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# The effectiveness of applying the economic and technological dimensions of the kingdom of Saudi Arabia's vision 2030 to achieve the competitive advantage of the Hail Region

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This research focuses on examining the impact of Saudi Arabia's Vision 2030 on the energy industry, specifically in the Hail region, by exploring the role of technological and economic strategies in fostering sustainable energy development. The study aims to identify key factors that facilitate the implementation of Vision 2030 to assess the current energy landscape in Saudi Arabia. By delving into the economic and technological dimensions of Vision 2030, the research seeks to determine the essential components that the Kingdom of Saudi Arabia needs to establish systems and initiatives that align with global scientific and technological advances, ensuring competitiveness and progress in the global arena. By surveying 60 faculty members from Hail University, the study employs a descriptive-analytical approach to unravel how economic activities and technological advancements collaborate to shape a sustainable and competitive energy sector. The findings highlight the crucial role of technological innovations, including advances in administrative processes, human resource management, regulatory frameworks, and technical infrastructure related to energy efficiency and renewable energy technologies. Furthermore, the study evaluates economic aspects such as labor market reforms, skill development programs, and support for emerging energy enterprises. The results underscore the positive impact of technological and economic interventions on the energy sector in the Hail region, with significant improvements in energy project management efficiency and the creation of a conducive environment for sustainable energy practices. The study reveals that the integration of technological and economic initiatives has led to notable improvements in the energy sector, reflected in average values ranging from 68% to 84%. These results underscore the fundamental role of Vision 2030 in advancing sustainable energy development and underscore the importance of leveraging economic and technological strategies to achieve energy sustainability and competitive advantage. This research contributes to understanding how Saudi Arabia's Vision 2030 is driving progress in the energy industry and emphasizes the importance of integrating economic and technological approaches in shaping a sustainable energy landscape. The findings provide valuable information for policymakers and stakeholders in the

energy sector, highlighting the need for concerted efforts to harness economic and technological advancements to promote sustainable energy development. By showcasing the transformative impact of Vision 2030 on the energy sector in the Hail region, this study underscores the originality and importance of research in advancing the goals of sustainable energy development in Saudi Arabia.

KEYWORDS

**Hail reign, energy developmeny, economic &technological, Saudi vision 2030, competitive advantage**

## 1 Introduction

The foundation of Saudi Arabia's Vision 2030 was a set of financial and economic changes intended to change the structure of the Saudi economy into one that is more diverse and sustainable and is focused on raising productivity and private sector participation (Anzeer, 2019). Since the vision was introduced, the Kingdom of Saudi Arabia has successfully implemented several supporting programs and structural changes to promote economic development. For example, several initiatives have been launched to increase local industry, promote local content, and develop promising economic sectors. In addition, efforts were made to maximize the role of private and small and medium businesses and improve the sustainability of public finances (Al-Lahed, 2019).

This study explores the economic and technological growth potential of the Hail region in the context of Vision 2030 in Saudi Arabia. There is a gap in understanding how regions like Hail can harness their strengths to support these objectives and how existing infrastructure can be improved for further progress. Despite substantial investments in digital transformation and emerging technologies, there remains a shortage of studies showcasing the region's potential and pinpointing competitive advantages for economic growth, innovation, and technology.

Consequently, the dimensions of Economic Vision 2030 are represented by the expansion of the Saudi economy into various industries in the modern era. A solid economic base was created as a consequence of this growth. The Saudi economy has grown exponentially, turning into one of the largest economies in the world, an important part of the Group of Twenty, and a key participant in the international economy and oil markets due to its reliable financial infrastructure, a prosperous banking industry, and several government-owned businesses staffed by highly qualified Saudi citizens (Jedouri. 2019). Therefore, investing idle human energy and turning it into a productive growth momentum by enhancing the workforce's skills and productivity represents the aspects of a thriving economy. The dimension of the labor market, effective labour allocation, and skill improvement are all focused on creating advanced humans capable of effectively managing economic transformation programs, as well as developing citizens' skills and capabilities as one of the key economic resources to enhance the economy's capacity to produce a variety of job opportunities. This helps the Saudi economy grow by attracting top individuals from around the world to work there (Vision, 2030, 2016).

On the other hand, concerning the technological dimension, as indicated by 2030 Vision, Aldossari indicated that technology is a major aid to the many changes that 2030 Vision aspires to, to develop the Kingdom's digital infrastructure and stimulate economic sectors, industries and private sector entities. In the same vein, Amirat and Zaidi (2020) pointed out that digitization and technology are essential for achieving the national transformation milestones because they support NTP initiatives, such as five joint digital platforms, 29 fundamental digital initiatives for important industries, and several national digital assets that can be created to support digital government transformation in the Kingdom of Saudi Arabia.

Amran et al. (2020) pointed out that digitization and technology can improve citizens' quality of life and foster economic and social advancement. Consequently, the Kingdom of Saudi Arabia, per the requirements of the 2030 Vision, has taken an orientation towards technology, communications, and digitization to accelerate the implementation of the programs and plans envisaged in the 2030 Vision plan and the national transformation and to help advance economic and social development, enhance good governance, and enhance national security. Alghazi et al. (2020) indicated that digital transformation toward technology is no longer an option but a reality through the employment of telecommunications services and the establishment of a highly developed and flexible telecommunications infrastructure in the Kingdom, in addition to small and medium enterprises. The Kingdom of Saudi Arabia has also been moving toward the local information technology industry to innovate and develop more valuable products and services in parallel with the digitization of education, which has been a continuous process up to now.

Based on the preceding, the research on the effectiveness of applying the economic and technological dimensions of the Kingdom's Vision of 2030 in achieving competitive advantage has its justifications in light of the policies presented on the global economic and technological scene related to the need to achieve competitive advantage in the Saudi society-Hail region per 2030Vision. One of these justifications is that the 2030 vision becomes a guide to chart the characteristics of a global competitive advantage in which the Kingdom of Saudi Arabia can innovate (Yusuf and Atassi, 2016).

Recent economic structural adjustments made by the Kingdom have resulted in higher economic growth rates while preserving the country's capacity to remain financially viable (Al-Jerbi, 2019). This is demonstrated by the Kingdom's improved business climate and its ongoing initiatives to foster economic diversification by the private sector. These initiatives include improving the business and investment climate and the Kingdom's appeal to investors on both the domestic and international levels (Bukhari, 2020). The goal of Vision 2030 for the Kingdom of Saudi Arabia is to increase the participation of medium and small businesses in GDP, decrease wastage, reduce overuse of natural resources and raw materials, and expand the number of production factors. This endeavour is driven

by the ambition to reduce the significance of the petroleum industry to the GDP and to diversify the nation's income sources. (Vision, 2030, 2016).

Vision 2030, on technology, found that traditional trade dominates up to 50% of the Kingdom's markets, and the market suffers from limited modern e-Commerce. Therefore, the Kingdom's government aims to increase the empowerment and contribution of electronic commerce by 80% by 2030. This, in turn, will attract more regional and international investment, increase financing for small and emerging companies, achieve high growth levels, and ease restrictions on ownership and foreign investment (AlGhamdi et al., 2022).

From the previous vision, the Kingdom of Saudi Arabia aims to become a leader in e-government on a global scale, as this will be achieved by providing more services online, expanding services, and improving their quality and quality of standards, which in turn will lead to less delay, more completion, and time and effort savings. However, the government has already begun to make significant progress in the field of e-government and expanding online services such as recruitment programs, online job search, e-learning services, passports, traffic and civil affairs, online payment services, and issuance of commercial records have also been improved (AlGhamdi et al., 2022).

Based on the preceding, the problem of the study arose, and a question began to crystallize in the minds of researchers related to the economic and technological dimensions of the Kingdom's Vision 2030 in achieving a competitive advantage in the Hail region. The Kingdom of Saudi Arabia must create systems and programs that align with the latest scientific, knowledge and technological advances in the global competitive arena to remain competitive and keep up with global economic and technological developments. Therefore, the above calls on researchers to identify the effectiveness of applying the economic and technological dimensions of the Kingdom's Vision 2030 to achieve competitive advantage and to know the most important factors that help to employ the 2030 Vision to diagnose the context of the current situation in the Kingdom of Saudi Arabia. Accordingly, the research problem is represented by the following main question.

What is the effectiveness of applying the economic and technological dimensions of the Kingdom's Vision 2030 in achieving competitive advantage and its repercussions on the Saudi society-Hail region?

1. Identifying the effectiveness of applying the economic dimensions of the 2030 vision of the Kingdom of Saudi Arabia to achieve competitive advantage.
2. Identifying the effectiveness of applying the technological dimensions of the 2030 vision of the Kingdom of Saudi Arabia in achieving competitive advantage.
3. Identifying the level of competitive advantage according to the requirements of the 2030 vision of the Kingdom of Saudi Arabia.

## 2 Problem background

The Kingdom's economy has seen a positive transformation due to reforms in line with Vision 2030, and this trend is expected to continue in the coming years. This is particularly evident with the large-scale investments spearheaded by the Public Investment Fund and leading companies. In addition, it is projected that the pace at which local knowledge and cutting-edge technology are being developed will accelerate (Moshashai et al., 2020).

The second cornerstone of Vision 2030 is a robust economy, with objectives to increase investment, leverage the potential of emerging economic sectors, diversify the economy, and create job opportunities for its citizens (Allmnakrah and Evers, 2020). Consequently, the second part of the developing economy focuses on providing opportunities for all individuals in terms of labour market requirements and generating opportunities for all, from individual business owners and small businesses to large corporations (Khashan, 2017). As a result, the third step is to foster entrepreneurship by implementing well-structured management structures and processes to implement institutional growth initiatives in line with an efficient labour force plan and to tackle job market disparities. These frameworks and processes must be in place to address inequities in the labour market. Making the most efficient use of the resources of the economy and improving the output of both the public and private sectors are necessary steps toward raising the level of private investment, broadening the scope of economic activity, and increasing overall productivity (Vision, 2030, 2016).

This study is unique in that it will examine the potential competitive advantages of the Hail region through Vision 2030, considering the Kingdom's long-term economic, social, and technological development goals. The study will identify the specific areas of economic and technological strength that the Hail region has and explore how they can be leveraged to create new sources of economic growth and development. In addition, the study will consider how the existing infrastructure in the region can be improved to further enhance its potential for development.

The findings of this study will contribute significantly to the existing literature by providing an in-depth analysis of the potential for economic and technological development of the Hail region within the framework of Vision 2030. The findings of this study will provide important information for decision-makers in the region and policymakers at the national level. It will also be of interest to researchers and practitioners in the fields of economics, technology, and development. Recent studies have shown that the Hail region is well positioned to become a leader in economic growth and technological innovation. This study will provide a detailed analysis of the competitive advantages of the region that can be used to realize this goal. This study will build on recent studies that have examined the regional economic development of Saudi Arabia, such as Nurunnabi (2017) and Al Garni (2022) studies that highlighted the potential of the Hail region to become a major contributor to the Saudi Vision 2030 plan (Nurunnabi, 2017).

Competition is an important factor that has contributed to a flourishing economy. Competition promotes better services, encourages privatization of public services, and creates a more favourable business environment, all of which bolster economic growth. All of these factors contribute to a better ability to attract top talent from around the world and high-quality investments, enabling the nation to capitalize on its advantageous location based on competitiveness (Grand and Wolff, 2020).

The fourth dimension of competitiveness is achieved when an effective and developed industrial sector is created through the implementation of an attractive competitive strategy, the use of the potential strength of the Saudi economy to address barriers to human growth, and the transformation of the Saudi economy into a powerful and successful economy that is a member of the G20; all of these things are achieved through the transformation of the Saudi economy. This is achieved by enhancing the economy's competitiveness, expanding and strengthening the business environment, and putting high-quality projects into action (Vision, 2030, 2016).

Regarding the technological dimension of the 2030 vision, Saudi Arabia has rapidly introduced digitization and transformation in various fields. It also works on government and private investment in emerging companies and companies in the technology sectors and benefits from the goals of the 2030 Vision in technology (AlMindeel and Martins, 2020). The Public Investment Fund finances projects of strategic value to the Saudi national economy and has invested 3.5 billion USD in the ride-sharing company Uber and has invested 45 billion USD in SoftBank to create a 100 billion USD technology investment fund in a combination of 2030 Vision goals in technology (Mitchell and Alfuraih, 2018). The fund also invested one billion and 500 million dollars in the space and satellite companies of the British Virgin Aviation Group.

Consequently, the objectives of 2030 Vision regarding technology are clear through the development of mobile networks, the Internet, and the fifth generation, as 2030 Vision in the Kingdom sought to launch the fifth-generation mobile network in 2019. Therefore, the Kingdom of Saudi Arabia became one of the first countries in the world to provide this technology to its citizens. In addition, the kingdom has also expanded by building more than 5,200 towers in 30 cities, and it is scheduled to be developed and expanded in more cities in the coming years. This development will lead to download speeds of up to 500 megabytes per second.

Consequently, the 2030 vision for technology indicates that the advanced digital infrastructure is the basis of all business today. Therefore, the government will partner with the private sector, especially telecommunications companies, in developing the Kingdom's digital infrastructure and will support local investments to aid in the growth of the telecommunications and information technology sectors, leading to an increase in the digital economy. One of the important aspects that 2030 Vision focuses on in developing technology is improving the quality of broadband coverage and expanding it up to 90% in the Kingdom's cities that are full of citizens, while it will reach 66% in urban areas that are not densely populated (AlGhamdi et al., 2022).

# 3 Review of the literature

Economic dimensions are represented in the current and future repercussions of the economy on the sustainable development of society and are the result of growth and change in which all aspects of economic and social activity are integrated. These dimensions include all the procedures, means and methods that are taken to increase production from the available economic resources that are sufficient to raise the standard of living of the individual and society while organizing development processes in a manner that achieves efficiency and makes the best use of economic and human resources (Jedouri, 2019).

Evolutionary economics theory is a theory that suggests that economic structures and processes evolve in response to changes in the environment (Al Garni, 2022). This theory could be utilized to identify how technological development can create a competitive advantage in the region. This could include developing new technologies that could be used to increase the efficiency of agricultural production or developing new methods to increase the quality of crops. This could lead to increased productivity, improved economic growth, and increased regional economic competitiveness. Using theories of technological innovation and evolutionary economics, the region has the potential to leverage its resources and capabilities to create a competitive advantage. This could then lead to increased economic growth, improved quality of life, and a more competitive nation. Finally, this theory provided the study with a theoretical background and clarification of the elements that are appropriate to include in the study tool and guide the results.

Technological dimensions are represented by the use of large and small machines, tools, and equipment by the individual, group, or society in the field of work. Accordingly, theoretical ideas and concepts are transformed into an applied field to increase production, productivity and quality based on digitization processes and the transformation towards various technological fields of both types, material and immaterial, and their theoretical and applied fields with the aim of the welfare and development of society (Mitchell and Alfuraih, 2018).

The theory of technological innovation is based on the idea that innovation is the key to economic growth and development. The theory suggests that technological advances can increase productivity, increase efficiency, reduce costs, and improve quality (Lee et al., 2016). In the case of the Hail Region, this theory could be used to identify new and innovative ways to increase the productivity and quality of the region's agricultural sector. This could result in higher yields and improved quality of agricultural products, leading to increased regional economic growth. Therefore, this theory shows new and innovative ways to increase productivity and quality, and this study used that to focus on the main dimensions that can create a competitive advantage in the region.

## 3.1 Economic and technological dimensions, including subdimensions

The economic dimension encompasses various aspects of economic functioning and development. It includes subdimensions such as:

1. Labour Market, Efficient Labour Allocation, and Skills Improvement. This involves managing supply and demand for labor, optimizing labor resources for productivity, and improving workforce skills through education and training programs.
2. Business Environment and Regulation. This subdimension covers the conditions influencing business operations, regulatory frameworks, and support for emerging businesses, including access to finance and infrastructure.

3. Enabling Entrepreneurship Opportunities and Attractive Competitiveness. This focuses on fostering a conducive environment for entrepreneurship, supporting startups, and improving overall competitiveness through innovation, infrastructure development, and trade openness. The technical dimension to answer the first question and its subdimensions are represented in: (administrative operations) (human resources) (electronic regulation), and (technical infrastructure).

The technical dimension encompasses technological aspects within a system or organization, including hardware, software, networks, and procedures. It involves the development, implementation, maintenance, and optimization of specific goals or objectives. The technical dimension consists of the following subdimensions:

1. Administrative processes, which include simplifying and enhancing administrative processes, including improving workflow and document management.
2. Human resources, which covers employee management and aspects such as recruitment, training, performance appraisal, and employee welfare.
3. Electronic regulation includes regulatory frameworks that govern electronic transactions, data privacy, cybersecurity, and digital governance.
4. Technical Infrastructure relates to developing, maintaining, and improving the underlying technical infrastructure, including hardware, software, networks, and communications technologies.

Competitive advantage is the ability to produce services of good quality, and it is considered a strong motivator that pushes to exert more effort, to continuously improve performance at all levels within organizations, and to reach development (Hadj et al., 2020).

In this study, the researchers define it as the totality of capabilities and modalities that the Kingdom of Saudi Arabia seeks through economic and technological dimensions to achieve a global competitive advantage through the 2030 vision.

The 2030 vision of the Kingdom of Saudi Arabia is a document based on a set of pillars and relies on three axes: a vibrant society, a thriving economy, and an ambitious nation. It is also a post-oil plan announced on 25 April 2016 (Vision, 2030, 2016).

In this study, the researchers define it as a set of measures that the researchers will take to benefit from it to know the effectiveness of applying the economic and technological dimensions of the 2030 Kingdom of Saudi Arabia vision to achieve competitive advantage (Khashan, 2017).

Tracking the relationship between leaders' mastery of tacit knowledge management skills and the achievement of competitive advantage, Aldosari (2023) explored the relationship between leaders' mastery of tacit knowledge management skills and the achievement of competitive advantage at universities. The study was conducted using qualitative research methods and interviews with university leaders. The findings indicate that the mastery of tacit knowledge management skills by leaders is important for achieving competitive advantage at universities. The study also found that leaders' mastery of tacit knowledge management skills is associated with increased innovation, improved collaboration, and better decision making. This study provides valuable information on how universities can leverage the skills of their leaders to achieve a competitive advantage.

In the context of understanding the effectiveness of the Saudi Arabian government's Vision 2030 plan in creating a knowledge-based economy, a study by Amirat and Zaidi. (2020) examined the effectiveness of the Saudi Arabian government's Vision 2030 plan in creating a knowledge-based economy and how it will impact the country's GDP growth (Triki et al., 2023). It uses a combination of quantitative and qualitative methods to analyze the potential impact of the plan, including an analysis of the existing economic environment and the potential effects of the plan on the labour market, infrastructure and the overall economy. The results suggest that the Vision 2030 plan could significantly increase GDP growth in Saudi Arabia, but more analysis and research is needed to confirm this.

Similarly, another study by Alharbi (2018) looks at the readiness of the Saudi healthcare system to change in the context of the Saudi National Healthcare Plan in Vision 2030. This study includes a review of the literature on the current evidence on the readiness of the Saudi healthcare system for change and an analysis of factors that may impede or facilitate the adoption of innovation in the Saudi healthcare system. The research also uses a qualitative method to analyze the perceptions of experts in the field who were asked to provide their opinions on the readiness of the healthcare system to change. The results of the study suggest that the Saudi healthcare system is not fully prepared to change, and several challenges must be addressed to adapt to the changes proposed by the National Healthcare Plan in Vision 2030.

In the framework of analytical studies and exploratory studies about green marketing dimensions positively impacted environmental preservation, the study by AL-Ghaswyneh (2021) examined how applying green marketing dimensions, such as product design, pricing, and promotion, can help preserve the environment according to the objectives of Vision 2030 in Saudi Arabia. The study focused on the Northern Region Cement Company (NRC). The research methodology used was a survey of NRC customers, followed by stakeholder interviews. The results showed that the dimensions of green marketing positively impacted environmental preservation, with customers and stakeholders showing a preference for sustainable products (Vision, 2030, 2016). The study concluded that green marketing should be used to help achieve Vision 2030 objectives in the region.

In the context of understanding the use of governance to gain competitive advantages, Ahmadani. (2020) examined the impact of governance on achieving competitive advantages in firms (Triki et al., 2023). The authors used a qualitative approach, conducting semi-structured interviews with 10 top-level managers in companies in three countries. The findings suggest that governance plays an important role in providing firms with competitive advantages, particularly in terms of strategic decision making, organizational efficiency, and risk management. The study also found that firms with better governance practices tend to be more successful in the long run. The results of this study provide valuable information on how companies can use governance to gain competitive advantages.

To explore the relationship between proactive environmental innovation and firm financial performance, a study by

Johl and Toha. (2021) examined the relationship between proactive eco-innovation and financial performance in the context of a circular economy. The authors analyze data from more than 3,000 publicly traded companies in the United States, Europe, and Asia-Pacific regions to explore the relationship between proactive ecoinnovation and firm financial performance. The authors hypothesize that proactive eco-innovation is positively associated with firm financial performance and that the relationship is stronger when considering the circular economy perspective. The authors then conduct a multilevel regression analysis to test their hypothesis. The study results indicate that proactive eco-innovation is positively associated with firm financial performance and that the strength of the relationship increases when considering the circular economy perspective. The study provides evidence for the importance of eco-innovation in the context of a circular economy and the potential for firms to benefit financially from proactive eco-innovation.

Lastly, to focus on developing 21st-century skills, Allmnakrah and Evers. (2020) study examined the need for a fundamental shift in the Saudi Arabian education system to implement the Saudi Arabian Economic Vision 2030. The authors review existing literature on the current state of the Saudi education system and the challenges and opportunities that accompany implementing a shift toward Vision 2030. The authors suggest that the Saudi education system should focus on developing 21st century skills, such as critical thinking and creativity, while highlighting the importance of technology and innovation. The authors also discuss the need for increased collaboration between the government, the private sector, and educational institutions in order to ensure successful implementation. Finally, the study provides recommendations on how the Saudi education system can be reformed to meet the goals of Vision 2030.

The competitive advantage of the Hail region in Saudi Arabia's Vision 2030 can be seen in the application of both economic and technological dimensions. This research will discuss the region's potential for economic and technological development to create a competitive edge. To explore this potential, it is important to analyze the theory of technological innovation and evolutionary economics.

The study was limited to identifying the effectiveness of applying the economic and technological dimensions of the Kingdom's 2030 vision in achieving competitive advantage. The study consists of two dimensions: the economic dimension and the technological dimension. Dimensions will be essential in the field study. The study sample consisted of faculty members from Hail University in the Kingdom of Saudi Arabia. The study was carried out in the academic year 2022.

# 4 Methodology

The study relied on the descriptive survey method. Due to its relevance to the subject and objectives of the current study, this method is used to study reality and describe the phenomenon in an accurate way by collecting, organizing, classifying, and expressing information quantitatively (Abu Allam, 2006).

Mitchell and Alfuraih (2018) indicated that the survey method includes some interpretation of the study's results; therefore, the measurement, categorization, and interpretation procedures are used to derive meaningful findings, which are then utilized to arrive at generalizations about the phenomena that are examined.

TABLE 1 Study sample according to the variable of educational qualification variable.

| Variables of the study | Number | Variables of the study |
|---|---|---|
| Professor | 11 | Professor |
| Associate Professor | 23 | Associate Professor |
| Assistant Professor | 26 | Assistant Professor |
| Total | 60 | Total |
| Variables of The Study | Number | Variables of The Study |

## 4.1 The nature of the study design

After identifying the study problem, questions and objectives, the data collection stage related to determining the perceptions of faculty members at Hail University in the Kingdom of Saudi Arabia was carried out according to a set of steps, which are as follows.

## 4.2 Sampling

The study population is described as "all the lexicon of the phenomena examined by the researcher, and thus all the people or objects that are the topic of the issue" (Obeidat et al., 2014, p. 11). Therefore, the study population includes all faculty from Hail University. In the next step, the researcher chose a sample of (60) faculty members. The sample size from the original population was determined on the basis of the Khashan (2017) table. The following table and chart show the distribution of sample members according to the educational qualification variable as a percentage.

It is evident from Table 1 and the chart that the research sample was distributed according to the professor category to (11) representing (18.33%) (23) from the associate professor category with (38.33%) and (26) from the assistant professor category with a percentage (% 43.34). The faculty members of Hail University were an appropriate population and sample for this study due to the university's unique access to both economic and technological resources. Furthermore, Hail University is a leading university of higher education in Saudi Arabia and its faculty are well versed in the economic and technological aspects of KSA Vision 2030.

## 4.3 Instruments

Researchers used the questionnaire as an instrument to collect information from study sample members to reveal the perceptions of faculty members at Hail University about the effectiveness of applying the economic and technological dimensions of the Kingdom's Vision 2030 in achieving competitive advantage and its repercussions on the Saudi society-Hail region. The questionnaire was developed by the research team of Hail University, Saudi Arabia, drawing on the theoretical background, previous studies, and revolutionary economic theory, using this theory to identify how

TABLE 2 Correlation coefficients.

| Dimensions | Correlation coefficients |
|---|---|
| Economic Dimension | 0.9485** |
| Technological Dimension | 0.9533** |

* At A Significance Level Of 0.05.
** At A Significance Level Of 0.01.

TABLE 3 Cronbach's alpha for the questionnaire dimensions.

| Dimensions | Cronbach's alpha |
|---|---|
| Economic Dimension | 0.89 |
| Technological Dimension | 0.95 |
| Total Reliability | 0.99 |

TABLE 4 Distribution of categories.

| Description | Range of means |
|---|---|
| very high | 4.21–5 |
| High | 3.41–4.20 |
| Medium | 2.61–3.40 |
| Low | 1.81–2.60 |
| very low | 1–1.80 |

technological development can create a competitive advantage in the region and that leads to increased productivity, improved economic growth, and increased regional economic competitiveness. The reliability and validity of the questionnaire were verified by conducting a pilot test. The pilot study was conducted among a sample of faculty members of Hail University to check its reliability and validity. The results of the pilot study were used to refine the questionnaire. The questionnaire was also finalized in consultation with experts in the field of economics and technology. The questionnaire consisted of two key parts. The first part included the basic data of the study sample according to the educational qualification variable. On the contrary, the second part included the dimensions of the questionnaire (economic, technological). Accordingly, the study instruments include (42) items for the two dimensions. A five-point Likert scale (very high, high, medium, low, and very low) was chosen to measure the responses of the samples. The questionnaire was written in English and was not translated into Arabic. Standard translation and back-translation methods were not adopted.

## 4.4 Validity

The validity of the research instrument was shown to be correct after its internal consistency was checked, which is the consistency of the elements of the study dimensions and their interrelationship with each other. It is measured by calculating the correlation coefficient of each dimension with the total degree of the questionnaire through the data from a pilot sample (Obeidat et al., 2014). To ensure the internal consistency of the questionnaire, it was administered to a pilot sample of (22) faculty members at Hail University, and their responses were entered into the software (SPSS 23). The significance levels of the correlation coefficient values were then used to construct the correlation coefficients between the overall score for each research dimension and the correlation coefficient values. The methodologies to determine the validity of internal consistency are presented in Table 2.

It is clear from Table 2 that the correlation coefficients of the study dimensions related to faculty perceptions and their significance value ranged between (0.9019) and (0.9846) degrees, which are high correlation coefficients and are statistically significant at the significance level (0.01). This indicates that the dimensions of the study are valid for internal consistency.

## 4.5 Reliability

To verify the reliability of the study instrument, the reliability coefficient of the study instrument was extracted through the (Cronbach's Alpha) coefficient, and Table 3 shows this.

It is seen from Table 3 that the values of Cronbach's alpha reliability coefficients for the dimensions of the study instrument (questionnaire) are high values; this shows that the questionnaire has a high grade of reliability and was suitable for scientific research purposes. To allow the elucidation of the results of the study questions, the researcher used the method of determining the level of answer to the items in the study instruments, where weight was given to the alternatives: (very high = 5, high = 4, medium = 3, low = 2, very low = 1). The answers were then categorized into five levels of the same range by the following equation: Range = (largest value - smallest value), range = 5–1 = 4. Determining the length of the confidence limits is done by the following equation: Length of confidence limits = range of the number of questionnaire responses (length of confidence limits = 4 ÷ 5 = 0.8). Thus, we have the following classification according to Table 4 and Figure 1.

## 4.6 Analytical approach

After the study tool (the questionnaire) in its final form was ready for application, the necessary measures were taken to implement it, as the questionnaire was distributed to the study sample members electronically through Google Drive; after this stage, the questionnaires were collected, by referring to Google Drive. The data were then transferred to an Excel file, and in another step, the data was transferred to the Statistical Package for Social Sciences (SPSS). Finally, the researchers reviewed each questionnaire separately to ensure its suitability for use in the study and to ensure that respondents followed the instructions for filling out the questionnaire. These instructions require taking into account honesty and objectivity in answering the questionnaire items and that the respondent places only one sign in front of each item.

Consequently, SPSS used statistical treatment methods, in addition to frequencies and percentages, to describe the study sample. Pearson's correlation coefficient was used to verify the internal consistency of the study instrument, and Cronbach's

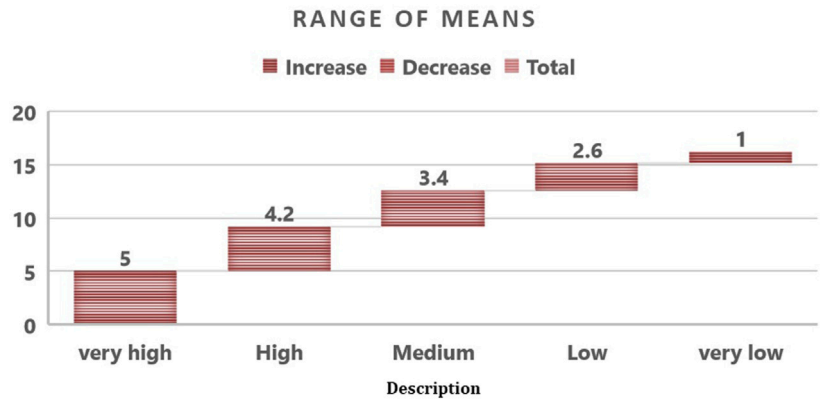


FIGURE 1
Range of means of distribution of categories.

TABLE 5 The ANOVA results of the comparison of measured.

| | Sum of squares | df | Mean square | F | Sig |
|---|---|---|---|---|---|
| Between groups | 91.468 | 3 | 45.732 | 4.368 | 022 |
| Within groups | 273.300 | 26 | 10.238 | | |
| Total | 364.768 | 29 | | | |

Alpha coefficient to calculate the reliability of the study instrument. Arithmetic means, and standard deviations were also used, as well as the "One Way Anova" test Table 5, to identify statistically significant differences in the responses of the study sample about their perceptions of the effectiveness of applying the economic and technological dimensions of the Kingdom's Vision 2030 in achieving competitive advantage and its repercussions on Saudi society-Hail region.

## 4.7 Study limitations

While the study offers meaningful insights into the effectiveness of applying the economic and technological dimensions of Saudi Arabia's Vision 2030 to achieve a competitive advantage in the Hail region, several limitations need to be acknowledged, particularly regarding the population sample.

Limited Population Sample: One of the primary limitations of this study is the restricted size and scope of the population sample. The data was gathered from a relatively small and region-specific demographic, focusing mainly on faculty from Hail University within the Hail region. This restriction could potentially skew the findings, making them less generalizable to other regions within the Kingdom of Saudi Arabia.

To mitigate this limitation, future research should aim to include a more diverse and extensive sample size that covers multiple regions of Saudi Arabia. A broader sample would provide a more comprehensive understanding of the nationwide effectiveness of Vision 2030s economic and technological dimensions.

Potential Effects on Findings: The limited population sample presents several potential effects on the study's outcomes. First, the specific contextual factors unique to the Hail region (such as its current economic status, technological infrastructure, and local cultural attitudes) could influence the perceived effectiveness of Vision 2030 initiatives. These nuanced variables might not be present or as influential in other regions, thereby affecting the generalizability of the findings.

Moreover, the size of the sample might not capture the full spectrum of opinions and experiences regarding the implementation of Vision 2030. This could lead to an overrepresentation or underrepresentation of certain views, impacting the robustness and reliability of the study's conclusions.

Additionally, the limited sample may restrict the study's ability to identify broader trends and patterns that could emerge from a more varied demographic. For instance, urban areas with different economic and technological baselines might exhibit different levels of progress and face distinct challenges.

Future research should prioritize incorporating methodological approaches that can help mitigate these limitations. Utilizing stratified sampling techniques to ensure that various subgroups within the population are adequately represented would provide a more balanced and accurate representation. Furthermore, employing longitudinal studies could offer deeper insights into how the impacts of Vision 2030 evolve over time across different regions.

Engaging with a broader array of stakeholders, including policymakers, business leaders, and ordinary citizens from various parts of Saudi Arabia, would also enrich the data pool, leading to more holistic and generalizable findings. This expanded approach would assist in identifying wider national trends, thereby enhancing the study's relevance and applicability.

TABLE 6 Labor market dimension, efficient labor allocation and skills improvement (N = 60).

| No. | Item | Means | Standard deviation | Rank | Degree |
|---|---|---|---|---|---|
| 5 | Vision 2030 aims to invest the malfunctioning human energies and turn them into a productive development momentum | 4.13 | 0.876 | 1 | High |
| 2 | Vision 2030 seeks to develop the workforce's capabilities and improve its productivity | 4.09 | 0.903 | 2 | High |
| 6 | Vision 2030 seeks to build a developed person capable of efficiently managing economic transformation programs | 4.01 | 1.036 | 3 | High |
| 4 | The Kingdom's Vision 2030 focuses on developing the skills and capabilities of citizens, as it is an important economic resource | 3.92 | 0.969 | 4 | High |
| 1 | The Kingdom's Vision 2030 seeks to enhance the economy's ability to generate diverse job opportunities | 3.77 | 1.036 | 5 | High |
| 3 | The Kingdom's 2030 Vision aims to entice talented individuals worldwide to work in Saudi Arabia and advance its economy | 3.61 | 1.124 | 6 | High |
| Weighted Mean | | 3.92 | 1.08 | - | High |

# 5 Results

## 5.1 The effectiveness of applying the economic dimensions of the 2030 vision of the kingdom of Saudi Arabia to achieve a competitive advantage

To address the first question, arithmetic means, and standard deviations of the research sample's answers were computed from the economic dimension and its subdimensions represented in: (labour market, efficient labour allocation and skills improvement) (business environment and regulation: support for emerging businesses) (enabling entrepreneurship opportunities and attractive competitiveness).

### 5.1.1 Labor market, efficient labor allocation, and skills improvement

The following table displays how the arithmetic means and standard deviations of the answers of the research sample were computed for each item of the labour market dimension in decreasing order.

It is evident from Table 6 that the arithmetic mean of the responses of the research participants to the items of the labour market was 3.92, with a standard deviation of 1.08, which is a high arithmetic mean according to the criteria established in Table 4. The arithmetic means of the questions in this dimension varied from (3.61–4.13), between the lowest and highest arithmetic means. At the same time, the responses of the research participants fell within a range of 68%–84% Table 6.

This outcome may be explained by the fact that Vision 2030 seeks to invest dysfunctional human energy and transform it into a productive development momentum by enhancing the workforce's capacities, improving its productivity, and building the advanced human capability of managing economic transformation programs efficiently. The Kingdom's Vision 2030 focuses on developing the skills and capabilities of its citizens, being an important economic resource.

### 5.1.2 Business environment and regulation: Support for emerging businesses

Table 7 shows how the arithmetic means and standard deviations of the answers of the research sample were calculated for each item of the business environment and the regulatory dimension in decreasing order.

It is evident from Table 7 that the arithmetic means of the responses of the study participants to the items of the business environment and the regulation dimension was (4.00), and a standard deviation (1.639), which is a high arithmetic mean according to the criterion adopted in Table 4. The arithmetic means of the questions in this dimension varied between (3.89 and 4.11), between the lowest and highest arithmetic mean. At the same time, the responses of the study participants fell within a percentage range of between (68%) and (84%).

This outcome can be clarified by the fact that Vision 2030 aims to increase the contribution of medium and small companies to the GDP by avoiding waste and excessive consumption of natural resources and raw materials. As a result, this leads to an increase in the number of production factors and a decrease in the oil sector's contribution to the gross domestic product and the diversification of sources of national income.

### 5.1.3 Enabling entrepreneurship opportunities

The following Table 8 illustrates how the standard deviations and arithmetic means of the responses of the research sample were calculated for each of the Enabling Entrepreneurship Opportunities dimension elements in decreasing order.

Table 8 makes it abundantly evident that the arithmetic mean of the responses of the participants in the research to the dimensions of enabling entrepreneurs was (3.65), and a standard deviation (1.354), which is a high arithmetic mean according to the criterion adopted in Table 4. The arithmetic means of the questions in this dimension varied between (3.59 and 3.71), between the lowest and highest arithmetic mean. At the same time, the responses of the participants to the study fell within a percentage range that ranged between (68%) and (84%).

TABLE 7 Business environment and regulation: Support for emerging businesses (N = 60).

| No. | Item | Means | Standard deviation | Rank | Degree |
|---|---|---|---|---|---|
| 4 | Vision 2030 aims to increase the contribution of medium and small companies to the GDP. | 4.11 | 1.193 | 1 | High |
| 5 | Vision 2030 is based on avoiding waste and excessive consumption of natural resources and raw materials | 4.09 | 1.232 | 2 | High |
| 3 | Vision 2030 seeks to increase the number of factors of production | 4.01 | 1.094 | 3 | High |
| 1 | The Saudi economy is predicated on lowering the oil industry's share in the country's GDP, as outlined in Vision 2030 | 3.91 | 1.176 | 4 | High |
| 2 | The Saudi economy is built on diversified national revenue streams as part of Vision 2030 | 3.89 | 1.627 | 5 | High |
| Weighted Mean | | 4.00 | 1.639 | - | High |

TABLE 8 Enabling entrepreneurship opportunities (N = 60).

| No. | Item | Means | Standard deviation | Rank | Degree |
|---|---|---|---|---|---|
| 4 | The goal of Vision 2030 is to create cutting-edge leadership frameworks and systems to run institutional development initiatives and the economy | 3.71 | 1.238 | 1 | High |
| 3 | The employment plan outlined in Vision 2030 corrects labour market imbalances | 3.69 | 1.055 | 2 | High |
| 2 | Vision 2030 is based on the optimal use of available economic resources | 3.66 | 1.083 | 3 | High |
| 1 | The Saudi economy, through Vision 2030, is based on increasing the efficiency of the performance of the public and private sectors | 3.61 | 1.176 | 4 | High |
| 5 | The Saudi economy is built on growing private investment, strengthening economic sectors and increasing productivity, according to Vision 2030 | 3.59 | 1.208 | 5 | High |
| Weighted Mean | | 3.65 | 1.354 | - | High |

TABLE 9 Attractive competitiveness (N = 60).

| No. | Item | Means | Standard deviation | Rank | Degree |
|---|---|---|---|---|---|
| 3 | A contemporary, effective, and developed industrial sector is what Vision 2030 aspires to create based on an attractive competitive approach | 3.84 | 1.093 | 1 | High |
| 5 | Through appealing competitiveness, Vision 2030 helps harness the potential strength of the Saudi economy and use it to eliminate barriers to human flourishing | 3.79 | 1.155 | 2 | High |
| 1 | Through Vision 2030, the Kingdom of Saudi Arabia has become an influential force in stimulating and stabilizing the global economy | 3.74 | 1.262 | 3 | High |
| 4 | Vision 2030 has contributed to transforming the economy of the Kingdom of Saudi Arabia from an economy that consumes imported goods and products into an active member of the Group of Twenty | 3.69 | 1.168 | 4 | High |
| 2 | The Kingdom's Vision 2030 seeks to develop and improve the business climate through attractive competitiveness | 3.61 | 1.174 | 5 | High |
| 6 | The Kingdom's Vision 2030 enhances the economy's competitiveness through quality projects | 3.58 | 1.206 | 6 | High |
| Weighted Mean | | 3.71 | 1.057 | - | High |

This outcome can be explained by the fact that Vision 2030 aims to create cutting-edge leadership frameworks and systems to manage the economy and institutional development programs by addressing the imbalance in the labour market, in addition to making the best use of the economic resources at hand, improving the performance of the public and private sectors, increasing private investment, and developing and raising the productivity of economic sectors.

### 5.1.4 Attractive competitiveness

Table 9 shows how the arithmetic means and standard deviations of the research sample's answers were determined for

TABLE 10 Administrative operations (N = 60).

| No. | Item | Means | Standard deviation | Rank | Degree |
|---|---|---|---|---|---|
| 4 | Vision 2030 contributed to developing digital management applications to serve the regulations | 3.59 | 0.871 | 1 | High |
| 2 | Vision 2030 focuses on speed and flexibility in providing digital services | 3.54 | 0.900 | 2 | High |
| 5 | Vision 2030 seeks to properly plan the transformation process for digital management | 3.47 | 1.038 | 3 | High |
| 1 | Vision 2030 focuses on the importance of data and information and its availability to all administrative levels | 3.44 | 0.960 | 4 | High |
| 3 | Vision 2030 is concerned with the overall quality of digital services | 3.41 | 1.081 | 5 | High |
| Weighted Mean | | 3.49 | 1.231 | - | High |

each of the Attractive Competitiveness dimension's elements in decreasing order.

Table 9 makes it evident that the arithmetic mean of the research participants' responses to the Attractive Competitiveness dimension items was (3.71), and a standard deviation (1.057), which is a high arithmetic mean according to the criterion adopted in Table 4. The responses of the research participants ranged between 68% and 84%, with the average of the items in this area ranging from 3.58 to 3.84, from the lowest to the highest averages.

This outcome may be explained by the fact that Vision 2030 seeks to build an attractive, competitive industrial sector that is contemporary, effective and developed using the potential strength of the Saudi economy to eliminate barriers to human progress. Accordingly, the Kingdom of Saudi Arabia has become influential in stimulating and stabilizing the global economy through Vision 2030s, which concentrates on creating and strengthening the business environment via appealing competition and boosting the economy's competitiveness through excellent initiatives.

## 5.2 What is the effectiveness of applying the technological dimensions of the 2030 vision of the kingdom of Saudi Arabia in achieving a competitive advantage?

The arithmetic means and standard deviations of the replies from the research sample were determined from the technical dimension to answer the first question and its subdimensions represented in: (administrative operations) (human resources) (electronic regulation), and (technical infrastructure).

### 5.2.1 Administrative operations

The following Table 10 shows how the standard deviations and arithmetic means of the research sample's answers were determined for each of the Administrative Operations dimension's components in decreasing order.

It is clear from Table 10 that the arithmetic means of the responses of the study members to the items of the Administrative Operations dimension was (3.79) and a standard deviation (1.231), which is a high arithmetic mean according to the criterion adopted in Table 4.

The study participants had responses between 68% and 84%, with average results of the items under this dimension between 3.41 and 3.59. This puts them between the least and the most significant arithmetic mean.

This outcome can be clarified by the fact that Vision 2030 focuses on the importance of compatibility of technology applications through digital management, with a focus on all regulations and systems by choosing the appropriate application methods and standards. This, of course, heightens the need to continuously modernise existing programs while also developing new ones and designing new ones that serve all the requirements of regulations. Thus, these programs effectively contribute to the practice of all digital management work and give legitimacy to it.

### 5.2.2 Human resources

The following Table 11 illustrates how the standard deviations and arithmetic means of the research sample's answers were determined for each of the Human Resources dimension elements in decreasing order.

Table 11 shows that the arithmetic mean of the responses of the research participants to the items of the Human Resources dimension was (3.36), and a standard deviation (1.207), which is a high arithmetic mean according to the criterion adopted in Table 4. The responses of the participants in the study fell into a percentage range of 68% and 84%, and the arithmetic means of the items in this dimension were between 3.31 and 3.41, placing them between the lowest and highest arithmetic means.

This outcome is explicable because Vision 2030 focuses its requirements on digital and technological management, which must be done according to clear and precise criteria. The use of technology necessitates specialized knowledge of how to work with computers, methods for data entry, retrieval, preservation, transfer, and archiving, how to work with programs and methods for data protection and follow-up, and how to implement electronic control, all of which require trained human resources.

### 5.2.3 Electronic regulation

Table 12 shows how the standard deviations and arithmetic means of the answers of the research sample were calculated for each item of the electronic regulation dimension in decreasing order.

Table (12) demonstrates that the arithmetic means of the research participants' responses to the Electronic Regulation dimension items was (3.48), and a standard deviation (1.254),

TABLE 11 Human resources (N = 60).

| No. | Item | Means | Standard deviation | Rank | Degree |
|---|---|---|---|---|---|
| 1 | One of the requirements of Vision 2030 is the implementation of digital management according to clear and accurate standards | 3.41 | 1.209 | 1 | High |
| 4 | Vision 2030 promotes the implementation of effective training programs on digital management and e-government techniques | 3.39 | 1.377 | 2 | High |
| 5 | Vision 2030 is based on a strategic plan related to digital governance | 3.37 | 1.159 | 3 | High |
| 2 | Vision 2030 focuses on the principle of specialization in digital work | 3.33 | 1.271 | 4 | High |
| 3 | Vision 2030 focuses on training employees on digital programs such as (Yusur Program and the Madrasti Platform) | 3.31 | 1.317 | 5 | High |
| Weighted Mean | | 3.36 | 1.207 | - | High |

TABLE 12 Electronic regulation (N = 60).

| No. | Item | Means | Standard deviation | Rank | Degree |
|---|---|---|---|---|---|
| 4 | Vision 2030 focuses on employing database programs such as Noor-Fares - Takamul—Takaful | 3.57 | 1.185 | 1 | High |
| 3 | The technology uses receivers for a digital archiving system | 3.53 | 1.059 | 2 | High |
| 2 | Vision 2030 focuses in its requirements on computerizing all administrative and financial work through information technology | 3.51 | 1.086 | 3 | High |
| 1 | The technology uses media to store and retrieve data and information, such as optical discs and memory cards | 3.41 | 1.172 | 4 | High |
| 5 | Vision 2030 is concerned with providing an accurate and flexible digital regulatory environment | 3.39 | 1.280 | 5 | High |
| Weighted Mean | | 3.48 | 1.254 | - | High |

TABLE 13 Technical infrastructure (N = 60).

| No. | Item | Means | Standard deviation | Rank | Degree |
|---|---|---|---|---|---|
| 4 | Vision 2030 focuses its requirements on the appropriate infrastructure for the application of technology (computers - networks - servers) | 3.55 | 1.005 | 1 | High |
| 2 | Vision 2030 focuses on modern means of communication for exchanging official information and inquiries | 3.47 | 1.148 | 2 | High |
| 5 | Technology in the Kingdom of Saudi Arabia provides networking to provide multiple services to the Saudi community | 3.50 | 1.207 | 3 | High |
| 1 | Vision 2030 focuses on implementing a security system to protect information and administrative data through antivirus and hacker software | 3.42 | 1.460 | 4 | High |
| 3 | Vision 2030 is concerned with online digital work patterns, as well as digital blogging | 3.41 | 1.403 | 5 | High |
| Weighted Mean | | 3.47 | 1.406 | - | High |

which is a high arithmetic mean according to the criterion adopted in Table 4. The percentage range of the responses of the study participants was between (68%) and (84%), and the arithmetic means of the items in this dimension fell between (3.39) and (3.57), the lowest and highest arithmetic means.

This indicates that Vision 2030 employs a modern and flexible regulatory structure, a network structure based on a sophisticated technical and information base, and a regulatory culture centered on the initiative in performance and the completion of work efficiently and effectively. In addition, Vision 2030 focuses on the development, change, efficient dealing with information technology and continuous reengineering of the regulatory environment.

### 5.2.4 Technical infrastructure

Table 13 shows how the standard deviations and arithmetic means of the research sample's answers were determined for each of the components of the Technical Infrastructure dimension in decreasing order.

Table 13 shows that the arithmetic means of the study participants' responses to the Technical Infrastructure dimension items was (3.47), and a standard deviation (1.406), which is a high arithmetic mean according to the criterion adopted in Table 4. The responses of the researchers were between a percentage range of 68%–84%, and the arithmetic means of the items in this dimension were between 3.41 and 3.55, which places them between the lowest and highest arithmetic means.

The data in the previous table indicate that Vision 2030 seeks, through its requirements, to provide modern technology means that enable the development of the application of technology in the Kingdom of Saudi Arabia on an ongoing basis and to provide the infrastructure through the application of digital management (computers, networks, servers). Additionally, Vision 2030 focuses on having a security system to protect information and administrative data through anti-virus and hacking software.

# 6 Discussion

## 6.1 The economic dimension

The study found that the arithmetic means for the dimension (labour market, efficient labour allocation, and skill improvement) was (3.92) which is a high arithmetic mean with a percentage between (68%) and (84%). This is consistent with the findings of similar previous studies, which have also found that the labour market, efficient labour allocation, and skill improvement are highly effective strategies for improving labour productivity (Aldosari, 2023; Allmnakrah and Evers, 2020). A study conducted by the World Bank found that effective labour market policies can improve labour productivity by up to 20%. Furthermore, research conducted by the International Monetary Fund has also found that improving the skills and knowledge of workers through training and education can lead to significant improvements in labour productivity. Thus, the study's results align with the findings of this research, which suggest that the labour market, efficient labour allocation, and skills improvement are key strategies to improve labour productivity.

Additionally, the study found that the arithmetic means for the dimension (business environment and regulation support for emerging businesses) was (4.00), which is a high arithmetic mean with a percentage between (68%) and (84%). This result is consistent with the findings of Shahrani et al. (2021), who looked at the effect of government regulation and support on emerging businesses. These studies have shown that when governments provide support and regulation for emerging businesses, it positively affects their growth and development. In addition, governments have been found to play a critical role in promoting economic stability, reducing uncertainty, and encouraging investment in small and medium-sized enterprises. The results of this study further confirm the importance of government support and regulation in creating an enabling environment for emerging companies.

It was also evident that the arithmetic means for the dimension (enabling entrepreneurial opportunities) was (3.65), which is a high arithmetic mean with a percentage between (68%) and (84%). This result is similar to previous studies' findings that people generally have a positive attitude towards enabling entrepreneurship opportunities. For example, Al-Mamary's (2022) study found that people had a strong willingness to take risks and be entrepreneurial, and this attitude was higher in countries with higher GDP (Al-Mamary, 2022). This suggests that the level of economic development can be an important factor in influencing people's attitudes toward entrepreneurship. Additionally, Arora's 2022 study found that people with higher levels of education were more likely to be positive toward entrepreneurship, and this is reflected in the study's results as well. Overall, these findings suggest that individuals generally support enabling entrepreneurship opportunities and that this attitude is likely influenced by factors such as economic development and educational attainment (Arora and Sarker, 2022).

Lastly, the study found that the arithmetic mean for the dimension (attractive competitiveness) was (3.71), which is a high arithmetic mean with a percentage between (68%) and (84%). This result is in line with the study by Zheng and Wang. (2022), which found that attractive competitiveness is an important factor in determining the success of a business (Wonglimpiyarat, 2010). According to these studies, companies that have a high level of attractive competitiveness tend to have higher profits and increased customer loyalty. In addition, these companies are more likely to attract and retain new customers.

# 7 Conclusion

The study has provided a comprehensive insight into the competitive advantage of the Hail Region in Saudi Arabia's Vision 2030. The application of economic and technological dimensions has highlighted the potential that the Hail region has to offer in terms of its agriculture, industry, trade, and services. The region is well positioned to take advantage of the opportunities that arise from Vision 2030, which can be leveraged to create a diversified and competitive economy in the future. The strategic location of the region, abundant natural resources, and educated population can help propel it toward a more prosperous future.

However, it is important to note that the region still faces many challenges, such as inadequate infrastructure, lack of access to capital, and inadequate support for small and medium enterprises. With proper investments, strategic planning, and the right policies, the Hail region will be able to take advantage of Vision 2030 and build a sustainable competitive advantage in the future.

## 7.1 The technological dimension

Based on the results, the arithmetic means for the dimension (administrative operations) was (3.49), which is a high arithmetic mean with a percentage between (68%) and (84%). This result is similar to the study by Amirat and Zaidi. (2020), which found that effective administrative operations are associated with higher performance in organizations. Therefore, this result suggests that o Moreover, this result is also in line with Allmnakrah (2020), which

found that organizations with effective administrative operations tend to have higher levels of job satisfaction, increased productivity, and improved customer service. Overall, the findings of this study indicate that administrative operations are essential for organizations to achieve success.

The study also found that the arithmetic means for the dimension (human resources) was (3.36), which is a high arithmetic mean with a percentage ranging between (68%) and (84%) and the arithmetic means for the dimension (electronic regulation) was (3.48) which is a high arithmetic mean with a percentage between (68%) and (84%). This result is consistent with the study by Johl and Toha. (2021) that looked at the same two dimensions. These studies have found that HR and electronic regulation have a high arithmetic mean with a percentage ranging between 68% and 84%. This suggests that HR and electronic regulation are both important factors that organizations must consider when implementing digital transformation. In addition, these studies have highlighted the need for organizations to ensure that they have the necessary resources and technology to enable a successful digital transformation.

The study also revealed that the arithmetic means for the dimension (technical infrastructure) was (3.47), which is a high arithmetic mean with a percentage ranging between (68%) and (84%) and the level of competitive advantage came to a high degree through the values of the arithmetic means of the economic dimension and the technological dimension of the 2030 vision of the Kingdom of Saudi Arabia. This result is consistent with Nurunnabi's study (2017), which found that the 2030 Vision of the Kingdom of Saudi Arabia has the potential to provide a high level of competitive advantage. This is due to the emphasis placed on the development of a strong technical infrastructure, as well as technological and economic advancements. The study also found that the economic dimension of the 2030 vision was the highest of the three dimensions, indicating that the Kingdom of Saudi Arabia is focusing more on economic development. This is in line with the goal of the 2030 vision to achieve long-term economic growth and diversification.

## 7.2 Theoretical implications

The theoretical implications of this study include the idea that the KSA Vision 2030 competitive advantage of the Hail region can be enhanced through the application of economic and technological dimensions. This suggests that economic and technological factors are integral to the realization of the KSA Vision 2030 goals and objectives. Furthermore, the region must also invest in and promote the development of its technological infrastructure, including the development of new technology, the diversification of existing technology, and the modernization of existing technology. Finally, the region must prioritize the development of new and innovative products and services that are able to provide a competitive advantage over other regions in the region and beyond.

## 7.3 Practical recommendations

The researchers recommend decision-makers, planners, and leaders of the private sector in Hail regions _KSA to:

1. Based on the results related to the technological dimension and achieving effectiveness for institutions, the researchers recommend developing administrative processes to activate technology requirements in line with Vision 2030 and adopting practical procedures that facilitate the application of technology in all institutions of the Kingdom of Saudi Arabia.
2. Building training programs in the field of information and communication technology and digital management, theoretically and practically, for employees and workers in the productive sectors.
3. Companies and institutions should make changes to lay the appropriate foundations and standards that help increase competitive advantage within an ambitious national economy, as emphasized by Vision 2030.
4. Establish an electronic security system to protect data and information and link companies and institutions to the national economy for the sake of global competitiveness.
5. Providing high-speed means of communication for the workload in the Saudi Economic Corporation.
6. Improving the level of infrastructure necessary for digital management in the Kingdom of Saudi Arabia.
7. Rebuilding the organizational structures in the institutions of the Kingdom of Saudi Arabia to increase competitiveness in the Saudi economy.

## 7.4 Limitations and future research directions

One major limitation of this study is the limited population sample. If the sample is too small or if it does not accurately represent the population of interest, it can limit the generalizability of the study's findings. The study only focused on faculty from Hail University within the Hail region, the findings may not be applicable to other industries or groups in the region. This could lead to a biased representation of the effectiveness of applying the economic and technological dimensions of the Vision 2030 initiative in achieving competitive advantage. Other limitations included the lack of comprehensive data on the economic and technological dimensions of the Hail Region, and its competitive advantage presents a limitation to this research and the lack of resources available to conduct a comprehensive study on the economic and technological dimensions of the competitive advantages of the Hail Region. Future research can focus on conducting a comparative analysis of Hail Region's competitive advantages over other regions. This will help to identify the strengths and weaknesses of Hail Region's competitive advantages and provide insights into potential areas of improvement.

# Data availability statement

The datasets presented in this article are not readily available because Data Integrity and Modification. Requests to access the datasets should be directed to a.almahaira@uoh.edu.sa.

## Author contributions

SA: Writing–original draft. SB: Writing–review and editing. AD: Data curation, Formal Analysis, Writing–review and editing. AA: Validation, Writing–review and editing.

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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.

## Publisher's note



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