Unveiling the potential of digital human avatars in modern marketing strategies

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Abstract

Purpose: To develop a theoretical framework that marketing practitioners and scholars can adopt to enhance their understanding of how firms can effectively deploy and use digital human avatars as part of their global digital marketing strategy. By doing so, we inform investors of ongoing digital transformations of marketing practices that will equip marketeers to provide scalable, tailored, reliable, and relevant digital self-service interactions to users, consequently improving the user/customer experience.

Design/methodology/approach: Thematic analysis was used to discover factors to enable the successful implementation of digital human avatars, drawing on in-depth interviews with fourteen executives of digital human avatars developer companies worldwide and analysis of ten podcasts and webinars with artificial intelligence (AI) experts.

Findings: Digital human avatars revitalise the international dynamic marketing capabilities (IDMCs) of firms by integrating advanced technologies that transform user interactions, improve engagement, and facilitate knowledge acquisition, dissemination and usage across various sectors and business units globally. This integration promotes a dynamic approach to international brands, customer relationships, and marketing knowledge management capabilities, offering profound value to users and firms.

Originality/value: The novelty of our study lies in exploring the characteristics of technologies and practical factors that maximize the successful adoption of digital human avatars. We advance and contribute to the emerging theory of avatar marketing, (IDMCs), and absorptive capacity by demonstrating how digital human avatars could be adopted as part of a firm's global digital marketing strategy. We focus specifically on six dimensions: outcomes and benefits; enhancements and capabilities; applications and domains; future implications; foundational elements; and challenges and considerations. This framework has direct implications for innovators and marketing practitioners who aim to adopt digital human avatars in their marketing practices to enhance the effectiveness of international marketing strategies.

Keywords: digital human avatars, global digital marketing strategy, international dynamic marketing capabilities, digital transformation, generative AI, absorptive capacity

1. Introduction

The advancement of AI systems, cloud computing, computer power, big data, and other smart technologies combined with superior available computational power have enabled the digital transformation of business processes and operations globally (Christofi *et al.*, 2023). At the same time, the adoption of AI and smart technologies in marketing has promoted and accelerated the automation of digital marketing interactions between businesses and customers, and between employees and business functions (Homburg and Wielgos, 2022; Shankar *et al.*, 2022). Gartner (2023) predicts that 85 percent of customer interactions in firms will be managed without a human by 2025, corroborating suggestions that digital transformation (Christofi *et al.*, 2023) has dramatically altered customers' engagement with global brands (Lamarre *et al.*, 2023; Makri *et al.*, 2019). This trendy customer/user behaviour requires marketing investment in diverse touch points, including digital self-service channels that can provide tailored messaging to individuals based on their unique needs (Buhalis *et al.*, 2023).

The benefits and challenges of AI adoption in streamlining the value chain of firms, digital transformation, and agility have been widely discussed in the marketing literature (Hadjielias *et al.*, 2022; Diaz *et al.*, 2022). One emerging type of AI is conversational AI, specifically digital human avatars with high anthropomorphic characteristics which emulate human behaviour, speech, and facial expressions, controlled by a human or software (Miao *et al.*, 2022). These AI-empowered entities can understand the context of the conversations with humans, engaging in realistic human-like interactions that make it difficult for humans to distinguish if the interaction is with a human operator or an AI (Sun *et al.*, 2023; Miao *et al.*, 2022).

Digital human avatars leverage AI to deliver personalised and intuitive interactions, infusing digital interfaces with a relatable human essence. These avatars can provide uninterrupted 24-hour service, with immediate, context-aware assistance that continuously evolves and improves

in quality and relevance after each interaction. The value of AI and digital human avatars is as yet not fully realised, but it lies in their ability to process and synthesise vast amounts of data into meaningful and engaging user experiences and scale it. This capability innovates the ways brands interact with users, customer service, and market adaptability. By humanising customer touchpoints, digital human avatars bring a nuanced, empathetic dimension to technology, fostering deeper customer loyalty and setting a new standard for service excellence in the digital age. Complementing these arguments, we argue that the adoption of AI in general requires the revitalisation of firms' capabilities and absorptive capacity and the reconfiguration of their IT ecosystems. The benefits brought about by these efforts are currently unrealised; however, available technologies allow conversational AI to be incorporated into marketing practices to enable firms to take a leap forward in innovation, brand engagement, user experience, and knowledge management.

Therefore, our motivation to carry out this study is to draw scholars and practitioners' attention to the increased value of using conversational AI, such as digital human avatars in international marketing to reduce operational costs, enhance customer-contact customisation and standardisation, improve the customer experience, expand customer services, and enable global scalability for firms (Buhalis *et al.,* 2023; Kot and Leszczyński, 2022; Miao *et al.,* 2022). Digital human avatars are important, as AI that replaces human capabilities can have a significant impact on user experience and seems to be an inevitable trend (Sun *et al.,* 2023; Katsikeas *et al.,* 2020; Diaz *et al.,* 2022).

Digital human avatars combine computer graphics, anthropomorphic characteristics and novel AI techniques. For example, Retrieval Augmented Generation (RAG) and Generative Pre-trained Transformers (GPTs) enable the integration of databases of knowledge that bring realistic human-like interactions to life. Examples of these applications are multiplying fast in both quantity and quality. Selena, modelled after Deutsche Telekom's customer service agents,

is an autonomous digital assistant that provides 24/7 support. Selena streamlines the process of delivering tailored broadband plan suggestions and personalised advice to users, contributing to Deutsche Telekom's reputation by offering expert, prompt, and unfailingly accessible customer service (Anyon, 2023). Another example is Erica, a virtual financial assistant that allows Bank of America users to gain insight into investment strategies and cancel pending payments, along with other self-service options (Bank of America, 2024).

However, there is a paucity of knowledge exploring how the adoption of AI technologies can facilitate automation and augment international dynamic marketing capabilities (IDMCs) by reducing the cost and intensity of labour allocation (Homburg and Wielgos, 2022). The development of IDMCs is important to strengthen the dynamic marketing capabilities of companies to secure firms' international marketing performance (Homburg and Wielgos, 2022). A few studies have explored the factors that enable the successful implementation of digital human avatars. For example, scholars informed by routine capability theory have suggested that implementation challenges include natural language processing deficiencies; the difficulty of creating new knowledge in firms, cities, and regions; and user-related negative attitudes towards the technology (Patel *et al.*, 2021), which seems outdated due to recent advancements in the AI techniques. Their findings suggest that adopter firms should consider project management enablers for the technology implementation, such as agile methodology and legacy systems integration. Their study does not explain how agile methodology and legacy system integration could be combined to effectively deploy digital human avatars to enhance a firm's IDMCs.

Therefore, this study's purpose is to identify and further examine the key requirements for the adoption and implementation of digital human avatars. We ask our research question: How can firms implement digital human avatars to provide adaptable, relevant, and reliable self-service to customers as part of their international marketing strategy?

To answer this question, we make use of two theoretical lenses, international marketing dynamic capabilities (IMDCs) (Bargoni *et al.,* 2023; Ciszewska-Mlinarič *et al.,* 2024) and collective absorptive capacity (Cohen and Levinthal, 1990, 1994; Roberts *et al.,* 2012). First, IDMCs refer to the firm's ability to acquire and integrate new digital technologies with their current knowledge base and digital assets, and by doing so, reconfigure the firm's strategic international marketing activities. Specifically, we follow the definition of IDMCs as "*firms' cross-functional processes for effectively reconfiguring marketing resources in response to environmental dynamism in international markets so as to create and deliver value to international customers"* (Ciszewska-Mlinarič *et al.,* 2024, pp. 168). Second, absorptive collective capacity refers to an organisation's ability to recognise the value of new external information, and assimilate and apply it to commercial ends. It encompasses a set of dynamic capabilities that allow a firm to effectively absorb and integrate external knowledge into its operations (Cohen and Levinthal, 1990, 1994; Roberts *et al.,* 2012). These theoretical lenses informed the exploration and expanded our understanding of how digital human avatars can be implemented by firms to enhance their IDMCs (Zahra and George, 2002; Homburg and Wielgos, 2022).

Our most interesting findings highlight the significant role of digital human avatars in enhancing IDMCs through personalisation of user interactions and adaptive management of brand identity, and by providing empathetic support across various sectors and contexts. Integrating digital human avatars into a firm's international marketing strategies can significantly enhance their IDMCs compared to firms that did not integrate digital human avatars into their IDMCs.

Our study demonstrates that digital human avatars provide versatility, improving user engagement while also streamlining internal organisational processes. For example, we found that human-like appearance and interaction capability not only make the avatars more relatable

to users but also may significantly enhance the user experience by providing seamless interactions. By integrating these avatars with firms' knowledge bases, there is a marked enhancement in the ability to capture, process, and utilise customer data, leading to more refined user experiences and strategic market adaptability. This is important, as international marketing knowledge management integrates global insights through processes and routines designed to facilitate learning in local markets, which is suggested to improve a firm's performance (Scuotto *et al.*, 2022).

Collectively, these findings suggest that digital human avatars are key drivers in the evolution of dynamic marketing practices, enabling firms to meet the sophisticated demands of global markets effectively.

We make two key contributions to the digital strategy and international marketing strategy literature. Firstly, we propose a conceptual framework that explains how firms can develop internally and access the external technologies needed to adopt digital human avatars to enhance their IDMCs and user experiences.

Second, we introduce the digital human avatar ecosystem for firms and explain how firms' global marketing strategies could be improved if digital human avatars are adopted.

2. Digital human avatars and international dynamic marketing capabilities (IDMCs)

2.1. International dynamic marketing capabilities and international marketing strategy

The development of conversational AI represents a paradigm shift in international marketing strategies, integrating a myriad of AI techniques such as natural language processing (NLP), natural language understanding (NLU), generative artificial intelligence (GenAI), large language models (LLM), and big data (McTear and Ashurkina, 2024). By integrating these technologies, it is suggested that firms can build collaborative intelligence in marketing for marketers and users/customers (Huang and Rust, 2022). This integration empowers firms to

foment automated personalised interactions, thereby enhancing customer satisfaction and operational efficiencies globally (Ashfaq *et al.,* 2020; Sun *et al.,* 2023). The significance of conversational AI extends beyond its technological dexterity, offering a strategic asset that strengthens IDMCs. This is a crucial method for firms wishing to change and adapt their marketing practices in a fast-evolving digital global marketplace (Bargoni *et al.,* 2023).

Despite the expansive body of research on conversational AI applications for marketing, there exists a gap in fully appreciating its strategic implications for international marketing (Blümel *et al.,* 2024). The prevalent focus on customer perception and interaction with conversational AI overlooks the potential of these technologies to serve as a base for supporting the enhancement of IDMCs (Van Pinxteren *et al.,* 2020; Hildebrand and Bergner, 2021; Choi and Drumwright, 2021). While Mariani *et al.*'s (2023) systematic review emphasises the influence of conversational AI on facets such as brand engagement and customer loyalty, the strategic advantage lies in leveraging conversational AI to cultivate a dynamic, agile marketing capability. Some examples highlighted in the review explore the effect of conversational AI on brand engagement (McLean *et al.,* 2021), increased user perception of social presence (Tsai *et al.,* 2021), higher consumer brand perception (Vernuccio *et al.,* 2023), higher customer satisfaction (Lee and Choi, 2017), and the positive influence on customer loyalty (Vernuccio *et al.,* 2023).

IDMCs represent the methods through which a firm utilises its resources to align with or even instigate market transformations (Barrales-Molina *et al.,* 2014). In more detail, IDMCs describe the procedures by which a firm combines, modifies, acquires, and eliminates resources (Eisenhardt and Martin, 2022). Aligned with this, we adopted the definition of dynamic capabilities as activities that firms can use to acquire, combine, merge and reconfigure their resources and assets to achieve new competencies, products, and strategies to be competitive in the dynamic environment typical of international markets (Teece *et al.,* 1997; Eisenhardt

and Martin, 2022; Bargoni *et al.,* 2023). In the context of this study, IDMCs are the high-level, cross-functional capabilities used by firms to utilise available resources to understand and attain the diverse needs of users better and faster than competitors (Day, 2011; Morgan *et al.,* 2018). This is suggested to be achieved by reconfiguring and enhancing a firm's marketing capability.

Specifically, IDMCs include the acquisition and implementation of digital technologies to enhance a firm's capability and overcome the barriers of international markets. They also offer low cost and automation, potentially strengthening global brand management capabilities (Matanda and Ewing, 2012), adaptive capabilities (Lu *et al.,* 2010), and overseas market-related exploitative and explorative capabilities (Lisboa *et al.,* 2011; Morgan *et al.,* 2018; Bargoni *et al.,* 2023). With the acceleration of digital transformation, the IDMCs of firms must be substantiated by their AI-enabled marketing capabilities, for example by utilising their actual digital assets and knowledge base to grow internationally (Scuotto *et al.,* 2022; Manis and Madhavaaram, 2023). This is important, as it has been suggested that IDMCs can improve firms' performance in international markets (Morgan *et al.,* 2018; Eisenhardt and Martin, 2022).

Global brand management capability integrates strategic standardisation with localised adaptation to manage brand identity across diverse international markets effectively (Matanda and Ewing, 2012). This strategy's success depends on firms' ability to balance improvements in marketing efficiencies while at the same time responding to (or anticipating) the fast-changing demands of the marketplace (Vorhies and Morgan, 2005). The rise in digital human avatars, which automate customer service and user interactions, is largely driven by advancements in AI technologies (McTear and Ashurkina, 2024). These technologies empower avatars to engage in detailed and sophisticated dialogues with users. For instance, companies like UneeQ (www.digitalhumans.com) have developed digital humans that leverage AI to

deliver customer service with a human touch, interacting with users in a way that mimics human empathy and understanding. These avatars are equipped to grasp user intent, analyse extensive data in real-time, and deliver responses that are precisely tailored to the context of the interaction (Blümel, 2024).

One practical example of these capabilities in action is the use of digital human avatars by Qatar Airways. This firm introduced Sama 2.0, a multilingual digital human avatar that assists customers in selecting entertainment options, completing check-in, and providing information about the destination (TTW, 2024). Similarly, in the telecommunication sector, Vodafone employs an AI-powered assistant in stores that gives customers access to automated self-service, enabling payments and interactions directly from a digital kiosk (Uneeq, 2024). Big technology companies are offering pre-trained AI models at a scale that will facilitate the development and adoption of digital human avatars. For example, Google Vertex AI Agent Builder, a recently released framework, offers a user-friendly interface for building AI agents with natural language instructions, fostering enhanced human–computer interaction within the enterprise knowledge base (Google, 2024).

This advanced technical and practical capability streamlines customer service operations, allowing companies to provide consistent and effective support across multiple digital platforms and markets while adapting quickly to user needs and preferences (Huang and Rust, 2022; Sun *et al.*, 2023; Blümel, 2024). Therefore, the adoption of AI digital human avatars embodies the essence of global brand management capabilities by equipping firms to dynamically adapt their marketing practices in alignment with the ever-evolving digital landscape and the diverse needs of users (Mitrega *et al.,* 2021). Specifically, these digital entities can trigger and be part of a process that a firm utilises to integrate existing resources, such as the current knowledge base with new technologies (AI tools), then creating value for

the firm and customers by reconfiguring, personalising and automating the interactions with international users/customers (Homburg and Wielgos, 2022).

It is suggested that firms need to renew themselves by constantly experimenting and learning (Day, 2011), and by adjusting, reallocating, and reconfiguring resources to meet the fluctuating demands of foreign markets and customers (Lu *et al.,* 2010). These adaptive capabilities enable companies to respond swiftly and effectively to changes, whether these are shifts in customer preferences or market dynamics, thus supporting a sustainable competitive advantage in international settings (Lu *et al.,* 2010). This is aligned with the concept of exploitative capabilities that focus on refining and enhancing existing knowledge, products, and processes to optimise efficiency. Conversely, explorative capabilities involve pursuing new knowledge and innovations that radically differ from current practices (Lisboa *et al.,* 2011). By combining their international exploitative and explorative capabilities, firms can maximise resilience and improve international performance (Peng *et al.,* 2023).

In this light, conversational AI in the format of digital human avatars emerges as a catalyst for innovative marketing practices that can propel firms towards a sustained competitive advantage in diverse international contexts. A firm can accomplish this by (i) sensing and exploring opportunities related to changing customers' needs, (ii) seizing and exploiting value from addressing such needs, and (iii) transforming itself by continuous renewal of its processes (Teece, 2014, p. 332; Teece *et al.,* 1997; Mitrega *et al.,* 2021; Bargoni *et al.,* 2023). In line with this, we develop our first proposition as follows:

Proposition 1. Firms that integrate conversational AI in the format of digital human avatars into their international marketing strategies enhance their international dynamic marketing capabilities.

2.2. Anthropomorphism and knowledge of digital human avatars

To fully exploit the potential of digital human avatars in a global marketing context, it is suggested that they exhibit a certain level of anthropomorphism (Miao *et al.,* 2022). This human-like appearance and interaction capability makes the avatars more relatable to users and may also significantly enhance the user experience by providing seamless interactions.

The importance of anthropomorphism in information systems is well-documented, with recent research exploring the effects of anthropomorphic attributes on human–computer interactions (Choi and Drumwright, 2021). Some studies suggest that humans engaging with computer systems with human-like characteristics will have the same social norms as when interacting with other humans (Adam *et al.,* 2020). Rizomyliotis *et al.*'s (2022) findings indicate that chatbots must possess a level of sophistication that enables them to anticipate customers' unique needs and tailor their responses to meet those needs. Conversational AI should be designed to align with customers' specific interests, thereby ensuring a satisfactory level of customisation in their responses (Rizomyliotis *et al.,* 2022) and enhancing the perception of social presence and trust, resulting in brand endorsement acceptance (Jones *et al.,* 2022). Digital human avatars can become a link between the user's point of contact and the firm's knowledge base. A firm's knowledge base includes all the intellectual resources and informational assets that the company utilises to develop its products, services, and strategies, and includes (but is not limited to) tacit and explicit knowledge, employee competencies and skills, intellectual property, big data and data insights, and the outcomes of research and development (Gupta *et al.*, 2021). The use of data in particular might be critical to facilitating innovation and improving a firm's dynamic capabilities.

Additionally, while the human-like characteristics of digital human avatars can lead to positive customer experiences (Rizomyliotis *et al.*, 2022), customer acceptance of digital human avatars is highly unpredictable and complex. Schanke *et al.* (2021) found that clients' likelihood to buy increases in a real-world experiment using human characteristics in digital human avatars when

interacting with customers. However, the same clients are resistant to completing transactions if they are required to provide personal information to the robot. Zhang *et al.* (2022) found that apologies given by a chatbot can reduce customers' negative emotions and increase tolerance to errors.

Customers who interact with AI have contextualised expectations (Yang *et al.,* 2022). This means that AIs with more human-like designs are preferred in situations where customers' perceived control is high, while the opposite is true in contexts where customers have low perceived control (Bartneck *et al.,* 2010). However, conversational AI can have a negative effect when technology fails to meet the expectations it generates in customers, as explored in the literature on the concept of the uncanny valley (Saygin *et al.,* 2012). More recent research has emphasized that in some contexts, people are reluctant to engage with AI-driven assistants and interact with avatars vis-à-vis human marketing agents (Ashfaq *et al.,* 2020). However, recent evidence suggests that human likeness of digital agents can improve engagement, loyalty, efficacy, and satisfaction (Jones *et al.,* 2022). Therefore, the effectiveness of digital human avatars may extend beyond mere anthropomorphic characteristics.

Evidence suggests that these AI agents should be able to demonstrate human communication abilities, particularly by being empathetic and understanding the nuances of a situation (context-aware). This allows the system to perceive the user's environment or situation and respond accordingly, similar to how a human would. By considering context, the agent can interpret the user's intent behind a question and tailor its response to reflect those sentiments and behaviours (Kusal *et al.,* 2022). By being empathetic, and understanding users' needs and emotions, and the tone of the conversation, these agents would provide a more contextualised and relevant seamless interaction. The current state of different AI and machine learning techniques, including (but not limited to) natural language understanding (NLU), natural language processing (NLP), large language models (LLMs), retrieval augmented generation

(RAG), natural language generation (NLG), and transformers enables the development and implementation of conversational AI presenting these features. For a detailed and technical description of these technologies, we suggest (Kusal *et al.*, 2022; McTear and Ashurkina, 2024).

To facilitate the development of context-aware digital human avatars, it is imperative that these agents are trained and integrated with extensive historical datasets to recognise the various contexts of user interactions, namely linguistic, physical, persistence, and emotional contexts (Korban and Li, 2022; Kusal *et al.*, 2022). Linguistic context involves the interactions among words, phrases, sentences, and paragraphs. This dimension is vital for conversational agents as it enables them to discern the various implications of words contingent on their application, the individuals using them, and the contexts in which they are employed (Kusal *et al.*, 2022). Physical context considers environmental variables to interpret meanings and select suitable equivalents for comprehension (Korban and Li, 2022). This encompasses factors such as the locale, time, speaker, ongoing activities, and involved objects. Persistence context concerns the continuity of dialogue across a sequence of exchanges. Conversational agents must monitor the progression of dialogue, integrating data from the current interaction, prior queries, and agent-initiated actions. This retention of context not only augments functionality but also synchronises the understanding between humans and digital agents, effectively creating a mutual historical narrative of the interaction (Kusal *et al.*, 2022). Emotional context involves the identification of emotional nuances expressed through words, their phrases, or even emojis (Korban and Li, 2022; Rivu *et al.*, 2023). Understanding this context is crucial if conversational agents are to accurately assess the emotional state and mood of users, enabling them to respond in a manner that is empathetic, effective, and appropriate to the situation (Kusal *et al.*, 2022; Rivu *et al.*, 2023).

Effective integration of digital human avatars with the company's data and knowledge base enables the avatars to promptly access real-time data, market and industry data and insights, longitudinal data on user interactions, and contextual knowledge, allowing for precisely tailored conversations and responses. In addition, digital human avatars need access to a firm's tacit and explicit knowledge, as well as intellectual property and research and development. This data-driven approach guarantees that every interaction between digital human avatars and users is informed by the latest insights and data. Interactions are immediately customised for individual customers, significantly enhancing the relevance and effectiveness of the IDMCs (Buhalis *et al.,* 2023; Jones *et al.,* 2022; Bargoni *et al.,* 2023).

By integrating the firm's knowledge base into the training of digital human avatars, as suggested by Kusal *et al.* (2022), these systems can become more adept at handling nuanced human interactions. In the context of this study, the AI agent would access and retrieve information from different data sources that will equip the digital human avatar to learn about user profiles, preferences, and complaints, as well as the firm's commercial story. Some examples of these information sources include registers filled on customer relationship systems (CRMs), and enterprise resource systems (ERPs), conversations recorded through interactions within call centres, and comments made by users on firms' social media channels (Manis and Madhavaram, 2023). Therefore, the real power of the digital human avatar lies in the seamless integration of these conversational agents with the company's underlying knowledge base (Shafeeg *et al.,* 2023). The integration and synchronisation of digital human avatars with company-specific data and context can enable consumer insights at the most granular level, empowering businesses to personalise marketing and sales offerings to each individual customer (Shankar *et al.,* 2022). With training on these extensive datasets of human interactions (Diaz *et al.,* 2022), digital human avatars employ different AI techniques to identify patterns and generate relevant responses to enquiries of users (Sun *et al.,* 2023; Kot

and Leszczyński, 2022). Consequently, firms can offer seamless and intuitive human–machine interfaces impacting customer experience, adding value through a combination of physical and digital touchpoints (Jones *et al.,* 2022; Diaz *et al.,* 2022). In line with this, it is proposed that:

Proposition 2. The anthropomorphic characteristics of digital human avatars are only effective for customer engagement if integrated into the firm knowledge base, consequently enhancing the firm's international dynamic marketing capabilities.

2.3. Collective absorptive capacity for integrating digital human avatars

To successfully adopt digital human avatars as a strategic firm's resource, it is crucial to consider the factors and conditions with the potential to enhance IDMCs from the perspective of a firm's capacity to acquire, absorb, and combine these new technologies with legacy systems and a firm's big data (Teece *et al.,* 1997). This lens redefines digital human avatars as not just a resource for improving user interactions but as a capability that can empower a firm to effectively navigate the challenges and opportunities of international markets and be faster than its competitors (Katsikeas *et al.,* 2020).

Absorptive collective capacity (Roberts *et al.,* 2012) can be regarded as a dynamic capability (Teece *et al.,* 1997). Therefore, it is an appropriate framework lens that, together with IDMCs, can inform an exploration of how firms can generate and exploit digital human avatars to enhance their ability to attain and uphold resource efficiency, leading to relevant services to users and customers in international markets (Zahra and George, 2002; Eisenhardt and Martin, 2022). This concept is vital for sustained competitive advantage, as it enables firms to stay abreast of technological advancements, market trends, and emerging customer needs (Eisenhardt and Martin, 2022). Through such capacity, firms can continuously innovate, improve, and adapt to the rapidly changing international business environment (Bargoni *et al.,* 2023).

Such rooted capabilities may aid firms in assembling, reassembling, and synchronising tangible and intangible resources to sustain or amplify their IDMCs (Bargoni *et al.*, 2023). Additionally, it is suggested that firms' absorptive capacity is linked to their collective proficiency in recognising, assimilating, implementing, and exploiting new knowledge/information (Cohen and Levinthal, 1990). In a progressing digital business environment, the combination and integration of traditional resources and digital technologies are sources of sustained competitive advantage, regardless of the sector (Eisenhardt and Martin, 2022).

The adoption of AI digital human avatars may trigger the acquisition and absorption of smart technologies to be used as a mediator to retrieve existing information and collect new internal and external information that, once internalised by firms, can create new or renewed marketing knowledge (Scuotto *et al.,* 2022). The concepts of knowledge adopted in this study belong to the explicit level (Cook and Brown, 1999). Explicit knowledge refers to knowledge that is codified, documented, and easily transferable between individuals (Cook and Brown, 1999). It contrasts with tacit knowledge, which is personal, context-specific, and often challenging to formalise (Cook and Brown, 1999).

However, augmenting or strengthening IDMCs by implementing new technologies is very difficult, and demands significant ongoing financial, human, and technological resources (Morgan *et al.,* 2018). Thus, it requires a firm to create and apply new capabilities (Leonard-Barton, 1995). For example, conversational AI and digital human avatars must be linked and integrated within different existing databases of a firm. These data need to be cleaned (parametrised, lowering case, removing punctuation, hashtags, complementing missing information, removing stop words, etc) and prepared in a format that different machine learning and AI techniques can retrieve and transform into understandable information (McTear and Ashurkina, 2024). Different data from diverse sources can then be pulled out, consolidated, and used to provide relevant and valuable interactions between users and digital human avatars.

This integration requires new human skills, ongoing support from the leadership, financial resources, interdisciplinary efforts, and coordination (Kusal *et al.*, 2022; McTear and Ashurkina, 2024). Over time, the renewed capabilities and ways of operating will become deeply ingrained in the firm, fortifying the IDMCs and advantages against the competition (Leonard-Barton, 1995). Accordingly, it is proposed that:

Proposition 3. The deployment of digital human avatars requires the revitalisation of a firm's collective absorptive capacity, which in turn strengthens both adaptive and market-related exploitative and explorative international dynamic marketing capabilities.

3. Data and Method

3.1 Participants and data collection

We started our data collection process by identifying 31 companies that have successfully developed conversational AI in the format of digital human avatars. We achieved this by scanning industry reports, such as Emergen Research (2023), and conducting Google searches with relevant keywords, such as "developers of digital human avatars" and "human avatars market share". Subsequently, we utilised the LinkedIn platform to identify individuals holding senior management positions within these 31 companies. The inclusion criteria required interviewees to take a leading role in developing and deploying conversational AI and digital human avatars within an organisation. We excluded candidates who were not directly involved in the development and implementation of digital human avatars and related projects. All study participants were engaged in developing technology as well as addressing the challenges associated with integrating digital human avatars into automated digital services for users and customers.

Using LinkedIn Sales Navigator, which facilitates the micro-segmentation of members, we targeted professionals with titles such as Senior Global Partner Account Manager, Vice

President of Product, Chief Marketing and Growth Officer, Chief Information Officer, Chief Technical Officer, and Head of Product, including the names of their companies. This search yielded 74 executives across the 31 companies. We then contacted all identified candidates via LinkedIn direct messages to explain the study's scope and invite them to participate. Initially, 18 executives agreed to participate, and finally, 14 were subject to in-depth interviews, resulting in an 18 percent response rate. The interviews were conducted at mutually agreed times using online communication platforms like Zoom, Microsoft Teams, and Google Meet. Recorded with participant consent, the interviews maintained a professional yet informal tone, fostering a relaxed atmosphere that encouraged open discussion about the experiences and opinions of the executives. The participant profiles are summarised in Table 1.

Table 1: Interview sample

	Position	Tenure in Position (Years)	Sector	Headquarters	Interview length (Min)
1	Chief executive officer and co-founder	2	Conversational AI, Chatbots, Digital human avatars	Italy	87
2	Chief technology officer advisor	4	Conversational AI and Robotics	Hungary	54
3	Partnerships development manager	2	Conversational AI-Chatbots-Digital human avatars	UK	42
4	Chairman of the board/founder/chief executive officer	19	Conversational AI-Chatbots-Digital human avatars	UK	67
5	Chief technological officer	5	Conversational AI-Chatbots-Digital human avatars	UK	71
6	Head of sales and marketing	3	Conversational AI-Chatbots-Digital human avatars	Germany	58

7	Venture partner, operations and product development	4	Conversational AI-Chatbots-Digital human avatars	USA	56
8	Managing director	4	Conversational AI-Chatbots-Digital human avatars	UK	64
9	Chief executive officer and co-founder	7	Conversational AI-Chatbots-Digital human avatars	Germany	57
10	Vice president of solutions and sales	3	Conversational AI-Chatbots-Digital human avatars	USA	73
11	Chief marketing officer	2	Edutech-Digital Humans	Israel	65
12	Chief executive officer and co-founder	3	Conversational AI-Chatbots-Digital human avatars	UK	56
13	Chief executive officer and co-founder	2	Digital Tutors	USA	45
14	Chief executive officer and co-founder	2	Holograms	Australia	30

Source: Compiled by the authors

We primarily recruited participants using purposeful sampling to ensure that participants worked in companies that develop and deploy digital human avatars, ensuring their familiarity with the subject of this study (Singh *et al.,* 2021). To gather perspectives complementary to those of our interviewees, we conducted an online search on podcast and webinar repositories (e.g., Spotify, Deezer, YouTube, Apple Podcasts, and BrightTALK), and AI company websites (e.g., Inbenta and Ipsoft) to retrieve their public discussions about conversational AI and digital human avatars applied to user/customer services. We consider this data triangulation important to strengthen the validity and reliability of the data collected through the interviews, consequently strengthening our data analysis and findings (Singh *et al.,* 2021).

The collection of webinars and podcasts was also refined as a triangulation technique after we carried out Google searches using keywords related to our research questions and the names of

executives, followed by keywords (podcast and webinar). At least 26 videos and audio files were initially selected. The lead enquirer watched and listened to all the materials, discarding content that was not relevant to the scope and research question of the study. Then, the lead researcher selected ten sessions of combined webinars and podcasts featuring specialists and practitioners discussing how digital human avatars can be deployed to improve user/customer services (Table 2).

Table 2: Sample profile podcasts and webinars

Podcast/webinar	Speakers	Company	Country
The Rise of Digital Humans and Brands	Chief Executive Officer	UneeQ	USA
How Receptive Will Customers be to Avatars Based on Previous Experience?	Director of innovation, innovation principal, VP of engineering and CX expert	Capita, Speech Graphics and Brainfood Consulting	United Kingdom
Artificial Intelligence is the Future of Customer Service	Head of IT operations and customer care manager	Inbenta and Simple TV	USA and Venezuela
Avatar - A Sense of Presence	Scientist, artist, educator and senior advisor	ANA Avatar XPRIZE	USA
AI Virtual Assistant Technology Guide 2022. Tech Insights for Visionaries	Mobi dev's experts	MobiDev	USA
Using AI to Create an Exceptional Customer Experience	Chief customer officer	Conversica	USA
The Intelligence Powering Smart Intelligent Virtual Assistant (IVA)	VP of research and principal analyst	Metrigy	USA
Conversational AI	Chief scientist and SVP data science and ML	LivePerson	USA
Fireside Chat with Chetan Dube	Chief Executive Officer	Amelia/Ipsoft	USA
Conversational AI for the World	Director of cognitive delivery and implementation	Amelia/Ipsoft	USA

Source: Compiled by the authors

Webinars and digital media became increasingly popular sources of qualitative data during the COVID-19 pandemic (Tiong and Sim, 2020). Conversational AI is a relatively new field of practice and study, and as such, it is difficult to identify and access many developers of digital human avatars.

The triangulation strategy for data-gathering allowed us to capture the latest practices, perceptions, opinions, and trends on the development and implementation of digital human avatars (examples depicted in Table 3). It is suggested that a blended approach to data collection can be used to expand the data sample and improve the validity of qualitative or quantitative inquiries by observing video or listening to audio recordings (Paterson *et al.*, 2003).

The sampling method allowed us to explore participants' experiences regarding the challenges, reasons, motives, perspectives, and expectations posed by early adopters implementing DHAs. Data were thus gathered from 24 professionals, including strategists, top-level executives representing service providers, and specialists in AI conversational models. A total of 14 hours of interviews and 12 hours and 30 minutes of conversations recorded in podcasts/webinars were transcribed using Amazon Web Services transcriber, an online automated voice-to-text transcription tool. The resulting transcripts populated more than 480 pages (in Word) and were individually saved in text files for each interview/podcast/webinar. Then, we uploaded each one of the 24 text files to NVivo 12 to support the identification of common patterns, coding, and data analysis. Thematic analysis was engaged with the division between the in-depth interviews and podcast/webinar data.

3.2 Ethics

The study projects were approved by the research university ethics committee, and are aligned to the Helsinki Declaration guidelines. Verbal consent was granted by participants, with documents detailing the scope and how the data would be used by the researcher team, such as

participant information sheets and consent forms sent via email to interviewees. Each participant was assigned a number, and personal data were anonymized in the transcripts. The participant profiles of podcasts/webinars were disclosed, as the content is online in the public domain. However, their identities were not quoted in the extracts from the transcripts. We made a distinction between interviewees and podcast participants when exhibiting direct quotations in the findings and discussion sections.

3.3. Method

The data were analysed using thematic analysis, a method that allows the exploration of individuals' insights and viewpoints from and within diverse data sets (Belotto, 2018). We engaged with thematic analysis that enabled us to encapsulate common themes and sub-categories, supported by quotes retrieved from interviews (Clarke *et al.,* 2017) with examples depicted in Table 3.

Table 3: Interviews with developers of digital human avatars

Participant	**Key insight(s) gathered**	**Supportive quotes**
(7) VP, operations and product development	Brand differentiation through digital avatars	"*How the avatar responds appropriately and express emotion. For example, the avatar will say: 'Sorry, but we cannot approve that loan right now', or 'Congratulations, you have been approved*".
(8) Managing director	Integration with backend systems	*"To make this kind of avatar even useful also for customer service, you have to ensure that it's connected to other third-party IT systems with other information that is needed at the point of sale".*
(9) CEO and co-founder	Customer experience and digital avatars	*"Digital avatars can be used to provide like automated customer service, through chatbots and virtual assistants and they can handle like sort of 67% of common customer queries. They can be used to simulate training and training scenarios".*
(5) CTO	Global implementation and cultural sensitivity	*"There was a Saud lady that was built specifically for the Neon project in South Arabia. Digital coaches for sales training and*

		digital assistants to work in the clearing process in a UK university".
(6) Head of sales and marketing	Financial and technical considerations	*"Since there is no out-of-the-box connectivity at the moment...You certainly need to have the financial possibility to integrate the front-end with the back-end technologies".*

Source: Compiled by the authors

We draw on the constructionist approach in our data analysis, which emphasises the meaningfulness of repeated occurrences of a topic and the importance of the themes from the perspective of the interviewees, the inquirers, and the study objective (Creswell and Miller, 2000). This study primarily used an inductive approach to analysis, which involved open coding and assigning weights to individual participants and data meaning (Belotto, 2018). Table 4 depicts the emerging common sub-themes that were subsequently encapsulated in the three major themes and their respective frequency in the data analysed.

Data analysis was guided by the six-phase approach to thematic analysis specified by Clarke *et al*. (2017). All transcripts were arranged in a tabular form, separating questions from answers in numbered rows. In the first phase, we repeatedly read through the transcripts to familiarise ourselves with the assumptions, topics, and comments that emerged and then made initial notes. In the second stage, we assigned early codes to encapsulate extracts and then labelled the portions of data that seemed to support our quest to answer the study question (see examples in Table 3). In the third stage, we reviewed the codes we had created, identified patterns amongst them, and started grouping them into sub-themes. At this stage, we identified areas of overlap and patterns in the extracts and decided whether some of our codes were too vague or not relevant enough so they could be discarded. Codes that were more prominent or broader became sub-themes. The fourth stage consisted of revisiting the sub-themes, grouping them, and defining themes. This stage involved formulating the precise meaning of each theme and figuring out how it helped us to understand the data. Themes were run across all transcripts for refinement (Braun and Clarke, 2006), with the most common themes presented in the findings

section. Three overarching main themes were identified in the final stage through analysis of the transcripts, as depicted in Table 4. Each phase was an iterative process that required immersion into interview transcripts, coding and re-coding relevant text and refining assigned codes, sub-themes, and themes.

Table 4: Theme development details

Codes	Quantity of extracts	Frequency of the sub-themes	Main themes
1. Digital human avatars development 2. Implementation and application 3. Global knowledge distribution 4. Enhancing learning and support through digital human avatars	39	26	Technology and innovation
1. Brand safety 2. Enhancing customer relations 3. Engaging younger audiences 4. Differentiation and brand identity	29	34	
1. Knowledge engine and AI 2. Emotional and engaging interaction 3. Anthropomorphising and attachment 4. Personalisation and analytics 5. Accessibility and choice	69	45	Knowledgeable digital human avatars
1. Automated customer service 2. Common customer queries 3. Personalisation of messages 4. Interactivity	47	34	Revitalising absorptive capacity

Source: Compiled by the authors

The authors' positionality and experiences are worth mentioning, as they affected the study from original conceptualisation to data collection and analysis. At the time of undertaking this study, only one author had experience of, and active interactions with, digital human avatars, while the others had only theoretical knowledge. The enquirers' academic, professional, and first-hand experiences facilitated balanced, meaningful, and profound engagement with the data. This engagement informed the understanding of, and connection between, the findings and existing knowledge. We understand that the process described builds the validity,

transparency, and trustworthiness of our study (Singh *et al.*, 2021). The credibility of our findings and discussions rests on the fact that we were loyal to the originality of the data collected, using direct quotes and extracts from the statements given by participants and triangulation of different data sources (Creswell and Miller, 2000). The high-level categories and their ramifications to the topics revealed by study participants (Table 4) were used to elaborate further insights and discussions addressing the three propositions developed in the theory.

4. Results and discussion

This section reintroduces the study propositions and links key findings in the themes. It incorporates discussions that encapsulate participant opinions and experiences while also contributing to current knowledge on the theoretical propositions posited in Section 2. Table 5 provides a summary of the contributions which emerged from the data interpretation related to theoretical propositions, and introduces factors, nuanced relationships, and challenges that limit or enhance the adoption of digital human avatars in a firm's strategy. Table 5 is structured as follows. We first provide the insights gleaned from the interview analysis, then demonstrate the mechanisms by which the introduction of digital human avatars could facilitate IDMCs related to these insights. Finally, we relate each insight and mechanism to the literature and source used in the theory section to motivate our three propositions, developing the link to each proposition.

Table 5: Summary of insights emerging from the data analysis and the mechanisms to facilitate international dynamic marketing capabilities in a firm

Insights	How enhancement of IDMC is achieved	Literature background
Global brand management capabilities	Personalised, unique, real-time interactions, provide adaptable and customised communication with users.	Matanda and Ewing, 2012

Global adaptive capability	Application across various domains. The capacity to identify and adapt to various emotional, language and interactional styles. Facilitate real-time data gathering and interaction analytics.	Teece *et al.*, 1997; Bargoni *et al.*, 2023
Agility and responsiveness capabilities	Blend digital and physical interactions, swift personalisation on a global scale, and unique experiences.	Hadjielias *et al.*, 2022
Marketing knowledge management	Facilitate better and more fluid collaboration with users by retrieving, registering, and making the data available for global marketing and sales purposes. Proficiency in combining current explicit knowledge with new tacit knowledge.	Scuotto *et al.*, 2022
Exploitative and explorative capabilities	Enable granular consumer insights, empowering firms to globally personalise at scale marketing and sales offerings for each individual customer. Adapt their responses based on the analysis of large datasets, ensuring that communication is responsive and culturally and contextually appropriate.	Lisboa *et al.*, 2011
Absorptive capacity	Requiring substantial cross-functional engagement to effectively integrate the AI technology stack to enable the digital human avatars.	Cohen and Levinthal, 1990; Zahra and George, 2002

Source: Authors based on interview analysis

4.1 Technology and innovation effects in international dynamic marketing capabilities

Our first proposition states that *firms that integrate conversational AI in the format of digital human avatars into their international marketing strategies enhance their international dynamic marketing capabilities*, suggesting that digital human avatars enhance global brand management capabilities (Matanda and Ewing, 2012) through personalised, real-time interactions, providing adaptable and customised communication with users. The versatility of digital human avatars allows firms to refine and optimise existing operations, as well as foster innovation and the ability to respond to new market conditions.

The application of digital human avatars was further highlighted across various domains, ranging from knowledge dissemination and content delivery to user experience and marketing tactics. By enhancing accessibility, inclusivity, and personalisation in interactions with users, these avatars open up endless possibilities for firms seeking to elevate their IDMCs. This versatility is illustrated by interviewee 5: "*Digital human avatars can sell, present products*

and engage with a younger audience who are used to interact with avatars in games". This quote demonstrates that the diverse applicability of avatars underpins their role in enhancing the adaptability capability of firms, extending the study by Lu *et al.* (2010), as it explains how to swiftly address varying market demands and customer needs in international markets.

Interviewee 1's views on this matter are reflected in the statement: *"Our technology is not limited to only the pharmaceutical industry; it can also be applied in other sectors. For example, we are currently developing a virtual influencer that uses our engine to disseminate information and actively engage with potential clients. We are collaborating with HR departments"*. This statement demonstrates that digital human avatars enhance firms' dynamic marketing capabilities by providing quick, customised responses across markets (Homburg and Wielgos, 2022). The capability stems from the ability of digital human avatars to combine information and knowledge exchanges with users, substantiating discussions on reconfiguring resources and competencies to meet international market dynamics (Teece *et al.*, 1997; Barrales-Molina *et al.*, 2014; Homburg & Wielgos, 2022).

Interviewee 14's statement illustrates the value created to users: "*we were talking to this one particular manufacturing customer where their employees on the floor have to take their own lunch time to go stand in line and ask HR a question. Well, that is not a great employee experience. And if you could actually do this on your own time simply by asking a question on a virtual agent, again, you have delivered value*". Such an inefficient experience for employees is now rendered obsolete with the introduction of virtual agents.

Another example of how digital human avatars enhance a firm's IDMCs from the banking industry is the adoption of cutting-edge technology utilised by digital human avatars to revolutionise banking customer service. With the ability of digital human avatars to seamlessly blend digital and physical interactions, holographic beings are bridging the gap between impersonal online transactions and tangible in-branch experiences. We can see this clearly in

a quote from Interviewee 3: *"Banks are early adopters of digital human avatars; they already have chatbots and virtual assistants. Now, we are providing the ultimate experience with the hologram of a digital avatar in their branches"*. This hybrid service model strengthens customer relationships and aligns perfectly with the growing demand for agility and responsiveness in international marketing strategies (Eisenhardt and Martin, 2022; Bargoni *et al.,* 2023). It is a crucial component for firms' success, as identified by experts, making it an essential aspect of any exploitative IDMC strategy (Lu *et al.,* 2010; Teece, 2014; Bargoni *et al.,* 2023).

The adaptability of digital human avatars to serve various sectors, from retail to healthcare, underscores their potential to transform the standard customer service model into a more engaging, empathetic, and user-focused approach. This adaptability is a critical aspect of IDMCs (Lu *et al.,* 2010), enabling firms to penetrate new markets and better and more efficiently adapt to changes in customer demands in existing markets based on digital human avatars as a new managerial capability (Eisenhardt and Martin, 2022). For example, the application of digital human avatars to connect with younger demographics, particularly those familiar with digital and gaming environments, enhances customer brand engagement.

This is exemplified in the view expressed by interviewee 10: *"Digital human avatars can sell, present products and engage with a younger audience who are used to interacting with avatars in games"*. Therefore, these findings suggest that digital human avatars facilitate better and more fluid collaboration with users by retrieving, registering, and making the data available for marketing and sales purposes (Nalbant and Aydin, 2023). This novel technology enhances the brand's appeal amongst younger consumers and positions the brand as forward-thinking and in tune with contemporary digital trends, thereby supporting brand engagement and recognition among this audience (Matanda and Ewing, 2012).

Digital human avatars offer a unique path for brands to strategic standardisation with localised adaptation to manage brand identity across diverse international markets effectively (Matanda and Ewing, 2012). This is achieved through the customisation capabilities of these entities, as pointed out by the participants in podcast 6. The following quote captures their sentiment: *"You can take a knowledge base of helpful information about your customers, and then easily customise the digital human avatars with any different look, style and personality, thus you can create multiple look styles and personalities"*. This tailored approach ensures that user interactions with them are consistent with the brand's image and messaging while also offering a unique experience that sets the brand apart from its competitors (Jones *et al.,* 2022).

The customizability of these avatars and the ability to support multiple languages positions them as a pivotal tool for global brand management capability (Lisboa *et al.,* 2011; Matanda and Ewing, 2012). As the participants in podcast 5 stated: *"This idea of using digital human avatars as a universal translator, so that you can go to anywhere in the world, to converse with people"*. Digital human avatars facilitate engagement with diverse users and enhance the perceived value of the brand on an international scale (Makri *et al.,* 2019). The value created can be summarised as enhancing brand equity, achieving cost efficiencies, and generating higher customer insights, sales, and profits (Przegalinska *et al.,* 2019; Katsikeas *et al.,* 2020; Jones *et al.,* 2022).

Overall, the findings from the interviews provide compelling evidence supporting proposition one: digital human avatars enhance a firm's IDMCs by enabling them to leverage advanced AI capabilities to foster more dynamic, responsive, and personalised marketing strategies across global markets. This aligns with the theoretical frameworks discussed in the background of the study and offers practical insights into how these technologies can be strategically integrated to enhance international marketing effectiveness.

4.2. Knowledgeable digital human avatars and international dynamic marketing capabilities.

We explore how the assimilation of digital human avatars into a firm's operational matrix revitalises its IDMCs to test our proposition 2, which states that *the anthropomorphic characteristics of digital human avatars are only effective for customer engagement if integrated into the firm's knowledge base, consequently enhancing the firm's international dynamic marketing capabilities*. Central to this transformation is the avatars' integration with the firm's extensive knowledge base, a synergy that brings forth nuanced user engagements and a personalised digital experience. The participants in our study explained how digital human avatars can enhance and enrich interactions with customers when integrated with the firm's data-driven knowledge base and customer history, moving from mere transactions to co-creating memorable experiences with customers. A few interviewees emphasised that *the anthropomorphic characteristics of digital human avatars* are needed to deliver a human touch in crafting marketing strategies and to make these strategies agile, insightful, and responsive to the complexity of global market demands. Our proposition 2 is supported, as we found that the integration of the *anthropomorphic characteristics of digital human avatars into the firm's knowledge base* enables the avatars to access and utilise a wealth of contextual and historical data on customers, competitors, and markets (Korban and Li, 2022; Kusal *et al.*, 2022). This allows for deeper and more robust interactions that are personalised and deeply resonant with individual customer needs and preferences. The following quotes are illustrative of the views expressed by the participants on this topic. For example, Interviewee 8 stated, *"You need to integrate the digital human avatars with the current databases. To be more personalised, it needs to integrate with the customer previous interactions with the company"*. Meanwhile, Interviewee 6 also reflected on the importance of emotional responsiveness of digital human avatars as follows: *"That sort of listening and emotional responsiveness is different from*

person to person, and we are developing some analytics in our back end to be able to both identify different character types or emotional types that customers resonate with best and how to identify who they are".

Informing digital human avatars with information available in current databases and real-time user inputs can ensure that every interaction is relevant and personalised. Thus, we add empirical evidence to McTear and Ashurkina (2024) by clarifying that integration with actual firms' knowledge base equips digital human avatars to be proficient in answering contextualised questions and providing up-to-date and accurate information. This finding furthers prior empirical evidence that digital avatars can significantly improve users' engagement (Jones *et al.,* 2022).

Adopting and integrating digital human avatars with company databases facilitates two-way interactive communication between firms and users. Beyond information retrieval and answering, the technology captures and stores user interactions, aligning with exploitative and explorative capabilities (Lisboa *et al.,* 2011). Integration with legacy systems enables avatars to retrieve and analyse past purchases and preferences, enhancing the user experience. Integrating avatars with company-specific data and context enables granular user insights, empowering firms to personalise marketing and sales offerings for each individual customer at scale (Scuotto *et al.,* 2022; Shankar *et al.,* 2022).

Participants also emphasised the necessity of digital human avatars in improving the accessibility of a firm's knowledge bases to supply technology quickly with relevant information for user interactions. They highlighted the empathetic capabilities of digital human avatars, particularly in sensitive interactions, such as those involving medical conditions where empathy and understanding are crucial. For instance, the quotes obtained from interviewee 9 and podcast 1 are illustrative:

"*The digital human avatar might lean in, furrow its brow, soften its voice, and express empathy, such as saying, I'm really sorry to hear that - when a user shares, they are not having the best day*".

"*Firms implementing virtual agents are getting phenomenal adoption because those employees recognized like when they have a question, they can get [an] immediate answer. And if you think about it, you know, let's just say from the HR perspective when you have an HR question, it could be about benefits, a question like I need to get an appointment for my daughter, am I entitled to it? Where do I find this information? People will call or send an e-mail. They're gonna get an answer within three to five days. They don't have three to five days, they came to recognize that with the virtual agent, you get an immediate answer".* The capacity of digital human avatars to identify and adapt to various emotional and interactional styles also provides users with a choice in their interactions and increases firm agility capability, which would not be possible without integration into the firm's knowledge base (Hadjielias *et al.,* 2022). This technology ensures that users' experiences are accessible, emotionally resonant, and contextually relevant. An interesting narrative shared by interviewee 6 illustrates a user expressing that a customer "*misses*" her digital human avatar, named "Holly". This indicates a level of attachment and personification where users can form emotional connections with digital human avatars, viewing them not merely as technological interfaces but as entities capable of forming relational interactions.

The avatars therefore become part of the firms' exploitative capabilities that can adapt their responses based on the analysis of large amounts of data and insights on firms, markets and industries available within the firm's knowledge base. This enables digital human avatars to better predict and leverage customer behaviour patterns and preferences, ensuring that communication is responsive as well as culturally and contextually appropriate (Lu *et al.,* 2010; Teece, 2014; Bargoni *et al.,* 2023). This task can be achieved, for example, by automating

communication with customers in any market and language, establishing authentic, relevant conversations with customers in international markets with local adaptations and thus enhancing brand equity, achieving cost efficiencies, and generating higher customer insights, sales, and profits (Przegalinska *et al.*, 2019; Katsikeas *et al.*, 2020; Jones *et al.*, 2022). By combining their international exploitative and explorative capabilities, firms can maximise resilience and improve international performance (Peng *et al.*, 2023).

In conclusion, the integration of digital human avatars with a firm's knowledge base is not merely a technological upgrade but a strategic enhancement of IDMCs. By leveraging anthropomorphic features combined with advanced AI integration, the avatars meet and exceed traditional customer interaction models, offering a more personalised and deeply engaging user experience that aligns with contemporary expectations and social norms while enhancing the quality of service provided to users (Adam *et al.*, 2020; Rizomyliotis *et al.*, 2022).

4.3. Revitalising absorptive capacity

The research findings overwhelmingly support our proposition 3, which states that *the deployment of digital human avatars requires the revitalisation of a firm's collective absorptive capacity, which in turn strengthens both adaptive and market-related exploitative and explorative international dynamic marketing capabilities.* Specifically, we found that the dual capabilities of exploitation and exploration of knowledge, adaptation market-related capabilities within the context of dynamic capabilities, was key for absorptive capacity revitalisation.

Our focus was on how the introduction of digital human avatars in firms necessitates the engagement of the firm's existing knowledge base and technical infrastructure in combination with the firm's capacity to acquire new technologies and the respective skills needed to implement them. For example, the digital human avatars will retrieve information from knowledge bases which should be updated, otherwise value will not be created for the adopter

firm and its users. Interviewee 1, for example, states: *"The biggest risk for companies deploying this technology is feeding it with outdated databases"*, demonstrating that congruence should be achieved between the most updated databases and the digital human avatars tapping into them.

Our finding aligns with Cohen and Levinthal's (1990) argument that absorptive capacity is vital for adopting external knowledge and adapting it within an organisation. Participants highlighted the need for substantial cross-functional engagement to effectively integrate the technology stack that will enable digital human avatars to recognise, process, and implement available knowledge. Interviewee 10 is very clear on this: *"There's a lot of work that needs to be done at the moment in terms of the capture process, in terms of the delivery, in terms of the speed of the interactions, about the integration of AI and the avatar"*. We argue that these efforts should be combined with engagements with external partners and data sourcing, engaging with specialists in the development and synchronisation of technology.

Our findings from the interviews further demonstrate that deploying digital human avatars enhances a firm's ability to adapt swiftly to changing international market demands. However this adaptive capability should not be taken for granted, as described by Teece *et al.* (1997), and firms need to create their ability to sense and respond efficiently to market changes. Digital human avatars facilitate real-time data gathering and interaction analytics, enabling firms to swiftly adapt their marketing strategies to meet the evolving preferences and expectations of global customers. A quote from Interviewee 1 further illustrates this finding: *"the firm implementing this technology needs to map their conversational flows with customers and users, because this will determine the AI engine that I can provide"*.

When integrating digital human avatars into a firm, these avatars act as intermediators that can enhance the explicit knowledge dimension within the firm. They facilitate the acquisition of new external and internal information by interacting with diverse data sources and user inputs

using different AI techniques (McTear and Ashurkina, 2024). The capability allows them to explore current explicit knowledge, which refers to codified, documented, and easily transferable knowledge among individuals (Nalbant and Aydin, 2023). This knowledge is then combined with tacit real-time knowledge, which is personal, context-specific, and often challenging to formalise (Cook and Brown, 1999), and is absorbed through automated interactions with users. Once employed across different levels of the firm, the digital human avatars help in synthesising and disseminating this newly created knowledge. They thereby enrich the collective knowledge of a firm, consequently enhancing its marketing knowledge capability as described in prior studies by Cohen and Levinthal (1990) and Scuotto *et al.* (2022), and its capability to innovate (Audretsch and Belitski, 2022).

This continuous cycle of knowledge integration and creation in an organisation fosters an environment where strategic decisions are informed by both tacit, explicit knowledge and the data-driven empathetical knowledge of digital human avatars. This integrates the nuanced insights of collective experiences and enables the co-creation of products jointly with customers. Digital human avatars apply a practice-based perspective to knowledge creation in action where "mediators (avatars) can facilitate the translation and re-creation of knowledge in different settings" (Marabelli and Newell, 2014 p. 479).

Our findings demonstrate that exploitation and exploration practices enhanced by digital human avatar interactions with users act as a source of dynamic capability for marketing and in global markets, expanding what we know regarding the role of dynamic capabilities in new value creation (Cohen and Levinthal, 1990; Zahra and George, 2002). Within this perspective, the implementation of digital human avatars aligns with the dual dynamic capabilities of the exploitation and exploration of knowledge (Peng *et al.*, 2023) and for different innovation outcomes (Belitski and Mariani, 2023). We argue that exploitative capabilities enable firms to enhance and refine existing competencies and knowledge, optimising operational efficiencies

and customer interactions through more tailored and contextually relevant engagements (Levinthal and March, 1993). By contrast, explorative capabilities drive firms to innovate and adapt to new users' requirements and behaviours by integrating and applying novel insights gathered through AI-enhanced interactions (Peng *et al.*, 2023).

Furthermore, we find that when adopting the technologies necessary to deploy AI digital human avatars, firms will need to find a balance between the exploration of existing resources and new knowledge bases present in the market. Consequently, the adoption of AI digital human avatars and the combinative nature of supporting the acquisition, assimilation, transformation, and exploitation of new external knowledge about users within the existing internal knowledge of a firm can be considered a dynamic organisational capability (Zahra and George, 2002). Interviewee 10 discussed the potential versatility and customisation of digital human avatars: "*digital human avatars has that personalisation and also like it's basically a cost-effective tool for businesses to be able to interact without having to have a person there*". This quote is substantiated by a Podcast 2 participant: *"we use digital human avatars to automate what a service desk agent does on a daily basis, whether you're an IT service desk, in service delivery, human resources or helping employees with payroll questions"*. These findings reflect the dynamic nature of absorptive capacity, where a firm must not only understand but also apply new knowledge to improve its operational effectiveness and market adaptability.

4.4. Development of digital human avatar ecosystem

Based on the interviews and podcast analysis, we assembled the factors into a framework which illustrates how the adoption of digital human avatars could be enhanced so they contribute more effectively to a firm's international marketing strategies. The framework presented in Figure 1 delineates the factors and processes involved in integrating digital human avatars into a firm's international marketing strategy to enhance its IDMCs. Central to this framework is

the development of a firm's absorptive capacity, which enables digital human avatars to perform the dynamic capability role of accessing, assimilating, absorbing, and applying new digital knowledge and technologies for a firm's marketing strategy.

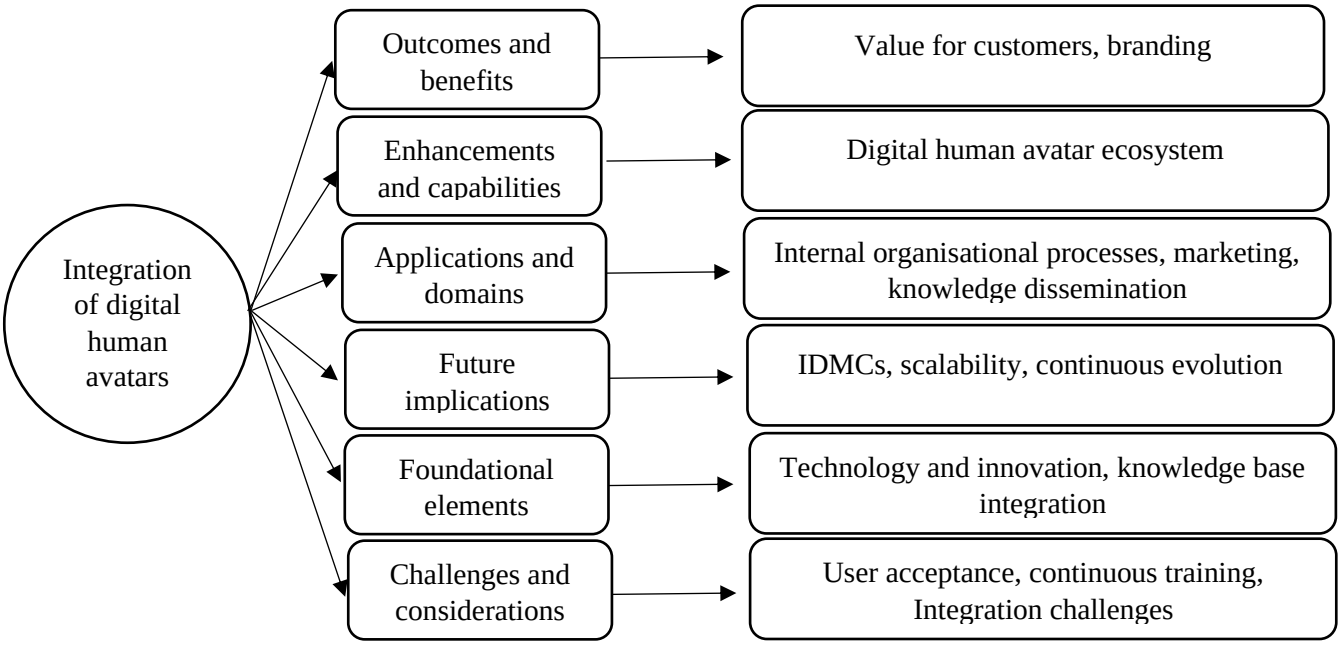


Figure 1: Framework for successful integration of digital human avatars in international marketing
Source: Authors based on interviews and podcast analysis

Figure 1 outlines the sequential and interconnected steps that a firm must undertake, starting with the initial activation of collective absorptive capacity, to recognise, assimilate, and exploit valuable external knowledge. This strategic approach ensures that digital human avatars are not merely technological tools but integral components that contribute to a firm's ability to understand and meet diverse customer demands across international markets. By following the pathways illustrated in this framework, firms can expect to capitalise on the unique dynamic capabilities of digital human avatars to engage with customers on a more personalised and efficient level.

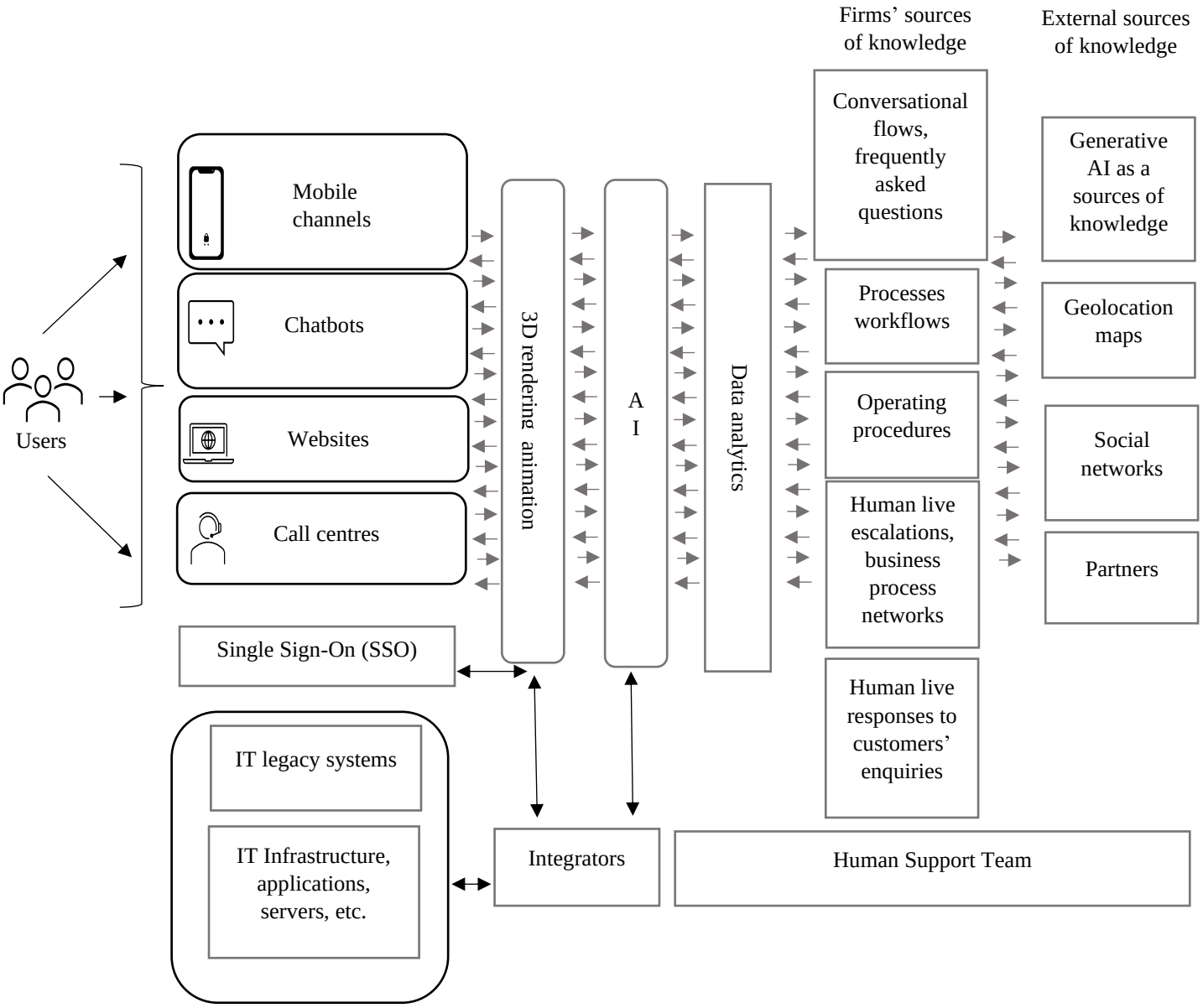
The mechanisms that enable actors such as firms and digital human avatars to effectively communicate with customers can be represented in the form of a digital human avatar ecosystem that goes beyond the firm. The adoption of digital human avatars changes the entire information technology ecosystem of a firm by integrating new digital technologies and AI and combining them with the existing IT ecosystem.

The digital human avatar ecosystem in an organisation is illustrated in Figure 2. After completing the diagram, we presented this figure to five independent AI experts across five different sectors for review and critical remarks. The experts suggested further modifications and adaptations to ensure that all elements of the ecosystem are mentioned and included.

The digital human avatar ecosystem (Figure 2) offers an in-depth structure which can be used by practitioners and academics to gain an overview of the connections between the front-end and back-end AI technologies involved in the integration of digital human avatars for customer service in organisations. Only by integrating all the AI engines with the current firm's knowledge base, it is possible to provide a seamless and relevant self-service to users of the technology.

Recent advancements in large language models such as Chat GPT-4 have facilitated the development of more contextualised interactions, and the fulfilment of gaps in knowledge about previous interactions with users. This is important, as by implementing large language models in customer service, marketers can collect new information that will enable the digital human avatars to be trained with new data.

Figure 2: Digital human avatars ecosystem structure in organisation
Source: Authors based on interviews and podcast data



The ecosystem consists of five layers. At the base of the system lies the foundational layer which includes the IT infrastructure, including for example customer relationship management (CRM) systems and various other applications and servers. These components are essential for feeding the AI stack with the vast amounts of data necessary for personalising and training digital human avatars to provide informed interactions.

The second layer includes channels through which customers can interact with digital human avatars, including mobile devices, chatbots, firm websites with integrated Single Sign-On

(SSO) capabilities, and call centres. Each of these channels integrates into the digital human avatar ecosystem, offering multiple touchpoints for user engagement.

The third layer includes the 3D Rendering Animation process, which brings avatars to life and enables them to interact with users in a realistic and engaging manner. The fourth layer is represented by the process which is powered by AI and machine learning technologies, such as Large Language Models, Generative AI, Natural Language Processing, and machine learning. These technologies work in concert to interpret, generate, and refine the avatars' communication and knowledge capabilities. The fifth layer introduces data analytics which acts as a critical conduit between the AI technologies and practical applications. This includes dialogue management systems and retrieval-augmented generation that utilise conversational flows, operational procedures, and real-time human support to ensure accurate and efficient responses to user interactions. This framework provides the contextual and situational awareness that avatars require to deliver personalised and relevant experiences to users around the globe.

The illustration of how the layers are interconnected is an important finding which shows the mechanisms of digital human avatar connectedness with other actors and systems within and outside an organisation.

The complexity of the digital human avatar ecosystem requires the acquisition, absorption, and combination of dynamic marketing capabilities and resources that will enable firms to strengthen and create new dynamic marketing capabilities, as stated in Bargoni *et al.* (2023). Digital human avatar technology is considered the front-end application, and its effectiveness depends on the integration with back-end AI systems, databases, and conversational flows. A dedicated team of operations and strategy specialists is essential for managing and disseminating knowledge across the organisation. The company needs to map the customer

journey and automate touchpoints with digital human avatars, enhancing existing self-service options.

5. Conclusion

5.1 Contribution to Theory

The exploration of digital human avatars within the framework of international dynamic marketing capabilities (IDMCs) significantly enhances our theoretical understanding of integrating conversational AI into international marketing strategies (Roberts *et al.,* 2012; Miao *et al.,* 2022). Our findings reveal that digital human avatars enhance IDMCs by incorporating advanced AI capabilities into firms' marketing strategies, facilitating more dynamic, responsive, and personalized global market engagement. The following theoretical implications have been developed based on the outcomes of this research.

Firstly, we bridge the gap in the international marketing literature by demonstrating the role digital human avatars play in the development of firms' international marketing strategies as dynamic capabilities. Additionally, the study examined the propositions that link conversational AI (in the format of digital human avatars) to firms' international marketing strategies and demonstrated the mechanisms that enable digital human avatars as a form of dynamic capability to shape international marketing strategy.

Secondly, we integrated two theoretical lenses, international marketing dynamic capabilities (IMDCs) (Bargoni *et al.*, 2023; Ciszewska-Mlinarič *et al.,* 2024) and collective absorptive capacity (Cohen and Levinthal, 1990, 1994; Roberts *et al.,* 2012), to demonstrate how a firm's ability to acquire and integrate new digital technologies into its marketing practices and strategy can further reconfigure its strategic international marketing activities. More specifically, we demonstrated the interactions between various factors within an organization and explained how digital human avatars may become a central repository of knowledge base,

as well as an effective marketing knowledge management tool (Scuotto *et al.,* 2022) meeting increasing customer expectations (Lisboa *et al.*, 2011).

Thirdly, we extend the theoretical construct of absorptive capacity by demonstrating how the adoption of digital human avatars in firms further bolsters their collective absorptive capacity and leads to the reconfiguration and mastering of IT ecosystems (Cohen and Levinthal, 1990; Zahra and George, 2002). We switch the conversation from dynamic capabilities for managers to how digital dynamic capabilities enable firms to develop strategic dynamic capabilities, both to facilitate operations and to align with the firm's marketing strategy in global markets (Christofi *et al.,* 2023). This is done by showcasing how transformations to a firm's IT ecosystem support the synthesis and dissemination of knowledge, thereby fostering a collaborative human–machine work environment that is crucial for driving innovation and securing a competitive advantage in digitally transformed international markets (Manis and Madhavaaram, 2023).

5.2 Contributions to management practice

Practically, the study provides a clear toolbox for firm managers on how digital human avatars could be efficiently adopted by firms willing to shape their international marketing strategies. By showcasing practical applications, this study can empower practitioners to envision and implement digital human avatars in ways that shape specific market and customer needs, thereby enhancing user engagement, service quality, and brand engagement. Below, we present three key recommendations for managers.

Firstly, our findings highlight the importance of enhancing global brand management and responsiveness by enabling firms to manage and enhance their international brand presence using digital human avatars. These avatars facilitate personalised, real-time interactions that can adapt to user preferences and regional market dynamics, allowing firms to optimise

operations and innovate. The flexibility of digital human avatars can serve diverse functions, from product presentations to engaging with a digitally savvy younger audience.

Secondly, our findings highlight the need to engage with customers with avatars as a form of digital transitioning from traditional customer service models to more interactive, empathetic, and user-focused models. For marketing managers, this means leveraging avatars to provide customized responses quickly across different markets and sectors, from pharmaceuticals to retail. This approach enhances customer service and also aligns with modern consumers' expectations for digital interaction, potentially increasing customer satisfaction and loyalty.

Thirdly, building on the need to leverage advanced AI for firms' marketing strategies, we suggest firm managers embed these avatars into marketing strategies in data analysis and utilise extensive data, improving their decision-making and strategic agility. The capacity of the avatars to assimilate and personalize interactions based on the firm's knowledge base will enable marketing managers to deliver finely tailored messages to their customers.

5.3. Limitations and future research

There are two main limitations of this study. Our first limitation is a lack of diversity in data sources. As digital human avatars is an emerging field, we had to limit our study to 14 experts in AI and 10 podcasts. Thus, our study primarily relies on thematic analysis of interviews with developers of digital human avatars. While this method provides deep insights into the perspectives of those directly involved in the development and implementation of digital human avatars, it may not capture the views of end-users or consumers who interact with these avatars, which can be an avenue for further research. This limitation could lead to a somewhat skewed understanding of the effectiveness and reception of digital human avatars across different user demographics and market segments. Therefore, further research will investigate, measure, or explore the phenomenon from the perspectives of early adopters of these

technologies. This can bring to light complementary knowledge which will advance academic discussions and inform practitioners in this domain.

Our second limitation is the potential bias in the interpretation of our interview data and podcasts. This study's approach to data analysis, where themes are derived from the data itself, carries a risk of subjective interpretation by the researchers. This subjectivity could influence the identification and prioritisation of themes, especially given that the analysis was informed by a constructionist approach which relies on the researchers' interpretations of the data.

To address the potential bias of interpretation, future research directions are outlined below.

Firstly, research needs to diversify research contexts and use of data sources. Future studies are encouraged to investigate the impact of digital human avatars across different organisational contexts and ecosystems, especially focusing on how these technologies are integrated and perceived in various international markets. By exploring how differing institutional forces affect the deployment and efficacy of digital human avatars, researchers can gain insights that are more generalisable and less subject to the biases of any single cultural or organisational context.

Secondly, future research should implement methodological variances and use mixed-methods approaches that combine qualitative insights with quantitative data. For instance, examining the interplay between digital human avatar ecosystems and international marketing strategies could benefit from statistical analysis to complement thematic analysis, providing a more robust and less subjective understanding of the data.

Finally, future researchers could expand stakeholder and ecosystem perspectives by widening the range of perspectives or including more stakeholders in the research. Future studies might include not just the developers and implementers of digital human avatars but also the end-users, customers, and human employees who interact with or are affected by these systems.

This broader range of viewpoints can help balance the interpretation of data and uncover impacts and perceptions that may not be visible through a stakeholder theory lens.

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