesis H4b is verified.

Mediation Role of Risk-Taking Tendency

Similarly, the test results of the mediating effect of risk-taking tendency are shown in **Table 8**. After adding the intermediary variable of risk-taking tendency, the effect coefficient of Confucian filial piety on entrepreneurial intention is reduced from 0.463 to 0.197, and the impact is still significant, but the effect path coefficient and significance are significantly reduced, indicating that risk-taking tendency plays a partial intermediary role in the relationship between traditional filial piety and Chinese youths' entrepreneurial intention. Therefore, hypothesis H4c is verified.

TABLE 4 | Correlation between the variables.

	Confucian filial piety	Achievement motivation	Self-efficacy	Risk-taking tendency	Entrepreneurial intention
Confucian filial piety	1				
Achievement motivation	0.573**	1			
Self-efficacy	0.568**	0.576**	1		
Risk-taking tendency	0.421**	0.567**	0.536**	1	
Entrepreneurial intention	0.556**	0.535**	0.513**	0.458**	1

**0.01.

TABLE 5 | Result of simple linear regression.

	Model 1	Model 2a	Model 2b	Model 2c	Model 3a	Model 3b	Model 3c
β	0.463**	0.435**	0.402**	0.328**	0.457**	0.425**	0.317**
R^2	0.778	0.781	0.775	0.689	0.717	0.771	0.711
<i>F</i>	671.23**	677.55**	655.68**	612.26**	610.23**	622.75**	702.33**

** $p < 0.01$.

TABLE 6 | Mediation role of achievement motivation.

Variable	Regression 1	Regression 2	Regression 3	
	Achievement motivation	Entrepreneurial intention	Entrepreneurial intention	
			Step 1	Step 2
Confucian filial piety	0.435**		0.463**	0.255*
Achievement motivation		0.457**		0.132*
R^2	0.781	0.717	0.778	0.789
F	677.55**	610.23**	671.23**	486.57**

* $p < 0.05$ and ** $p < 0.01$.**TABLE 7 |** Mediation role of self-efficacy.

Variable	Regression 1	Regression 2	Regression 3	
	Self-efficacy	Entrepreneurial intention	Entrepreneurial intention	
			Step 1	Step 2
Confucian filial piety	0.402**		0.463**	0.262*
Self-efficacy		0.425**		0.173*
R^2	0.775	0.771	0.778	0.728
F	655.68**	622.75**	671.23**	478.76**

* $p < 0.05$ and ** $p < 0.01$.**TABLE 8 |** Mediation role of risk-taking tendency.

Variable	Regression 1	Regression 2	Regression 3	
	Risk-taking tendency	Entrepreneurial intention	Entrepreneurial intention	
			Step 1	Step 2
Confucian filial piety	0.328**		0.463**	0.197*
Risk-taking tendency		0.317**		0.102*
R^2	0.689	0.711	0.778	0.779
F	612.26**	702.33**	671.23**	458.73**

* $p < 0.05$ and ** $p < 0.01$.

RESEARCH CONCLUSION AND DISCUSSION

Entrepreneurship is not only an individual activity, but also a social activity, which will be affected by many external factors such as social environment. To some extent, national culture determines personal values, thinking ideas and behavior. It is an important part of the entrepreneurial environment that can't be ignored. China is an ancient civilization with a history of more than 5,000 years. In the long historical evolution, it has formed an excellent traditional culture that continues to today, affecting the thoughts and behaviors of all Chinese. It is more practical value to study China's practical

problems based on China's cultural environment. Therefore, this paper selects the Confucian filial piety culture in Chinese traditional culture and uses empirical research methods to explore its impact on Chinese youths' entrepreneurial intention. The results show that there is a significant positive correlation between Confucian filial piety and Chinese youths' personality characteristics. Confucian filial piety culture has a positive impact on young people's individual characteristics. The higher the level of filial piety, the higher their achievement motivation, self-efficacy and risk-taking tendency. From the regression coefficient, compared with self-efficacy and risk-taking tendency, the influence of Confucian filial piety culture on youth achievement motivation may be more obvious. This may be related to the expectations of parents for their children from childhood. Looking forward to their children's success is almost every Chinese parent's expectation and wish for their children, and children influenced by the culture of filial piety will take living up to their parents' expectations as their standard of filial piety. Therefore, children who grow up in such a family environment have high achievement motivation. The study also shows that there is a significant positive correlation between Chinese youth's personality characteristics and entrepreneurial intention. Individuals with high achievement motivation have higher expectations for their achievements and are more willing to go all out to achieve their ideals and goals. Therefore, they are easier to become entrepreneurs and hope to obtain material and spiritual satisfaction through entrepreneurship. Individuals with high self-efficacy are more confident in themselves, and can produce higher work performance in completing many types of tasks, so their entrepreneurial intention is higher. Individuals with risk-taking tendency like challenging tasks, are not afraid of risks, have more active thinking and more innovative ability, so they will have a stronger willingness to start a business. From the correlation and regression coefficient, the impact of achievement motivation on young people's entrepreneurial intention is the most obvious, followed by self-efficacy and risk-taking tendency. This conclusion is basically consistent with the existing research results.

Through the above multi-level regression analysis, it can be seen that Confucian filial piety culture has not only a direct effect on Chinese youth's entrepreneurial intention, but also an indirect effect with personality characteristics such as achievement motivation, self-efficacy and risk-taking tendency as intermediary variables. If young people have a thorough understanding of Confucian filial piety culture and agree to practice it, they will have a higher willingness to start a business. Moreover, Confucian filial piety culture will also imperceptibly affect young people's achievement motivation, self-efficacy and risk-taking tendency, and then affect their entrepreneurial intention. Therefore, we can appropriately increase Confucian filial piety and other traditional cultural education, improve the cultural cultivation level of youth groups, enhance cultural self-confidence, build strong cultural influence, and then promote them to form positive personality characteristics. This will not only have a positive effect on entrepreneurial willingness, but also have a positive effect on young people engaged in other work.

Entrepreneurship is a long-term process full of thorns. In this process, the behavior of entrepreneurs may change with the development of entrepreneurial environment and entrepreneurial practice. For entrepreneurial individuals, the entrepreneurship may also be a process of self-growth. With the change of their own experience, their understanding of entrepreneurship and the intensity of entrepreneurial intention will change. However, this study uses cross-sectional data and does not consider this change, which may make the research results inconsistent with the reality of entrepreneurship. In the future research, we can use the dynamic research method to track the entrepreneurs. Due to the limited ability of personal research, this paper used the stepwise regression for testing the mediating analysis. This method has some limitations which may affect the accuracy of the research results. In the future, preacher and hayes technique can be used for testing the mediating analysis. In addition, due to the influence of COVID-19, the scope of data investigation in this paper is relatively small, and the diversity of samples is insufficient, which may make the research results not representative. At the same time, the manifestations of filial piety culture in different regions of China often show significant differences. This study does not consider this difference. In the future, we can make a comparative study of regional differences in this field.

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DATA AVAILABILITY STATEMENT

The original contributions presented in the study are included in the article/supplementary material, further inquiries can be directed to the corresponding author.

AUTHOR CONTRIBUTIONS

KF and ZL: determined the overall research idea and structure of the manuscript. KF: literature review, theoretical assumptions and definition of key concepts. ZL and YX: questionnaire design, the distribution and recovery of questionnaires, the classification and sorting of survey data. All authors contributed to the article and approved the submitted version.

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The Joint Effects of Hubris, Growth Aspirations, and Entrepreneurial Phases for Innovative Behavior

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Innovation is often seen as essential for ventures to succeed. High business failure rates in entrepreneurship, however, suggest that innovations are frequently driven by entrepreneurs blinded by overconfidence. Thus, anticipating when and why entrepreneurs will be motivated to innovate is fundamental for entrepreneurial success. Using a large sample obtained from population surveys conducted in 77 countries, this study analyzes the variables that are significantly associated with innovative behaviors. The research tests a model proposing that the joint effects of hubris, growth aspirations, and an entrepreneur's level of entrepreneurial experience have a crucial impact on innovative endeavors. It finds that hubris is significantly related to entrepreneurs' growth aspirations and that ambition, in turn, is positively related to innovative behaviors. In addition, the study finds that both relationships are moderated by the level of entrepreneurial experience. These findings highlight the need to wise up amateur entrepreneurs before they embark on innovative endeavors.

Keywords: hubris, growth aspirations, innovation, entrepreneurial process, entrepreneurial ambition

INTRODUCTION

Extensive statistical evidence shows that entrepreneurship, as an economic activity, is characterized for having high rates of business failure (Headd, 2001; Hayward et al., 2006). For example, the Failure Institute state that 75% of new firms in developing economies do not survive more than 2 years. Shane (2009) noted that the correlation across industries between start-up rates and failure rates is 0.77. Headd (2003) observed that 34% of new ventures did not survive the first 2 years, 50% did not survive 4 years, and 60% did not survive 6 years. Furthermore, studies reveal that, on average, 9 out of 10 new businesses close during their first year (e.g., Phillips and Kirchhoff, 1989). In a similar vein (Dunne et al., 1989), analyzing the manufacturing sector, observed that 62–80% of firms existed the market after a period of 5–10 years, with most exits being failures. Despite the above, many of those who engage in entrepreneurial activities are driven by the belief that they can overcome great odds and achieve success (Zhang and Cueto, 2017). This phenomenon—which Scott Shane refers to as “the myth of entrepreneurship” (Shane, 2008)—is strongly related to individuals who present tenacity, excessive pride, and arrogance (Shane, 2009).

Theoretical studies propose that individuals' socially constructed confidence affects how they interpret information about their ventures (Hayward et al., 2006, 2010). Literature also suggests that when people act on fictional thinking as it was reality, they often get hurt and also harm those around them (Shane, 2008; Trevelyan, 2008). This, however, may not be entirely true, as shown by the conflicting views and evidence on whether the resulting outcomes are positive or negative. For instance, several studies observed that overly confident entrepreneurs frequently err when deciding how to optimally allocate resources (e.g., De Meza et al., 1996; Shane, 2009). It has also been suggested that the typical entrepreneur is bad at selecting industries, as they commonly

choose the easiest, rather than the best industries for starting up a business (Johnson, 2004). While not every business closure should be seen as a failure, entrepreneurs tend to overestimate their abilities (Cassar, 2010; Coelho, 2010; Mueller and Shepherd, 2016), and this in turn is related with some of the observed discontinuance rates of entrepreneurial activity. On the other hand, extensive evidence suggests that positive beliefs can contribute to the achievement of myriad outcomes. For instance, passion (Cardon et al., 2009, 2017), courage (Miller and Le Breton-Miller, 2017; Bockorny and Youssef-Morgan, 2019), and psychological capital (Jensen and Luthans, 2006; Rauch and Frese, 2007) are positively related to venture performance (Hmieleski and Carr, 2008), authentic leadership (Jensen and Luthans, 2006), and wellbeing (Hmieleski and Carr, 2007).

Inspired by this paradoxical evidence, this paper aims to understand the role of entrepreneurs' cognitive processes on firm-level innovation. Specifically, this study adopts an integrative approach based on social cognitive theory (SCT) and the hubris theory of entrepreneurship (HTE) to explain how some cognitive processes (i.e., hubris, comprising founder's confidence in knowledge, predictions, and personal abilities) of the entrepreneurs' managerial decisions (i.e., enacting innovative endeavors) change across the entrepreneurial process. Using a sample of 104,564 entrepreneurs, findings underscore the moderating role of the entrepreneurial process on the relationship between hubris and growth aspirations, and between growth aspirations and innovation. It finds that both relationships become weaker as entrepreneurs progress through the entrepreneurial process.

This study offers three key contributions to the ongoing academic debate on this topic. First, it examines the applicability of complementing SCT and HTE for explaining when, how and why hubris has a direct—and indirect—impact on innovative endeavors through growth aspirations. By doing so, this research confers theoretical grounds to support existing empirical evidence, helping improve the understanding of the role of hubris in entrepreneurs' characteristics (e.g., motives, goals, values) and firm's outcomes (e.g., innovative outcomes). It is anticipated that entrepreneurs' initial cognitive settings have a relative influence on a firm's outcomes. This, via the construction of a strong intrinsic motivation that leads entrepreneurs to make risky decisions and to integrate this as a core aspect of their business strategies. Thus, the present research contributes to continuing efforts to elucidate how hubristic entrepreneurs set their ambitions for growth and the subsequent impact that this has on multiple innovative endeavors. Second, while the existing literature provides consistent findings of the role of experience in entrepreneurship, it fails to directly address how the entrepreneurial process provides reference points through which the relative influence of initial cognitive settings on firm outcomes change as entrepreneurs advance through the phases of the entrepreneurial venture. The present research addresses this possibility by investigating the moderating role of the entrepreneurial stages in how hubristic entrepreneurs set their ambitions for growth. While recent studies emphasize the benefits and downsides of hubris among entrepreneurs, limited focus has been placed on how its influence might vary

across the different entrepreneurial phases. Third, similar to other studies (Anokhin and Wincent, 2012), this research warns of the nuances and complexities of encouraging entrepreneurs to develop innovative ventures, as those most likely to be persuaded are amateurs and naive entrepreneurs (Mitchell et al., 2008; Senyard et al., 2014; Sanchez and Dunning, 2018). These insights can help inform and shape policy initiatives aimed at fostering innovation by highlighting how hubris can act as a precursor to innovative endeavors. The findings call for a serious reconsideration of the premise on which new venture creation support programs are built. From a public policy perspective, stimulating start-up rates to encourage innovative entrepreneurial outcomes may be inadequate. Moreover, public investments of pecuniary and non-pecuniary resources into such programs must be guided by a sound understanding of entrepreneurs' motivations. In the absence of such information, private and public investments might end up boosting ambitious entrepreneurial ventures that are likely to fail, resulting in substandard outcomes for the local economy.

THEORETICAL UNDERPINNING

SCT is based on the principle that personal and situational factors affect individuals' social behaviors (Bandura, 1977). Social cognition analysis considers the mental representations that are constructed based on people's current or previous experiences, how these representations are manipulated, the processes through which they influence other aspects of cognition and the decisions and behaviors that result from the application of these processes (Bodenhausen et al., 2003). To do so, SCT adopts an agentic perspective to self-development, adaptation, and change (Bandura, 2005). To be an agent is to intentionally make things happen through one's actions (Bandura, 2001). Hence, individuals are not only planners and forethinkers but also self-regulators. One of the means through which individuals regulate themselves is through self-efficacy. Self-efficacy is defined as the belief in one's capability to mobilize the cognitive resources and the actions needed to exercise control over events in our lives (Wood and Bandura, 1989). According to SCT, self-efficacy is a major determinant of people's choice of activities, how much effort they will expend, and how long they will sustain effort when dealing with stressful situations (Bandura, 1977).

Alongside SCT, HTE (Hayward et al., 2006) is a highly influential theory explaining why some entrepreneurs are particularly prone to starting up new ventures under high rates of business failure. Like SCT, this theory refers to an individual's belief in her/his own ability to accomplish a goal or outcome. HTE focuses on socially constructed confidence (Bollaert and Petit, 2010), where entrepreneurs' beliefs about the success of a project lie on their interpretation of their knowledge, skills, and the project's qualities. However, HTE highlights how overconfidence encourages entrepreneurs not only to start firms but also to pursue challenging growth strategies, often in hostile environments with insufficient resources. Thus, these two theories are complementary in the conception of the individual as

being goal-directed and proactively involved in shaping the task environment.

A core element of these two theories is the role of cognitive processes in explaining behavior, either through self-efficacy for SCT or overconfidence for HTE. The nexus between these approaches is underpinned by studies observing that confidence is closely related with self-efficacy (Hayward et al., 2010). Overconfidence refers to self-efficacy that exceeds the individual's capacity to successfully achieve the task at hand (Douglas, 2009, 2017; Hurst, 2019), where hubris can be conceived as the "dark side" of overconfidence (Hayward et al., 2006). According to Akstinaite and Sadler-Smith (2021), hubris is an extreme manifestation of confidence that is described by preoccupations with success, feelings of excessive pride and self-importance. Thus, hubris can be understood as an exaggerated sense of self-efficacy, and as a defining feature of entrepreneurs' thinking (Hayward et al., 2006). Methodologically, hubris is linked with individuals' subjective interpretation of information concerning three separate and independent psychological processes: (1) overconfidence in knowledge, (2) overconfidence in prediction, and (3) overconfidence in personal abilities.

Based on these frameworks, it is anticipated that social behavior is triggered by the individual's expectations which, in turn, are nurtured by the conviction that they can successfully execute the behavior required to produce the outcomes (Shaver, 2003). As a result, individuals might believe that a particular course of action will produce certain outcomes. However, even if they entertain serious doubts about whether they can perform the necessary activities, such information will not necessarily influence their behavior.

HYPOTHESES DEVELOPMENT

Prior literature describes hubris as exaggerated self-confidence (Hayward and Hambrick, 1997) that arises when entrepreneurs overestimate the personal wealth they will generate from their ventures (Hayward et al., 2006). Empirical studies observe that entrepreneurs are generally highly confident even though traditional entrepreneurial activity is statistically very likely to fail, and initial plans for a venture are a weak predictor of future performance. This suggests that entrepreneurs are prone to overconfidence both in terms of the risk profile of the opportunities they identify and the initial resource endowments deemed sufficient to pursue them (Hayward et al., 2006). Owen and Davidson (2009) identify three key external factors that contribute to hubris: (1) holding substantial power; (2) minimal constraint on the leader exercising authority; (3) the length of time that leaders remain in power. Considering that these three factors can be parsimoniously featured as characteristics of what occurs in entrepreneurial ventures, it is possible to assume that entrepreneurs are particularly prone to hubris.

While some studies suggest that hubris can be attributed to risk-taking (Craig and Amernic, 2004; Li and Tang, 2010), others propose that it involves a "belief in one's superior qualities" (Chatterjee and Hambrick, 2007). For example, a classic symptom of hubris is an exaggerated self-belief, bordering on a sense of

omnipotence regarding what the individual thinks that he/she can personally achieve. This, in turn, can manifest in contempt for the input of others, with entrepreneurs pursuing strategies out of their inflated sense of confidence and impaired convictions (Kroll et al., 2000; Douglas et al., 2021). In this sense, this hubris is driven by an interpretation of their experiences and is largely unaffected by the experiences of others or the features of the situation—even when considering others' experiences and situational features could help improve the accuracy of decisions (Ball et al., 1991; Moore and Kim, 2003).

At the firm level, the effect of hubris can be observed on the decision-making, specifically on strategic decision processes, strategic choices, and organizational performance (Simon and Houghton, 2003; Hiller and Hambrick, 2005). Hubristic entrepreneurs may not be inclined toward decision comprehensiveness. Instead, they may be likely to believe that they already possess the required skills, valuable personal insights to understand strategic situations and available alternatives, such that they will not feel the need to exhaustively gather, analyze, and discuss data. Accordingly, hubristic entrepreneurs may hold the conviction that their efforts and expectations lead to favorable firm outcomes (Hayward et al., 2010).

At a personal level, the effects of hubris have been linked with a wide array of personality traits, including locus of control, tolerance for ambiguity, charisma, and risk-propensity (Hayward and Hambrick, 1997). For instance, Hiller and Hambrick (2005) suggested that hubristic individuals have a higher locus of control (Miller, 1983; Urbig and Monsen, 2012; Karabulut, 2016). If so, it is reasonable to consider that hubris may be substantially valuable because it allows hubristic entrepreneurs to create and seize opportunities, as well as overcome obstacles; but also, hubris may accentuate motivational power and the conviction that the entrepreneurial venture is in good, capable hands (Bass, 1990; Hiller and Hambrick, 2005).

Hubris determines choices, strategy preferences and dispositions (Jensen and Zajac, 2004). Hubristic individuals seek personal power and use this power to support their excessive image of self and to curtail negative feedback to carry out grandiose projects (Kroll et al., 2000; Glad, 2002). Accordingly, hubris may provide entrepreneurs with the bravado to pursue challenging tasks (Hayward et al., 2006; Haynes et al., 2015) and the conviction that they will have the necessary resources for their ventures to succeed (Cialdini, 1993; Lowe and Ziedonis, 2006). Hubristic entrepreneurs might overstate the value and efficacy of their unique personality and leadership skills and, therefore, overestimate the likelihood that their ventures will succeed. Together, these factors illustrate why hubristic entrepreneurs might misjudge gains from prospective ventures and present themselves as greedy (Hayward and Hambrick, 1997; Haynes et al., 2015).

Previous literature has shown that the mechanisms by which growth aspirations are supported rely on individuals' convictions on themselves (e.g., Davidsson, 1989, 1991). Further, research suggests that inflated estimations of personal abilities to produce success promote higher goals (e.g., Hayward and Hambrick, 1997; Hiller and Hambrick, 2005). Therefore, to the extent that individuals overvalue

their knowledge and skills, hubris may appear as one of the basic elements from which growth aspirations are anchored. Therefore:

H1: Hubristic entrepreneurs are more likely to have higher growth aspirations

Entrepreneurs normally act on what they see or, perhaps more importantly, what they think they see (Busenitz and Lau, 1997). There are several reasons why biases might permeate entrepreneurial decisions, including information overload and velocity, high uncertainty, lack of historical information, and organizational routines and time pressure (Busenitz and Barney, 1997; Baron, 2004). The core argument of this strand of the literature suggests that by relying on these biases, entrepreneurs' are more comfortable making decisions in contexts of ambiguity, uncertainty, and complexity (Simon et al., 2000; Zacharakis and Shepherd, 2001; Busenitz et al., 2003; Holcomb et al., 2009). Thus, entrepreneurs' perceptions of reality are critical to their subsequent strategic business decisions (Forlani and Mullins, 2000; Krueger, 1993; Krueger and Brazeal, 1994).

The strategic decisions made by entrepreneurs, such as innovative choices (Chrisman and Patel, 2012; De Massis et al., 2013; Classen et al., 2014), are frequently governed by non-economic goals (Baron et al., 2011; Manzanque et al., 2020); where according to McMullen and Shepherd (2006), one of its prime drivers is the entrepreneur's motivations. In this sense, in seeking to improve their venture's organizational performance, entrepreneurs may be likely to pursue innovations (Schoonhoven et al., 1990; Chaney and Devinney, 1992; Roberts, 1999). Regardless of the internal features of the business, such as its absorptive capacity, entrepreneurs with high growth aspirations can see innovation as the most reasonable avenue to achieve the highest possible business growth (Poblete, 2018).

Upon introducing new products, services, business processes, and/or novel business models, it is impossible to accurately foresee the outcomes of the decisions made (Douglas, 2017). Yet, prior studies highlight that including innovative processes is critical for increasing a firm's performance (Gundry and Welsch, 2001; Cruz-Cázares et al., 2013; Gao and Chou, 2015). Accordingly, innovative choices may naturally appear to be both feasible and desirable in the eyes of entrepreneurs with high growth aspirations (Chrisman and Patel, 2012; De Massis et al., 2013; Classen et al., 2014). Hence, aspiration levels would affect a firm's outcomes, including its overall business strategy (Lant, 1992; Miller and Chen, 1994; Audia et al., 2000; Gundry and Welsch, 2001) or decisions regarding R&D investments (Bolton, 1993). These, in turn, are expected to increase the likelihood of developing innovations that enhance the growth rate of the business (Greve, 2003; Chen, 2008; Giachetti and Lampel, 2010; Vissa et al., 2010).

Through this motivational process, entrepreneurs may be more prone to acquire new knowledge to augment the business' absorptive capacity and improve its flexibility and innovation capability (Kim, 1998; Chaudhuri and Tabrizi, 1999). Such capabilities are linked with innovation efficiency and, ultimately, firm performance (Gundry and Welsch, 2001;

Zahra and George, 2002; Manzanque et al., 2020). In this sense, high growth aspirations may act as a motivational driver encouraging entrepreneurs to increase their efforts to run innovations. Therefore:

H2: The greater the aspiration for growth, the greater the propensity to exhibit innovative behaviors

As previously mentioned, while traditional entrepreneurial activity is statistically more likely to fail, and initial plans for a venture provide a weak predictor of future business performance, entrepreneurs are generally confident of their chances to succeed (Coelho, 2010). Under these circumstances, novice entrepreneurs seem to be primarily driven by their interpretation or construal of their experiences (Griffin and Ross, 1991; Kruger and Dunning, 1999). This is largely unaffected by the experiences of others (Ball et al., 1991) or the context of the situation (Moore and Kim, 2003), even when consideration of others' experiences and situational features could help improve decision accuracy (Hayward et al., 2006).

Prior evidence has observed that novice entrepreneurs are particularly likely to be overconfident in their skills and that their predictions about the future are optimistic (Poblete et al., 2019). Entrepreneurs with limited experience in their current business may underestimate the difficulty of solving more complex problems and so become overoptimistic in their ability to solve them (Weinstein, 1987; Ucbasaran et al., 2007). Thus, novice entrepreneurs may be prone to overestimate, for example, their customers' understanding of and appreciation of their products (Camerer and Lavallo, 1999).

According to Akstinaite and Sadler-Smith (2021) feelings of excessive pride and arrogance might reduce as entrepreneurs become cognizant of their knowledge gaps (Shepherd et al., 2000). Thus, while entrepreneurs run their business, other business-related entrepreneurs and stakeholders may act as influential models by providing examples of behavior to observe and even imitate. The more time entrepreneurs are involved in their venture, the more time they have to absorb these representing models and re-encode their cognitions (Forbes, 2005). As a result, as entrepreneurs gain experience and engage with others, they can adjust their mental frames based on the behavior they have observed. In this regard, studies have noted that entrepreneurs are more likely to imitate behavior modeled by business-related entrepreneurs they perceive as similar to them or who operate in the same industry (Holcomb et al., 2009).

As they acquire more experience, entrepreneurs moderate their optimism and become more accurate and precise (Ucbasaran et al., 2007; Trevelyan, 2008). This may suggest that the effect of hubris is not static. On the contrary, mental representations are repeatedly configured and calibrated while the entrepreneur is running their business. Indeed, this improved information processing has been evidenced on changes in cognitive structures themselves (Mitchell et al., 2002). Thus, in comparative terms, while novice entrepreneurs may overstate the extent to which their cognitive resources can confer them with a competitive advantage, more experienced entrepreneurs are less likely to overlook new information that contradicts their

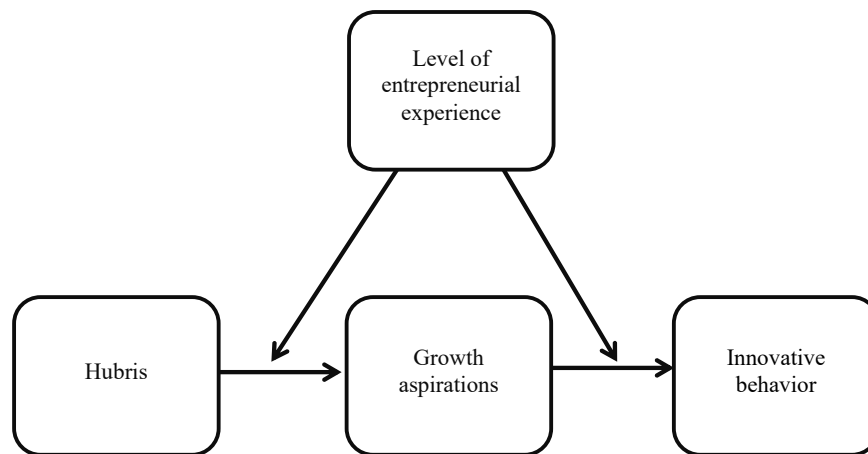


FIGURE 1 | A moderated mediation model of the influence of hubris on innovations.

expectations about their resources and capabilities (Baron and Henry, 2010). Therefore:

H3: The level of entrepreneurial experience moderates the relationship between hubris and growth aspirations, such that this relationship is weaker.

As the relationship between hubris and growth aspirations, there are also theoretical and empirical grounds for suggesting that the level of entrepreneurial experience may play a key role in the relationship between growth aspirations and innovative endeavors. Numerous studies have observed that firms' age and innovation are negatively related (Hansen, 1992; Huergo and Jaumandreu, 2004; Coad et al., 2016). While there may be several reasons behind this inverse relationship, entrepreneurs' motivation for growing in established firms is merely one interrelated factor with several other crucial determinants of firm growth (Wang et al., 2016). Zhou and de Wit (2009) demonstrate that several conditions must be in place for a venture to grow, including individual determinants, organizational determinants (firm attributes, firm strategies, firm-specific resources, organizational structure, and dynamic capability), environmental determinants, and growth barriers (financial and institutional barriers). Consequently, the direct influence of the entrepreneurs' motivation in the outcomes of a firm, such as running innovations, decreases as firms grow.

Further, the influence of entrepreneurial motivation may decrease as the business venture becomes more established. Decisions made by established entrepreneurs might be more pragmatic than those made by their amateur, overly optimistic, counterparts who are at the early stages of the venture creation process and may "want it all." Amateur entrepreneurs might ignore, for example, the influence of external environmental conditions on growth objectives (Dutta and Thornhill, 2008). In this sense, innovation is no longer seen as an all-powerful force (Poblete, 2018), but only as one of the many roads to achieve growth (Carreón-Gutiérrez and Saiz-Álvarez, 2019).

According to Gundry and Welsch (2001), high-growth-oriented entrepreneurs tend to adopt a more structured approach to organizing their businesses, characterized by: strategic intentions that emphasize market growth and technological change, a stronger commitment to the success of the business, greater willingness to sacrifice on behalf of the business, earlier planning for the growth of the business, utilization of a team-based organizational design, concern for reputation and quality, adequate capitalization, strong leadership, and utilization of a wider range of financing sources for the expansion of the venture (p. 454). Balancing these elements with entrepreneurs' notions of different growth strategies might reduce the influence of motivation on innovative endeavors.

Davidsson (1991) found that perceived ability, perceived need, and perceived opportunity are some of the most important influences on growth motivation.¹ Hence, this growth bias, expressed by innovation-driven "highly ambitious" entrepreneurs, is more likely to be evidenced as an early growth plan in the life of a business and actioned by novice entrepreneurs (Davidsson, 1991; Storey, 2011; Uy et al., 2013). Accordingly, as firms become more established, entrepreneurs become less "entrepreneurial" and not aggressively growth-oriented through innovation. As entrepreneurs progress through the entrepreneurial process (Bhave, 1994; Trevelyan, 2008), they acquire experiential knowledge and a heightened awareness of external environmental conditions. This knowledge provides a frame of reference through which entrepreneurs' mental images of innovations are actively shaped by the entrepreneur's sense-making processes (Autere and Autio, 2000), which reduce the link between innovation and growth orientations. Therefore:

H4: Level of entrepreneurial experience moderates the relationship between growth aspirations and innovative behaviors, such that this relationship is weaker

¹This growth motivation in turn can be expressed in several ways, such as aspirations, expectations, and behavioral intentions, among others (Davidsson, 1989).

TABLE 1 | Description of the control variables.

Variable	Description/Survey question	Answer categories
Gender	What is your gender?	Male: 1; Female: 0
Age	What is your current age (in years)?	1–99
Educational level	Educational attainment	Pre-primary education: 1; Primary education or first stage of basic education: 2; Lower secondary or second stage of basic education: 3; (Upper) secondary education: 4; Post-secondary non-tertiary education: 5; First stage of tertiary education: 6; Second stage of tertiary education: 7
Social capital	Do you know someone personally who started a business in the past 2 years?	Yes: 1; No: 0
Fear to fail	Would fear of failure prevent you from starting a business?	Yes: 1; No: 0
Ent. Intentions	Are you, alone or with others, expecting to start a new business, including any type of self-employment, within the next 3 years?	Yes: 1; No: 0
Prior entrep. Experience	Have you, in the past 12 months, sold, shut down, discontinued or quit a business you owned and managed, any form of self-employment, or selling goods or services to anyone?	Yes: 1; No: 0
Export intensity	What percentage of your annual sales revenues will usually come from customers living outside your country?	0–100%
GCR–5 categories	Global Competitiveness Report, Country Group report–5 categories	Stage 1: Factor-driven; Stage 2: transition to stage 3; Stage 3: Efficiency-driven; Stage 4: transition to stage 5; Stage 5: Innovation-driven

In sum, this study proposes, and tests, a moderated mediation model of the role of growth aspirations on innovative behaviors. This model (represented in **Figure 1**) proposes that among entrepreneurs, hubris stimulates growth aspirations and that these ambitions, in turn, promote innovative endeavors. Further, the model also suggests that both of these links are moderated by the entrepreneurial phases, becoming weaker as entrepreneurs advance through more established stages of the venture.

METHODOLOGY

Sample

The data used for the analysis originate from the 2015 to 2017 Adult Population Surveys of the Global Entrepreneurship Monitor (GEM) project (Reynolds et al., 2005). Pooling the observations from three consecutive years in one dataset allows for controlling for fluctuations in the distribution of entrepreneurial innovativeness across countries and time. GEM is currently the largest and most widely recognized cross-country research initiative to study the prevalence, determinants, and consequences of entrepreneurial activity. The core activity of GEM is to compile yearly empirical data on entrepreneurial activity based on a random sample of at least 2,000 adult-age individuals in each of the participating countries.

Variables

Hubris

According to Hayward et al. (2006), hubris' conceptuality relates to an individual's subjective interpretation of information concerning three separate and independent psychological processes: (1) overconfidence in knowledge, (2) overconfidence in predictions, and (3) overconfidence in personal abilities. GEM data also provide relevant information relating to these dimensions. To proxy for overconfidence in knowledge, this study uses individuals' beliefs of their skills, knowledge, and

experience to successfully run a startup. The entrepreneur's view that in the next 6 months good business opportunities will arise is employed to measure overconfidence in predictions. Finally, overconfidence in personal abilities is measured by the belief that in the next 5 years, the startup will hire 19 workers or more.

The rationale for selecting the above-defined categories is as follows: The primary objective is to differentiate between overconfident entrepreneurs and those who exhibit some degree of confidence. Accordingly, the strictest possible definition for hubris that the data allows is defined as the reference category. Thus, and considering a robust finding in cognitive psychology highlighting that high confidence is positively correlated with greater overconfidence (Hayward et al., 2006), hubristic entrepreneurs are defined as those whose answers meet all three categories. Every other combination is zero.

Growth Aspirations

Similarly, like other studies, growth aspirations are calculated as the difference between the natural logarithm of entrepreneurs' expected number of employees in the next 5 years and the actual number of employees at inception (Estrin et al., 2013; Capelleras et al., 2019).

Innovative Behavior

In concordance with previous literature (e.g. Poblete, 2018; Carreón-Gutiérrez and Saiz-Álvarez, 2019), this study uses the presence of innovative outcomes at a firm-level to proxy for innovative behavior. The underlying argument about this logic relies on the notion that the presence of firm-level innovative outcomes may emerge as a consequence of initial behavioral responses that individuals perform and engage (Shaver, 2003).

The GEM survey includes three follow-up questions relating to the innovativeness of the business idea of those individuals who qualify as entrepreneurs. These questions cover various aspects of the business venture, including the novelty of the technology, the novelty of the product or service for customers,

and the degree of market competition. They are widely used to construct a profile of the innovativeness of business ventures (Poblete, 2018; Carreón-Gutiérrez and Saiz-Álvarez, 2019). They also allow defining various measures for the types and degrees of entrepreneurial innovativeness.

Recognizing that innovations can emerge at different stages of the entrepreneurial venture and in various forms, this study covers some of the potential manifestations that suggest the presence of innovation. Concretely, innovation is likely to arise in settings characterized by: few or no direct competitors; novelty in products and services for customers; and high use of technology. More evidence of these manifestations means that it is more likely that the venture is innovative. The variable ranges from 1 to 6.

Entrepreneurial Experience

Following the trail of previous research (e.g., Poblete, 2018; Poblete et al., 2019), entrepreneurial phases are used as a proxy for the level of entrepreneurial experience. Entrepreneurial activity is often categorized by identifying the different phases of the new venture development process (Gatewood et al., 1995; Shook et al., 2003; Brockner et al., 2004; Forbes, 2005; Baron and Shane, 2007). GEM defines the entrepreneurial process based on three transition points marking typical entrepreneurial barriers (Reynolds et al., 2005). The first phase of the start-up process consists of people in the adult population contemplating setting up a business (Shaver et al., 2001). During this phase, entrepreneurs move from conception to gestation or start-up process and are considered nascent entrepreneurs.

The second transition reflects the development of the start-up into an operational business: the firm's birth transition (Choi et al., 2008). Many aspects can be part of the new firm's "birth" (Katz and Gartner, 1988; Reynolds and Miller, 1992), such as the intention to create a business, boundary-type definitions, resource-based definitions, and/or definitions motivated by exchanges. GEM, however, defines new business owners as those entrepreneurs that have paid salaries and wages for more than 3 months and less than 3.5 years (Reynolds et al., 2005).

The third phase has to do with the liability of newness and overcoming the valley of death. This final stage is reflected by the age of the firm. Thus, those entrepreneurs that have paid salaries and wages.

Control Variables

A total of 12 control variables are included. Three are country-level variables: Global Competitiveness Index (GCI), country dummies, and year dummies. Two are firm-specific variables: industry-sector dummies and export intensity. Finally, seven variables relate to the entrepreneur: gender, age, educational level, social capital, fear to fail, entrepreneurial intentions, and whether he/she has prior entrepreneurial experience. **Table 1** presents a detailed description of the control variables.

These variables are selected based on previous studies showing that these characteristics play an important role in influencing entrepreneurial decisions (Koellinger et al., 2007; Parker, 2009). For example, fear of failure inhibits innovations, both by suppressing new ideas and avoiding risky concepts (Kuyatt, 2011). Further, studies suggest that being a male

enhances growth aspirations (Estrin and Mickiewicz, 2011) and innovative behavior (Koellinger, 2008). In addition, age has been considered as a factor affecting entrepreneurial growth aspiration (Autio, 2005) and also strategic decisions of the firm, including innovative choices (Busenitz and Barney, 1997). Further, controlling by industry accounts for sectoral differences in capital intensity ratio and optimum size of the firm that may influence growth aspirations (Estrin et al., 2013) and propensity to innovation (Chaney and Devinney, 1992; Bolton, 1993; Cruz-Cázares et al., 2013). Similarly, by adding the GCI, this study controls for different aspects of country-level competitiveness, such as the level of innovation and business sophistication (Amorós et al., 2019).

RESULTS

Table 2 summarizes the means, standard deviations, and correlations for all variables. **Tables 3, 4** present the results of the analyses performed to examine the moderation effect of hubris and the entrepreneurial process on growth aspirations. **Table 4** presents the results of the corresponding analysis for innovative behavior.

Hypothesis 1 predicts that entrepreneurs' hubris is positively related with their growth aspirations. Results relevant to this hypothesis are presented in Model 2 of **Table 3** and indicate that, as predicted, hubris is significantly related to growth aspirations ($B = 2.11, p < 0.001$). Hypothesis 2 predicts that growth aspirations are positively related to the presence of innovative endeavors. Results (Model 5 of **Table 4**) provide support for H2: growth aspiration is significantly related to an innovative behavior ($B = 0.194, p < 0.001$).

Hypothesis 3 proposes a moderating effect of the level of entrepreneurial experience on the relationship between hubris and growth aspirations. As shown in Model 4 of **Table 3**, results offer support for Hypothesis 3 (B of the interaction between hubris and growth aspirations = $-0.08, p < 0.001$). Consistent with predictions, the link between hubris and growth aspirations is indeed weaker for entrepreneurs that have been running their venture for longer.

Hypothesis 4 predicts a moderating role of the level of entrepreneurial experience with respect to the relationship between growth aspirations and innovative behaviors. Results offer support for H4 (Model 6 of **Table 4**): the level of entrepreneurial experience negatively moderates the relationship between entrepreneurs' growth aspirations and different manifestations of innovative entrepreneurial activity (B of the interaction between value of innovation and hubris = $-0.175, p < 0.001$).

Mediating Role of Growth Aspirations

To test the proposal that the experience-moderated growth aspirations mediate the relationship between hubris and innovative behavior, we follow the procedure by Baron and Kenny (1986). It poses that the following conditions must be met: (a) the independent variable is a significant predictor of the mediator, (b) the mediated variable is a significant predictor

TABLE 2 | Mean, standard deviation, and correlations.

Variables	Mean	SD	1	2	3	4	5	6	7	8	9	10	11	12
1 Gender	1.410	0.492												
2 Age	41.170	12.804	-0.020**											
3 Educational level	3.231	1.490	-0.048**	-0.044**										
4 Social capital	0.609	0.488	-0.030**	-0.126**	0.087**									
5 Fear to fail	0.299	0.458	0.052**	0.002	-0.015**	-0.043**								
6 Ent. Intentions	0.398	0.489	-0.023**	-0.217**	0.000	0.117**	-0.039**							
7 Prior entrep. experience	0.078	0.269	-0.009**	-0.038**	0.003	0.051**	0.016**	0.147**						
8 Export intensity	3.228	1.144	0.040**	0.035**	-0.114**	-0.041**	0.005	-0.087**	-0.046**					
9 GCR—5 categories	3.736	1.227	-0.061**	0.198**	0.335**	-0.054**	0.002	-0.222**	-0.067**	-0.128**				
10 Hubris	0.040	0.197	-0.071**	-0.027**	0.096**	0.069**	-0.047**	0.086**	0.033**	-0.069**	0.030**			
11 Entrep. phases	2.116	0.851	-0.038**	0.287**	-0.081**	-0.084**	0.009**	-0.273**	-0.062**	0.115**	0.038**	-0.018**		
12 Growth aspirations	1.460	1.248	-0.138**	-0.042**	0.187**	0.054**	-0.036**	0.124**	0.064**	-0.154**	0.075**	0.494**	-0.097**	
13 Innovative behavior	5.772	1.499	-0.026**	0.042**	0.059**	0.025**	-0.048**	0.080**	0.016**	-0.042**	0.050**	0.082**	0.051**	0.131**

* $p < 0.010$; ** $p < 0.005$; *** $p < 0.001$.

of the dependent variable in the absence of the mediator, (c) the mediator has a significant unique effect as a predictor of the dependent variable, and (d) the effects of the independent variable on the dependent variable shrinks upon the addition of the mediator to the model. Full mediation is indicated if the effect of the independent variable is no longer significant when the mediating variable is added, whereas partial mediation is suggested if the effect of the independent variable is reduced but remains significant.

TABLE 3 | Results of the moderation effect of hubris and entrepreneurial process on growth aspirations.

Variables	Growth aspirations			
	Model 1	Model 2	Model 3	Model 4
Country (dummies)	Yes	Yes	Yes	Yes
Year (dummies)	Yes	Yes	Yes	Yes
Gender	-0.262***	-0.187***	-0.198***	-0.198***
Age	-0.003***	-0.004***	-0.002***	-0.002***
Educational level	0.132***	0.097***	0.092***	0.093***
Social capital	0.076***	0.008	0.012	0.012
Fear to fail	-0.075***	-0.021*	-0.025**	-0.025**
Ent. Intentions	0.291***	0.229***	0.188***	0.189***
Prior entrep. experience	0.2***	0.158***	0.152***	0.152***
Export intensity	-0.131***	-0.101**	-0.093***	-0.094***
Industry (1)	-0.146***	-0.086**	-0.057*	-0.06*
Industry (2)	0.005	0.012	0.042	0.041
Industry (3)	-0.048	-0.036	-0.005	-0.006
Industry (4)	-0.293***	-0.203***	-0.183***	-0.184***
GCR—5 categories	0.001	-0.004	-0.01**	-0.01**
Hubris		2.11***	2.137***	2.294***
Entrep. Phases (E.P.)			-0.137***	-0.131***
E.P.* Hubris				-0.08***
R^2	0.099	0.301	0.308	0.309
Adjusted R^2	0.099	0.301	0.308	0.309
Change in R^2		0.202	0.007	0.001

* $p < 0.010$; ** $p < 0.005$; *** $p < 0.001$.

TABLE 4 | Results of the moderated mediation analysis.

Variables	Innovative behavior					
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Country (dummies)	Yes	Yes	Yes	Yes	Yes	Yes
Year (dummies)	Yes	Yes	Yes	Yes	Yes	Yes
Gender	-0.064***	-0.053***	-0.044***	-0.045***	-0.026	-0.031*
Age	0.007***	0.007***	0.005***	0.005***	0.007***	0.008***
Educational level	0.039***	0.034***	0.037***	0.037***	0.017***	0.017***
Social capital	0.052***	0.041***	0.047***	0.045***	0.016	0.010
Fear to fail	-0.144***	-0.135***	-0.136***	-0.136***	-0.142***	-0.138***
Ent. Intentions	0.281***	0.265***	0.316***	0.312***	0.262***	0.258***
Prior entrep. exp	0.043**	0.035**	0.044**	0.042**	0.023	0.013
Export intensity	-0.036***	-0.032***	-0.040***	-0.038***	-0.018***	-0.018***
Industry (1)	-0.172***	-0.167***	-0.202***	-0.195***	-0.221***	-0.206***
Industry (2)	-0.044	-0.046	-0.078***	-0.075***	-0.105**	-0.101**
Industry (3)	-0.012	-0.012	-0.042	-0.038	-0.002	0.008
Industry (4)	0.046*	0.055**	0.033	0.036	0.136***	0.138***
GCR - 5 categories	0.042***	0.041***	0.044***	0.044***	0.078***	0.078***
Hubris		0.517***	0.507***	-0.418***	-0.761***	-0.006
Entrep. Phases (E.P.)			-0.137***	-0.117***	-0.324***	-0.105***
E.P. * Hubris				0.454***	0.355***	-0.043
Growth aspirations (G.A.)					0.194***	0.135***
E.P* G.A.						-0.175***
R^2	0.019	0.024	0.029	0.032	0.064	0.073
Adjusted R^2	0.019	0.024	0.029	0.031	0.064	0.072
Change in R^2		0.005	0.005	0.002	0.033	0.009

* $p < 0.010$; ** $p < 0.005$; *** $p < 0.001$.

First, it was examined the relationship between the independent variable and the mediator. As shown in Table 3, a significant relationship exists between experience-moderated

hubris and growth aspirations ($B = -0.08$, $p < 0.001$). Second, looking at the Model 4 of **Table 4**, which presents the relationship between the independent variable and dependent variable, it is possible to observe that experience-moderated hubris is significantly related to innovative behaviors ($B = -0.454$, $p < 0.001$). Third, experience-moderated growth aspirations is significantly associated with innovative behaviors ($B = -0.175$, $p < 0.001$) as indicated in Model 6 of **Table 4**. Fourth and finally, as Models 4 and 6 in **Table 4** demonstrate, the coefficient for the experience-moderated effects of hubris on innovative behaviors became insignificant when the experience-moderated effects of growth aspirations were included in the regression equation. The coefficient decreased from .454 ($p < 0.001$ in Model 4) to -0.043 (n.s. in Model 6). Thus, experience-moderated growth aspirations fully mediate the positive relationship between experience-moderated hubris and innovative behaviors in the present data.

Sobel tests were used to obtain further evidence of full mediation. Sobel (1982) tests calculate the magnitude of the unstandardized indirect effect and its associated standard error. The ratio of the indirect effect over its standard error is referred to as the Sobel statistic, which is compared to a z distribution to determine the statistical significance of the indirect effect. The Sobel tests showed that the indirect effect of experience-moderated hubris on innovative behaviors (Sobel statistic = -13.95 , $p < 0.001$) was in the anticipated direction and statistically significant, providing further evidence for full mediation.

DISCUSSION

This study investigated the relationships between hubris, growth aspirations, and innovative behavior. Both hubris and growth aspirations were chosen based on the extensive evidence indicating their relevance for behaviors performed by entrepreneurs. Further, growth aspirations have often been identified as an essential antecedent of innovation, while hubris has been found to influence many aspects of cognition and behavior. Based on such evidence, it has recently been suggested that hubris may also play an important role in entrepreneurship, influencing entrepreneurs' decisions to pursue product newness, low competition, and recent technology.

The findings provide empirical evidence for these arguments. Consistent with a large body of evidence, the results indicate that entrepreneurs' hubris is significantly related to their growth aspirations. Further, enhanced growth aspirations were found to be significantly related to the development of ventures presenting innovative outcomes. Overall, these findings indicate that hubris relates to important aspects of entrepreneurship—a finding consistent with results recently reported in the entrepreneurship literature. However, such effects are not direct in nature; rather, they are mediated by intervening variables. Specifically, in the present research, growth aspirations were found to mediate the relationship between entrepreneurs' hubris and innovative behavior.

The results indicate that both the relationship between hubris and growth aspirations, and between growth aspirations and innovation, are moderated by the entrepreneurial phases in which the entrepreneur is involved. Both relationships are weaker in the advanced rather than the early entrepreneurial phases. Although this study does not aim to explain the mechanisms underlying these moderating effects, both are predicted based on previous research. Concerning the link between hubris and growth aspirations, it was reasoned that advanced entrepreneurial phases are less likely to present over-optimism, a condition found in recent studies to be required for hubris to enhance growth aspirations. Turning to the relationship between growth aspirations and innovative endeavors, it was reasoned that innovation is easier for new firms than for established firms and consequently, the impulses generated by the entrepreneurs' aspirations are more likely to be carefully considered and implemented in established firms than new ventures. Thus, the relationship between growth aspirations and innovative behaviors will be weaker as firms age.

IMPLICATIONS

This study makes three important contributions. First, it studies the entrepreneurial process using an agentic approach. This allows exploring and further understanding how “entrepreneurial rosy-lenses” evolve across the different phases of an entrepreneurial venture (Douglas, 2009). Through hubris, entrepreneurs set ambitious goals and decide on the courses of action that are most likely to produce the desired outcomes (Bandura, 1977). In this sense, hubris operates as a powerful intrinsic motivator for amateur entrepreneurs and as a core guide for their actions. As entrepreneurs progress to more experienced phases of the business, they acquire a forethoughtful perspective calibrated to plan ahead, reorder their priorities, and restructure their strategies. Thus, business decisions in more advanced stages seem to be complemented, providing direction, coherence, and meaning to the business.

Secondly, this study combines two theoretical approaches: one purely borrowed from psychology and other centered on entrepreneurship.² This provides a broad overview to effectively explain how, why, and when hubris can be conceived as one of the antecedents of innovative endeavors. In other words, linking these theories offers a more inclusive explanation for a phenomenon observed in many studies (Shane, 2008, 2009). Additionally, it provides more empirical legitimacy through the data and analyses performed in this study. Entrepreneurship is a dynamic and developmental process that culminates with the exploitation of a business opportunity (Davidsson, 2015). This research reveals that motivations and aspirations are not fixed, but rather grounded in the different stages through which entrepreneurs evolve. While extensive research has developed the notion of the study of bias in entrepreneurship (Zhang and Cueto, 2017); this study likewise saw the possibility for additional

²However, the concept of “hubris” has been studied previously in both psychology and management.

research on integrative approaches. Thus, it responds to calls for socially situated cognition research (Mitchell et al., 2011; Randolph-Seng et al., 2015; Davidsson, 2016).

Third, the findings offer valuable insights for policymakers on the nexus between innovative endeavors and hubristic entrepreneurship. Prior studies have shown that many entrepreneurs who participate in training and education programs only realize what it means to be an entrepreneur during the course of the activity and end up adjusting their aspirations (Oosterbeek et al., 2010). Consequently, public policies that are tightly focused on removing entry barriers for prospective entrepreneurs may result in a large pool of entrepreneurs with inadequate entrepreneurial skills (Camerer and Lovo, 1999; Cassar, 2010) potentially leading to more harm than good (Anokhin and Wincent, 2012). It is important to note that this study does not suggest that promoting innovation is detrimental to entrepreneurial activity. It warns, however, that innovative endeavors should not be encouraged for the wrong reasons, especially for novice entrepreneurs. This is crucial to prevent ineffective entrepreneurship policies which may lead to undesired outcomes.

Finally, I further argue that the relationship between hubris and innovative behavior is partly indirect since it is mediated by growth aspirations where the entrepreneurial experience has a relevant moderating role. Novice entrepreneurs are more likely than experienced entrepreneurs to be influenced by their hubris in shaping their growth aspirations, and these highly aspirational inexperienced entrepreneurs, in turn, are particularly prone to behave in an innovative manner. Thus, the combined effects of growth aspirations with the lack of entrepreneurial experience from which hubris operate in the mind of naive entrepreneurs seem to confer some insights about why a relevant percentage of innovative entrepreneurial activity fail in the early stages of the firms (Shane, 2008; Zhang and Cueto, 2017). Presumably, experienced entrepreneurs constrain their growth bias through innovation as they develop a more accurate understanding of their knowledge, skills, and abilities; while also exploring different growth strategies (Uy et al., 2013; Mueller and Shepherd, 2016). As a result, the present research sheds light on the factors that contribute to being aware of the potential downsides of innovation in the hands of novice hubristic entrepreneurs highly motivated to grow (Davidsson, 1991; Storey, 2011). In terms of managerial implication, it is recommended that innovative strategies may be selected on the advanced stages of the venture to the extent that entrepreneurs' growth aspirations are not blinded by hubris.

LIMITATIONS AND SUGGESTIONS FOR FUTURE RESEARCH

While the results of this study are in line with the findings of several previous studies, limitations exist that should be carefully addressed by future research. For instance, many of the measures employed are self-reported (e.g., hubris, growth aspirations, innovation). Also, among the limitations of the present work is the difficulty of directly measuring constructs used and thus

the need to use "proxy" variables. Although these measures were based on those used in previous studies and possess acceptable reliability and academic validity, the constructs of primary interest are complex. Thus, additional measures of these variables should be incorporated before the results of this research can be accepted with confidence.

Secondly, this study did not examine other potential mediators of the relationship between hubris and innovation aside from growth aspirations. Although results indicate that growth aspirations fully mediate the relationship between hubris and innovation, hubris may also influence innovation through other mechanisms not specifically investigated here. Future research should explore the role of other potential mediators of the relationships between hubris and firm-level variables such as innovation.

Future studies could address whether the Dunning-Krueger effect is evidenced among entrepreneurs. In broad terms, the Dunning-Krueger effect is the finding that across a wide range of tasks, poor performers greatly overestimate their ability, whereas top performers make more accurate self-assessments. While the findings of this research provide some insights that may suggest that novice entrepreneurs are indeed prone to overvalue their human capital (knowledge, abilities and skills), there is limited information about expert entrepreneurs in regard to how much they value their entrepreneurial self-efficacy, for example.

There is also a need to examine the potential role of hubris in other aspects of the entrepreneurial process. For instance, does hubris play a role in discovering emerging opportunities? Countries like Chile, which have been encouraging entrepreneurship and increasing their entrepreneurial activity rates, may be studied under the lens of normative social influence. Social psychology research also suggests that individuals are prone to optimistic bias. This bias induces people to believe that they are above the average in several domains. Hubris can increase this bias by enhancing an entrepreneur's capacity to discover new opportunities. In turn, investigating the role of conformity (individuals acting per the societal rules) could provide valuable insights into the nature of the foundations in the HTE. Based on prior literature suggesting that social norms have a significant effect on opportunity confidence (Hopp and Stephan, 2012; Emami and Khajehian, 2018), normative social influence can be an antecedent of why so many people decide to enter in entrepreneurship.

Finally, future research should examine the expert knowledge in entrepreneurship and how to cultivate it. Previous research suggests that the entrepreneurial mindset is malleable and trainable, so deeper investigation of the transition from novice cognitive structures to expert cognitive structures would appear to be an important and potentially valuable task for entrepreneurial education.

CONCLUSION

The results of this study add to the existing body of knowledge investigating the role of hubris in innovative entrepreneurship, showing that entrepreneurs' hubris is, directly and indirectly,

related to innovation. In a general sense, it suggests that hubris can influence entrepreneurs' levels of growth aspirations. However, this effect is stronger when entrepreneurs are at the initial stages of the entrepreneurial process (e.g., novice entrepreneurs). As they progress through the different phases of the process, the influence of hubris on their growth aspirations decreases. Similarly, growth aspirations encourage innovative behaviors, but as entrepreneurs advance through the process, further increments in growth aspirations are associated with declines, rather than advances, in innovative behaviors. Novice entrepreneurs must become cognizant of the risks that hubris can confer and regulate it accordingly—particularly at the early stages of their entrepreneurial venture. They must also recognize that

innovations are not necessarily the best and only mean to reach business growth.

DATA AVAILABILITY STATEMENT

Publicly available datasets were analyzed in this study. This data can be found here: www.gemconsortium.org.

AUTHOR CONTRIBUTIONS

CP was responsible for all the work done in this study.

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Re-creation After Business Failure: A Conceptual Model of the Mediating Role of Psychological Capital

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In case of failure, entrepreneurs could endure various financial, psychological, and social costs. These intertwined costs could affect their learning from failure. All individuals do not react in the same way when dealing with adversity. Rather than focusing on (negative) consequences of business failure, we took a more positive approach by using the Conservation of Resources (COR) model theory to build our conceptual model. Psychological capital, which refers to “an individual’s positive psychological state of development characterized by high levels of self-efficacy, optimism, hope, and resilience,” could be considered as a resource to recover from entrepreneurial setbacks. We suggest that a high level of psychological capital plays a mediating role in the relationship between the negative consequences of failure and learning from failure. By learning from this experience, failed entrepreneurs will increase their intention to re-create a venture and pursue their entrepreneurial career. This theoretical research, by building a conceptual model based on resources, offers a more positive approach of entrepreneurial failure and investigates key psychological assets, such as psychological capital, that support the development of entrepreneurial resilience rather than the prevention of business failure.

Keywords: business failure, learning from failure, psychological capital, conservation of resources model, re-creation, intention to re-create

INTRODUCTION

Faced with a complex, uncertain and ever-changing world, the creation and disappearance of firms are common and inherent in the economic process (Cannon and Edmondson, 2005; European Commission, 2007; Ucbasaran et al., 2013). The entrepreneurial journey is paved with plenty of obstacles, possibly leading to failure, certainly in these times of sanitary crisis.

After a long focus on entrepreneurial success, researchers started to investigate the topic of failure by highlighting its importance (DeTienne, 2010; Wennberg et al., 2010; Hessels et al., 2011; Wennberg, 2011; Balcaen et al., 2012; DeTienne and Cardon, 2012; Coad, 2013; DeTienne and Wennberg, 2014; Wennberg and DeTienne, 2014; DeTienne et al., 2015; Justo et al., 2015; Leroy et al., 2015; DeTienne and Wennberg, 2016), starting to change mentalities about business failure and to integrate it as a natural part of the economic cycle. Research is now looking at failure as a way to future success for both entrepreneurs and the economy as a whole (Singh et al., 2007) thanks to the opportunity of learning from it (McGrath, 1999; Minniti and Bygrave, 2001; Shepherd, 2003; Cannon and Edmondson, 2005; Singh et al., 2007;

Cope, 2011; Ucbasaran et al., 2013). However, it might also be difficult for an entrepreneur who failed to learn from his/her experience because failure is often seen as an emotionally traumatic event (Shepherd, 2003; Cope, 2011).

In case of failure, entrepreneurs could endure various financial, psychological, and social costs. The financial costs could be associated to a loss of or a reduction in personal income. The social costs are related to the impact of failure on personal and professional relationships, such as divorce for instance (Cope, 2011) and/or loss of an important social network (Harris and Sutton, 1986). The stigma associated to failure is the social devaluation of the person who does not or no longer meet the social norms (Efrat, 2006 cited in Ucbasaran et al., 2013), which is profoundly discrediting (Sutton and Callahan, 1987). Most psychological costs experienced by entrepreneurs after failure are emotional and/or motivational. Negative emotions associated to failure can, for example, be pain, remorse, shame, humiliation, anger, guilt, responsibility, and fear of the unknown (Harris and Sutton, 1986; Shepherd, 2003; Cope, 2011). Concerning the motivational aspects of psychological costs, some authors noted that entrepreneurs who fail have a sense of helplessness that decreases their beliefs in their ability to lead tasks with success in the future and generates rumination that impedes task performance (Bandura, 2001; Shepherd, 2003). Moreover, the intensity of these negative consequences can be influenced by the individual response, as well as by the environmental context in which the entrepreneur finds him/herself (Ucbasaran et al., 2013). The effects and the magnitude of these intertwined costs could affect the process of learning from failure (Ucbasaran et al., 2013).

All individuals do not react to failure in the same way. Some entrepreneurs can re-create a business more easily than others. This could be due to positive emotions. Some researchers believe that the latter play a key role in learning from a business failure and have called to further investigate their role (Byrne and Shepherd, 2013; Ucbasaran et al., 2013). Based on this call, the question at the heart of this conceptual article is: How to explain at the individual level that some entrepreneurs have the intention to re-start after a business failure while others do not?

To answer this question, we focus on the internal resources of the entrepreneurs that could help them to overcome a failure situation, specifically their psychological capital (PsyCap). This concept, coming from the Positive Organizational Behavior and developed by Luthans et al. (2007: 3) refers to “*a positive psychological state of development of the individual characterized by high degrees of self-efficacy, optimism, hope and resilience.*” It could be considered as an asset to recover from entrepreneurial setbacks. Human and social capitals have been studied extensively in the field of entrepreneurship, but internal psychological resources have been left aside. Human capital is related to what a person knows (knowledge, abilities, skills, and experience); whereas social capital refers to people the person knows (his/her relationships and professional networks). According to Luthans and Avolio (2009), PsyCap can be complementary to these two capitals because it concerns who we are and what we become (Luthans et al., 2006b). Therefore, this PsyCap

could help entrepreneurs to learn from failure and to make a decision about their subsequent entrepreneurial career.

To build our conceptual model and understand the role of PsyCap to overcome business failure, we use the Conservation of Resources (COR) theory (Hobfoll, 1989, 2002). By being motivated to gain resources, i.e., “*anything perceived by the individual to help attain his or her goals*” (Halbesleben et al., 2014: 1338), individuals try to enrich their resource pool, both to protect them from potential losses and to experience positive well-being. When individuals appraise a situation as a loss of resources, they experience it as a stressful event. To offset this loss, they mobilize other resources. PsyCap is viewed as a personal characteristic/resource (Gong et al., 2019; Virgă et al., 2020) supporting stress resistance. We suggest that a high level of PsyCap plays a mediating role in the relationship between the negative consequences of failure and learning from failure. By learning from this experience, failed entrepreneurs will increase their intention to re-create a venture and pursue their entrepreneurial career. By building a conceptual model based on resources, we offer a more positive approach of entrepreneurial failure and investigate key “psychological assets,” such as PsyCap, that support the development of entrepreneurial resilience rather than the prevention of business failure.

Besides being among the first articles to examine the key role of positive emotions in learning from a business failure and to introduce the concept of PsyCap in the field of entrepreneurship, our research contributes to the existing literature by being the first one to look at the role of PsyCap in learning from failure and re-creation, as well as to propose a mediating effect of PsyCap on the relationship between business failure consequences and learning from failure.

This article will consist of two parts. First, we will present our theoretical foundations. To this end, we will define entrepreneurial failure, learning from failure and its barriers and facilitators, before explaining the concept of PsyCap, in the light of the COR theory (COR)—which will be the central theory used in this paper—and its links with learning from failure and the intention to re-create. We will illustrate our theoretical argument with our conceptual model. Finally, we will discuss the theoretical and practical implications of this model.

THEORETICAL FOUNDATION AND CONCEPTUAL FRAMEWORK

This part will consist of five sections. We first define entrepreneurial failure, before explaining learning from failure, its barriers and facilitators. We then present the concept of PsyCap through the light of the COR theory. Finally, we examine the impact of learning from failure and PsyCap on business re-creation.

Business Failure Definition

Studies on entrepreneurial failure are rather recent. To date, there is no universally accepted definition of entrepreneurial failure. Authors define it based on their own theoretical approach (Smida and Khelil, 2010). The most common definition reduces

it to insolvency or bankruptcy (Zacharakis et al., 1999). Even if this definition is useful to operationalize and build samples (Singh et al., 2007), for some authors, entrepreneurial failure cannot be simply be reduced to bankruptcy (McGrath, 1999; Cannon and Edmondson, 2005; Singh et al., 2007; Smida and Khelil, 2010; Ucbasaran et al., 2013).

In addition to the economic aspects, expectations and goals set by the entrepreneur must also be taken into account (McGrath, 1999; Singh et al., 2007; Smida and Khelil, 2010; Ucbasaran et al., 2013). Following recommendation of Shepherd and Patzelt (2017) to use the definition that better suits one's research question, we endorse the definition of Khelil (2016: 76) who defines entrepreneurial failure as « *a psycho-economic phenomenon characterized by the entry of a new venture into a spiral of insolvency and/or the entrepreneur's entry into a psychological state of disappointment. In the absence of economic and/or psychological support, entrepreneurs are forced to exit from their entrepreneurial activities* ». It considers the destruction of resources, as well as the entrepreneur's psychological state. In the absence of a financial and/or moral support, this entrepreneur will see his/her business disappear. This multidimensional and holistic view of failure thus also introduces the concept of "support." The latter can be both external, through the family, professional, or private network, institutions, etc., and internal, i.e., the own resources of the individual. In this paper, we focus on the entrepreneur's resources in a failure situation, specifically his/her PsyCap.

Learning From Failure

Because failure is inherent to the economic life, several researchers in management and entrepreneurship see it as a good opportunity to learn and not repeat the same mistakes (McGrath, 1999; Minniti and Bygrave, 2001; Shepherd, 2003; Cannon and Edmondson, 2005; Cope, 2011; Ucbasaran et al., 2013). Failure can thus contribute to entrepreneurial learning.

Entrepreneurial learning is seen as a dynamic, discontinuous, and changing concept rather than a stable, consistent, and predictable one (Cope, 2005). Indeed, the entrepreneurial process is characterized by significant and critical learning events by which an entrepreneur improves his/her personal and entrepreneurial knowledge that will eventually determine the success of his/her venture (Deakins and Freel, 1998). Entrepreneurs increase their subjective stock of knowledge particularly through non-routine events (Minniti and Bygrave, 2001).

In the context of entrepreneurial learning theory, business failure could be a non-routine event by which an entrepreneur can learn to improve his/her entrepreneurial knowledge and pursue an entrepreneurial career (Shepherd, 2003; Ucbasaran et al., 2010). According to Minniti and Bygrave (2001), both positive and negative experiences shape entrepreneurs' knowledge and influence the course of their future choices. In line with these authors, Shepherd (2003) defines learning from business failure as the ability for an entrepreneur to revise his/her previous knowledge on how to handle his/her own business efficiently by integrating the feedback information about the reasons why the business failed. From this perspective,

failures seem to be "*the seeds of subsequent project success*" (Shepherd et al., 2009a).

Cardon and McGrath (1999 cited in Cope, 2011) stress the importance of considering failure as a "learning journey," which means that the process of sense-making behind learning from failure is gradual over time and constitutes a dynamic process. This sense-making process is realized through three interconnected mechanisms, i.e., scanning, interpretation, and learning (Gioia and Chittipeddi, 1991; Thomas et al., 1993), the latter acting as a retroaction feedback for scanning and interpreting information (Shepherd et al., 2009a). Specifically, the scanning information is a selective attention to relevant information and a collection of these to promote sensemaking. When information is collected, an individual gathers it into structures appropriate for a better comprehension of its meaning (Taylor and Crocker, 1981; Gioia, 1986). This process refers to the interpretation of the information. Learning dynamics relate to actions taken by an individual (Daft and Weick, 1984) following scanning and interpretation dynamics, leading to significant modifications in one's current practices (Ginsberg, 1988; Thomas et al., 1993). As mentioned before, these three mechanisms work together because information collected by scanning dynamics is essential for the interpretation (Daft and Weick, 1984). In turn, interpretation structures this information in order to act in a specific way (Gioia and Chittipeddi, 1991), and the action(s) resulting from learning influence, in its(their) turn, scanning and interpretations of new information (Daft and Weick, 1984).

However, learning from entrepreneurial failure is not an easy task. Indeed, negative emotions sometimes interfere with an individual's attention when he/she is processing information (Mogg et al., 1990), which affects learning (Bower, 1992). Focusing uppermost on emotions that come with failure may interrupt prematurely the information process about potential causes of failure (Bower, 1992). As said before, the magnitude and the intensity of financial, social, and psychological costs may obstruct the learning process of failure (Ucbasaran et al., 2013). The latter is also perceived as intimidating (Rogoff et al., 2004) since the entrepreneur may express a loss of self-esteem (Jenkins et al., 2014), feelings of guilt, shame, and remorse that are difficult to handle (Ucbasaran et al., 2013). Moreover, he/she is not used to deal with it because he/she learned by socialization to keep a distance from negative situations (Cannon and Edmondson, 2005). In this context, learning from failure is not a natural, automatic, or instantaneous act (Wilkinson and Mellahi, 2005). This leads to the first proposition:

Proposition 1: Financial, psychological and social costs negatively influence learning from failure.

Some researchers explain how failed entrepreneurs could overcome the negative emotions related to business failure in order to favor learning from failure (Shepherd, 2003; Shepherd et al., 2009a). Through a "grief recovery process," failed entrepreneurs cope with the loss of his/her business. This process consists of two distinct but complementary strategies: loss and restoration orientations (Shepherd, 2003). These strategies

help to manage negative emotions, which contribute in some way to the learning process. This beneficial part depends on both the intensity of the grief (of which symptoms are anger, guilt, anxiety, hopelessness, withdrawal, and depression) and on how far the entrepreneur is in this grief process.

The loss orientation strategy is composed of three phases: a confrontation of loss, a reassessment of the events before, and at the time of failure and the awareness of different causes of failure (Stroebe and Schut, 1999; Shepherd, 2003, 2009). The restoration orientation is entirely different. It consists of distracting from and avoiding all thoughts linked to the loss, as well as, eliminating secondary sources of stress generated by the business failure (Stroebe and Schut, 1999; Shepherd, 2003, 2009). With the oscillation between these dual processes, an entrepreneur adopts the best strategy to handle the loss of his/her business (Shepherd, 2003; Cope, 2011) by regulating his/her emotions. Thereby, emotional interferences are reduced and ability to learn from failure is increased.

An emotion-focused strategy could also help entrepreneurs to manage their negative emotions (Byrne and Shepherd, 2013). Indeed, high negative emotions motivate the entrepreneur to make sense of his/her loss, while higher positive emotions provide him/her with the cognitive resources necessary to facilitate and motivate this sense-making. Cognitive strategies focusing attention on failure and encouraging self-reflection also lead to a better understanding of failure.

These cognitive mechanisms are not the only ones that can minimize the costs of business failure on learning from failure. Other resources such as the PsyCap may have a positive impact and favor the learning process even if failed entrepreneurs experience financial, psychological, and social costs.

Conservation of Resources Theory and PsyCap

To understand the role of PsyCap in this context, we used the COR theory (Hobfoll, 1989, 2002). The basic tenet of this model of stress is “that people strive to retain, protect, and build resources and that what is threatening to them is the potential or actual loss of these valued resources” (Hobfoll, 1989: 516). Three situations explain a stress response: when individuals feel that (1) their resources are threatened, (2) wasted, or (3) their effort to gain new resources is in vain. There is a primacy of resource loss in this theory (Halbesleben et al., 2014) because it is the threat of loss (or the effective loss) of resources that conditions the triggering of stress. For people, losing resources is psychologically more harmful than gaining resources is helpful. Therefore, the second principle of this theory is “that humans are motivated to protect their current resources and acquire new resources” (Halbesleben et al., 2014: 1335). This resource investment allows individuals to protect them from resource loss, to bounce back from resource loss, and to acquire new resources.

Resources are anything that individuals perceive as helping to attain their goals (Halbesleben et al., 2014). Hobfoll (1989, 2002) identifies four types of resources: personal characteristics (e.g., self-efficacy, optimism, and well-being), objects resources (e.g.,

home), conditions (e.g., marital status, tenure, and seniority), and energies (e.g., time, money, and knowledge). The value of these resources is deeply rooted in the sociocultural environment in which an individual lives, which influences his/her reaction and interpretation of the event for his/her well-being. As resources are developed during the life span within cultures that suggest pathways to follow or those not to follow, individuals develop resource caravans. This suggests that when you develop one resource, you can develop others at the same time (Hobfoll, 2002). For this reason, PsyCap is a resource caravan, as will be shown below.

The concept of PsyCap comes from the organizational behavior literature (Luthans et al., 2007). It is viewed as a resource explaining health (Lupsa et al., 2020) or academic performance and reducing burnout and boredom (Virgă et al., 2020). In a world where economic uncertainty, constant competition, and perpetual technological advances prevail, companies can gain a sustainable competitive advantage by developing the PsyCap of their human resources (Luthans et al., 2007). In the case of entrepreneurship, an important PsyCap is an asset for the entrepreneur-manager, both for the development of his/her business and in a situation of failure. Despite the limited exploration of PsyCap in the entrepreneurship literature (as mentioned by Welter and Scrimshire (2021)), several researchers are beginning to investigate its impact on entrepreneurs' life satisfaction (Bockorny and Youssef-Morgan, 2019), venture performance (Wang et al., 2019), or entrepreneurial intention (Zhao et al., 2020). We study it in the context of entrepreneurial failure because it could help entrepreneurs to recover more easily from the loss of their business and to gain new knowledge by learning from it.

Psychological capital (or PsyCap) is defined by Luthans et al. (2007, p. 3) as:

« An individual's positive psychological state of development characterized by:

1. Having confidence (self-efficacy) to take on and put in the necessary effort to succeed at challenging tasks;
2. Making a positive attribution (optimism) about succeeding now and in the future;
3. Persevering toward goals and, when necessary, redirecting paths goals (hope) in order to succeed; and
4. When beset by problems and adversity, sustaining and bouncing back and even beyond (resiliency) to attain success ».

As mentioned in its definition, PsyCap is considered as a state, meaning that individuals can develop these four components to overcome hardships (Luthans, 2002a; Luthans et al., 2006b, 2007; Luthans and Avolio, 2009; Chen and Lim, 2012). This idea that these components can be developed is quite recent. Historically, these four concepts have long been studied as personality traits. For instance, the first theories on resilience considered that an individual was resilient by genes (Coutu, 2002). However, some counter-examples, like resilience from a beloved person's loss or a traumatic experience, showed that it is more a state (Bonanno, 2004).

It should also be noted that self-efficacy, optimism, hope, and resilience intertwine and interact. Because of their mutual influences, a synergy occurs between them, where the whole

is greater than the sum of its parts (Luthans et al., 2006a, 2007). This means that a person who has the will and a clear idea of the path he/she must follow to achieve his/her objectives will be more motivated and capable of overcoming adversity (Luthans et al., 2007). A person who trusts will be able to use hope, optimism, and resilience for specific tasks in different areas of his/her life. A resilient person will be able to use coping mechanisms to develop a realistic and flexible optimism. In turn, self-efficacy, hope, and resilience can also help to develop a positive attribution style to actions under one's control.

Self-efficacy has its origins in the social cognitive theory of Bandura (1986). It refers to « *one's conviction (or confidence) about his or her abilities to mobilize the motivation, cognitive resources, and courses of action needed to successfully execute a specific task within a given context* » (Stajkovic and Luthans, 1998, p. 66). This sense of efficacy is built through five essential cognitive processes: representation, intention, observation, self-regulation, and self-reflection (Luthans et al., 2007). These cognitive processes allow an individual to take time to reflect on both his/her past successes and failures, learn from them, and use this self-knowledge to progress.

In the field of entrepreneurship, self-efficacy has been widely investigated (Welter and Scrimshire, 2021). Studies have shown that entrepreneurs have a high degree of self-efficacy (Hayek, 2012). Confident entrepreneurs are motivated to make the necessary effort to successfully conduct their business (Trevelyan, 2011). However, a failure can undermine that trust (Boss and Sims, 2008). In such a situation, it is not general self-efficacy that decreases, but the one related to a specific task (Smith et al., 2006). Therefore, to help an individual to bounce back from a setback, the confidence in his/her ability to succeed the task failed must first be restored. From this point of view, self-efficacy could help an entrepreneur to recover from a failure (Boss and Sims 2008). Indeed, by developing it, an individual reflects on his/her past successes and failures, which can contribute to learning.

Inspired by the work of Snyder, *hope* is defined as a positive motivational state based on a sense of achievement from the interaction between the desire (i.e., the energy directed to a goal) and the way/path to get there (i.e., planning to attain goals; Snyder et al., 1991). In other words, hope is « *a cognitive or "thinking" state in which an individual is capable of setting realistic but challenging goals and expectations* » and reaching out to these by his/her self-determination, energy and internal control's perception (Luthans et al., 2007, p. 66). In addition, hope allows a person to generate alternative ways to achieve his/her desired goals when the original path is not possible.

In the field of entrepreneurship, the perception of internal control, one of the mechanisms that create hope, has been investigated. Research has shown a positive relationship between hope and satisfaction of entrepreneurs owning a business (Jensen and Luthans, 2006; Hayek, 2012). In the case of a failure, nurturing hope could allow the entrepreneur to consider alternative ways to continue an entrepreneurial career if he/she desired it, and therefore could deploy the necessary energy to get there.

Conceptualized by Seligman (1998), *optimism* refers to the attribution of positive events to internal, permanent, and pervasive causes, and negative events to external, temporary, and related to a specific situation cause. In contrast, a pessimistic attribution style interprets positive events as belonging to external and temporary factors related to a particular situation and explain negative events in terms of internal, permanent, and generalized factors. From this point of view, optimistic people tend to consider that the causes of desirable events are under their control (Luthans et al., 2007). Moreover, they expect the causes of these events to persist over time and to be helpful to manage other situations in different areas of their lives. In this way, they see things positively and internalize the positive aspects of their lives, not only in the past and the present, but also in the future. Luthans et al. (2007) suggest that this optimism must be realistic and flexible. It should not be pushed to extremes, in which case an individual could attribute all successes to him/herself, try to control all aspects of his/her life, attribute failures only to external causes, and shirk his/her responsibilities. In this respect, people with a high degree of realistic optimism are capable of gratitude for factors contributing to their success. Similarly, in a situation of failure, they are able to classify information, to establish facts, to learn from their mistakes, to accept what they cannot change, and to move forward.

In the organizational behavior literature, some researchers have shown that the PsyCap optimism can lead to a self-fulfilling prophecy (Peterson and Chang, 2002). In addition, a person with high realistic optimism is both motivating and more motivated to achieve long-term success (Peterson, 2000). Moreover, optimists are more likely to embrace change, to see opportunities in the future, and to focus on these opportunities, even in negative situations (Luthans et al., 2007). Therefore, in a situation of failure, an optimistic entrepreneur would consider this negative situation as a step allowing him to accomplish future success and to identify new entrepreneurial opportunities.

In turn, *resilience* is defined by Luthans (2002a) as the ability to bounce back or quickly recover from a hardship, a conflict, a failure or even positive events such as progress and increased responsibilities. This resilience involves everyday skills and psychological strengths (Masten, 2001; Masten and Reed, 2002). People of all ages and psychological conditions can maintain and nurture resilience. Therefore, resilient people are not exceptional and rare persons (Coutu, 2002).

According to Hayek (2012), resilience is an important characteristic of entrepreneurs because they are known for their determination when they face challenge. But in a situation of failure this resilience can be undermined. Therefore, we suggest that by nurturing or developing their resilience these entrepreneurs can quickly recover from an unsuccessful experience and re-start a business if they wish.

As mentioned above, the four components of PsyCap can also help an entrepreneur to think about what has happened to his/her business. First, we assume that the five cognitive processes (i.e., representation, intentional, observation, self-regulation, and self-reflection) building self-efficacy (Luthans et al., 2007)

will help to learn from failure. Hope, optimism, and resilience also are resources that will help to manage failure and its negative consequences to promote learning. These four components act as a resource caravan like as mentioned by the COR theory. Failed entrepreneurs face a loss of resources due to the financial, psychological, and social costs of their business failure. We assume that these costs would be negatively related to PsyCap. However, individuals are motivated to use their resources to face with a loss situation. Drawing on COR theory, and on our review of the literature, we propose that PsyCap would be a positive cognitive resource that buffers the potential threat of a business failure's consequences on learning from failure. By using their personal resource through PsyCap, failed entrepreneurs gain new resources (energies) such as new knowledge acquired by learning from failure. The mediating role of PsyCap has been highlighted in research on well-being (Sabot and Hicks, 2020), on job performance and job burnout (Gong et al., 2019) as well as on entrepreneurs' life satisfaction (Bockorny and Youssef-Morgan, 2019), but as far as we know, no research has yet proposed a mediating effect of PsyCap on the relationship between business failure consequences and learning from failure. In this context, we make the following propositions:

Proposition 2: Financial, psychological and social costs negatively influence PsyCap.

Proposition 3: PsyCap mediates the negative impact of financial, psychological and social costs of entrepreneurial failure on learning from failure.

Impact of Learning and PsyCap on Re-creating

By learning from his/her entrepreneurial failure, an entrepreneur increases his/her knowledge on different levels: his/her knowledge about him/herself (his/her strengths and weaknesses, skills, abilities, and entrepreneurial approach's efficacy), the disappearance of his/her venture (strengths and weaknesses of the venture and reasons for failure), the nature of his/her networks and relationships (managing a team, working with a partner, persuading investors, and building valuable collaborations) and the venture management (development of new models of how to manage and grow entrepreneurial ventures; Cope, 2011). These learning outcomes give him/her a future-oriented vision and increase his/her entrepreneurial preparedness' level to pursue entrepreneurial activities. This new knowledge will be even more useful if the entrepreneur uses it in another business (Shepherd, 2003; Shepherd et al., 2009b), whether it is his/her own new business or if he/she pursues his/her career in the entrepreneurial field without creating a new business (Cope, 2011). This leads to the following proposition:

Proposition 4: Learning outcomes from failure have a positive influence on the intention of re-creating a new business.

Other empirical studies also show that people who have started a business are more likely to re-create a new one compared to

those who have never tried the entrepreneurial adventure (Caroll and Mosakowski, 1987; Schutjens and Stam, 2006). Entrepreneurial intention is a *sine qua non* condition for entrepreneurial behavior (Krueger, 2003). In their study, Schutjens and Stam (2006) found that most entrepreneurs who have ceased their activity still keep their entrepreneurial intentions at the time of their first business closure. According to these authors, the amount of hours invested in the first company and the experience of running a business contribute to the intention of re-starting a new business.

A few studies have explored the impact of learning from failure on the intention to re-create and the actual re-creation of a new business. Entrepreneurs who have experienced a business exit (by closing, ceasing, or leaving their ventures) have more relevant entrepreneurial skills and identify business opportunities more often than those who did not undergo an entrepreneurial exit (Hessels et al., 2011). In this context, some assume that a new business created by a renascent entrepreneur—that is, an entrepreneur who has exited his/her business and re-enters into entrepreneurship (Stam et al., 2008)—will present better performance (Ucbasaran et al., 2013). A study by Yamakawa et al. (2013) has investigated it empirically by interviewing Japanese entrepreneurs who re-launched a venture after one or more unsuccessful experiences. They studied the influences of cognitive determinants (that is the internal attribution of the cause of failure and intrinsic motivation to re-start a new business) and the experience of failure on the growth of the new business. Entrepreneurs attributing the cause of failure to themselves had better performance when they had had a small number of failures. By contrast, the performance decreased for those who had experienced many failures. For these researchers, entrepreneurial failure is not always beneficial. The relationship between previous failure and the pursuit of an entrepreneurial career is influenced by the cognition of the entrepreneur.

Given that the pursuit of an entrepreneurial career is influenced by entrepreneurs' cognitions (Yamakawa et al., 2013), the development of PsyCap among failed entrepreneurs should facilitate their learning and promote the re-creation of a new business. PsyCap is a mechanism by which past experiences of failure can shape entrepreneurs to pursue their entrepreneurial journey (Jenkins et al., 2014). By attributing negative events to external, uncontrollable, and varied causes, an individual develops and maintains his/her resilience optimism (Luthans and Youssef, 2004). The latter can help an entrepreneur to preserve his/her entrepreneurial motivations after such a negative experience (Jenkins et al., 2014). The pursuit of an entrepreneurial career could be related to a potential high resilience of the entrepreneur (Jenkins et al., 2014). This leads to the following proposition:

Proposition 5: PsyCap has a positive influence on the intention to re-create a business.

In a context of entrepreneurial failure, the development or consolidation of entrepreneurs' PsyCap can mitigate the negative impact of the failure's consequences on learning. He/she will learn from his/her mistakes and will therefore

be motivated to launch a venture again. This leads to our sixth proposition:

Proposition 6: If failed entrepreneurs have a high PsyCap, they will learn more easily from their unsuccessful experience, have a more important intention to re-create a business, and will be more likely re-create a new business.

However, even if an entrepreneur with a high degree of PsyCap manages to learn from failure and wishes to start anew, this willingness can be reduced by too much debt following failure and/or by stigmatization suffered by the entrepreneur in his environment (European Commission, 2007). A good fit between the environment and the individual's personal attributes shapes the entrepreneurial intentions (Kristof-Brown et al., 2005; Hsu et al., 2017). There are different perceptions of failure among countries or even in several areas in a country (Cardon et al., 2011). Failure is tolerated when the area has a munificent business climate providing support to sustain troubled businesses. In this context, failed entrepreneurs are not stigmatized. In regions where business failure is attributed to a mistake, the stigmatization of entrepreneurs is higher and influences the entrepreneurs' view of themselves. This stigmatization will affect the entrepreneurs' willingness to re-create a new business. Moreover, a business failure can generate financial losses. If an entrepreneur has no financial resources on his/her own, he/she will not be able to launch a new business. Hence, financial losses and entrepreneurial stigma would both have a moderating effect on the relationship between the intention to re-create and the actual re-creation following failure (Burchell and Hughes, 2006; Stam et al., 2008; Cope, 2011; Simmons et al., 2014). This leads us to the following proposition:

Proposition 7: Debt and/or stigma moderate the relationship between intention to re-create and actual re-creation. More specifically, the more debt an entrepreneur has and/or the more stigmatized he/she is after failure, the less positive the relationship between the intention to re-create and the actual re-creation will be.

Conceptual Framework

Figure 1 presents our conceptual model. It suggests that PsyCap would promote (1) learning in the context of entrepreneurial failure and (2) the intention of the failed entrepreneur to pursue his/her entrepreneurial career. The failure's consequences will prevent the good process of learning from failure (Ucbasaran et al., 2013; P1). We propose that there is a negative relation between business failure consequences and PsyCap (P2). However, in a situation of loss of resources, such as business failure, a failed entrepreneur will be motivated to gain new resources through learning from failure. To acquire these new resources, he/she will use other resources he/she has, such as his/her PsyCap. If this positive state encourages the entrepreneur to learn from his/her mistakes (P3), he/she could manifest the desire to continue his/her entrepreneurial career by not repeating the same mistakes (P4 and P5). Since the intention to create

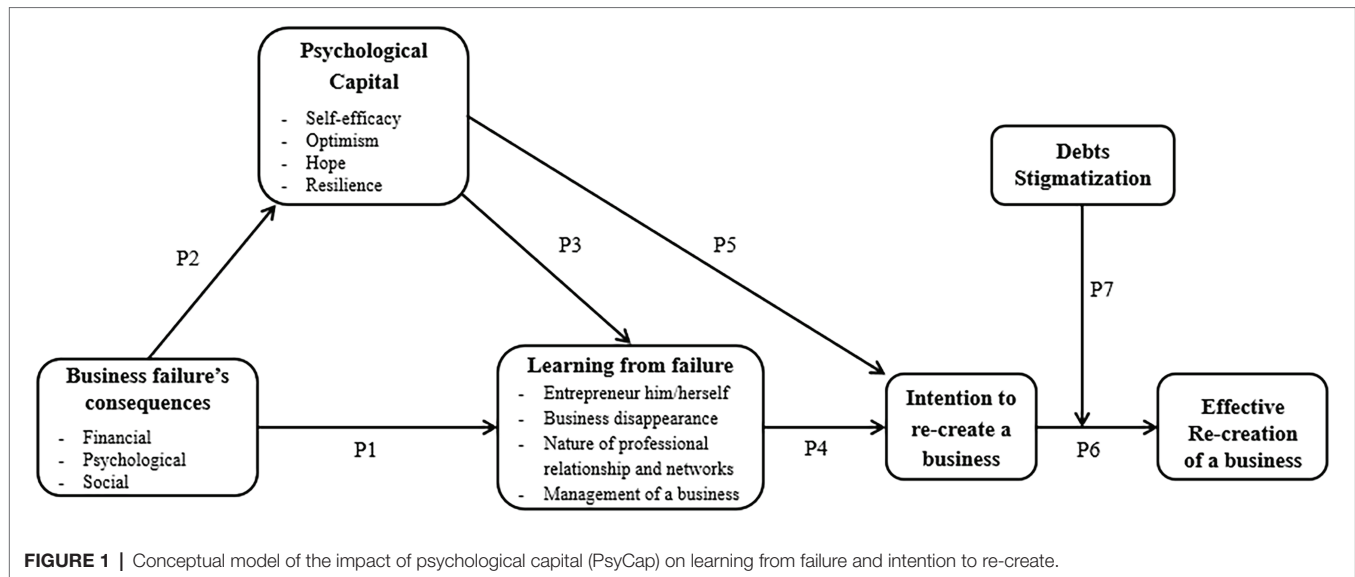
is a *sine qua non* condition to the effective creation (Krueger, 2003), we assume that the intention of re-creating a new business will help to lead to the real re-creation of a new venture (P6). However, this effective recreation could be reduced if the entrepreneur has too much debt and/or feels strongly stigmatized by his environment, even if he has a high PsyCap and feels he has learned from his failure (P7).

DISCUSSION

Many researchers agree that entrepreneurs learn from their entrepreneurial failure (McGrath, 1999; Minniti and Bygrave, 2001; Shepherd, 2003; Cannon and Edmondson, 2005; Cope, 2011; Ucbasaran et al., 2013). However, given the financial, psychological, and social consequences of business failure and of the social stigmatization of these entrepreneurs, this learning is not an easy task (Ucbasaran et al., 2013). Despite these barriers, 3%–8% of them still re-start a new activity. How to explain this figure? Our conceptual model can be of some help. Its originality stems from a positive approach to promote learning from failure through PsyCap and their impact on the intention to re-create, as well as the effective re-creation of a subsequent business. Drawing on COR theory (Hobfoll, 1989, 2002), we considered that the PsyCap is a personal resource that failed entrepreneurs can mobilize to gain new knowledge about entrepreneurship. We suggest that a high level of PsyCap buffers the negative effects of the failure's consequences on entrepreneurial learning process. In addition, we assume that it also has a positive effect on the intention to re-create a business; this intention can be followed by effective re-creation of a new venture. Similarly, the accumulation of knowledge on the entrepreneur him/herself, the ending of his/her business, and the management of a business and professional relationships can positively influence his/her intention to create a new venture and really do it.

Understanding the barriers and facilitators of learning from failure and their implications for the pursuit of an entrepreneurial career process from a theoretical point of view offers interesting avenues for future research.

If some authors have begun to investigate the cognitive and emotional processes that influence the performance of a new business after previous business failures (Yamakawa et al., 2013) or to make sense of this failure (Byrne and Shepherd, 2013), few studies have focused on mechanisms that facilitate learning from entrepreneurial failure. Through our theoretical model, we try to answer the following question: Does a positive psychological state allow better learning and re-starting after a business failure? The positive approach of PsyCap would enable entrepreneurs to capitalize on their failure's experience in order to better bounce back from it. A study on job search has shown that through interventions and training to help job seekers to develop their PsyCap, they increased their perceived employability in their job search (Chen and Lim, 2012). By developing a high degree of PsyCap, unemployed people are more confident about their abilities and skills, are more optimistic about the future, do not give up their job search, and invent solutions to overcome obstacles in their job search. This positive attitude



encourages them to look for opportunities rather than to attribute their difficulties to external causes and blame themselves (Chen and Lim, 2012). While a job search situation is not similar to an entrepreneurial failure, we believe that the development of PsyCap may have similar effects on the ability of entrepreneurs to learn from their failure and continue their entrepreneurial career.

The concept of PsyCap is used more and more in the field of organizational behavior. Some authors have also started to introduce it in the field of entrepreneurship (Jensen and Luthans, 2006; Jenkins et al., 2014). Its application to the entrepreneurial process could be considered at the venture creation stage, as a determinant of opportunities identification or intention to create, or later, as a determinant of performance. Welter and Scrimshire (2021) have recently called to incorporate PsyCap into entrepreneurship research and develop research questions on topics such as opportunity evaluation or the process of entrepreneurship.

Besides PsyCap, other cognitive or affective mechanisms may also be relevant to promote learning from failure in order to re-create a new business. In particular, we believe in the potential of the concept of hardiness developed by Maddi (2013). Luthans et al. (2007) also suggest that cognitive processes, such as creativity and wisdom, as well as emotional processes, perceived well-being, flow (that is a state of maximum concentration) and humor should be investigated, as these could also be constitutive of PsyCap. Based on the COR theory, these other mechanisms are resources forming a resource caravan. The more resources an individual has, the more he/she will be prone to gain additional resources and recover from losses (Halbesleben et al., 2014).

In terms of the practical implications, PsyCap is a tool that can be exploited for the development of the entrepreneur in general and, more specifically, of the entrepreneur in a business failure context. This concept has two major advantages: it can be developed and is available to everyone (Luthans, 2002a,b; Fleig-Palmer et al., 2009; Chen and Lim, 2012). Providing training for entrepreneurs to develop their PsyCap would be in line with the recommendations of the European Commission. Indeed, in its 2007 report, it recommended to develop psychological and technical supports for entrepreneurs who have failed, through, for instance, training and specific supervision. Considering that the half of newly established firms does not survive the first 5 years after creation (European Commission, 2007) and that very few failed entrepreneurs re-launch a new business thereafter, it would seem appropriate to focus on these entrepreneurs.

Finally, we believe that PsyCap has a bright future in entrepreneurship research at large. In addition to its usefulness in understanding learning from failure and re-creation, it could be investigated in the creation process and/or in opportunities identification or as a factor promoting the leadership of the entrepreneur and his/her business' performance.

AUTHOR CONTRIBUTIONS

RD and FJ contributed to formulating the conceptual framework, analyzing the literature, and writing and editing the manuscript. All authors contributed to the article and approved the submitted version.

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Is Abusive Supervision the Last Straw? The Buffering Role of Construal Level in the Association of Abusive Supervision With Withdrawal

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Drawing on the theory of cognitive-affective processing system and that of construal level, we propose a moderated mediation model illustrating the relationship among abusive supervision, shame, construal level, and work withdrawal. We tested this model with a two-source time-lagged survey of 387 employees from 129 work teams in central and East China. Results revealed that abusive supervision had a positive association with the emotion of shame and supported the mediating role of shame linking abusive supervision to work withdrawal. Besides, our findings supported the buffering effect of construal level on the shame-work withdrawal relationship as well as the indirect relationship between abusive supervision and work withdrawal channeled through the emotion of shame.

Keywords: abusive supervision, shame, cognitive-affective processing system, construal level, work withdrawal

INTRODUCTION

Abusive supervision as a common workplace encounter has received tremendous attention from both academic and practical communities. It was defined by Tepper (2000) as subordinates' perception of the extent to which supervisors engage in the sustained display of hostile verbal and nonverbal behaviors, excluding physical contact. There is considerable agreement that abusive supervision remarkably correlates with negative outcomes such as turnover intention (Tepper, 2000), emotional exhaustion (Wu and Changya, 2009), and counterproductive work behavior (Mitchell and Ambrose, 2007; Sulea et al., 2013). Work withdrawal, an essential facet of counterproductive work behavior, refers to behaviors that restrict the amount of time working to less than is required by the organization (Spector et al., 2006). If it is not effectively curbed, it will evoke peer's withdrawal (Eder and Eisenberger, 2007), which will consequently lead to a decrease in productivity (Sagie et al., 2002) and increase in costs to organizations (Carpenter and Berry, 2016; Huang et al., 2020). Though some scholarly efforts have been made to explore the relationship between abusive supervision and work withdrawal (Wei and Si, 2011), what underlies this relationship and what are the boundary conditions remain mysterious (Tepper et al., 2017).

Prior research has examined the relationship between abusive supervision and work withdrawal through emotional mechanisms such as emotion exhaustion and negative emotion in general (Chi and Liang, 2013; Atwater et al., 2015; Huang et al., 2020). However, few studies empirically tested the mediating role of specific negative emotions typically triggered by abusive supervision such as shame (Peng et al., 2019), a type of self-conscious emotions (Kim et al., 2020).

We focus specifically on shame rather than other general negative emotions for two reasons. First, shame seems to have a natural connection with work withdrawal, because when subordinates feel ashamed on account of abusive supervision, their desire to hide or disappear will be provoked (Schmader and Lickel, 2006). Second, shame is a very unique and important emotion in organizations. Unlike other emotions, shame can induce a wide range of behavioral responses (such as constructive behaviors on the one hand and withdrawing behaviors on the other) under different circumstances, which can offer significant implications to organizations on how to induce more functional reactions in employees to shame (Daniels and Robinson, 2019). Despite that the presence and consequence of shame at workplace have significant implications for both management practice and scholarly theory, there is a paucity of research examining this specific emotion, not to mention the factors influencing its reactions. Thus, our current study examines the factors influencing the relationship between shame and work withdrawal as a way to echo Daniels' and Robinson's (2019) call for more research in this regard.

The theory of cognitive-affective processing system (hereinafter called CAPS) proposes that individuals process information with two separate but interacting systems, called the cool and hot system. When the hot system functions, individuals tend to respond instantly and automatically out of impulse, while when the cool system works, individuals tend to respond calmly out of reason (Metcalf and Mischel, 1999). CAPS is helpful in explaining people's emotional and rational responses. However, it fails to delineate the boundary conditions of people's discrete responses. We argue that people's discrete responses depend on their construal level (Trope and Liberman, 2000, 2003), conceptualized as the ways that people encode and retrieve information (Wiesenfeld et al., 2017). Since construal level theory (hereinafter called CLT) delineates how different people apply mental representations of different levels of abstraction to the same target, it helps understand people's difference in self-control (Fujita et al., 2010) and thus helps depict people's discrete reactions. As a consequence, we propose that subordinates respond differently to shame, elicited by abusive supervision, because they are governed by different processing systems, affected by their construal level.

Drawing upon CAPS (Metcalf and Mischel, 1999) and construal level theory (Trope and Liberman, 2000, 2003), we theorize a cross-level moderated mediation model (see **Figure 1**) to test the relationship between abusive supervision and work withdrawal, mediated by the negative emotion of shame and moderated by construal level. The current study advances the literature in several ways. First, we extend the literature by integrating the theory of cognitive-affective processing system and that of construal level to explore why some subordinates respond more impulsively than others; in another word, why some subordinates withdraw from work to a greater extent than others. This extension is meaningful in that it gives a new perspective on the relationship between abusive supervision and work withdrawal, especially when most research was conducted from the perspectives of emotion-regulation theory, the transactional theory of stress, affective

events theory, conservation of resources, etc. (Chi and Liang, 2013; Mawritz et al., 2014; Atwater et al., 2015; Nauman et al., 2020). Second, we expand our understanding of the negative emotion of shame as an underlying mechanism linking abusive supervision and work withdrawal. The extant studies center on either the mediating role of negative emotions in general (Tepper et al., 2017; Yu and Duffy, 2020) or subordinates' discrete emotions to abusive supervision (Peng et al., 2019), which primarily demonstrated the effect of people's emotional experiences different in nature and magnitude on different work attitudes and behaviors (Brockner and Higgins, 2001; Zhang et al., 2019), we extend the literature by investigating the unique and understudied emotion of shame (Daniels and Robinson, 2019), and by uncovering why some people respond to shame in an avoidance way (withdrawal), while others do not. Third, by identifying a very important moderator (i.e., construal level), we complement our knowledge on the factors influencing individuals' discrete behavioral reactions to shame and on the boundary conditions under which the above abusive supervision-work withdrawal relationship is magnified or buffered.

Emotional Outcome of Abusive Supervision: Shame

The theory of CAPS suggests that there are two separate but interacting hot and cool processing systems within individuals, with the former based on affect and the latter on cognition (Metcalf and Mischel, 1999). The hot system is to large extent under the control of "stimulus," driving individuals to respond more rapidly and more automatically (Kross and Mischel, 2010), whereas the cool system is characterized by cognitive rumination, allowing individuals to process the "stimulus" information more slowly and more rationally (Metcalf and Mischel, 1999). Accordingly, the activation of the hot system contributes to the interpretation of individuals' emotional reactions related to stimuli. The activation of the cool system, on the other hand, interprets their non-impulsive actions (Metcalf and Mischel, 1999).

Daniels and Robinson (2019) defined shame in the organizational context as a painful emotion arising when an employee evaluates a threat to the self-concept when he or she has fallen short of an important standard tied to a work-related identity. This definition implies that shame results from a threat to his or her work-related identity, which is tied to feedback from other people, especially from in-group ones (such as leaders) who are in a position to convey more self-relevant information. As Daniels and Robinson (2019) put, the appraisal of deviation from identity-relevant standard and the attribution of deviation to faulty self are the two triggers of shame. Along this line, when subordinates suffer from abusive supervision, their hot system immediately processes the information about this stimulus so that they realize immediately that they fall short of their leaders' standards and the fact that they are the ones (not someone else) who are abused makes them easily attribute the fault to themselves (Peng et al., 2019), which rapidly leads to their negative emotion, shame.

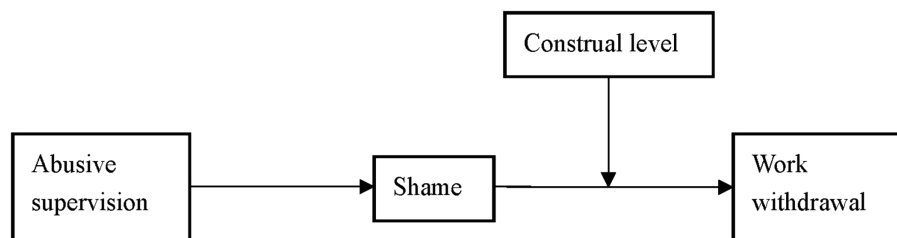


FIGURE 1 | Research model.

In short, when subordinates encounter abusive supervision, their hot system will be activated spontaneously because of the self-apparent information exposed by the stimulus, leading to their emotional response of shame because of the perceived threat to self-concept (Daniels and Robinson, 2019; Peng et al., 2019; Kim et al., 2020). In light of this, our first hypothesis proposes a positive relationship between abusive supervision and shame.

Hypothesis 1: Abusive supervision is positively related to shame.

Shame as a Mediator

The extant literature has indicated that negative emotion evokes withdrawal behaviors (Chi and Liang, 2013; Atwater et al., 2015; Liu et al., 2019). Shame, as a particular negative emotion, is held to provoke a desire to hide or disappear (Schmader and Lickel, 2006) in order to avoid a continued threat to the self (Daniels and Robinson, 2019) and thus initiates avoidant responses, such as withdrawal (Nathanson, 1992; Claesson et al., 2007), which encompasses removing from the shame-inducing situation, or minimizing contact with the situation (Chao et al., 2011; Daniels and Robinson, 2019). Combining the strong eliciting effect of abusive supervision on subordinates' shame with the close association between shame and its common avoidant coping strategy, withdrawal (Daniels and Robinson, 2019), we propose the following hypothesis.

Hypothesis 2: Abusive supervision has a positive and indirect relationship with work withdrawal, mediated by Shame.

Construal Level as a Moderator

One basic premise of CLT is that one's psychological distance is closely associated with one's construal level. Specifically, as psychological distance (such as temporal distance, spatial distance, social distance, and hypothetical distance) increases, construal level would become higher, namely, more abstract, and as the construal level increases, the psychological distance people envisage would increase too (Trope and Liberman, 2010). In line with this, the less psychologically distant an event is, the lower levels of abstraction it will be represented (Trope et al., 2007). In another word, when abusive supervision occurs to an individual employee (vs. others), this negative event is taking

place right now (vs. distant future), right here (vs. there), implying a close psychological distance. The close psychological distance triggers this individual's low construal level, drawing his or her attention to the details of what is happening to him or her here and now, which makes him or her unable to transcend the currently experiencing event in time and space (Trope and Liberman, 2010) and thus will instantly activate the hot system, leading this individual to respond reflexively (Metcalf and Mischel, 1999) and immediately eliciting his or her strong emotion of shame.

Though the construal level can be activated as a state by psychological distance (Trope and Liberman, 2010), it remains relatively stable in people's mental representation of their work over time (Reyt and Wiesenfeld, 2015). In general, people with higher construal level may attend more to long-term benefits (temporal distance), things happening far away from them (spatial distance), global interests (social distance), and desirability (hypothetical distance) as well, whereas people with lower construal level in contrast focus more on short-term benefits, things happening right in the space, self-interests, and feasibility (Wiesenfeld et al., 2017). As such, we hold that abusive supervision, due to its close psychological distance, leads the abused subordinates to mentally represent the event at a low level of abstraction (i.e., low construal level) and thus to be more susceptible to the control of shame. However, after the activation of the abused subordinates' hot system, individuals with different construal levels generate different cognitive distractions and thus may exhibit varying degrees of withdrawal behavior (Metcalf and Mischel, 1999). This is manifested in the following two aspects.

First, construal level affects how subordinates evaluate the rewards, i.e., how valuable and meaningful the desired end-state is. As a result, those with higher construal level attach more cognitive attention to the desirability of the desired end-state (the value of the desired outcomes) rather than its feasibility (Trope et al., 2007; Wiesenfeld et al., 2017). In contrast, those with lower construal level lay more stress on feasibility, namely, how easily a particular end-state can be reached (the difficulty and likelihood of success; Wiesenfeld et al., 2017). Hence, high construal level enables subordinates to be more perseverant and more willing to make efforts to reach their desired end-state (Wiesenfeld et al., 2017), facilitating stronger self-control (Kross and Mischel, 2010), which in turn attenuates the stimulus control. Accordingly, for the abused subordinates with higher construal level, they are more capable of pulling themselves

together and more proactive in finding solutions to overcome the negative emotion of shame and to achieve their desired end-state such as self-actualization and career success. They are thus less likely to withdraw. However, those with lower construal level are more sensitive to the feasibility; therefore, the negative emotion of shame haunting them makes them believe that their desired end-state (e.g., career success) is unattainable and feel disenchanted, symbolizing strong stimulus control. In short, the high construal level enables the abused subordinates to stress the desirability of their end-state which empowers them to get rid of the hot system control, beneficial for them to control themselves not to withdraw (Wiesenfeld et al., 2017).

Second, construal level affects how subordinates value their long-term and short-term interests. Specifically, subordinates with higher construal level are more inclined to form abstract representation that transcends the currently experiencing event in time and space (Trope and Liberman, 2010). As a result, subordinates with higher construal level are more likely to concentrate on what is in line with their long-term interests, whereas those with lower construal level are more likely to weigh their short-term concerns (Schmeichel and Vohs, 2009; Wiesenfeld et al., 2017). When subordinates' long-term interests are in conflict with their short-term concerns such that one behavior is satisfying for the moment but harmful in the long run, higher construal level allows them to attach more attention to the long-term rewards. Close attention to the long-term interests distracts their attention to short-term concerns, which hence leads to greater self-control (Trope et al., 2007; Fujita et al., 2010; Kross and Mischel, 2010) so that subordinates' cool system is in a position to function. Compared with struggling to advance, withdrawal is much easier and more effortless. In view of this, withdrawal seems to be a comfortable choice in the short term but it will negatively impact subordinates' job performance (Mobley, 1982) which will ultimately jeopardize their career advancement (Restubog et al., 2011) in the long run. The good thing is that subordinates' higher construal level allows their cool system to take the place of the hot system to function, which inhibits their impulse of withdrawal by guiding them to put the short-term concern (shame) aside and drawing their attention to the long-term interests (performance improvement, self-actualization, and career success).

Taken together, we hypothesize the moderating effect of construal level on the positive relationship between shame and work withdrawal rather than on the relationship between abusive supervision and shame.

Hypothesis 3: Construal level moderates the relationship between shame and work withdrawal such that subordinates with lower construal level have a stronger tendency to withdraw from work when feeling shame, but those with higher construal level are less inclined to do so.

Based on hypothesis 3 and our previous reasoning on the indirect relationship between abusive supervision and work

withdrawal, we further argue that although abusive supervision, as a hot event, can activate hot emotions in subordinates, it does not necessarily cause them to give up their efforts and withdraw from work. The last straw that breaks the subordinates' back is actually their low construal level. Thus, we theorize the moderated mediation hypothesis as follows.

Hypothesis 4: Construal level moderates the indirect and positive relationship between abusive supervision and withdrawal through shame such that the indirect and positive relationship is weaker for subordinates with higher construal level and that relationship is stronger for subordinates with lower construal level.

MATERIALS AND METHODS

Participants and Procedures

We invited MBA students from three classes to assist our survey. A total of 138 students eventually accepted our invitation. All of them are full-time workers working at small and medium-sized enterprises in central and East China. These students were required to randomly invite one work team at their companies, encompassing one team leader and three subordinates. These MBA students assisted in administering four questionnaires, with one to be filled by the leader and the other three by the subordinates. To safeguard confidentiality, all the questionnaires were put inside envelopes where numbers and alphabets were marked to match the subordinates with their corresponding leaders. At the beginning of each questionnaire, instructions were given to inform the participants of the research purpose and the confidentiality of the survey. They were also informed that they were voluntary and free to express their real feelings, which would be used for research purposes only. Their finished questionnaires were requested to be put in the original envelopes, sealed with their own signatures on, before being handed to the MBA students. Data were collected at two time points, with a 1-month interval. At time 1, subordinates were instructed to rate their leaders' abusive supervision as well as their own construal level. At time 2, these subordinates were requested to report their emotion of shame. Meanwhile, their corresponding leaders were asked to complete measures of the subordinates' withdrawal behavior.

We collected valid responses from 414 subordinates at time 1. Among these subordinates, 387 continued on with the survey themselves and were rated by their team leaders at time 2. Consequently, our analysis included a sample of 129 work teams. Among the 129 team leaders, 61.2% were male. Most of them had a bachelor's degree (62.8%) or master's degree (26.4%). The vast majority of them were middle managers (62.8%), with the rest being first-line managers (24.8%) and senior managers (12.4%). Among the subordinates, 44.4% were male, 68.7% had a bachelor's degree, 16.3% had a master's degree, and 11.9% had a college degree. As for tenure, 68.7% of them had worked for the company for no more than 6 years.

Measures

Multiple-item scales were utilized to measure the concerned variables, all measures of which (unless otherwise specified) were rated using a 5-point Likert-type scale ranging from 1 (strongly disagree) to 5 (strongly agree). The researchers translated these English scales into Mandarin Chinese, following the back-translation procedure proposed by Brislin (1980).

Abusive Supervision (T1)

It was measured using a shortened 5-item scale (Mitchell and Ambrose, 2007) at Time 1 ($\alpha=0.94$). Sample items are “My supervisor tells me my thoughts and feelings are stupid,” and “My supervisor makes negative comments about me to others.” We applied $R_{wg(j)}$, $ICC_{(1)}$, and $ICC_{(2)}$ to judge the rationality of data aggregation. Statistic results (mean $r_{wg(j)}=0.89$; median $r_{wg(j)}=0.96$; $ICC_{(1)}=0.43$, $ICC_{(2)}=0.69$; $F_{(128, 258)}=3.24$, $p<0.0001$) supported our aggregation decision.

Construal Level (T1)

To measure subordinates' construal level, we chose 12 items with the highest loadings from the 25-item scale developed by Vallacher and Wegner (1989). Each item is followed by two alternatives, one representing the “how” aspect of the activity (low-level construal) and the other representing the “why” aspect of the activity (high-level construal). For example, subordinates were required to choose whether “Cleaning the house” was best described as “showing one's cleanliness” (high construal level) or “vacuuming the floor” (low construal level) and whether “painting a room” was best described as “applying brush strokes” (low construal level) or “making the room look fresh” (high construal level). Alternatives featuring low-level construal was coded as 1, whereas those featuring high-level construal was coded as 2. We averaged the 12-item scores to capture the value of each subordinate's construal level. The internal consistency (α) of this scale was 0.58.

Shame (T2)

Following Cavalera et al. (2017) we used a simplified scale of shame to measure the subordinates' feelings of shame ($\alpha=0.95$). The short version contained four items, to which we added a time indicator. Sample items are “In the last one month, I felt humiliated, disgraced” and “In the last one month, I felt worthless, powerless.”

Withdrawal (T2)

Team leaders rated their subordinates' behaviors of withdrawal using a simplified version of the subscale of CWB (Atwater et al., 2015). The current version includes three items (e.g., “this employee often comes to work late without permission” and “this employee often stays home from work without legit reason”). Cronbach's alpha was 0.89 for the withdrawal subscale.

Control Variables

In line with the practices of Mawritz et al. (2014), We controlled for subordinates' age, gender, education, and organizational tenure to rule out the potential influence on our outcome variables, for previous research (Aquino and Douglas, 2003) indicates that these demographic variables offer explanations for different responses to abusive supervision.

RESULTS

We first conducted CFAs to confirm the construct validity of the concerned variables and to examine the measurement structure by Mplus version 7.4. The baseline model included all the four variables (abusive supervision, shame, withdrawal, and construal level). Results showed that the 4-factor model fit the data well ($\chi^2=420.94$; $df=246$; $\chi^2/df=1.71$; $p<0.001$; CFI=0.96; TLI=0.96; RMSEA=0.04; SRMR=0.05). The hypothesized 4-factor model was superior to other more parsimonious models: a 3-factor model combining shame and withdrawal ($\chi^2=1962.76$; $df=249$; $\chi^2/df=7.88$; $p<0.001$; CFI=0.62; TLI=0.58; RMSEA=0.13; SRMR=0.13), a 2-factor model combining shame, withdrawal, and construal level ($\chi^2=1285.78$; $df=251$; $\chi^2/df=5.12$; $p<0.001$; CFI=0.77; TLI=0.75; RMSEA=0.10; SRMR=0.10), and a 1-factor model with all variables loaded on one factor ($\chi^2=2748.36$; $df=252$; $\chi^2/df=10.91$; $p<0.001$; CFI=0.45; TLI=0.40; RMSEA=0.16; SRMR=0.14). These CFA results suggested that all the 4 key variables had satisfactory discriminant validity. Nevertheless, given the nested structure of our data, we conducted multilevel CFA on the basis of the above conventional CFA. The multilevel CFA results ($\chi^2=399.25$; $df=251$; $\chi^2/df=1.70$; $p<0.001$; CFI=0.96; TLI=0.95; RMSEA=0.04; SRMR for within=0.05; SRMR for between=0.03) supported the consistency of the factor structure at both levels. Based on these results, we continued on with hypotheses testing using the same software. **Table 1** shows the descriptive statistics of the concerned variables and their zero-order correlations.

Before testing these hypotheses, we examined the within-group and between-group variances for the mediating and dependent variables (shame and withdrawal) by computing the ICCs. Results (shame: $ICC_{(1)}=0.39$, $ICC_{(2)}=0.66$; withdrawal: $ICC_{(1)}=0.86$, $ICC_{(2)}=0.95$) revealed meaningful between-group variances which justified using multilevel analysis (Hofmann, 2002).

We applied the path analysis method in an effort to test our moderated mediation hypotheses (Edwards and Lambert, 2007) in Mplus, where we specified 2 models. Model 1 tests the main and indirect effects of abusive supervision on withdrawal *via* shame. In this model, Hypotheses 1 and 2 are tested. Model 2 tests Hypotheses 3 and 4, concerning the moderating effect of construal level. Following the suggestions of Hofmann and Gavin (1998), we grand-mean centered abusive supervision in all analyses to reduce multicollinearity between random intercepts and slopes.

To test the main and indirect effect of abusive supervision on withdrawal *via* shame, we specified a 2-1-1 model (Preacher

TABLE 1 | Means, standard deviations, reliabilities, and correlations among study variables.

Variables	<i>M</i>	<i>SD</i>	1	2	3	4	5	6	7	8
1. Gender	1.56	0.50								
2. Age	2.58	1.14	0.01							
3. Org tenure	2.18	1.30	0.11*	0.60**						
4. Education	2.98	0.64	0.02	−0.29**	−0.21**					
5. AS	1.60	0.62	−0.04	−0.03	−0.01	0.05	(0.94)			
6. Shame	1.82	0.93	−0.10	−0.04	−0.01	0.05	0.36**	(0.95)		
7. Withdrawal	1.72	0.98	0.01	−0.06	−0.05	−0.05	0.17**	0.23**	(0.89)	
8. CL	1.42	0.20	0.05	−0.04	0.13	0.02	0.05	0.03	0.05	(0.58)

AS=Abusive supervision, Org tenure=Organizational tenure, and CL=Construal level. *N*=387. Cronbach's alpha values of each scale are boldfaced and noted on the diagonal. Gender: 1 = male, 2 = female; Age: 1 = 25 years and below, 2 = 26 to 30 years, 3 = 31 to 35 years, 4 = 36 to 40 years, 5 = 41 to 45 years, 6 = 46 years and above; Organizational tenure: 1 = 3 years and below, 2 = 4 to 6 years, 3 = 7 to 9 years, 4 = 10 to 12 years, 5 = 13 years, and above. **p* < 0.05; ***p* < 0.01.

TABLE 2 | Multilevel modeling results.

Variables	Model 1 (Hypothesis 1–2)		Model 2 (Hypothesis 3–4)	
	Shame coeff (SE)	Withdrawal coeff (SE)	Shame coeff (SE)	Withdrawal coeff (SE)
Gender	−0.08 (0.08)	0.05 (0.04)	−0.08 (0.08)	0.05 (0.04)
Age	−0.05 (0.05)	−0.03 (0.02)	−0.05 (0.05)	−0.03 (0.02)
Org tenure	0.02 (0.04)	0.01 (0.02)	0.02 (0.04)	0.01 (0.02)
Education	0.00 (0.06)	0.02 (0.04)	0.00 (0.06)	0.03 (0.04)
Abusive supervision	0.33*** (0.05)	0.14* (0.08)	0.33** (0.05)	0.14* (0.08)
Shame		0.06* (0.03)		0.06* (0.03)
Construal level (CL)				0.07 (0.10)
Shame*CL				−0.06* (0.03)
R ²	0.01	0.06*	0.01	0.08**

N = 387. Unstandardized coefficients and standard errors are presented. **p* < 0.10. ***p* < 0.05; ****p* < 0.001.

TABLE 3 | Conditional indirect effects of abusive supervision on withdrawal.

Mediator	Moderator: Construal Level	Indirect Effect ^a	S.E.	95%CI ^b
Model 1 Shame	N/A	0.02	0.01	[0.01, 0.07]
Model 2 Shame	High (+1SD)	0.015	0.01	[−0.01, 0.04]
	Low (−1SD)	0.022	0.01	[0.003, 0.04]

^aThe product of coefficients approach was used to estimate the indirect effects.

^b95% confidence intervals were produced based on the bootstrapping approach with 20,000 replicates.

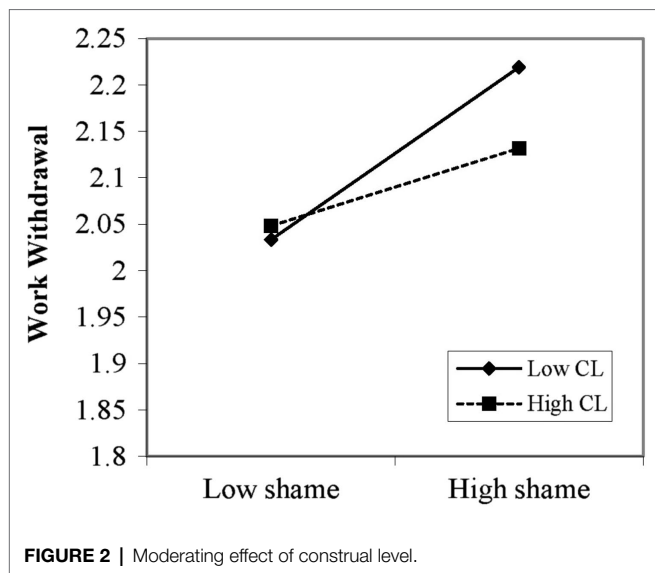
et al., 2010), where abusive supervision was specified at the between level, with shame and withdrawal specified at both the between level and the within level. At the between level, abusive supervision was linked to withdrawal directly and indirectly through shame. At the within level, we connected shame with withdrawal. We tested the mediation effect of shame at the between level, because abusive supervision as a constant within a group cannot engender any individual

difference within a group (Hofmann, 2002). Consequently, a conventional two-level model with fixed path coefficients (Hofmann, 1997) was specified. In other words, we specified the coefficient of the shame-withdrawal path to be identical at both levels, facilitating the interpretation of the indirect effect.

Table 2 shows the path coefficients for model 1. As it presents, abusive supervision was positively related to shame ($a = 0.33$, $p < 0.001$). Hypothesis 1 was supported. Hypothesis 2 proposes a positive and indirect relationship between abusive supervision and work withdrawal through Shame. To test the statistical significance of the indirect relationship, we first applied the product of the coefficient of the abusive supervision-to-shame path and the coefficient of the shame-to-withdrawal path (MacKinnon et al., 2002) and then used the Monte Carlo simulation method with 20,000 replicates to produce the 95% confidence intervals (hereinafter called “CI”) by R version 1.3.1093. Supporting hypothesis 2, abusive supervision did have a significant indirect relationship with withdrawal via shame ($ab = 0.02$, 95% CI = [0.01, 0.07]; excluding zero; See Table 3).

Hypothesis 3 predicts that high construal level attenuates the positive relationship between shame and work withdrawal. Therefore, we expect the interactive effect between shame and construal level on withdrawal to be significant and that the positive relationship to be weaker when construal level is high. Results of model 2 in Table 2 indicate that the direct and positive effect of shame on withdrawal was approaching statistically significant ($b = 0.06$, $p = 0.05$); meanwhile, the interactive effect of shame and construal level was significant in predicting withdrawal ($b = -0.06$, $p < 0.05$). We plotted this interaction in Figure 2. As depicted in Figure 2, low construal level significantly enhances the positive influence of shame on withdrawal ($b = 0.10$, $p < 0.05$), verifying its role of “last straw” that breaks the abused subordinates’ “back,” while if the abused subordinates’ construal level is high, abusive supervision is not likely to break their “back” ($b = 0.05$, n.s.), supporting hypothesis 3.

Hypothesis 4 proposes the moderating role of construal level in the indirect relationship between abusive supervision and work withdrawal through shame. Similarly, we expect this indirect relationship to be stronger among subordinates



with lower construal level and weaker among those with higher construal level. As shown in model 2 of **Table 3**, the indirect effect of abusive supervision on work withdrawal through shame was stronger among subordinates with low construal level ($ab_{low} = 0.022$, $CI[0.00, 0.04]$). For those with high construal level, the indirect effect ($ab_{high} = 0.015$) was not significant with the confidence interval $[-0.01, 0.04]$ containing zero. Besides, the difference in conditional indirect effect was significant at a p value of 0.045 ($ab_{high-low} = -0.01$, 90% $CI = [-0.01, -0.00]$). Hence, hypothesis 4 received support.

DISCUSSION

Our study aims to investigate why and when abusive supervision positively correlates with work withdrawal. We drew upon the theory of the cognitive-affective processing system and identified an emotion mechanism of shame underlying this positive relationship. The results of our study indicated that abusive supervision usually energized subordinates' hot system which aroused their feelings of shame because of the negative implication of self-concept and drove them to respond impulsively, i.e., withdraw from work. But the results suggested that not all subordinates responded the same way. Those with higher construal level responded less impulsively to the emotion of shame, because their construal level empowered them to better control themselves and inhibited the hot system from continuous working. However, the moderating effect of construal level on the indirect relationship between abusive supervision and work withdrawal was only significant among those with low construal level. In spite of the insignificance of its moderating effect among those with high construal level, the differences in conditional indirect effect were significant.

Theoretical Implications

Our study significantly contributes to the extant literature by providing a new perspective on subordinates' emotional and behavioral responses to abusive supervision. Prior literature on CAPS stresses the pivotal role of the cool system in cooling the impulse down when individuals are faced with the temptation of immediate gratification (Metcalf and Mischel, 1999). However, our study expands the literature by empirically proving that the cool system also works in terms of helping individuals overcome obstacles and suppress their need for the immediate release of negative emotion. Additionally, by investigating the moderating role of construal level, our study furthers the current understandings of the boundaries under which these two systems operate. Given the significant moderating effect, construal level has been proven to be one of the determinants of hot-versus-cool-system dominance.

Our research contributes to the literature by uncovering the unique role of the emotion of shame in mediating the effect of abusive supervision on work withdrawal. This contribution is important because most studies ignored the emotional response of shame to abusive supervision. Despite that a limited number of studies (Peng et al., 2019; Kim et al., 2020) have examined this salient emotional reaction, they did not connect feelings of shame with work withdrawal, which was considered to be a shame-focused coping style (Yelsma et al., 2002).

The current study broadens our knowledge about construal level and its moderating role in the relationship between abusive supervision and work withdrawal through the emotion of shame. Wiesenfeld et al. (2017) held that CLT had implications for motivation in terms of impacting what people do and the intensity with which they do it. The application of construal level as a moderator in our study suggested that construal level played a crucial role in explaining why individuals respond differently to threats to their sense of self such as abusive supervision. First, construal level affects whether individuals prioritize desirability or feasibility. Second, it impacts whether individuals put their long-term concerns first or not. Third, it influences whether individuals represent stimulus in a hot way or in a cool way. In a word, CLT sheds light on why some subordinates exhibit more perseverance and resilience than others do when feeling ashamed, elicited by abusive supervision. In this sense, our study answered the recent call for research on the relationship between construal level and perseverance in the service of long-term goals (Wiesenfeld et al., 2017).

Practical Implications

In addition to the above theoretical implications, our study also yields some practical implications. First, our findings replicate the detrimental effect of abusive supervision on subordinates, which is once again a wake-up call for leaders to be cautious about the harmful impacts of their abusive supervision and to take effective actions to eliminate its occurrence in their management practice. Second, organizations should develop regulations and codes of conduct

specifically for leaders to avoid any form of destructive supervision. To what extent leaders' behaviors are compliant with the codes of conduct should be considered as an appraisal criterion for leaders' performance. Besides, organizations should warrant a system in place to ensure subordinates' voices of depression are heard. Otherwise, the subordinates may be worn out by abusive supervision except for those with high construal level. Third, our study proves the buffering impact of construal level, which reminds organizations of measures that can be taken in order to reduce the harmful influence of abusive supervision. Specifically, HR managers should include candidates' construal level into the selection criteria and design more training programs to elevate employees' construal level, which is conducive not only for organizations to minimize the potential harm to employees but also for employees to become more perseverant in the pursuit of their long-term goal.

Limitations and Future Research

As with other studies, our study is subject to some limitations which offer directions for future research.

First, we cannot make a causal inference with a survey design. Nevertheless, we collected data using surveys from different sources (subordinates and leaders) at different time points (two times points with one-month interval). But we still encourage future research to apply multiple methods, including but not limited to experience sampling method (ESM) and experimental design. With ESM, researchers are in a position to observe the daily fluctuations in individuals' perception of abusive supervision and their levels of shame which aid in detecting subordinates' transitional trajectories between the hot and cool systems. With experimental designs, researchers are safer to draw causal inferences. Besides, with experimental designs, researchers can apply various methods of manipulations so that they will not be bothered by the relatively low value of Cronbach's alpha of the construal level in this study, which may be caused by the careless response, reversal ambiguity due to the inclusion of reverse coding items (Weijters and Baumgartner, 2012), and translation nonequivalence due to linguistic and cultural differences (Chang et al., 1999). Therefore, we recommend future research applying more methods of manipulations in the experimental design or doing more pilot studies or analyses of psychometric properties to validate the measure of construal level.

Second, we tested only one negative behavioral outcome of abusive supervision under the theoretical framework of CAPS which delineates the control of two separate systems on individuals' affect and cognition (Metcalf and Mischel, 1999). When the cool system is dominant, individuals exhibit rational behavioral responses so that they are liable to persist in the pursuit of long-term goals in the face of obstacles (Metcalf and Mischel, 1999). Along this line, future research that looks to extend our findings could explore positive behavioral reactions to abusive supervision such as work engagement, creative performance, or job performance in general, demonstrating individuals' ability to construe

events rationally and control themselves from behaving impulsively.

Third, our study focused on only one emotional mechanism that has been proved to have a close association with withdrawal, an avoidance-oriented behavioral reaction. Future research is encouraged to find mediating effects of other avoidance-oriented emotional reactions to abusive supervision (Zhang et al., 2019) such as fear. Besides, future research could give more consideration to individual differences and explore the moderating role of individual differences such as personality traits in the relationship of abusive supervision with emotional responses, for abusive supervision may induce discrete emotions in different individuals. For instance, if the subordinates are high in conscientiousness, when they are abused, they are more likely to feel guilt rather than shame due to the close association between conscientiousness and guilt (Fayard et al., 2012), but they are less likely to withdraw from work due to their features of high responsibility and impulse control (Fayard et al., 2012). But for the subordinates high in Machiavellianism, when they are abused, they may be more likely to feel angry rather than shame and exhibit unethical subsequent behaviors rather than just withdraw from work (Greenbaum et al., 2016).

Finally, we theorized the moderating effect of construal level on the indirect relationship between abusive supervision and work withdrawal through shame. However, our study did not encompass a variety of discrete emotions (e.g., anger and guilt) that are frequently provoked by abusive supervision. Since high construal level plays a critical role in promoting self-control (Fujita et al., 2010). We have every reason to believe that construal level might be equally functional in controlling individuals' other negative emotional reactions. Hence, we urge future research to explore more possibilities of construal level. Additionally, CLT suggests that four distance cues including temporal, spatial, social, and hypothetical distance initiates high construal level, which in turn distances people from things psychologically (Trope and Liberman, 2010). Future research is also encouraged to examine whether these four distance cues additively or interactively combine to influence individuals' emotional and behavioral reactions to abusive supervision.

CONCLUSION

Negative consequence of abusive supervision is not a new research topic. But it remains unclear how the abused subordinates respond cognitively and emotionally to abusive supervision, what mechanisms underlie their responsive behaviors, and what boundary conditions of these relationships are. Our study answered these questions by integrating the theory of cognitive-affective processing system and that of construal level. We found that abusive supervision was positively correlated with work withdrawal through the emotion of shame and that this indirect relationship was only significant for those subordinates with low construal level, indicating that subordinates' low construal level might

be the “last straw” that breaks the abused subordinates’ “back.” Our study is not an attempt to justify abusive supervision, but rather we hope that our research will arouse more scholarly attention to the buffering effects of subordinates’ construal level on the negative outcomes of abusive supervision.

DATA AVAILABILITY STATEMENT

The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

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RG and BL contribute to the content of the article and agree to be accountable for it. All authors contributed to the article and approved the submitted version.

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Crowdfunding Curriculum Design Based on Outcome-Based Education

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Entrepreneurship has flourished in recent years; however, since education on how to raise funds has received little attention from scholars, obtaining funds remains a difficult task. The development of crowdfunding has provided new opportunities to entrepreneurs, thus solving the funding, marketing, and distribution problems they previously faced. The main purpose of this study is to organize crowdfunding literature and to develop a crowdfunding curriculum grounded on output-based education. Students are asked to develop a product and a crowdfunding plan within the span of one semester. This study explains the teaching content separately from the crowdfunding plan competition, course elements, and timetable.

Keywords: curriculum design, outcome-based education (OBE), crowdfunding, entrepreneurship, entrepreneurial ventures

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INTRODUCTION

Crowdfunding as a practice has flourished in recent years and has become a new way for entrepreneurial ventures, or even individuals, to obtain venture capital (Kazakeviciute et al., 2016). It is an Internet-based financial model which supports entrepreneurs' efforts in raising funds for their projects from a relatively large number of individuals, rather than *via* traditional financial intermediaries (Tuo et al., 2019). The market size of global crowdfunding in 2019 was estimated to be approximately US \$30 billion; it is further estimated that, from 2021 to 2026, the compound annual growth rate will exceed 16% (Mordor Intelligence., 2021). The same report indicated that in 2019, 6,445,080 fundraising campaigns were held globally.

Some scholars have focused their fundraising research on key success factors (Simon et al., 2019; Zhang et al., 2020; Wang et al., 2021), investment motivations (Liang et al., 2019; Wang et al., 2022), delivery performance (Tuo et al., 2019), and funding types (Figueroa-Armijos and Berns, 2021). However, crowdfunding education have received less attention from researchers than entrepreneurship education (Vealey and Gerding, 2016; Luo et al., 2018; Ruget, 2019; Shneor and Flåten, 2020).

Many universities and colleges currently offer diverse programs in entrepreneurship. When students identify unmet needs, they develop creative problem-solving products or services to discover potential business opportunities. However, the enthusiasm of individuals or teams alone can only transform ideas into prototypes; if there is a lack of funding, these ideas cannot be commercialized. Therefore, due to limitations in knowledge, resources, and experiences, many new entrepreneurs face higher failure rates than their older counterparts (Stamboulis and Barlas, 2014). The crowdfunding platform is an emerging model of Internet finance, providing entrepreneurs with new opportunities to solve the problems regarding funding, marketing, and distribution.

Before commercializing their ideas, entrepreneurs thus have a chance to obtain funding during the ideation, creation, or post-production stages.

Through crowdfunding, founders can realize diverse goals, including fundraising, demand testing, and marketing. Funders are able to propose existing ideas to seek financial support from backers (Copeland, 2015). They can observe users' responses directly on the Internet, interact with consumers, and compete to test the market without distributing a large number of goods at once. On crowdfunding platforms, backers are characterized by diversity in backgrounds, high levels of education, and high degrees of professionalism. If the backers of the platform are not interested in a particular project—and this results in a deficiency of demand—there will be no need for founders to invest additional funds or efforts. Crowdfunding has also been used for marketing purposes, to generate demand for new projects in their early stages. Backers can be used to test consumers' responses to products and may help entrepreneurs identify the market prospects facing their products or projects. This can also cultivate early users' sense of belonging to products or projects. It is particularly important for industries in which projects seek to create an ecosystem for free products (Mollick, 2014). Hence, how the founder designs the crowdfunding campaign becomes very important. Crowdfunding campaigns that lack academic consideration do not necessarily reduce the writing quality on the platform (Copeland, 2015). Crowdfunding curriculums, however, can help students develop a better and systematic understanding of how to raise funds, demonstrate demands, and engage in marketing. Therefore, crowdfunding education can help students be ready for the evolving nature of contemporary entrepreneurial work.

The curriculum of this paper adopts the principles of outcome-based education (OBE). Students are asked to develop a product and a crowdfunding plan over one semester. OBE originated out of behavioral learning theory, with a focus on observable behaviors. It has been defined as “clearly focusing and organizing everything in an educational system around what is essential for all students to be able to do successfully at the end of their learning experience” (Spady, 1994). The concept of OBE provides the structure and system for a learning outcome-driven curriculum; the role of student-centered education in achieving the objectives and requirements of the curriculum is clear. Making a direct connection between curriculum, objectives, and requirements is a critical first step.

The main objective of a course based on such a curriculum would be to provide learners with practical experience so that they can understand the work required to initiate crowdfunding campaigns—this includes developing new products, writing project descriptions, making videos, and engaging in fundraising on crowdfunding platforms. The students will have a preliminary understanding of how to launch crowdfunding campaigns before raising funds online. The literature on online crowdfunding is growing rapidly, and scholars are devoted to studying and explaining the factors in the success of such endeavors. For example, Tafesse (2021) referred to theoretical insights from the advertising communication literature and employed a dataset of more than 8,000 reward-based crowdfunding campaigns to

test the effects of communication strategies on the campaigns. Eiteneyer et al. (2019) claimed that inviting clients to participate in the innovative activities of entrepreneurial ventures can significantly increase the success rate of crowdfunding for new products. This study will extract the main research topics from journal articles that will be regarded as potential teaching content.

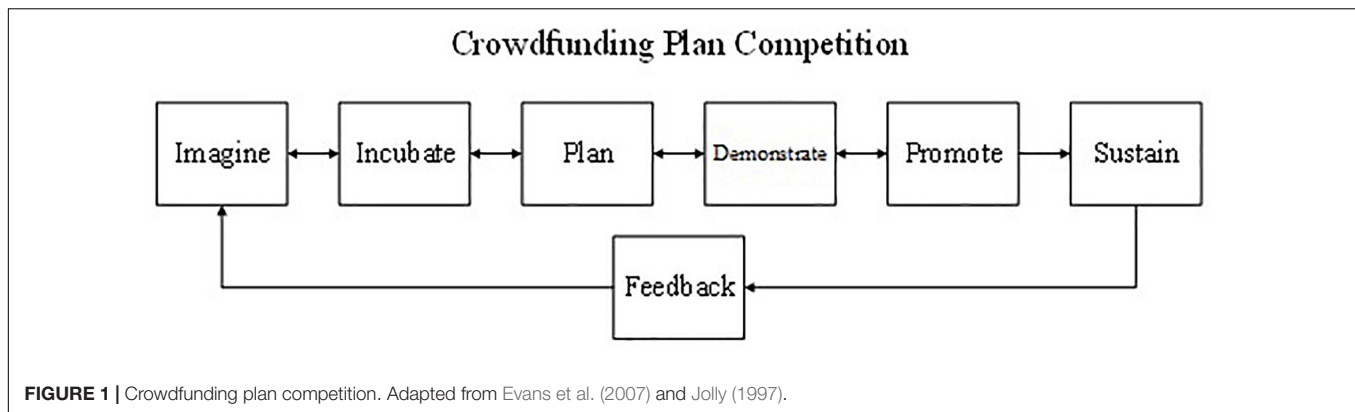
Crowdfunding campaigns can be generally classified into four types: donation-based, lending-based, equity-based, and reward-based (Figuerola-Armijos and Berns, 2021). Reward-based crowdfunding is most commonly used, accounting for 74% of the industry share in 2019 (Valuates Reports, 2019). Therefore, based on OBE, the design of the course focuses on reward-based crowdfunding campaigns. The rest of the article is organized as follows. Section “Crowdfunding Course Overview” explains outcome-based competition activities and teaching objectives. Section “Content of the Crowdfunding Course” introduces the development of the crowdfunding curriculum and its content. Finally, section “Conclusion” proposes some pedagogical implications and concludes the study.

CROWDFUNDING COURSE OVERVIEW

Crowdfunding Plan Competition

This course integrates the technology commercialization model of OBE and Jolly (1997) to develop students' competencies in product development and crowdfunding. Outcomes in the OBE concept are not grades, but competencies that students have at the end of their learning journey (Spady, 1982). These competencies include knowledge and understanding (cognition), practical skills (skills), attitudes and values (affection), and individual behavior (Gullickson, 2003). The course project results can be divided into multiple sub-tasks, and the sub-tasks must be related to each other and show the staged output results. This task structure helps students know what they need to do and stay focused and understand why the task is being done. As students try to understand the task, they design solutions and turn them into action plans (Rao, 2020). An important difference between OBE and traditional education is teaching feedback (Ansari and Usmani, 2018). Feedback is a mechanism that drives student progress, leading to better and more effective learning experiences (Wu et al., 2012). Jolly (1997) believes that innovation commercialization refers to a series of processes from the generation of innovative technology to the entry of products, embodying the new technology into the market. He analyzes the innovation value chain from the perspective of product life cycle, and proposes five stages of commercialization, including imagination, cultivation, physical display, promotion, and sustainability. Only innovations that can improve corporate profitability are successful innovations, which depend not only on the technological R&D capabilities of the company but also on the subsequent excellent commercialization process.

Based on OBE, this course slightly modifies the technology commercialization model, adding planning and feedback. Students who enrolled in this course were asked to develop their products and crowdfunding plans through three rounds of competitions. In each stage, clear learning objectives



and outcomes were arranged. Only by allowing students to constantly act and reflect in the process of practice will they obtain results and abilities. The procedures used in the crowdfunding plan competition are shown in **Figure 1**. We provided opportunities for product development before the stage in which formal crowdfunding plans were prepared, allowing learners to complete their proposals step-by-step. The following points will explain the procedures:

1. **Imagining:** This is the process of value generation and the beginning of the creative process. It involves activities such as identifying unmet needs in the market or the deficiencies of existing products and innovatively proposing patent ideas or new products or services to meet these needs.
2. **Incubating:** A wide range of stakeholders work together to prove the feasibility of the idea. At this stage, concepts and ideas form a prototype, which is then continuously improved and commercialized.
3. **Planning:** The course module requires carrying out different types of planning for products, descriptions, and videos, among others. The main objective of this stage is to use innovation and creativity in planning.
4. **Demonstrating:** In class, each group demonstrates its plan and innovation idea. The crowdfunding plan is continuously refined through the three rounds of elevator pitches until a good plan is formulated. This stage aims to cultivate students' teamwork, integration, improvement, and expression competencies.
5. **Promoting:** Through enthusiasm and appropriate preparation, each team promotes its plan to the reviewers or even to crowdfunding platforms and potential sponsors later. The main objective of this stage is to quickly convey to the reviewer or sponsor, the advantages of the product and evoke their interest.
6. **Sustaining:** The most important purpose of crowdfunding is to raise funds to make products. The products must be produced and delivered to the sponsor; otherwise, the funds will be refunded. Founders should continuously carry out incremental research and development to improve existing technologies and achieve sustainability.

Teaching Objectives

The components of the crowdfunding education program are shown in **Table 1**. We have determined a philosophical teaching approach that can guide the “pedagogy, teaching, and learning process” and the roles of participants in the course (Kazakeviciute et al., 2016). This study employed the components of a crowdfunding education program developed by Maritz and Brown (2013), including the objectives, content, pedagogy, and audience. The details are explained as follows:

1. **Objectives:** Teaching objectives refer to the expectations to be met during the teaching process (Maritz, 2017). They are also the basis for teachers' choices of pedagogy, content, assessment, and outcomes. The objectives of the present course are: (1) to learn how to transform ideas into products and demonstrate them in crowdfunding campaigns; and (2) to use marketing plans and network communities to make crowdfunding plans successful.
2. **Audience:** The learners of this course are not required to have previously enrolled in Entrepreneurial Management, and all full-time students can enroll in this course. We encourage learners to form interdisciplinary teams, and if possible, to not limit the members of the teams to students who enroll in this course. The team instructors are not limited to lecturers, and the teams can invite teachers from other disciplines or business experts. Such diversity can provide greater opportunities for mutual learning (Kazakeviciute et al., 2016).
3. **Pedagogy:** Lectures account for 75% of the curriculum, including basic concepts, case studies, crowdfunding process, and crowdfunding plan demonstration. Self-directed learning accounts for 25%, covering new product development, factory contacting, and crowdfunding planning. Lectures, case studies, presentations, discussions, and elevator pitches are the main teaching methods.
4. **Content:** This course focuses on developing entrepreneurial knowledge, skills, and competencies through a greater emphasis on searching for market opportunities and commercializing ideas than on theory-oriented learning. The teaching content is divided into four modules: development of entrepreneurial projects, project descriptions for crowdfunding, video production, and

TABLE 1 | The components of a crowdfunding education program.

Dimension	Description
Objectives	Acquiring knowledge that is closely related to crowdfunding Learning how to move from idea, to product, to crowdfunding Understanding the strategies, operational methods, risks, and benefits of crowdfunding Understanding the management of network communities Learning from cross-disciplinary and practical experience
Audience	Full-time undergraduate and graduate students
Pedagogy	75% lectures and 25% self-directed learning
Content	Basic principles of crowdfunding, product development, innovation, and marketing
Assessment	Elevator pitch 75% and term paper 25%. Rating for elevator pitch according to the teams' entrepreneurial proposals and the demonstration of crowdfunding campaigns. The final report is graded by the instructor.
Outcomes	Knowledge about product development and crowdfunding behaviors are usually derived from group work on interesting real-world projects.

Based on Maritz and Brown (2013).

entrepreneurial sustainability. These teaching contents are organized by relevant literature.

5. Assessment: Course grades consist of three rounds of team lift competitions (75%) and individual final reports (25%). In the competition, each round accounts for 25%, and the points come from two evaluation systems. The first assesses the learners' coursework delivery and content (10%), and the second is the peer rating of the elevator pitches (15%). In the first system, the instructor assesses the white paper delivered by the learners, which includes the final drafts of the product proposal, project descriptions for crowdfunding, video design, and the crowdfunding proposal. In the second system, students rate the elevator pitches of other groups. The instructor ranks the ratings after averaging them and assigns scores across different ranges of ratings. This design allows learners to not only understand the advantages of other groups' approaches, but also improve their own approaches. The personal final report consists of the practical training process record (15%) and learning experience (10%) and is scored by the instructor. The record of the practical training process includes the purpose, time arrangement, content, difficulties encountered, and solutions. The learning experience must be combined with professional knowledge to summarize the feelings, experiences, gains, opinions, and suggestions during the training period
6. Outcomes: Three rounds of elevator pitches are to be presented during lectures. Each round focuses on coherent modules with different content. Students will be asked to formulate a crowdfunding plan through simple group exercises and demonstrations.

CONTENT OF THE CROWDFUNDING COURSE

Development of Teaching Content

Previous studies have discussed how to be successful *via* crowdfunding from a number of different perspectives such as new product development (Chan et al., 2021; Roma et al., 2021; Wu and Chen, 2021a), crowdfunding project design (Moradi and

Badrinarayanan, 2021; Felipe et al., 2022), multimedia and social media (Datta et al., 2019), and financial sustainability (Gamble et al., 2017). This study organizes the above into modules, contents, and references (Table 2).

Teaching Content

Outcome-based education divides teaching activities based on two categories: teachers and students. The teachers are expected to achieve training objectives that target five competencies: self-directed learning, hands-on experience, team communication and cooperation, problem analyzing and solving, and innovation. Meanwhile, learners are expected to meet project requirements, complete the prescribed assignments, and attain a certain level of innovative achievement. Based on Table 2, the crowdfunding curriculum is divided into four stages, which are presented in the course timetable (Table 3) for the semester.

During the first stage (Weeks 1–5), the instructor introduces the course content, explains the semester's three-round group competition, and asks students to shift from a merely "thinking"-based learning approach to "practical" learning. Then, the instructor explains how to recognize market opportunities and imagine and design services or products in an orderly manner. Students form teams and observe market demands. Then, based on imaging and design, they propose solutions. Sustainability and innovation are important considerations when designing a product (Wu and Chen, 2021b). Entrepreneurs who are sustainability- and innovation-oriented can be more successful at crowdfunding (Chan et al., 2021). In Week 5, each team needs to, quickly and briefly, explain their business ideas, novel factors, and key differentiations with competitors. The length of the presentation is limited to 1 min, with a maximum of three slides. Other teams will rate and give feedback on the presentation. After completing this module, learners will be able to design product or service prototypes.

The target customers of a product can be identified through crowdfunding platforms. During the second stage (Weeks 6–10), the lecturer explains the key components and sponsorship aspects of crowdfunding campaigns. By discussing the product description examples in terms of different qualities, students will understand what makes information appealing and develop effective communications for a crowdfunding campaign.

TABLE 2 | Crowdfunding curriculum development.

Module	Content	References
General information	Crowdfunding platform	André et al., 2017
	Entrepreneurship team	Gafni et al., 2019
New product development	Opportunity recognition	Eiteneyer et al., 2019
	Innovation orientation	Datta et al., 2019; Sahaym et al., 2021
	New product development	Roma et al., 2021; Sahaym et al., 2021; Tafesse, 2021
	Sustainability	Chan et al., 2021
	Product cost	Liu et al., 2021
Crowdfunding project design	Project descriptions	Burtch et al., 2013; Yuan et al., 2016; Moradi and Badrinarayanan, 2021; Tafesse, 2021
	Price and rewards	Liu et al., 2021; Felipe et al., 2022
	New project revision	Cornelius and Gokpinar, 2020
	Funding target	Liu et al., 2021
Multimedia and social media	Photos	Tafesse, 2021
	Videos	Gafni et al., 2019; Tafesse, 2021
	Social media	Datta et al., 2019; Sahaym et al., 2021
	Customer	Eiteneyer et al., 2019; Cornelius and Gokpinar, 2020
	Communication	Chan et al., 2021
Financial sustainability	Financial sustainability	Gamble et al., 2017
	Product delivery	Tuo et al., 2019

Sponsorship is the act of participating financially in a project where the backer provides a certain amount of funding to the proposer and receives substantial rewards related to the project. Student teams work on a crowdfunding proposal, determining the target amount, product description, and plan to reward consumers. When setting the target amount for crowdfunding, students must consider the cost of the reward plan. Project title, project content, team introduction, commitment, and risks are essential components of project descriptions. Factors such as frequent updates can contribute to successful outcomes, whereas spelling errors will reduce the success rate (Mollick, 2014). A reward plan consists of one or more reward projects. The ingenious arrangement of the components and pricing of reward plans can help backers make choices. In Week 10, each team needs to introduce their project descriptions. The length of the presentation is limited to 3 min, with a maximum of six slides. Other teams give their ratings and feedback on the presentation. When this module is over, learners will be able to design a plan that either resonates with the target audience or creates a perception of need.

In the third stage (Week 11–15), the lecturer explains the essential elements of videos and the management of social media, addressing the question of how to make a project video that can clearly convey the ideas to sponsors; this is done by discussing examples of videos with different qualities that will help students understand the process behind good videos. Social networking has an important role in funding entrepreneurial ventures, as crowdfunding is, by nature, a highly socialized behavior. A study on the relationship between crowdfunding sponsors and proposers revealed that the number of friends on online social networks positively correlated with success (Mollick, 2014). Therefore, before the project is opened for online fundraising, it is best to cultivate a group of fans who

are concerned about the project. Based on their products and potential sponsors, learners start to plan the themes and scripts of the video, including purposes and plots. A crowdfunding video usually focuses on a specific “purpose,” which serves as the core principle for developing all the scenes and scripts. In addition, for proposers, a fan club is a medium for engaging with the public, directly connecting the project and the crowd. Before the project goes online, it is recommended to draft 1–2 months of posts and appropriately plan their themes and contents. In Week 15, each team should introduce their crowdfunding plan within 3 min. Other teams provide ratings and feedback on their presentations. After completing this module, students will be able to develop a crowdfunding proposal to attract sponsors.

In the final stage (Week 16), the lecturer explains how to maintain financial sustainability and product delivery performance. A major advantage of crowdfunding is the feedback received from backers, which can strengthen the two-way communication between founders and those providing support (monetary and otherwise). Continuous improvement in products or crowdfunding campaigns is required to realize financial sustainability. Finally, students are encouraged to use their plans to raise funds on crowdfunding platforms after the course. The course is subsequently concluded.

Outcomes

Through this course, it is hoped that the student teams can explore market opportunities and innovatively develop a new product or service. It is difficult to develop a new product or service in a short amount of time. However, the lecturer can provide examples to illustrate how entrepreneurs put forward entrepreneurial plans to help students think and develop. For example, yak is a special local livestock originating from the

Qinghai-Tibet Plateau. An entrepreneur, Danma, found that the vitamin A and fat contained in yak milk can moisturize skin and promote epidermal metabolism. With this understanding, she made handmade soaps using yak milk without additives, going on to sell the product across the world. Another social enterprise, NORLHA, found that Tibetans seem to have neglected other uses of yak wool, which had the potential to produce extreme wealth and which had accompanied Tibetans for over a thousand years. After cleaning and depilation, yak wool is woven into textiles, lending surprising softness, warmth retention, and durability. These exquisite fabrics are now popular among major brands and top designers.

Our aim is to lead students to study in teams through a crowdfunding plan competition. We emphasize and attach importance to the learning process and crowdfunding plans, rather than the actual crowdfunding. A key challenge in the development of crowdfunding is to provide students with meaningful opportunities to raise funds and allow them to learn how to become resilient and capable by carrying out this

work. However, as a by-product of students' efforts, the lecturer may be able to see a small number of feasible "products and crowdfunding plans." Teachers can encourage and guide these student teams to continue with their crowdfunding process.

CONCLUSION

This article focuses on encouraging and educating student teams about the process of creating a matched crowdfunding plan for market demands and products. A team must show market and economic sustainability for their plan to have the opportunity to raise funds successfully from crowdfunding platforms. Hopefully, every student taking this course will be able to achieve this goal. Furthermore, this study can influence our methods of teaching. OBE is akin to learning through actions and producing outcomes. Action-oriented learning is a learning theory which entrepreneurs use to learn by reflecting on the actions they have taken when solving practical problems. Therefore, on the basis of

TABLE 3 | Timeline of the course.

Dates	Instructor	Students	Deliverables
Week 1	Explanation of crowdfunding campaigns, group competition, and how to recognize market opportunities	Formation of teams (interdisciplinary) and observation of market demands	Crowdfunding campaign competition
Week 2	Introduction to entrepreneurial thinking and ways of finding solutions	Visualization of a solution based on market demands	Draft proposals of the products
Week 3	Explanation of prototype incubation	Designing of prototypes and initiation of search for factories to create samples	Final drafts of product proposals
Week 4	No class. Meet with teams facing difficulties and help them solve their problems.	Self-directed learning and preparing for the first round of elevator pitches	
Week 5	Explanation of the assessment rubric. Offer suggestions and make assessments after the competition.	Presentation regarding market demand and proposal regarding products or services. Delivery of peer rating and feedback.	First round of elevator pitches
Week 6	Introduction to crowdfunding and its working mechanisms	Learners start to plan their crowdfunding proposal	Outline of crowdfunding project descriptions
Week 7	Case studies on marketing plans and crowdfunding	Students conduct case studies on crowdfunding	Drafts of crowdfunding project descriptions
Week 8	Successful professionals to be invited to share their crowdfunding experiences	Learners start to design the webpage on crowdfunding platforms and confirm the production cost with factories	Final drafts of crowdfunding project descriptions
Week 9	No class. Meet with teams facing difficulties and help them solve their problems.	Self-directed learning. Prepare for the second round of elevator pitches	
Week 10	Explanation of the assessment rubric for the second round. Offer suggestions and make assessments after the competition.	Students present their project descriptions for crowdfunding. Peer rating and feedback delivered.	Second round of elevator pitches
Week 11	Introduction to crowdfunding videos and photo productions	Learners start to design the videos and photos for crowdfunding	Draft design of fundraising videos
Week 12	Explanation of social media management and advertisement	Website and social media management. Confirmation of the production schedule with factories.	Final drafts of fundraising videos
Week 13	No class. Meet with the teams facing difficulties and help them solve their problems.	Self-directed learning. Integrating products, photos, videos, pitches, and reward plans with social network sites.	Drafts of crowdfunding proposals
Week 14	No class. Meet with the teams facing difficulties and help them solve their problems.	Self-directed learning. Preparation for the third round of elevator pitches.	Final drafts of crowdfunding proposals
Week 15	Explanation of the assessment rubric for the third round. Offer suggestions and make assessments after the competition.	Students present the final crowdfunding campaign. Peer rating and feedback delivered.	Third round of elevator pitches
Week 16	Explanation of how to maintain the sustainability of products. Encourage excellent teams to raise funds on crowdfunding platforms. Course wrap-up.	Reflection and feedback on this course	Term papers

OBE, we collated relevant literature concerning crowdfunding as potential teaching content, thereby developing a course covering the material on this topic.

This course's development makes four contributions: (1) this article integrates Jolly's model and OBE, and puts forward the process of crowdfunding competition. The former values the commercialization process while the latter focuses on results. We divided the crowdfunding program into three parts, allowing participants to make achievements gradually by running fast using small steps. This allows learners to learn from doing, observe peers and reflect, and develop commercial products and crowdfunding plans; (2) by combining research and teaching, important concepts are extracted from the relevant literature on successful crowdfunding. Topics discussed by scholars are then taught so that students can understand the key factors affecting the success of crowdfunding. The gap between management research and teaching has also received attention from scholars (Burke and Rau, 2010). Thus, this method provides a new path for future course design; (3) differing from other entrepreneurship or crowdfunding courses, this course combines the two so as to induce students to learn from the practical aspects of product development and crowdfunding; and (4) in most courses, students are divided into groups from within the course to carry out activities; this course, however, encourages learners to invite students external to the course in order to form teams. The instructors are not limited to the course lecturer: teachers in the fields related to the entrepreneurial projects can be invited. This crowdfunding course is built as a platform for multidisciplinary interactions, thereby enhancing interdisciplinary thinking (Kazakeviciute et al., 2016).

The crowdfunding plan competition is not only an integral part of product commercialization, but also an educational mechanism concerning the development process of fundraising. It can, thus, build a bridge between "products, crowdfunding plan competition, and entrepreneurship." The most important factors regarding this process are innovation and creativity. Throughout the stages of imagination, incubation, planning, display, promotion, and so on, students are required to draw upon their innovation and creativity.

In the teaching goals, the teaching philosophy methods can be changed according to the teachers' plans. For example, if teachers feel that there is not enough class time, they can use autonomous learning to supplement students' development for the purposes of the course. At present, assessment is conducted by teachers and students. The lecturer can introduce experts from the platform, consumers, and business circles to conduct assessments. This course does not require the student teams to actually raise funds. The main reason being that it is difficult to develop good products within one semester. If conditions permit, teachers can set the requirements in the course arrangement period, but the teaching progress may need to be rescheduled.

The teaching content is mainly derived from the extant body of literature concerning crowdfunding. For the lecturer, this is a dynamic process. With the development of research, teachers can add or remove some content, or can designate some content as autonomous learning content. We have also tried our best to encourage students to seek out team members

outside of the course's enrolled class members so as to form interdisciplinary teams. This can assist and encourage students to learn how to integrate experience, skills and knowledge, and prepare for starting new businesses. Since we encourage students to form diversified teams, the cross-functional teaching team can broaden students' horizons. Students will be exposed to different viewpoints on the process of crowdfunding, and should deal with every problem in this process from multiple perspectives.

The arrangement of the number of teaching weeks can be adjusted according to teachers' plans. It is suggested that the lecturer can add or remove autonomous learning sections to adjust the number of teaching weeks. If previous courses already included entrepreneurship and new product development, and the student teams already have their product conceptions, this course could just focus on how to develop a crowdfunding plan. Crowdfunding course can also be developed into a school year-long program, with the first semester focusing on product development and the second semester focusing on the development of crowdfunding plans. Throughout the course, students can raise funds *via* crowdfunding platforms and obtain the first-hand feedback on their products and services from actual real-world fundraising situations.

This course has not been taught yet, and still needs the input and verification of the authors and additional teachers. The first module and competition process have been taught by the second author and some students taking the course achieved good results in many entrepreneurship competitions. Teaching knowledge and creating knowledge are complementary activities (Burke and Rau, 2010). Therefore, we adopt a new viewpoint, sorting out the themes of the literature on crowdfunding as the potential teaching content. The proposed course design method can be extended and applied to other present and future education fields (Wu and Chen, 2021b).

DATA AVAILABILITY STATEMENT

The original contributions presented in this study are included in the article/supplementary material, further inquiries can be directed to the corresponding author/s.

AUTHOR CONTRIBUTIONS

YW: conceptualization, and review and editing. C-HY: writing. Both authors contributed to the article and approved the submitted version.

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Collapse of Better Place: A Managerial Cognition Perspective on the Failure of an Entrepreneurial Initiative

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The survival of any entrepreneurial initiative depends on a working business model that could create value for the customers and, simultaneously, allow the firm to capture value from what has been created. Despite increased attention to business model research, the understanding of business models' impact on entrepreneurial development is quite constrained. In particular, the question of how an entrepreneurial firm's business model is influenced by its organizational members' managerial cognition remains under-explored. To tackle this research question, we drew a linkage between the business model literature and a managerial cognition perspective to build the theoretical foundation. We used this theoretical lens to investigate the failure of Better Place, an Israeli entrepreneurial company that focused on its proprietary battery-swap electric vehicles. In our findings, we argued that organizational members' managerial-cognition-based conceptual framework is critical to the business model decision-making of an entrepreneurial firm. The discrepant and strongly held conceptual framework may result in misjudgment of environmental changes, especially when emerging-market numbers in an industry are high, and consensus regarding technology innovation in an industry is still lacking. The improper conceptual framework can generate mistaken business models, which further bring about an organizational decline. It is crucial for entrepreneurial firms to learn and improve existing conceptual frameworks and consequent business models by business interaction in the initiative stage if they are to avoid failure. The research outcome paves the way for future empirical studies to contribute to machine learning in the field of cognitive automation, artificial-intelligence-driven smart manufacturing, and sustainable industrial value creation in the era of digital transformation.

Keywords: business model, managerial cognition, entrepreneurial failure, value creation, value capture, case study

INTRODUCTION

Entrepreneurs usually adopt creative ways to seek solutions to customer problems, through which lucrative gains can be realized in business ventures (Ries, 2011; Blank, 2013). This venturing process is characterized by boundary-spanning resource bricolage and mobilization (Reypps et al., 2021) and trial and error (Blank and Dorf, 2012), aiming to develop a business model that could strike an adequate balance between value creation and value capture (Morris et al., 2005;

Sarooghi et al., 2021). From a value-based perspective (Brandenburger and Stuart, 1996), value is a central component in determining an organization's survival and prosperity, including entrepreneurial firms, within which value could be jointly created at different levels while the created value needs to be captured using competition or isolating mechanisms (Lepak et al., 2007).

The development of business models for entrepreneurial initiatives has become an important issue for both researchers and practitioners (Zott and Amit, 2007; George and Bock, 2011; Del Bosco et al., 2019), along with the emerging trend of business model research within the fields of strategy (Wirtz et al., 2016; Foss and Saebi, 2017; Massa et al., 2017) and marketing (Mason and Spring, 2011; Wieland et al., 2017). However, inconsistent definitions and varied conceptualizations constrain our understanding of business models in entrepreneurial contexts. For example, Zott and Amit (2007) considered business models to be activity systems and argued that their design in terms of efficiency and novelty would impact the result of a firm's entrepreneurial initiative, while other researchers pay particular attention to the fit between and among business model elements (Morris et al., 2005; Blank and Dorf, 2012), including customer needs, enterprises' capabilities, and partnerships. Recently, entrepreneurship is seen from a design science view that emphasizes the identification and modifications of artifacts which could lead to a business model that maintains a balance between customer desirability, technology feasibility, and business viability (Ding, 2021; Sarooghi et al., 2021).

With the escalation of interest in business model innovation (Foss and Saebi, 2017; Massa et al., 2017; Lanzolla and Markides, 2021), a cognitive perspective has emerged as an important theoretical lens to look at the development of a business model mainly because past research devotes great efforts to examine exogenous drivers, leaving the managerial cognition under-explored. Interestingly, business models as cognitive schemas are important, yet less investigated to explain an entrepreneurial initiative's success or failure, particularly the latter. This importance lies in which entrepreneurs make sense of opportunities and their environments to take venturing actions (Hill and Levenhagen, 1995; Nicholson and Anderson, 2005), and that entrepreneurs are reflective practitioners (Schön, 1983), whose agency in reflection would drive the pivoting of their business models (Blank, 2013). Due to the need to expand the knowledge of business models as cognitive schemas, we raised this research question as follows: how is an entrepreneurial firm's business model influenced by its organizational members' managerial cognition?

We formed a theoretical lens by combining a managerial cognitive perspective with business model literature and further investigated our research question of how an entrepreneurial firm's business model is influenced by its organizational members' managerial cognition through a case study. The case under study was Better Place, an Israeli entrepreneurial firm attempting to promote electric vehicles (EVs) based on its proprietary battery-swap system. Better Place, which was founded in 2007 and filed for bankruptcy in 2013, served as a suitable case because it had a complete developmental process for exploring

the research question and because sufficient archival data were available to build the case, including the entrepreneur's interviews and speeches in the media. The structure of the rest of this study is as follows: after presenting our theoretical foundation, we explained the rationale for adopting a qualitative case study method, then, and we presented our case findings, followed by a discussion section, an implication section, and the conclusion. A cognition perspective that focuses on managers' mental representations, recognized as schemas (Massa et al., 2017), enables us to provide a deep understanding of the failure of an entrepreneurial business model, complementing the knowledge of business models that take from a rational design and an evolutionary learning perspective (Chesbrough, 2010; Zott and Amit, 2010). The research outcome can also serve as a foundation for future empirical studies that could contribute to cognitive automation, artificial-intelligence-driven smart manufacturing, and sustainable industrial value creation in the era of digital transformation.

LITERATURE REVIEW

An Overview of Business Models

Business models have not only attracted increased attention from business practitioners but also sparked extensive discussions among scholars and researchers. A business model depicts how an enterprise operates in a certain institutional environment (Magretta, 2002), through which the value that underpins the enterprise's survival and prosperity could be created and captured (Teece, 2010). Thus, the development of a business model concentrates on which group of customers to serve by providing what specific offerings can be delivered at an appropriate cost, allowing profits to be generated (Osterwalder and Pigneur, 2010). That is to say, the success of a business model hinges on four interrelated elements, namely, key resources, key process, profit formula, and customer value proposition that center around a customer value proposition (Johnson et al., 2008). Seeing business models as realized strategies (Casadesus-Masanell and Ricart, 2010), business model innovation is crucially important for both existing and entrepreneurial firms to gain a strategic advantage in the face of the modern economy (Del Bosco et al., 2019; Abhishek et al., 2021) and even during the pandemic (Crick and Crick, 2020).

Following the study by Timmers (1998), research on business models continues to grow (Lanzolla and Markides, 2021). However, the definitions and conceptualizations of business models remain divergent in extant literature (Wirtz et al., 2016; Foss and Saebi, 2017; Massa et al., 2017). Although a business model is regarded as a cost-and-effectiveness structure (Casadesus-Masanell and Ricart, 2010) and a value-based architecture (Teece, 2010) that describes the functioning of a profit-seeking organization (Magretta, 2002), there are different views on its attainment. To design a feasible and viable business model, both Johnson et al. (2008) and Osterwalder and Pigneur (2010) have paid close attention to the alignment of business model constituting elements (including resources, activities, partners, and channels), while

Zott and Amit (2010) have conceived of a business model as a system of interdependent and boundary-spanning activities that should render important characteristics, including operational efficiency, lock-in effects, complementary products/services, and/or novel process. Additionally, the work of conceptualizing business models has spawned mainly in the domain of strategy (DaSilva and Trkman, 2014; Lanzolla and Markides, 2021), leaving it under-developed in other areas, such as marketing. As Wieland et al. (2017) have emphasized that more efforts should be devoted to advance the understanding and conceptualization of business models in the market, and therefore, they further this movement by infusing the notion of service-dominant logic, which is based on Vargo and Lusch (2016) who stressed that the existence of a firm is to make use of its knowledge and skills to provide a good which facilitates the creation of the customer's own value in a usage context.

It appears that the existing studies of business models tend to overweight the firm-centric resources and activities and downplay the necessary business interaction, which permits the creation and capturing of value in collective actions (Håkansson and Ford, 2002; Kohtamäki and Rajala, 2016). Mason and Spring (2011) have indicated that the business model of an enterprise is closely connected with that of its stakeholders. In other words, the development and execution of one side usually affect that of the other side, which means that enterprises can hardly have business models designed on their own. In a similar vein, Ballantyne et al. (2011) argued that the formulation of a value proposition, a central element of a business model, is not solely performed by the firm itself, but rather through the engagement with its key stakeholders, such as suppliers or customers. Particularly in the coming age of platforms and ecosystems (Jacobides et al., 2018), developing a suitable business model accordingly needs to consider this interactive nature so as to take advantage of interdependence spanning organizational boundaries (Chandna and Salimath, 2018).

A Managerial Cognition Perspective on Business Models

Abundant research on business models has appeared in the scholarly literature over the past decades, within which branches of different thinking are developed. While Martins et al. (2015) have identified three major perspectives being employed in business model research that include rational design, evolutionary learning, and managerial cognition views, Massa et al. (2017) have classified the existing research findings into three interpretations that, respectively, see a business model as empirically grounded reality, managers' mental representations, and a conceptual framework which aims at creating competitive advantage underpinning a firm's survival and prosperity. Nevertheless, both of which have pointed out that the interest in a cognition perspective on business model development has escalated in research. It is fair to say that this emerging trend just reflects a social construction perspective that sees organization behaviors, including the formulation of a business model, as organization members' conversations, interpretations, actions, and reactions occurring in day-to-day social interaction (Bleicher, 1980; Weick, 1995).

Although the rapidly changing environment urges the firms to innovate or redesign their business model, increased attention has been shifted to an endogenous look at managers' mental representations (Martins et al., 2015; Massa et al., 2017; Frankenberger and Sauer, 2019), which affect the design components and their interrelations that constitute a business model. "Business models as managerial schemas" can be seen as a cognition turn in research, which is in parallel development with cognitive perspective in strategy (Gavetti and Rivkin, 2007; Narayanan et al., 2011). A central notion of the cognition perspective concerns that the managers in organizations grasp their surroundings and frame issues based on their individual understanding, knowledge, and experience (Weick, 1995), and thus, their decision-making and strategic actions are conditioned by their interpretations of the world around them (Gavetti and Rivkin, 2007). Based on Martins et al. (2015), business model schemas are seen as cognitive structures that could produce managerial understandings which facilitate the organization of boundary-spanning activities and resources, enabling a firm's creation and capturing of value through managing the architecture of interdependencies. That is, the managerial schemas represent a firm's value creation logic that organizes and structures the content of activities constituting a business model (Zott and Amit, 2010), in order to seize the perceived opportunities (Weick, 1995; Chesbrough, 2010).

Interestingly, Martins et al. (2015) further proposed two strategic processes of schema generation that facilitate the formulation and architecting of a business model; they are *analogic reasoning* and *conceptual combination*. A common ground between the two processes lies in which managers can employ existing knowledge, abstractions, and concepts from a familiar area and apply them to a new area to make sense of novelty and ideate important elements for developing a business model. In a similar vein, the managers, as well as entrepreneurs, are seen as reflective practitioners whose efforts to "make it work" just reflect their perceptions of the world and experience of past actions (Schön, 1983). Such analogic or imagining practices have been deemed a critical approach for entrepreneurs to put their initiatives into engagement with real-life circumstances (Cornelissen and Clarke, 2010; Sergeeva et al., 2021). An example of analogic reasoning practices is vividly demonstrated by, Elon Musk, the founder of Tesla, employment of Apple's stylish computer system as an analog to conceive of his popular EV (Martins et al., 2015).

Extant literature has indicated that business practitioners and managers hold unique *images* of their operational environment (Massa et al., 2017) and even *network pictures* that depict their ways of developing inter-organizational relationships, in line with their individual sense-making of the surroundings, for the attainment of the economic goals (Ramos et al., 2012). This view of network pictures is grounded in the fact that any actors, both individuals and organizations, require to be engaged in interaction with others for their sustainable development (Håkansson et al., 2009), and that the actors' actions and reactions are influenced by their own interaction histories taking place in relational bounds, within which perceptions and understandings are developed (Weick, 1995; Håkansson and Ford, 2002). This interactive perspective emphasizes that a firm's competitive

advantage hinges on its business interaction with others, by which the engaged actors' resources can be combined and their activities can be systematically connected for productive uses, from which the creation and capturing of value are rendered (Baraldi et al., 2007). As a result, network pictures need to be regarded as a crucial part of managerial schemas because these mental pictures are concerned with key components in the design of a business model, including the boundary-spanning resources and activities that are contributed by important partners (Osterwalder and Pigneur, 2010; Zott and Amit, 2010). Moreover, the network picture-infused mental representations are particularly important to competing in the era of platforms and ecosystems (Adner, 2017; Jacobides et al., 2018), due to which the firm's advantage relies on an adequate design of interdependencies that permit value creation in collective and aligned actions. Thus, it is important to have the flexibility to learn and improve the existing conceptual framework so that consequent actions and behavior can be elevated (Hall, 1976; Hall, 1984). Moreover, the persistence of improper conceptual framework does explain organizational decline as a protracted process or a downward spiral despite the abundance of managerial talent (Hambrick and D'Aveni, 1988).

Additionally, in the era of digital transformation, entrepreneurial firms usually confront tasks on how to utilize emerging technologies to perform cognitive automation (Lu et al., 2020; Edwards, 2021) as decision-making support systems to shape and execute their business models accurately and effectively. For example, applications of Internet-of-things (IoT) and artificial intelligence (AI) technologies can help entrepreneurial firms bring about cyber-physical smart manufacturing by automatically sensing, collecting, and analyzing data for decision-making through networking operations, equipment, factories, and personnel (Coatney, 2019; Jones et al., 2020; Durana et al., 2021; Edwards, 2021; Hamilton, 2021; Kovacova and Lăzăroiu, 2021) to enhance overall performance and swiftly adjust to ever-increasing end-user demands at a competitive cost (Keane et al., 2020; Monostori and Váncza, 2020; Popescu et al., 2021). That is a system of cyber-physical smart manufacturing tackles reflections from both the supply and demand sides by the regenerative consequences of dynamic effectiveness (Mikalef et al., 2020; Brown and Gu, 2021) through the use of a responsive self-governing process, which plays a significant role in formulating and implementing business models. In addition, the capability for entrepreneurial firms to robotically, precisely, and predictably validate process signatures and communicate the upgrade of production parameters leads to optimization in quality, time management, and consistent transparency throughout the entire value chain (Lenz et al., 2020; Watkins, 2021), which is crucial to ensure survival and avoid failure in their business operations.

RESEARCH METHODOLOGY

Qualitative Approach

Given the exploratory nature of this research, employing a qualitative naturalistic inquiry is an appropriate method (Lincoln and Guba, 1985), which enables us to study the research

phenomena being embedded in socially constructed reality (Lincoln and Denzin, 2003). The benefits of employing such a discovery-oriented method include the reduction of study manipulation of the research setting and few prior restrictions on what the consequences of the investigation will be (Patton, 2002). To tackle our research question of how an entrepreneurial firm's business model is influenced by its organizational members' managerial cognition, we utilized a single case study to investigate the complexity and complicatedness of an entrepreneurial initiative (Yin, 2009), including the contextual conditions in its unique setting (Myers, 2019), within which the perceptions of involved actors were formed (Weick and Bougon, 1986). In particular, the case study allowed us to concentrate on the influences of time and temporality (Chou and Zolkiewski, 2012), which drove the developmental process of a business model underpinning an entrepreneurial initiative.

Research Case Selection

The case under investigation was Better Place, the focal entrepreneurial company based in Israel, which was chosen under the following considerations. First, the chosen company served as a suitable case for engaging in an intellectual dialogue with business model literature (Yin, 2009), mainly because Shai Agassi, the founder of Better Place, conceived a revolutionary idea of promoting his proprietary electric cars by separating the ownership of car and battery and put it into business practice. Second, Better Place was selected because it was regarded by the media as the most spectacularly failed entrepreneurial start-up of the twenty first century, and thus serves as an archetypal example of entrepreneurial failure. Furthermore, this case permitted us to explore our research question because Better Place had a complete developmental process from its establishment in 2007 to its liquidation in 2013. Since Better Place was famous for its entrepreneurial initiative, an abundance of archival materials was available to build the case, including the entrepreneur's speeches and interviews of its various stakeholders in the media. Therefore, using Better Place as the case is a suitable way to look at entrepreneurial failure from a theoretical lens of business models.

Data Collection and Analysis

This research collected informative archival materials including the transcripts of speeches of the founder, individual, and group interviews in the media, press reports, and relevant seminar and conference materials. A variety of data sources and collection paths also allowed this research to examine questions from more perspectives. Secondary data of individual and group interviews with the media from 2007 to 2020 have been collected. This period covers the entire life of Better Place from its foundation to bankruptcy and several years later, as public opinion reacted. **Table 1** lists individual and group interviews by 42 personnel, which resulted in a total of 65 h 30 min and 44,791 words in length, with 6 categories of interviewees ranging from the CEO of Better Place, company employees, partners, competitors, investors, and industry successors. In every interview, unstructured inquiries and open questions were used to understand the background and experiences of the interviewees as well as their reactions to certain issues.

TABLE 1 | Categories of identities of the persons interviewed by media (2007–2020).

	Category	Number	Note	Length (h/words)	Media
Group interviews	Employees	5	High-level executives, mid-level management, staffs	3'00'' (h) 1,375 (words)	YouTube videos, Financial Times, Ynetnews
	Partners	8	EV manufacturers, vehicle leasing providers, governments, power companies	5'30'' (h) 2,583 (words)	YouTube videos, Green Car Reports, Forbes, Car Advise, The Wall Street Journal
	Competitors	5	Toyota, Autolib, Tesla	4'30'' (h) 1,898 (words)	YouTube videos, The Guardian, Forbes
	Industry successors	6	GM, BMW, Tesla, Renault-Nissan, GreenWay	2'00'' (h) 3,206 (words) 2,495 (words)	YouTube videos, TechCrunch, Forbes
	Sum	24		15'00'' (h)/ 11,572 (words)	
Individual interviews	CEO	1	Shai Agassi	32'30'' (h) 19,688 (words)	TED, YouTube videos, The Washington Post, The Atlantic, cnet.com, The Wall Street Journal
	Employees	3	High-level executives, mid-level management	5'32'' (h) 1,433 (words)	YouTube videos, Forbes, The Jerusalem Post
	Partners	3	EV manufacturers, vehicle leasing providers	4'30'' (h) 4,803 (words)	YouTube videos, The Times of Israel, Israel21c, Green Car Congress, The Wall Street Journal
	Competitors	2	Autolib, Tesla	3'50'' (h) 549 (words)	YouTube videos, Yahoo finance, the Atlantic
	Investors	7	General Electric, HSBC Holdings, morgan Stanley, European Investment Bank, UBS AG, VantagePoint, Ofer Group, Lazard Asset Management, Maniv Energy Capital	0'50'' (h) 4,309 (words)	YouTube videos, Greentech Media, CBS Money Watch
	Industry successors	2	Tesla, Renault-Nissan	3'18'' (h) 2,437 (words)	YouTube videos, Yahoo finance, New York Times, The Atlantic, Globes, Green Prophet, Reuters
	Sum	18		50'30'' (h) 33,219 (words)	
Total		42		65'30'' (h) 44,791 (words)	

During this research, we have also actively participated in various formal and informal activities related to Better Place and the EV industry, including international seminars, and conferences hosted by industrial associations and businesses. Our participation in these activities has served two purposes; one is to collect related secondary data, and the other is to find more potential interviewees. More secondary data have also been

collected from a total of 45 reports published by international media, periodicals, and industrial associations. These reports provide sufficient evidence for historical analysis.

To analyze the relevant case data, we relied on the technique of “segmenting and reassembling the data to convert them into findings” (Boeije, 2010). We employed the procedure suggested by Miles and Huberman (1984) that revealed data reduction,

display, and conclusion verification that are interwoven before, during, and after data collection. Although data from different sources such as media channels do not show all perspectives in common, the utilization of this field-based dynamic research provides an advantageous complement to the data acquired and permits us to narrow the gap between existing data and the relational respects of facts.

We first proceeded with data reduction techniques, guided by the research question: how is an entrepreneurial firm's business model influenced by its organizational members' managerial cognition? We first coded all archival materials we obtained to indicate their source, e.g., speeches of the founder, individual and group interviews in the media, press reports, and seminar and conference materials. Then, we prepared a list to sort all issues reflected and involved in this study. Since the accurate interpretation of events requires an understanding of context, we developed a context table to map descriptions of data with the involved issues. Following that, we focused on issues deemed to have a greater effect on the business models and organizational members' socio-cognition, and a total of 23 such issues were identified. A total of 17 issues were retained because they met critical criteria, while the remaining issues were eliminated for being relatively minor in comparison with the former.

Then, we continued our efforts to create a string of information displays to process the data, which contained a series of role-category matrices arrayed in temporal sequence. For each archival item, we produced a 5×10 matrix that featured the rows presenting the identities of the participants in the interviews and the columns showing the founder's ideas and behavior, partners' ideas, and behavior, the company's strategy and major events, customers' reactions and behavior, and the outcome of the strategy and major events. Then, the main points of various individuals' comments regarding the selected issues were input into each cell, grouped by role categories. We accordingly connected and coded related comments in time sequence to observe the effects. As a consequence, we developed 10 of these role-category matrices arrayed by time series.

Finally, the finished matrices were integrated to build a summarized 5×7 matrix (Table 2) with the rows showing each year from 2007 to 2013 and the columns presenting the founder's ideas and behavior, stakeholders' ideas and behavior, the company's strategy and major events, customers' reactions and behavior, and the outcome of the strategy and major events. Information in each cell marked the major events identified from the previous matrices according to the perceptions of interviewees from individual and group interviews. This display allowed us to trace the evidence of how an entrepreneurial firm's business model is affected by its organizational members' socio-cognition around all major events.

FINDINGS AND ANALYSIS

Better Place's Business Model and Environmental Context

The Israel-based Better Place, founded in 2007, was a venture-backed international firm that developed and rendered

battery swap and charging services for EVs. Its founder and CEO at the time, Silicon Valley entrepreneur Shai Agassi, pledged to change the world by means of service stations where a battery in an EV could be taken out and swapped for a fresh one, extending the EV's driving range within minutes. Agassi's ambition had at first been supported by Israel's President Peres. The Israeli government at that time made commitments to provide government administrative incentives and had also been backed up by one carmaker, Renault-Nissan (which then became Better Place's critical partner in EV manufacturing), as well as certain famous venture capital groups such as Garnoff Venture (was responsible for Better Place's public relations), Maniv Energy Capital, Morgan Stanley, and Vantage Point (which provided strong funding). The value proposition of Better Place, which shaped and formulated the company's business model, was as Agassi described to the media as follows: "*Customers would buy the cars, but Better Place would own the batteries.*"¹ That meant when drivers needed to recharge their EVs speedily, they could proceed to a Better Place station and easily swap their batteries within minutes.

In Agassi's plan, by employing automation software to supervise and manage the recharging stations connected with Better Place, the company would be able to offer electricity for numerous EVs without increasing any power plants or transmission lines. In addition, Better Place's first prototype car was the Renault Fluence Z.E., an electric sedan equipped with a swappable battery in its trunk space that could provide an 80-mile driving range. Better Place's QuickDrop battery exchanging system allowed the battery of Renault Fluence, the only EV disposed of in Better Place's network, to be switched in merely 3–5 min at battery swap stations.

Furthermore, Better Place established its first EV charging station in December 2008 in Cinema City, Israel. The company's network of EV charging infrastructure was based on a cutting-edge smart grid platform that could automatically manage the charging of hundreds of thousands of EVs simultaneously during daily peak demand hours and prevent the network from overloading in the host country. Better Place also encouraged governments to mandate open access and international standards to EV charging stations so as to facilitate competing networks. However, sufficient global consensus in support of this proposal was not achieved.

Although Better Place successfully gained seed funding from venture capitals when it was founded, the initial enthusiasm did not last. Better Place's EV battery swap and charging solutions were competing with many other technologies, all of which were targeting to timely address the most imminent energy problems then, most importantly decarbonization. The industry in which it operated, no matter whether renewable energy or EV, was full of emerging markets where applications of new technologies arose rapidly. Examples included biofuels, wave, tidal, solar energy, thermal storage, smart meters, gas storage, onshore and offshore wind, and hydrogen vehicles. They were so innovative

¹The Washington Post, 6 March 2013. Refer to <https://www.washingtonpost.com/news/wonk/wp/2013/03/06/better-place-was-supposed-to-revolutionize-electric-cars-what-went-wrong/>.

TABLE 2 | Better Place's time line of issues and events.

When the company's major events started to occur	Founder's ideas and behavior	Stakeholders' ideas and behavior	Company's strategy and major events	Customers' reactions and behavior	Outcome of the strategy and major events
2013	The founder stepped down with little influence on the company as one of the corporate board members.	The only partner, Renault-Nissan, saw a dim future for swap-battery EVs and stopped further collaboration with Better place.	1. CEO Evan Thornley stepped down, replaced by Cohen. 2. Withdrew from markets of the U.S., Australia, Japan, and China, and only focused on markets of Israel and Demark.	Customer confidence was severely crushed.	1. The financial status of the company deteriorated. 2. Better Place announced bankruptcy.
2012	Lack of capability for execution.	President Ofer of Better Place's company in Israel disagreed with the founder agassi regarding future markets.	Founder Shai Agassi was requested to step down from CEO position (was still corporate board member), replacing by the CEO of Better Place's branch company in Australia, Evan Thornley.	Lack of will to purchase an EV with doubtful resale value, an infantile network of swap stations, and an inexperienced contract for battery power.	1. Better Place failed to develop a growing EV customer base or create effective strategic partnerships. 2. Better Place was facing a financial dilemma.
2011	Sought to expand the market of Guangzhou City, Canton Province, China.	1. Government of China listed EV as a promising strategic industry. 2. China Southern Power Grid (CSG) and Better Place signed a partnership MOU to form alliance.	Sought to expand the market of Guangzhou City, Canto Province, China.	Lack of will to purchase an EV with doubtful resale value, an infantile network of swap stations, and an inexperienced contract for battery power.	Slow review by local authorities and EV manufacturing problems hindered the market expansion plan.
2010	Sought to expand Australia market.	An alliance was formed between ActewAGL (Australia's power company) to expand the Australia market.	Sought to expand Australia market.	Consumers hesitate to purchase due to potential risks derived from innovation of EVs.	Slow review by local authorities and EV manufacturing problems hindered the market expansion plan.
2009	1. Sought to expand the market of Province of Ontario, Canada. 2. Sought to expand the market of Japan. 3. Tends to employ cronies as top management of the company.	1. An alliance was formed between Bullfrog (a power company in Canada) and Better Place to expand Canada market. 2. Government of Japan supported the setting up of EV charging stations in Japan; an alliance was formed between Nihon Kotsu (largest taxi operator in Japan) and Better Place. 3. Many high-level executive managers of Better Place left the company.	1. Sought to expand the market of the Province of Ontario, Canada. 2. Set up first EV charging station in Japan.	General customers still regarded EV battery swapping and charging as a relatively new technology.	1–2. Slow review of local authorities and EV manufacturing problems hindered the market expansion plan.
2008	1. Sought to expand the Israel market. 2. Sought to expand the Demark market. 3. Sought to expand the market of Bay Area, State of California, United States. 4. Sought to expand the market of the State of Hawaii, United States. 5. Sought to deploy battery swap system and declared that cost would be half the price of a model petroleum fueling station. 6. Sought to use smart software to supervise and manage the EV recharging system; sought to encourage governments to mandate access and to charging networks to boost competition. 7. Was unrealistic, stuck to his own opinions, unwilling to compromise when negotiating with potential partners.	1. Government of Israel lowered the EV sales tax. 2. Dong Energy provided funding to expand Demark market. 3. 4. Governments of Hawaii and California facilitated market development. 5. Only Renault but no other carmakers joined Better Place's big plan. 6. Other potential partners, such as leasing companies, were unwilling to invest large capital into an asset with unclear value. 7. The business models were still so novel that potential partners (car makers, battery manufacturers, swap/charging station manufacturers, power companies, and local governments) hesitated to engage.	1. Sought to expand the Israel market. 2. Sought to expand the Demark market. 3. Sought to expand markets in the Bay Area, State of California, United States. 4. Sought to expand the market of the State of Hawaii, United States. 5. Launched the QuickDrop battery swap system to support the Renault Fluence Z.E. battery. 6. Launched its first functional charging station in Israel. 7. In the process of negotiation with potential partners.	1. The Better Place business model received a lukewarm response from the automotive press. 2. General customers still regarded EV battery swapping and charging as a relatively new technology. 3. Corporate customers hesitated to purchase the EV car because even though the purchase cost declined (due to the reduction of purchase tax), the cost of possession still increased (license tax includes battery usage fee).	1–4. Slow review of local authorities and EV manufacturing problems hindered the market expansion plan. 5. Robotic swap stations were supposed to cost \$500,000 each, but ended up costing \$2 million. 6. Lack of global consensus for governments to mandate international standards and access to recharging networks.
2007	1. EV dream: customers buy the cars while Better Place owns the batteries. 2. Emphasis on infrastructure creation rather than value creation.	Began with strong financial and non-financial support from Israel's President Peres, Renault-Nissan, Garnoff Venture, Maniv Energy Capital, Morgan Stanley, and Vantage Point.	Better Place was founded and venture-backed as an international company with business models to develop and sell battery swap and charging services for EVs.	1. Venture investors were interested in the new business models. 2. Consumers felt the idea was novel and started to evaluate the business model.	Acquired financial investment successfully from venture capitals.

and novel in the industry that the prospects were still hazy and unexpected. There was much disagreement, and consensus failed to emerge regarding which application would prevail in the foreseen future. From a financial perspective, EV battery swap and charging was progressing up the funding maturity curve but remained a relatively emergent technology. That foreshadowed the subsequent difficulties Better Place would face in funding acquisition once they could not make obvious progress with partnership or market feedback.

As for partnership building, as an EV charge point operator, its various potential partnership options, in terms of charging segments, included home, destination, rapid, and workplace charging. For example, in the case of home charging, its partnership options included EV manufacturers, vehicle leasing providers, housebuilders, councils, retail energy suppliers, and renewable energy hardware (such as solar PV and battery storage). For the funding of any go-to-market solutions, they needed to declare a solid and reliable revenue model. Creating profit based on a growing EV customer group was crucial, and strategic partnerships were a key tool to help deliver the growth. However, Better Place neither succeeded in developing a growing EV customer base nor did it create effective strategic partnerships.

A bold attempt in an entrepreneurial initiative but mistaken sense and decision-making amid environmental changes and competition led to an eventual financial crisis at Better Place. A report stated as follows: *“While each swap station would cost \$500 thousand, the then CEO of Better Place, Shai Agassi, declared that the cost would be half the price of a typical petroleum fueling station. . . and it ended up costing \$2 million. Critically, Better Place failed to get any other automaker onboard to design and produce standardized vehicles with swappable batteries, with Agassi alienating such potential partners as BMW and GM. Better Place sold fewer than 1,500 electric Renaults before it was liquidated, with Agassi fired in disgrace in 2012.”*²

Better Place after all filed for bankruptcy in May 2013. After spending approximately US\$850 million in private capital, the company underwent two failed attempts at post-bankruptcy acquisition. In the end, the bankruptcy receivers sold off the last assets to Gnrly for only US\$450,000 in November 2013.

The Interrelation of Better Place's Organizational Members' Managerial Cognition and Its Business Model Performance

Based on **Table 2**, it can be observed that the company's major events, usually derived from strategic changes in its business model, were influenced by its founder Agassi, the management of the company, and its various stakeholders. They are jointly interrelated to influence the firm's decision-making on business model development, which is critical to company performance.

First, **Table 2** shows that the founder Agassi has a tendency to be arbitrary, unwilling to compromise, narcissistic, inclined

to employ cronies as top management of the company, and lacked execution capability. These features triggered his epochal EV dream that customers would purchase the EVs, but Better Place would own the batteries, his emphasis on infrastructure creation rather than value creation, and his ambition to expand into overseas markets such as Israel, Denmark, the United States, Canada, Japan, Australia, and China. All the ideas and behavior of the founder impacted the company's business model and major events.

Second, we also find from **Table 2** that in many major events of the company, the founder was not the only actor whose ideas and behavior could impact the company's decision-making on the business model. The members from its top management and the other stakeholders among its partners, such as EV manufacturers, investors, leasing companies, and local governments, were also important influencers that did much to determine how Better Place would run its business. Their joining even brought new teams and organizational members to Better Place, which could directly carry significant weight concerning the development of the company's business model. For instance, as Better Place was founded in 2007, although the vision of the founder Agassi played a decisive role, various venture capitals and Israeli President Peres were also important driving forces that encouraged the company to go for its great EV dream. Similarly, after Better Place launched operations, when President Ofer of Better Place Israel disagreed with the founder Agassi regarding future markets and the only partner Renault-Nissan took a dim view of the future prospects of swap-battery EVs and stopped further collaboration with the company, Better Place took actions to withdraw from markets in the United States, Australia, Japan, and China, and chose to focus only on the markets of Israel and Denmark.

Third, based on the above, we can figure out that when Better Place was first founded, the views and positions of its influential decision-makers, including the founder and the other stakeholders, were very consistent, which did create a great impetus to move the business forward. However, shortly after it launched operations, management missteps and the failure of Better Place to convince its business partners of its business model led to fragmentation among decision-makers, who had divergent interpretations of company's strategies and business models. This caused Better Place's gradual decline. Clues regarding how Better Place's initial problems resulted from management missteps were also revealed in a report as follows: *“Mr. Agassi focused too broadly on future growth, at the expense of getting early details of the business right.”* and *“As Better Place expanded, Mr. Agassi recruited many software specialists. . . but the company had fewer managers with automotive or infrastructure expertise.”*³

Fragmentation among decision-makers also brought about misjudgment of environmental and market risks. Although a business model focused on a battery-swap station network made the company unique, fascinating, and compelling, unfortunately, each station cost around US\$500,000 to construct. It was unwise

²Lawrence Ulrich, Car Commentator, the IEEE Spectrum's Blog, 13 May 2021. Available at <https://flipboard.com/@ieeespectrum/tech-news-reqm0ejaz/how-is-this-a-good-idea-ev-battery-swapping/a-vqoALEffTAS4cm4KrXlrbA%3Aa%3A1880309793-1cdf047f6%2Fiee.org>.

³Interviews of former employees of Better Place, 2013. Refer to <https://www.washingtonpost.com/news/wonk/wp/2013/03/06/better-place-was-supposed-to-revolutionize-electric-cars-what-went-wrong/>.

to develop an enormous network for merely few users. Without building a complete network, the customers were reluctant to adopt Better Place's industry-leading idea of battery swap for EVs. The chicken-and-egg conundrum can be time and cost-consuming to overcome and perhaps was not even necessary. This just explained why Renault, a well-known French brand, only sold 800 EVs that adopted Better Place's innovative solution in the initial period.

Moreover, an innovator needs a solid foothold to survive in markets. It counts on customer groups willing to adopt the new technology rapidly in the early stage. Better Place had trouble in identifying the foothold it was targeting. The company began with the goal of exploring the markets of Israel, Denmark, the United States, and Australia, but ended up by trimming its ambitions to only Israel and Denmark. Weak support from local authorities also hindered its market expansion plan, which could be seen in an interview of the company officials, where one person stated as follows: *"Local authorities, whose permission was needed to build battery-switching stations, put up unexpected roadblocks, slowing progress."*⁴ Contrast Better Place's approach to that of its French competitor, Autolib, which has established a network of presence throughout Paris where a proprietary EV (the "Bluecar") could be rented by early adopters by the hour. Its strategic focus was so local that the charging station network was sufficient.

In addition, in new markets, the early adoption rate is correlated directly with the extent of risk that customers are taking. Better Place forced consumers to buy an EV with the doubtful resale value, or to lease one from leasing firms assumed to be willing to take the cost of the asset. Furthermore, the company also locked people into purchasing expensive charging stations and using an infantile network. All these resulted in its failure in market penetration. If we contrast Better Place's approach with the way Nissan leased its Leaf EV or the reason why Tesla's EVs required no dependence on charging locations, it is not difficult to find that innovation is rarely so compelling that customers would not refuse to be among those of the early adopters. The Apple's continuous release of its successful new products, including the iTunes, iPhone, and iPad, has taught us a valuable lesson that the leader or management team of a startup needs to prioritize a decision that could generate customers' sustaining dependence on the firm's production solution, followed by a lock-in effect.

It is important to note that revolutionary ideas gain influence if they are realized through a simple product design. However, Better Place was not the case. In the eyes of its founder, peddling Better Place's unique business model seemed to be more important than promoting its vehicles that generated actual incomes. The company's efforts resulted in a lukewarm response from the automotive press. It turned out to become that the innovative seemingly, but yet doubtful offering, in terms of a mediocre vehicle together with an additional contract for electricity, made it hesitate for customers to buy-in. One report interpreted the failure of Better Place as follows: *"The execution of going to market was faulty on several fronts, including failure*

*to fully develop and validate the system in the launch city of Tel Aviv, an aggressive international expansion without having proven the model, and failure to find an effective way of communicating the value proposition to a substantial base of potential subscribers. These are all issues that could have been remedied, however, had financing not been a constraint."*⁵

DISCUSSION AND IMPLICATIONS

Discussion

Our case findings show that an entrepreneurial firm's business model demonstrates how the firm operates in a certain institutional environment (Magretta, 2002) and is interpreted by organizational members (Ring and Rands, 1989; Massa et al., 2017). How organizational members' managerial cognition influences an entrepreneurial firm's business model within this research context can be illustrated by the interrelation of the managerial cognition of Better Place's organizational members and its business model performance. The founder Agassi's personal character, emotions, attitudes, and the capability of sense-making, together with the managerial cognition of Better Place's organizational members, including its top management, partners, investors, and the other influential stakeholders, were inextricably intertwined as a conceptual framework (Massa et al., 2017) that formatted Better Place's business model. Therefore, an entrepreneurial firm's business model is determined not merely by its entrepreneur but is also influenced by its organizational members, including various stakeholders, based on their individual understanding, knowledge, and experience (Weick, 1995) and thus, their decision-making and strategic actions are conditioned by their interpretations of the world around them (Gavetti and Rivkin, 2007). Enterprises can hardly have business models designed on their own. The business model of an enterprise is closely connected with that of its stakeholders (Mason and Spring, 2011). Organizational members, including stakeholders, with their mind representations and conceptual framework, usually employ existing knowledge, abstractions, and concepts from a familiar area and apply them to a new area to make sense of novelty and ideate important elements for developing a business model (Martins et al., 2015). A firm's competitive advantage hinges on its business interaction with others, by which the engaged actors' resources can be combined, and their activities can be systematically connected for productive uses, from which the creation and capturing of value are rendered (Baraldi et al., 2007).

In Better Place's case, as the company's stakeholders, such as its partners, investors, and local governments, increased, they also brought in new members and teams with new expertise, habits, and motivations to the company and added new knowledge to the conceptual framework, which critically commanded the decision-making on the structuring, formation, and execution of its business model. The empirical evidence in this research can be found from the influence of Renault-Nissan, Better Place's only car-maker partner. Renault-Nissan came to have a dim view of

⁴Interviews with company officials, The Washington Post, 6 March 2013.

⁵Harvard Business School Digital Initiative, 10 December 2015.

the future prospects for swap-battery EVs, which caused Better Place to withdraw from a number of foreign markets and reshape its business model.

In addition, owing to the founder Agassi's idealistic character, fragmentation among Better Place's decision-makers, and the breakdown of the conceptual framework shortly after its foundation, it failed to convince its internal members as well as broad partners. As a result, Renault was the only carmaker that joined the big plan. Weak support from local authorities also hindered its market expansion plan. Those factors eventually caused Better Place's crash. Moreover, the business model derived from its conceptual framework (in other cases, such as Nissan and Tesla, their cognition actually guided them to different business models) forced consumers to buy an EV with the doubtful resale value, lease one from leasing firms assumed willing to take the cost of the asset, locked people into purchasing expensive charging stations or using an infantile network of swap stations, causing the failure of the company to develop effective narratives in communication with its internal members, broad partners, investors, and customers, and lead to eventual failure. This proves the importance of business models as schemas organizing managerial understanding of how firms' value-creating activity systems are designed. Organizational members usually not only consider the cognitive aspect (collective and individual) but also the linguistic one (communicating within the organization) (Brown et al., 2005; Martins et al., 2015). This provides empirical evidence that the persistence of improper mental models does explain organizational decline as a protracted process or a downward spiral despite the abundance of managerial talent (Hambrick and D'Aveni, 1988), and it is important to have the flexibility to learn and improve existing mental models so that consequent behavior and actions can be elevated (Hall, 1976; Hall, 1984).

Theoretical Implications

Based on the discussion of our case findings, this research puts forward the following propositions:

Proposition 1: Organizational members' managerial-cognition-oriented conceptual framework based on their interpretations of environments is critical to the business model decision-making of an entrepreneurial firm.

Proposition 2: Discrepant and strongly held conceptual frameworks of an entrepreneurial firm tend to result in misjudgment of environmental changes and cause inappropriate decision-making on its business model.

Proposition 3: Inappropriate decisions are easily made on a business model, especially when emerging-market numbers in an industry are high and consensus regarding technology innovation in an industry is still lacking.

Practical Implications

This research can also provide practical implications for the development of entrepreneurial businesses. In Better Place's case, the company was facing a complex environment with numerous emerging markets where various innovative technologies seeking decarbonization competed. In the beginning under the founder Agassi's cognition and plan, with the early support from its

most stakeholders, it aimed to penetrate the markets of Israel, Denmark, the United States, and Australia. However, owing to a series of subsequent misjudgments of market changes and mistaken decisions on its business models, the company eventually trimmed its ambitions to Israel and Denmark, causing its failure to acquire a firm foothold. Local authorities' unexpected delay in the review also hindered its market expansion plan. At that time, within the industry of either renewable energy or EV, so many novel ideas and business models emerged and competed with each other that consensus regarding technology innovation had been hard to reach. Therefore, we also found that the conceptual framework of an entrepreneurial firm tends to lead to mistaken decisions on business models, especially when emerging-market numbers in an industry are high, and consensus regarding technology innovation in an industry is still lacking. These findings can be viewed as reminders for entrepreneurial businesses to operate cautiously and think carefully when making critical decisions. For instance, savvy entrepreneurial firms may be well advised to take slower steps and not do dramatic experiments with large budgets at the initiative stage of their businesses. Instead, a small pilot, a dry run of a new technique, or a simulation for markets, may be more dependable and secure.

Moreover, if entrepreneurial initiatives are to avoid failure, it is crucial that they have the flexibility to learn and improve existing mental models and consequent business models. Entrepreneurial firms can utilize innovative technologies, such as IoT and artificial intelligence, to facilitate their dynamic work on improving shared mental models through cognition automation. The result of this research can also provide a useful foundation for entrepreneurial firms in constructing machine learning systems to autosense and maintain the optimal conceptual framework to avoid failures and ensure survival.

CONCLUSION AND FUTURE RESEARCH

This research pioneers by explaining the failure of an entrepreneurial initiative through a holistic lens by integrating business models and a managerial cognition perspective. We comprehensively and logically provide clarity on the phenomenon, including the fact that organizational members' managerial cognition and conceptual framework based on their interpretations of environments are critical to the decision-making on the business architecture in an entrepreneurial firm. The discrepant and strongly held conceptual framework may result in misjudging the environmental changes, especially when emerging-market numbers in an industry are high, and consensus regarding technology innovation in an industry is still lacking. The improper conceptual framework can generate mistaken business models, which further bring about an organizational decline. If entrepreneurial initiatives are to avoid failure, it is crucial that they have the flexibility to learn and improve existing conceptual frameworks and consequent business models.

The result of this research provides value both theoretically and practically. Theoretically, the contribution of this research

to the study streams of entrepreneurship is that the use of a managerial cognition perspective that focuses on managers' mental representations, recognized as schemas (Massa et al., 2017), enables us to provide a deep understanding of the failure of an entrepreneurial business model, complementing the knowledge of business models that take from a rational design and an evolutionary learning perspective (Chesbrough, 2010; Zott and Amit, 2010). Practically, the outcome of this research can also be viewed as a reminder for entrepreneurs and practitioners to operate cautiously and think carefully in handling decision-making at initiative stages of business. Entrepreneurial firms that can catch, correct, and learn from failure before others do usually succeed.

This research faces constraints as other studies usually do. First, it is limited to inference only from a single case study, especially under the circumstance that failure in entrepreneurship is pervasive. Second, since Better Place had gone bankrupt in 2013, it also caused difficulty in gathering primary data. However, due to the long engagement of one of these research authors in the case of Better Place, the abundance of existing evidence from archival data still provide a solid research foundation. During the research process, triangulation was conducted as well, including examining the variety of data resources and the challenges and inquiries from the coauthor.

The propositions developed by this study still need more empirical tests on multiple cases in order to form

theories. Future research, whether qualitative or quantitative, is encouraged to go further based on the outcome of this research. Furthermore, learning from failure paves the way to success. In the era of digital transformation, the result of this research can also serve as a foundation for future empirical studies contributing to machine learning of entrepreneurial firms with regard to such fields as cognitive automation, artificial intelligence-driven manufacturing, and sustainable and industrial value creation.

DATA AVAILABILITY STATEMENT

The original contributions presented in this study are included in the article/supplementary material, further inquiries can be directed to the corresponding author.

AUTHOR CONTRIBUTIONS

M-HL and H-HC contributed to the conception and design of the research. M-HL organized the structure, compiled the theoretical background, and wrote the first draft of the manuscript. H-HC collected the data, refined the logic analysis, and examined the interpretations. Both authors contributed to the manuscript revision and approved the submitted version.

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