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# The prospect of digital human communication for organizational purposes

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**Introduction:** There has been a great deal of excitement and discussion about the potential for artificial intelligence (AI) to improve business processes by providing more effective delivery options in cost-effective ways. One such way for many companies is the use of chatbots (AI tools to talk to customers) as their first line of customer service communication. Using digital human technology (AI with a digital human) such as a chatbot to improve communication engagement is increasing in many companies. Digital human communication has advantages over other communication modes, such as being available at any time for employees to consume and always having correctly, vetted information to share. Even though digital human technology offers great promise for organizational communication, the potential utility will be impacted by how employees perceive communication. For example, in-person conversations with business leaders or human resources may not be readily available, creating a positive perception of the communication availability of digital humans. However, if employees have a negative bias toward digital human communication, they may not perceive it as an effective source of communication.

**Method:** This experimental exploratory study was conducted to better understand the satisfaction and perceived effectiveness of digital human communication. It was assessed by using mixed methods across three groups of respondents. One group heard a company announcement in person, the second group read the same announcement in the form of an email, and the last group heard the message from an AI-generated digital human. The digital human created was the same as the in person human and the words were exactly the same. After the communication, the respondents took a survey assessing their satisfaction and perception of the communication modality they received.

**Results:** It was found that users were satisfied with all 3 modes of communication, but the email was the most effective tool for most aspects of communication, even surpassing the human one for most aspects of satisfaction and effectiveness. Additionally, there was no perceived difference in organizational support for the 3 groups.

**Discussion:** When subjects are exposed to something new, they immediately make an appraisal based on their perception of the usability and gain of that interaction which impacts their willingness to accept new technologies. As per our study, firms can start using Digital humans for communication for corporate announcements and even better would be an interactive digital human.

## KEYWORDS

communication, digital human, technology acceptance model, technology adoption, computer mediated communication (CMC), artificial intelligence, Uses and Gratification Theory

## Introduction

The role artificial intelligence (AI) will play in future of the workplace is rapidly evolving (Srnicek, 2017). A considerable amount of research and speculation has focused on how AI may automate and potentially eliminate certain jobs (McKinsey and Company, 2022). However, beyond the ability of AI to complete work tasks, the role of AI in interpersonal communication has the potential to profoundly change how people communicate (Hancock et al., 2020). Even though AI is being used extensively in supporting organizational communication, it has garnered less attention (Androusoy et al., 2019). For example, many customer service applications have shifted the initial customer contact online and in call centers through the utilization of AI-enabled chatbots (Poola, 2017). The use of AI-enabled chatbot technology in business applications is now the focus of more research (Rust and Huang, 2014; Pizzi et al., 2021).

Beyond chatbots, AI has already imbedded itself in written communication by auto-correcting spelling errors, highlighting grammatical errors, and suggesting more efficient ways to phrase a sentence. Additionally, many households regularly utilize adaptive AI communication through Amazon's Alexa or Apple's Siri (Hepp, 2020). More recently, there has been a great deal of attention on how AI may help write news stories or academic papers using ChatGPT (Graves, 2023). Furthermore, Graves (2023) notes the potential for AI functionality such as Chat CPT to personalize communication in the voice of those utilizing the tool by mining the communication text of users and speaking in their voice will likely be a future enhancement.

The evolving use of AI in communication technology has the potential to make communication more targeted, efficient, and available to users by providing access to communication in ways that have not previously been utilized (Hancock et al., 2020). One such way is with a digital human. According to Deloitte (2022), digital humans may be the next step in organizational communication, where an avatar or the image of someone representing the organization shares information with those observing the communication. This technology has the potential to humanize the use of technology in communication by using a human's imagination, body language, and voice cues while being easy to access and available for 24 h a day and 7 days a week. However, technology is only as valuable as users are willing to accept it (Davis, 1989).

The purpose of this study is to determine how effectively users perceive digital human technology when it is used for a corporate announcement compared with other more traditional communication modes, i.e., in-person or email communication. In this study, a corporate announcement is delivered in person, via email, and by a digital human across three groups of respondents in separate surveys. Quantitative and qualitative data are analyzed to assess how effective respondents felt each communication mode was in delivering the corporate announcement and whether that impacted their perception of organizational support. Analyzing these data on user perception provides researchers and practitioners with valuable data on this new technology which can be used to draw insights into the potential for further adoption. Drawing on prior research in communication technology

perception and acceptance, the article considers what lessons can be learned and applied as digital human technology evolves. This research is important due to the critical role corporate communication plays in organizational behavior (Robbins and Judge, 2009).

## The evolution of communication technology

Myers and Myers (1982) posit that organizational communication is the tool that binds employees and drives organizational behavior. Organizational communication is used to communicate corporate mission, goals, and culture and build organizational support and cohesion (Zaccaro et al., 2001; Verburg et al., 2013). Technology-mediated communication can be a substitute for leadership, providing structural support when a leader cannot be present (Hoch and Kozlowski, 2014; Newman et al., 2020). Therefore, organizational communication is critical for an organization's success.

Technology and the growth of computer-mediated communication technology have an important role in the delivery of organizational communication. Computer-mediated communication originated with mainframe computers communicating with each other, which, then, evolved into simple text-based messages sent from user to user in mainframes and eventually evolving into email (Walther, 1996). Developing concurrently with the evolution of different computer-mediated communication modes was a dramatic improvement in the availability of the internet, making computer-mediated communication more effective (Armbruster and Wimmer, 1992). As these technologies were being developed, broadband technology was also becoming more accessible, allowing for computer-mediated communication to be transmitted 50 times faster than early broadband technology. This established a technology infrastructure that could support additional communication technology development (Savage and Waldman, 2005). The development of high-speed, affordable internet service led to an explosion in the number of technology-enabled communication tools from social media to online meeting services such as Zoom and WebEx (Newman and Gopalkrishnan, 2022), to the integration of AI into computer-mediated communication with chatbot-based tools (Shankar, 2018).

There is currently a great deal of research on chatbots and the role they can play in different business applications from customer service (Pizzi et al., 2021) to corporate communication and training to support human resource management (Majumder and Mondal, 2021). IBM defines a chatbot as "a computer program that uses artificial intelligence (AI) and natural language processing (NLP) to understand customer questions and automate responses to them, simulating human conversation" (<https://www.ibm.com/topics/chatbots>). A literature review from Mygland et al. (2021) found that chatbots can assist humanlike conversation by navigating and facilitating a process, providing assistance or information, and ensuring there is privacy in communication. In a business application, a chatbot can provide a lower cost service delivery model than live customer service agents and

support online shopping experiences and answer questions or make suggestions to support the customer experience (Pizzi et al., 2021). In other business applications such as human resource management, chatbots can support predictable inquiries and can help organizations gain data and insight into areas of inquiry (Taule et al., 2022).

However, as the use and application of chatbots have grown, this does not mean users are completely satisfied with their experience. Research has found that user dissatisfaction with chatbots can originate from the chatbots' perceived lack of understanding and their inability to display emotion (Lin et al., 2022). Because of this, one of the next evolutions in communication technology will be the use of digital humans to assist with corporate communications (Deloitte, 2022).

"A digital human can be defined as a life-like being, powered by artificial intelligence (AI), with the capability of conversing, communicating, and creating an emotional connection, like any other human being" (Silva and Bonetti, 2021, p. 1). Digital human technology combining realistic or real human images and AI got off to an auspicious start as "deep fakes" which simulated realistic communication, oftentimes related to the news which generated conversation and outrage (Westerlund, 2019). In a more positive application, digital humans can assist in delivering important organizational communication that enables human connections (Deloitte, 2022). For example, the company UNEEQ (2023) advises that digital humans can be used for a variety of applications from customer service and financial advising to being a wellness coach. 2mee Ltd. and IBM have developed technology that allows users to create a digital version of them to communicate quickly with customers (IBM, 2023).

In a customer service application, using digital human communication can increase engagement and clickthrough rates by 87% (IBM, 2023). Silva and Bonetti (2021) completed a study on retail engagement that showed respondents were likely to choose to interact with digital human avatars when shopping. Those surveyed felt strongly about the ability of the digital human to positively interact and have a social presence with the customers. Research emerging on digital human communication technology has shown some early success in customer service; however, how this engagement translates to other business applications is still being determined.

## Acceptance of digital human technology

How broadly technology is used and accepted is a major theme of technology research (e.g., Lee et al., 2003; Chuttur, 2009; Vahdat et al., 2021). When subjects are exposed to new technologies, they make an appraisal of the benefits of using that technology. Users' decisions on whether new technology may be personally beneficial can be explained by the appraisal theory (Scherer et al., 2001). According to the appraisal theory, employees make an appraisal when being exposed to a new technology that their experience with the application is either positive, neutral, or negative (Zhang and Provost, 2019). This appraisal is based on experience and environmental factors that may influence the user's perception (Jokinen and Silvennoinen, 2020).

Recently, employees' appraisal and acceptance of new technology for communication have varied based on the application and experience (Lin, 2003). We have seen pushback on the use of Zoom for video conferencing, as employees suffer from "Zoom fatigue" resulting in a negative perception of the technology (Newman and Gopalkrishnan, 2022). Park et al. (2014) found that technology acceptance for workplace communication technology is tied to the perceived ease of use and the usefulness of a technology. In retail applications, users were influenced by how realistic and pleasant their experience was when interacting with communication technology (Silva and Bonetti, 2021). This assessment of utility is likely what caused the rapid growth and use of mobile devices for communications through "apps" over the last 15 years (Min et al., 2021).

The Uses and Gratification Theory (U&G) helps explain the process users go through when determining whether they will have a positive or negative perception of different communication media based on the users' communication needs and the gratification they anticipate getting from the communication media (Blumler and Katz, 1974). The U&G posits that the motivation to use certain communication media can be driven by cognitive, affective, personal, and social needs as well as the need to reduce tension (Katz et al., 1973). U&G has been applied to help explain the process users go through when evaluating new communication technology (Ruggiero, 2000). For example, a study by Chen (2011) concluded that users were motivated to use Twitter as a communication media based on their perceived communication needs and satisfaction with that communication media. U&G has also been applied to users deciding whether there is a benefit to using AI-driven communication technology such as learning platforms (Chang et al., 2022), chatbots (Rese et al., 2020), and AI assistants (Xie et al., 2023).

In addition, the technology acceptance model (TAM) plays a prominent role in predicting how well users would be motivated to adopt and use technology innovation (Davis, 1989). In the model, users' perception of the utility of a new technology influences how they perceive its effectiveness which drives their willingness to use the technology (Kim et al., 2010). Several studies focused on the acceptance of new communication technology innovation have evaluated the influence of the perceived usefulness of the technology in driving adoption, from cell phones (Kwon and Chidambaram, 2000), email (Szajna, 1996) to social media (Rauniar et al., 2014), Zoom (Djojo et al., 2021), chatbots (Dosovitsky and Bunge, 2021), and intelligent voice assistants (Yin and Wu, 2023).

Communication technology is now evolving again with the application of AI-driven chatbots for customer support and corporate communication. System developers are driven to make technology as realistic and human-like as possible to encourage use and acceptance (Carmigniani et al., 2011). Organizations are currently investing nearly \$100 billion in AI technology communication which can simulate humans (Statista, 2022). These investments have been accelerated by individuals' experiences with COVID-19, which has helped develop more positive attitudes toward the usefulness of communication technology (Ishaq et al., 2021). This makes the creation of digital human technology the next frontier of technology-driven communication tools for organizations to explore (McKinsey and Company, 2022).

Even though AI has been introduced into technology communication, there are few quantitative studies that have assessed employees' willingness to accept AI technology in the workplace (Choi, 2021). However, the use of AI in communication is "advancing rapidly, with potentially critical impacts in areas", such as personal relationships and relationships with organizations (Hancock et al., 2020, p. 97). Choi (2021) suggested that individual factors such as motivation and ability may impact employees' perception of AI.

Thus, as digital human communication technology emerges, its acceptance will be based on its perceived ease of use, how enjoyable the interaction felt and if it fills and communication needs. Due to the increased use of communication technology and limited research in this area, an exploratory study was conducted to collect data regarding users' perceptions of the effectiveness of digital human technology for organizational communication. This led us to the following hypotheses:

H1: Users will have mixed reactions regarding the effectiveness of digital human technology when communicating a corporate announcement.

H2: Since users are being exposed to a new form of technology, they will find more traditional communication methods, such as email and live communication as more effective than digital human.

H3: Users will be satisfied with all three modes of communication.

H4: Users who receive corporate communication in person or via email will perceive organizational support as higher than those who receive it from the digital human.

## Methods

A quasi experimental study was used to assess the current perception and utility of digital human technology. A corporate communication announcing the merger of two companies was developed (see Appendix A). The respondents were undergraduate and graduate students in business programs at US universities based in the southeast. The 374 participants were divided into three groups. The first group of 131 respondents received the message with a digital human speaking the script (<https://youtu.be/1ekvq9aYoXc>). The second group (130) received an email with the exact same content, and the third group (113) was in-person communication making the same corporate announcement. Once the script was communicated, the respondents in each group completed a survey regarding various constructs on the effectiveness of the communication and perception of organizational support from the resulting communication. The demographics of the respondents are presented in Table 1, Study demographics.

The survey instrument used in this study consisted of three sections as follows: (a) demographic information, (b) survey scales, and (c) a collection of qualitative data. The respondents were first asked to assess their perception of the effectiveness of each communication mode based on Newman et al. (2020) Perception of Leaders' Effective Use of Communication on seven-point Likert scale. The scale assessed whether the communication each

TABLE 1 Study demographics.

Baseline characteristics	Digital human	In-person	Email	Full sample
	<i>n</i>	<i>n</i>	<i>n</i>	<i>n</i>
Age	28	20	30.5	26.65
Education				
High school	24	52	17	93
Associates	81	12	88	181
Bachelors	23	49	24	96
Masters	3	0	1	4
Ethnicity				
Caucasian	55	65	57	177'
Hispanic/Latino	43	23	40	106
Black/African American	14	12	14	40
Asian/Pacific Island	3	4	5	12
Native American	2	2	3	7
Others	14	7	11	32

respondent received was clear and the message was understood. It also assessed the respondents' confidence in the communication and whether or not the respondents thought the communication mode was acceptable for the message being communicated.

Next, respondents were asked on a 10-point differentiation scale, how satisfied they were with the communication they received. The measure was "on a scale of 0 to 10 how satisfied were you with the communication you received?"

Respondents were then asked to assess how they perceived the organizations' support after receiving the communication. The 8-item perceived organization support scale by Eisenberger et al. (1986) was used for this assessment. The scale items included items like whether the organization cares about the employees' wellbeing, whether the organization considers the employees' goals and values, and whether or not the organization values the employees' opinion.

Finally, respondents were asked to provide qualitative responses on why the specific communication mode they were evaluating was effective and why they felt that way. The qualitative analysis was conducted in multiple ways. First, an inductive coding system was created by the researchers to categorize the sentiment of each response regarding effectiveness, as positive, neutral, or negative. Within each of these categories, themes were identified as to why a respondent perceived the communication in that way. To complete this analysis, the qualitative research process outlined by Thomas (2006) was followed to code and establish themes. In addition, qualitative data were analyzed for sentiment using tools developed by Soper (2023).

## Analysis and results

To analyze these data, the mean results were computed for each communication method. ANOVA was, then, run to determine



differences between the respondents' view on the perceived communication effectiveness based on the communication mode they received ( $F = 8.58, 2,368, p < 0.01$ ). Bonferroni was also leveraged for *post hoc* analysis to validate differences between the groups.

As shown in Table 2, a comparison of the perceived communication effectiveness scale across modes shows the difference between the communication delivered by the digital human and a memo as 0.704, which indicates that the respondents found the memo to be more effective than the digital human. In addition, the in-person communication was found less effective than the memo ( $-0.55$ ). There was not a statistically significant difference seen between the communication being delivered in person and by the digital human.

## Hypothesis 1

Hypothesis 1 was supported. The results indicate that the respondents did have mixed reactions regarding the use of digital technology to deliver a corporate announcement. For each communication mode, respondents were asked whether the digital human communication mode was effective and provided qualitative responses for why they rated the communication that way. A total of 91 respondents provided qualitative data. Iterative analysis was conducted to identify the tone of each comment and categorized into positive, neutral, or negative. The respondents demonstrated mixed reactions to digital human communication: 30 responses were positive, 26 were neutral, and 35 were negative. Within each tone, themes were then identified.

Positive responses included the feeling that "I believe the digital human would be effective to bridge and communication lags", "I think using a digital human for this type of corporate communication can be effective", and "I think this could work for corporate communication because sometimes the person who needs to communicate is not always available so for them to be able to record the message ahead of time will save money and time". Examples of neutral responses included "it could be effective, but I would prefer a real person" and "it could be effective for some people, but not everyone". Negative responses included "robots wouldn't be able to communicate effectively", "it felt impersonal for the huge change that is occurring", and "to me this is missing the human emotional connection that is had in a live speech".

Second, data were reviewed using the Daniel Soper sentiment analysis to measure the overall sentiment for the digital human communication delivery. The result of the analysis was the digital human corporate communication and was in the neutral range ( $-6.5$ ) on a scale of 100 to  $-100$ . This result was similar to the sentiment score from the in-person communication ( $-15.9$ ) and email communication ( $-20.3$ ).

## Hypothesis 2

Hypothesis 2 was supported. The data results showed us that respondents felt that the in-person and email modes of communication were slightly more effective than digital humans. The mean results (on a 7 point Likert scale) were (a) email memo

received 5.88, (b) in-person communication 5.33, and (c) digital human, 5.17 for communication effectiveness. Next, ANOVA was run against the perceived communication effectiveness scale to determine if there was a statistically significant difference between the three communication modes ( $F = 8.58, 2,368, p < 0.01$ ). For *post hoc*, we ran Bonferroni. As shown in Table 2, the comparison of the perceived communication effectiveness scale across the modes shows the difference between the communication delivered by the digital human and the email memo as 0.704, which indicates that the respondents found the memo to be statistically more effective than the digital human. In addition, the in-person communication was found less effective than the email memo ( $-0.55$ ). There was not a statistically significant difference between in-person communication and digital human (see Table 2).

Further analysis was completed using one-way ANOVA, isolating the measure "Do you think using a <insert communication treatment> for this type of corporate communication can be effective?" When looking at only this question, there was a significant difference among the three groups ( $F = 35.267, df = 2,368, p < 0.001$ ). The same result occurred in *post hoc* testing using Bonferroni, Tukey, and Dunnett tests.

As shown in Table 3, a comparison of the perceived communication effectiveness measure across modes shows that receiving the communication in person was perceived as more effective than the digital human ( $0.908^*$ ) when only asking the single measure of perceived communication effectiveness. Additionally, comparing the perceived effectiveness of the email memo vs. digital human, the email communication was perceived as more effective when evaluating the single measure ( $1.125^*$ ).

## Hypothesis 3

Hypothesis 3 was supported. The results indicate that the respondents were satisfied with all three modes of communication. This was evaluated by comparing the overall rating of satisfaction on the differentiation scale which asked how satisfied respondents were with the communication mode received on a scale of 0 to 10 (10 being completely satisfied). All three communication modes resulted in a degree of satisfaction: 8.13 for the e-mail memo, 7.24 for in-person communication, and 6.50 for the digital human communication.

Further analysis was conducted with one-way ANOVA, and while respondents were satisfied with each communication mode, there was a statistically significant difference among the three modes with the degree of satisfaction ( $F = 14.218, 2,365, p < 0.001$ ). The results in Table 4, differential scale results, show that the email communication was preferred over the in-person ( $-0.890^*$ ) and digital human technology ( $1.629^*$ ). There was not a statistically significant difference in the level of satisfaction between the communication delivered in person and by the digital human.

## Hypothesis 4

Hypothesis 4 was not proven when comparing groups and scales. Respondents did not perceive higher organizational support when communication was given in person or by email. ANOVA

TABLE 2 Comparison of the perceived communication effectiveness scale across modes.

	In-person vs. memo	In-person vs. digital human	Memo vs. digital human
Perceived communication effectiveness scale	-0.55*	0.15	0.704*

\* &lt;0.01.

TABLE 3 Comparison of the perceived communication effectiveness measure across modes.

	In-person vs. memo	In-person vs. digital human	Memo vs. digital human
How efficient do you feel this mode of communication is?	No significant difference	0.908*	1.125*

\* &lt;0.01.

TABLE 4 Differential scale results.

	In-person vs. memo	In-person vs. digital human	Memo vs. digital human
On a scale of 0 to 10, how satisfied were you with the communication you received?	-0.890*	No significant difference	1.629*

\* &lt;0.01.

analysis of the degree of perceived organizational support after receiving the communication did not result in a statistically significant difference between the three groups ( $F = 2.181, 2,368$   $p = 0.114$ ).

## Discussion and theoretical implications

How artificial intelligence may be used in the workplace in future is currently being explored. The results from this study provide interesting insights into the potential of digital human technology in corporate communication. This study advances our understanding of the utility of digital human communication for organizational communication. The results from comparing respondents' perception of the effectiveness of an organizational announcement using digital human technology and the respondent's satisfaction with the communication mode showed no statistical difference between the level of satisfaction and perceived effectiveness of in-person communication vs. the digital human, while the email memo was perceived as more effective than both the in-person and digital human communication for the corporate announcement. Additionally, no communication modality impacted the respondent's perception of organizational support.

### Leveraging digital humans for organizational communication

Organizational communication is fundamental to the success of companies (Myers and Myers, 1982). These results provide significant implications for the future potential of digital human communication. The fact that all three communication modes had a positive level of satisfaction, and there was no statistical difference between the three in the level of perceived organization support provided, introduces the possibility that organizations

could start leveraging digital human communication for more corporate announcements and other types of communications.

This is important because there are many potential advantages to leveraging digital human communication. Digital human communication is potentially more efficient than having large group meetings where leaders may need to travel to attend, and there will always be employees who will not be available at the time of the meeting. Digital human communication technology can help solve this issue with messages being available for 24 h a day and 7 days a week and can improve the employees' experience. For global offices and remote employees, this communication mode can help employees feel more connected to the organization and use time more efficiently.

Companies that are able to successfully deploy digital human communication technology may be able to substantially improve the communication experience when combining the technology with interactive artificial intelligence. This will allow employees to have access to ask questions to leaders in ways they are not able to ask today. In the example of a corporate announcement, the employee watching the digital human would be able to ask questions directly to a C-Suite leader. The digital human would be able to provide responses to anticipated responses directly to the employee. If a question asked is outside of the options programmed, the digital human could acknowledge the question and provide a response that it is a good question but not provide a direct response. Employee questions that are not able to be answered could then be reported to an internal communication resource, who could collect and revise responses or follow up with the employee asking the question.

### Perceived value of digital human communication

Prominent themes in the qualitative data from respondents who felt the digital human communication was effective can be leveraged for organizations, considering this communication

mode in future. The advantages cited were the availability of the digital human communication, the efficiency of the communication, and the richness of digital human technology. Responses in the qualitative data illustrate the future potential of this communication mode, “the digital human communication helps to cover the areas that the human is limited. This system is programmed to work automatically and repeatedly, and the information would be available to everyone in real time”. Another added “today’s workplaces are going digital and remote working has become the new way. Digital communication is fast, easier, and cheaper”.

Regarding the efficiency and richness of digital human communication media, one respondent noted that “the digital human will save time and we will get faster answers,” and another noted that it “is effective because with that much information, people will not read a document or email with all that information. I feel they would skim it vs. watching a video”.

## Perceived limitations of digital human communication

Respondents who did not feel the digital human communication was effective resulted in three prominent themes as follows: they did not like the technology, they would have preferred the communication in-person, and they thought the communication was impersonal. Understanding these themes help organizations strategize around future use. For example, if company leaders provided context for why they are leveraging the digital human communication modality, such as the inability to travel to every location and meet with employees in person but wanted to talk directly to everyone, they may be able to mitigate some of those who did not like the communication because they wanted it in person. As well, using the leaders’ actual voice for the announcement and any AI-generated questions and answers may make the technology “feel” more personable.

## Theoretical implications

The results from this study also advance our knowledge of the U&G theory and technology acceptance model for how users perceive the utility of AI-driven communication technology. The U&G theory posits that users who perceive a benefit and gain or gratification when using new communication media will positively impact their perception of the media. The technology acceptance model focuses on the perceived usefulness of new technology and how it influences users’ perception. The influence of these theories was observed in our qualitative data analysis. Analysis of positive themes or those who enjoyed their interaction with the digital human technology was followed with positive comments on the use of the technology and a willingness to continue using or acknowledgment of the potential future use of the communication technology. Conversely, those who did not enjoy their interaction saw little use for the technology. These data show the need for a thoughtful deployment of digital human communication technology for organizations who plan to utilize it in future.

## Deploying digital human communication

Furthermore, the data from this study reinforce the importance of change in management when rolling out new communication technology starting with conveying why the change is being made and the expected benefit to new users. For example, the advantages of the digital human communication being always available and able to reach people globally when users can dedicate time to listen to the message should be explained to employees. Leaders should also consider a change in management process to provide support for the communication technology since most organizational change and transformation fail (Kotter, 2012), and the risk of failure also applies to changes to organizational communication norms (Suchan, 2006). There is a risk that the employee will perceive communication as poorly executed and this can reduce employee trust, organizational commitment and alignment to the organization (Society of Human Resource Management, 2023).

To successfully execute technology change, it is suggested that the organizations evaluate its ecosystem to understand what resistance to the technology change may be received (Adner and Kapoor, 2016). Once the ecosystem is understood and if there is a good match for leveraging digital human communication, Goodman and Griffith (1991) provide five steps to execute technology change as follows: socialization, commitment, rewards, feedback and adjustment, and diffusion. Additionally, Suchan (2006) offers a model for changes in communication norms which include understanding the current organizational environment, determining the reason for changes, recruiting change agents, creating structure and skills as needed, and aligning the new systems to support the business need.

Combining communication modes for important organizational communications should also be strongly considered. Communicating messages in person or with a digital human can help promote emotion, excitement, and a tone of a message that an email cannot. Additionally, email communication can be interpreted differently by different receivers (Ellis, 2021). However, email has the advantages of being able to document important strategic decisions, policies, and ensure everyone has received the same message (Ellis, 2021).

The advantages of using multiple modes of communication inclusive of digital humans were also reflected in our data with many respondents liking the email communication because it provided documentation they could reference, while others said they would never read an email, that there was too much information presented, and therefore preferring the digital human. A digital human would be useful for communication for auditory learners, visual learners would prefer an email. The email also provides reference documentation and maybe an advantageous approach combining the strengths of both modalities.

## Future research and limitations

This was the first study of its kind for such communication by measuring the perception of the effectiveness of digital human communication and comparing that perception with other communication modes and with that come some limitations. First, this study focused on a corporate announcement related

to a merger. Future studies should test other types of corporate communication. Some of the negative results in the reaction to the communication was based on respondents' resistance to a merger which may have skewed their perspective on the communication effectiveness. The experiment included undergraduate and graduate students, with an average age of 30.52 years, receiving the digital human communication. It is possible that older populations may have been more resistant to the digital human and younger populations could have been more open to the technology. The communication was provided without any context. Potentially, if respondents' perception would have been different and if they were told that leaders were not available for in-person communication or that they are working virtually.

These limitations start the research agenda for future exploration regarding the effectiveness and utility of digital human communication using different messages across different age groups and in different industries. In addition, future research could expand to build out question and answer capabilities driven by AI.

The strategic future of many organizations will make an assessment on how AI-enabled activities can be leveraged to improve delivery and efficiency. Exploring how organizations can leverage AI and digital humans to make corporate communication more available, efficient, and consistent may have great value in future. The results from this study show that there is an open window to explore the use of digital human communication within an organizational context.

## 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 Rollins College IRB. 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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## 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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## Supplementary material

The Supplementary Material for this article can be found online at: <https://www.frontiersin.org/articles/10.3389/fcomm.2023.1200985/full#supplementary-material>

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