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Riding the Wind Metaverse: A Study on the Mechanisms of the Impact of Digital Employees on Resource Management in Enterprises

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Abstract. A virtual digital human is a synthesized entity in the virtual realm, constructed using computer graphics, graphic rendering, motion capture, deep learning, and other advanced technologies. It possesses human-like attributes such as physical appearance and interactive capabilities. Individuals such as Du Junfei, White Dragon, and others have emphasized the notion of digital twins. However, no precise classification exists for using virtual digital human in the enterprise sphere. They are generally referred to as digital employees. With the advancement of time, the constant advancement of science and technology, and the growing prevalence of enterprise practice, the present digital employee exhibits a novel scenario. Consequently, this article will be categorized into two groups: the digital twin, who rely on the enterprise's current employee identification, and the digital elite, who own a new identity as digital employees. The text thoroughly examines the impact of digital human selection on the competence of enterprise resource management.

Keywords: Digital Twin; Digital Elite; Resource Management.

1. Introduction

The convergence of the real economy and the digital economy, along with the digitalization of the traditional sector, is a significant objective of China's economic progress. However, in the previous digital transformation endeavours, the digital human has yet to be extensively adopted. With the impact of the coronavirus 2019 epidemic and the maturity of the relevant supporting technology, digital human are deeply involved in digital transformation and upgrading enterprises to help them improve the whole resource management process.

China's industrial digitization has been rapidly growing in recent years. Analysts at the China Business Industry Research Institute anticipate that China's digital economy will reach a market size of 56.7 trillion yuan by 2023, representing 43.5% of the country's GDP. China's digital sector businesses are experiencing tremendous growth in hardware and software domains. Part of some large enterprises also actively implement informatization and digital upgrades, but the degree of digital in traditional scale enterprises is still not high, which has a digital transformation impact on their business, the current industry digital to the enterprise in AI, big data, artificial intelligence and other fields have requirements, it has become the small and medium-sized enterprises challenging to carry out digital technology threshold.

The digital economy offers technical assistance to the tangible economy and restructures the production organization while serving as a data resource and market for the digital economy. With the increasing integration of digital technology into traditional businesses, the market size of the digital economy has been growing. Digital technology and related equipment have been more widely used, leading to the application of the digital economy in various industries. The use of digitalization in conventional sectors has been rising due to the constant advancement of new infrastructures such as 5G and AI and the rise of ideas like the Internet of Things and digital human. The application scenarios are expanding, enhancing organizations' efficiency across several production, management, and operation domains.

With the continuous maturity of new digital technology, digital human can become a new opportunity for transforming small and medium-sized enterprises. Compared with the previous industrial digitalization, the threshold of industrial digital technology led by digital human is lower, and the requirements for enterprises in the capital are lower, which is a new means for small and medium-sized enterprises to promote industrial digitalization. Digital human can also help the traditional enterprise optimize resource management, as digital enterprise development enhances the digital level of traditional enterprises; therefore, through the study of this paper, an in-depth analysis of digital human of resource management resource creation makes the traditional enterprise's understanding of digital more in-depth and comprehensive, at the same time strengthen the attention of digital transformation, innovation resource management mode.

2. Background to the Study

2.1. Integration of the Digital and Real Economies

Over time, the scientific and technological revolution and industrial revolution have developed in-depth, and the digital economy has become an essential component of the modern economic system. In the 14th Five-Year Plan, "accelerating the development of digitalization and building a digital China" is listed in a separate article, which proposes "focusing on the deep integration of the digital economy and the real economy, accelerating the construction of digital infrastructure, perfecting the governance system of the digital economy, and synergistically advancing the digital industrialization and digitalization of industries. ". The convergence of the digital economy and the real economy is a crucial factor in advancing the high-calibre growth of China's economy. It plays a significant role in facilitating the transformation and enhancement of the real economy.

The digital economy provides technical support for the real economy, reconstructs the form of production organization, and provides data sources and markets for the digital economy. Accompanied by the deepening industrial digitization of traditional enterprises, the market scale of the digital economy has been expanding; digital technology and supporting equipment have been popularised, and the digital economy has been applied to a wider range of fields. With the continuous improvement of new infrastructures represented by 5G and AI and new concepts such as the Internet of Things and digital human, the application of digitalization in traditional industries has been increasing. The application scenarios are increasing, helping enterprises improve their production, management, and operation efficiency.

2.2. Classification and Application of Digital Human in Business

The digital human is one of the new concepts created in recent years. Along with the development of digital technology, the improvement of infrastructure, and the impact of the new needs generated by the process of industrial digitization, employees in the form of digital human (digital employees) have become a new subject in enterprise management, using technology and data resources to achieve the creation, communication and sharing of value. There are two forms of enterprise digital employees: digital twin created based on enterprise employees and digital elites based on big data and artificial intelligence. Under the rapid development of AI technology, digital elites based on big data take on the roles of intelligent customer service and digital CEOs in enterprise management, thus enhancing the management level. AI (Chat GPT, Wenxin Yiyin) products in large language models have become hot spots this year. GPT has become the fastest-growing consumer-grade application in history, significantly changing the education economy, the Internet and other fields. The big language model AI makes the digital elites involved in enterprise management more vivid, allowing enterprises to communicate with digital human in natural language, improving the efficiency of enterprise information transfer. The explosion of the meta-universe concept has led many tech giants, such as Meta and Apple, to launch virtual reality devices, which are the basis for enterprises to build a digital twin. Quest, launched by Meta, is a device focusing on VR technology, offering applications that include teleconferencing and many other office software; Vision Pro, released by Apple, is an MR

device that can merge digital content with reality. Unlike VR devices, MR devices allow users to use digital content while remaining in a real-world environment, helping users build their digital human. The popularity of similar devices promotes the technology of digital twin, lowers the threshold of use, and allows digital twin to participate in business management. In addition, both the explosion of the meta-universe and virtual reality devices have attracted more tech giants to research and launch similar technologies and products, lowering the cost of using these technologies. From its debut to public time, VR technology has existed for nearly 10 years, but this period has yet to produce a revolutionary experience of new products. Now, the meta-universe fire again stands before the public vision. This year's launch of the new products also allows the user to experience the enhancement of the fire of VR products once again so that the cost of a digital twin decreases significantly.

2.3. Digital Human as a New Opportunity for Industrial Digitization

Although the degree of industrial digitization in China has been deepening, the fact is that most of the enterprises with a deeper degree of industrial digitization are traditional above-scale enterprises. In contrast, the level of industrial digitization among SMEs is generally low. Many SMEs need help with problems of low technology level, insufficient funds for transformation and transformation, and an insufficient digital talent pool. The Enterprise Digital Talent Development White Paper (2022) points out that the proportion of enterprises with year-on-year growth in digital talent training demand in 2022 is as high as 65.6% compared with 2021. The industrial digitalization demand of SMEs is strong, but effective digital technologies such as AI and the Internet of Things (IoT) have high thresholds.

In contrast, digital employees' technological and talent requirements are relatively simple. Hardware and software facilities for building digital elites and digital twin continue to grow in popularity, and using them for enterprise resource management is relatively simple. In the future process of industrial digitization, digital employees can be a new measure for SMEs to promote their digitization, and they can also be used as a supplement by enterprises above the scale that have already completed industrial digitization.

3. Literature Review

3.1. Correlation Studies of the Metaverse and the Digital Workforce

1. The Metaverse and the Digital Economy

With the deep integration and development of digital and real economies, the metaverse concept has gained wider and wider attention. At present, the academic community has yet to reach a consensus on the definition of the concept of the metaverse. However, in general, the metaverse is a technology-oriented digital virtual space based on the large-scale integration of blockchain, virtual reality, artificial intelligence, digital twins and other emerging technologies to achieve connectivity and communication with real society and to enhance the interactive experience and production intelligence of people and everything (Davis et al., 2009). As a result, the development of the meta-universe has the following three characteristics. First, the most significant feature of the metaverse is the integration of virtual and reality, using virtual technology to construct or replicate real-life scenes, bringing users a more convenient and immersive life experience (Xiong Yan et al., 2022; Kim, 2021). Secondly, based on its attributes of virtual and real integration, the meta-universe emphasizes openness and interaction, especially in the combination of intermingling and civilization to achieve the transformation of decentralized communication mode so that users can play creativity more freely in the virtual world and explore more possibilities in combination with the real world, and ultimately realize the value of co-creativity (Yu,2021; Zhou et al., 2022). Thirdly, as a product of the development of the digital economy, the meta-universe has a distinct economic orientation, while technological integration further empowers the real economy in the process of creating value, expanding the dimension of production in the real space, prompting the transformation of the

intelligence and automation of production, and bringing about a significant change in the creation of real production (Lu Liangliang et al., 2023; Guo Hai et al., 2021).

The development potential of the meta-universe is vast, and there is room for its expansion and assistance in many fields, such as high-end industrial production, interactive commerce and communication, which brings profound business model innovation (Zhao Xing, 2022). Guo Hai et al. (2023) pointed out, based on analyzing the characteristics of the meta-universe, that its business model has the three characteristics of technology-driven, scene-convergence and user-driven, and achieves value creation in reshaping the production link. Wu Songqiang et al. (2023) further argued that the value creation brought by the meta-universe runs through the whole chain of value production, value encounter, value transfer to value spillover, and benefits are expanded in the equal interaction between production and sales. As a result, the application of meta-universe technology prompts enterprises to update the production organizational structure and the logic of judging production expectations, thus further realizing the potential of productivity (Jaung, 2022).

2. Overview and Classification of Digital Employees

Empowered by meta-universe technologies, virtual digital human have gained increasing attention as avatars. A virtual digital human is a virtual person with a digital appearance. This paper, however, focuses on enterprise productivity development and uses the concept of Digital Workforce to emphasize the mechanism of using virtual digital human enterprise productivity. Digital employees, i.e., virtual images constructed in the meta-universe using artificial intelligence, digital twins, and other technologies, can facilitate enterprises' actual production process (Fengling Ding, 2023). According to the difference between the degree of technology application and actual role, digital employees can be divided into digital twin of existing employees and digital elites with brand new identities.

A digital twin is a virtual image created for a real person using digital twin technology, which is manipulated by the real person and is a virtual projection of the real person in the meta-universe (Li Zonghui, 2022). One example of using this technology is the "AI digital twin" of Gu Jia, chief of media and co-chair of the TMT group at China Merchants Securities, which can accurately analyze analysts' financial situation through their own published research reports. In the financial sector, digital twin have caused changes in human resource management, with in-depth exploration in terms of efficiency costs and practical application scenarios (Lu Minfeng, 2020). On the other hand, Wu Qiang et al. (2023) used digital twin to explore a new path of enterprise performance management and tapped into a new direction of enterprise digital management. Relying on real employees, digital twins reduce uncontrollable risks while improving productivity, enhancing the efficacy of quantitative assessment of employee performance, and bringing new possibilities for enterprise resource management capabilities.

The digital elite is a virtual image based on artificial intelligence technology, with a new character identity and a certain degree of autonomy (BEKEY, 2012). Tang Yu, the rotating CEO of the Internet company Netdragon, is a digital elite with a unique identity, using a real-time big data centre and analytics system to support the company's daily operational decisions. The digital elite achieves a crucial step in the digital transformation of enterprises from automation to intelligence, which can effectively enhance the digital competitiveness of enterprises, bring a higher degree of governance effectiveness for enterprises, and stimulate the creative vitality of enterprises (Lu Minfeng, 2020; Zhang Tiantong, 2022).

Overall, with the continued development of digital technology and the digital economy, the meta-universe gives new development space for enterprise production management, and the two classifications of digital employees precisely represent different degrees of digitization and the direction of development, bringing new possibilities for enterprise resource management.

Table 1. Comparison of similarities and differences between the two types of digital employees

	Digital twin	Digital Elite
Lay the foundation	Artificial intelligence (AI)	Real Employees
Technological base	Artificial Intelligence, Digital Twins,	Big Data, Internet of Things
Equipment foundation	AI chips, computing platforms, etc.	VR/AR/MR devices, etc.
Whether or not there is autonomy	No	Yes
Does it need to be manned?	Yes	No
Role in business	Performance Management, Efficiency Improvement	Day-to-day decision-making and operations
Level of digitization	High	Low

3.2. Studies Related to the Configuration of Enterprise Resource Management

1. Resource heterogeneity empowers resource management capacity

An enterprise's resource management capability, which refers to the effectiveness of its resources and their use, is an essential means of influencing enterprise performance and can be analyzed as a source of dominant power from the perspective of both "resources" and "capabilities" (Zahra et al., 2006). Capability theory suggests that a firm's strength lies in the utilization and management of its resources and in the construction of arrangements that enhance its competitive advantage and enable it to transcend its development (Prhalad, 1990; Winter, 2003). However, the management of resources must return to the resource itself. Some scholars point out that only heterogeneous resources can bring more core competitiveness to enterprises (Barney, 1991; Moliternod et al., 2007). Heterogeneous resources refer to resources with scarcity and hard to replace, which can create an unrepeatable and irreplaceable difference for the enterprise and maintain a prominent or leading position in the dynamic adjustment of the market (Moliterno et al., 2007). Resource management capability is a dynamic process by which firms orchestrate their heterogeneous resources to enhance corporate governance.

2. Resource programming theory: from resource integration to resource creation and optimization

Cao Hongjun et al. (2011) found that the critical factor affecting the role of heterogeneous resources in enterprises is the ability to acquire, integrate and release resources and that the management of resources by enterprises should focus on a reasonable combination of configurations to release the value of resources fully. This kind of resource management focusing on enterprise resource integration to achieve maximum competitive advantage is the resource orchestration theory, which constructs different governance efficacy in the dynamic adjustment of resources (Sirmon et al., 2007; Symeonidoud et al., 2018). Zhang Lu et al. (2019) focus on the mechanism of the role of corporate resources for initial resource allocation, which is oriented by resource actions to the formation of corporate business models. On the other hand, Fan Libo et al. (2020) analyzed the logical progression of resource management capability from resource acquisition and utilization to resource creation and optimization based on the dynamic resource management perspective and resource orchestration theory.

The fundamental role of heterogeneous resources on enterprise competitiveness has been confirmed and recognized in the academic world, and the dynamic adjustment and arrangement of resources can create and optimize resources. However, most of the above analyses are based on traditional industries or initial enterprise development, and the research on the emerging virtual digital industry

has to explore its specificity further and improve the relevant theories while paying attention to the trend of technological development.

3.3. Study on the Relationship between Digital Employees and Enterprise Resource Management

With the continuous development of digital technology, enterprises continue to promote digital transformation to allocate their resources effectively (Jay et al., 2015). On the one hand, digital transformation includes enterprise intelligent manufacturing and production process optimization, building a transformation and upgrading path for traditional enterprises to improve production quality and efficiency (Lv Tie, 2019). On the other hand, the digital transformation of enterprises should also focus on using innovative technologies to achieve organizational structure innovation and larger-scale governance effectiveness (Guo Hai, 2019). The digital transformation of enterprises should be based on the reality of their development, exploring optimization mechanisms while verifying output performance, achieving intelligent automation transformation based on solid technical support, and maximizing resource utilization (Li Hui et al., 2020).

At the level of human resource management, most existing studies focus on the work characteristics of traditional employees, proposing a series of influencing factors and optimization paths for work efficiency improvement (Wang, Asia et al., 2014; Shang, Hangbiao et al., 2022). In digitalization, Gao Zhonghua et al. (2022) put forward the mechanism of platform transformation for the optimal management of human resources. Xie Xiaoyun et al. (2021) emphasized the interaction between people and technology, raised the resource management issue in which people and technology synergize, and discussed the problems that may arise from it.

It can be seen that the current academic community in the field of enterprise digital transformation, although reached a certain consensus in principle, in the field of resource management configuration, especially in the field of human resource management, has not yet tapped into the new kinetic energy of new intelligence for the enterprise to bring about a breakthrough in the role of change, the relevant research only stays in the digital technology to optimize the role of the mechanism of the management of human personnel.

4. Main Elements and Assumptions

Virtual digital human refers to the existence of a virtual world based on computer graphics, graphics rendering, motion capture, deep learning, and other technologies to create appearance characteristics, interaction capabilities, and other human characteristics of the composite body. Although Du Junfei, White Dragon and others have paid attention to the concept of digital twin, the application of virtual digital humans in the field of enterprise still does not have a specific classification, only general with the digital employees to refer to. Moreover, with the development of the times, the continuous progress of science and technology and the increase of enterprise practice, the current digital employee presents a new situation. Accordingly, this paper will be divided into digital employees **(relying on the enterprise's existing employee identity) and digital elite (with a new identity of digital employees)**. Moreover, it explores in detail the effect of digital employee selection on enterprise resource management capability.

Resource management in firms is an inaccessible part of firm organizational operations; Hu Yuanlin and Zhang Shuang (2018) explored the mediating role of resource management in environmental regulation on firm performance; Zhao Jianbo et al. (2009) found a strong correlation between resource management and firm performance; Wan Ru (2022) explored the value of resource management in firms in the communications industry; Liu Lijiang (2005) verified the benefits of resource management for firms from a technological level verified the benefits of resource management for enterprise development. Enterprise resource management significantly impacts enterprise performance; this paper starts from the generality of resource management and finally adopts the

four-dimensional scale developed by Fan Libo et al., i.e. resource acquisition, resource utilization, resource creation and resource optimization.

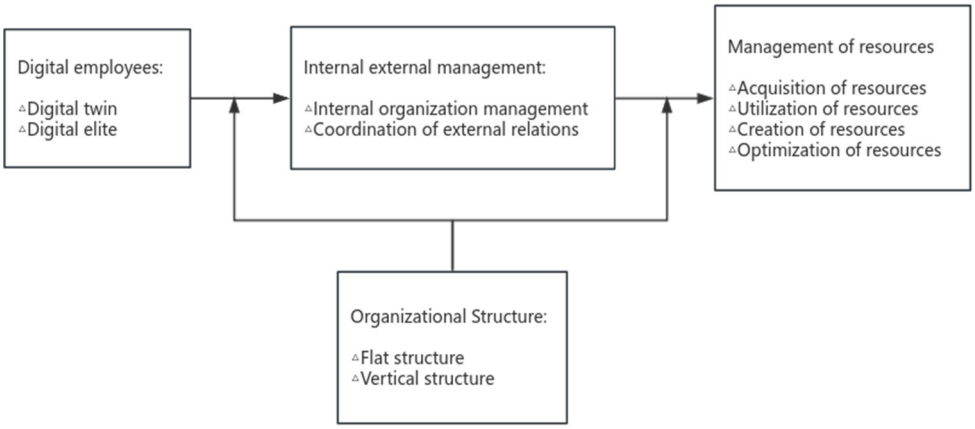

Figure 1. Flowchart of Digital Employee Engagement in Enterprise Resource Management

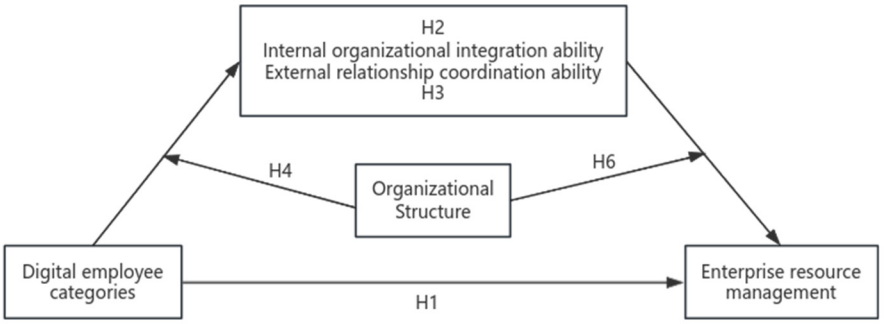

Figure 2. Research hypothesis map

4.1. Digital Employee Categories and Their Impact on Enterprise Resource Management

According to the different identity characteristics, we can divide the enterprise's digital employees into the digital twin established by the existing employees and the digital elite established by artificial intelligence. Digital twin, equivalent to the existing digital employees for the meta-universe world of a copy of the reproduction, often for the enterprise's senior managers of the personal image and data reconstruction, in addition to undertaking data processing and analysis of the function, but also instead of attending some of the meetings and activities. The digital elite is a digital person with a "new" identity; they will have a new appearance, background and corporate identity, compared with the digital twin closer to the real employees; in addition to completing the basic tasks, the digital elite can also make autonomous decision-making behaviour through the empirical analysis of big data fitting. According to the understanding of resource management theory, this paper mainly adopts the classification of enterprise resource management by Professor Fan Libo and others; that is, enterprise resource management includes four dimensions: resource acquisition, resource utilization, resource creation and resource optimization.

Enterprise resource acquisition refers to the process by which an enterprise obtains the resources, technology and knowledge it needs to build a competitive advantage. There are three ways of enterprise resource acquisition: resource cooperation, resource transfer and resource exchange. Resource cooperation refers to the cooperation between enterprises and other individuals or organizations in the market to obtain scarce resources and make up for their respective deficiencies; resource transfer refers to the use of non-commercial means by enterprises to obtain resources from other enterprises by doing an excellent job of interface management, and do not give back resources to other enterprises in a reverse manner (Yang et al., 2013); resource exchange emphasizes the

principles of commerciality and reciprocity, and enterprises obtaining entrepreneurial resources from the outside need to give back specific resources or value to the other party (Yang et al., 2013). resources from the outside, the enterprise needs to give back specific resources or value to the other party (Sheila et al., 2010). Resource cooperation, transfer and exchange are strategic behaviours that have a significant impact on the development of enterprises, while both digital twin and digital elites are still essentially a figurative manifestation of the machine platform and temporarily cannot decide on strategic behaviours; at the same time, in order to demonstrate the importance of their cooperation, transfer and exchange of resources, enterprises are more inclined to use senior management to attend relevant meetings and activities Although the processing of complicated data by digital employees can simplify the obstacles in the process of enterprise resource acquisition, information processing is not the central application scenario for digital twin and digital elites. Therefore, the impact of the digital workforce on access to corporate resources is very small.

Enterprises are a set of resources, and the competition between enterprises revolves around the competition for and utilization of resources. Enterprise resource utilization can be divided into internal resource utilization and external resource utilization (Chenyou Wang, 2022). For the enterprise's internal resource utilization, mainly focusing on the resource utilization of accounting accounts, existing research has shown that the digital employee has a significant facilitating effect on the enterprise's accounting information processing and internal resource integration, but it is not related to the digital twin and the digital elite status, which is reflected in the power of its essential functions, for the use of external resources mainly from enterprise networked embedding, cooperative clustering, and user participation. The resource management of enterprise networked embedding and cooperative clustering requires the construction of an enterprise ecosystem, and the digital employees of a single enterprise cannot improve resource utilization. However, the virtual image of digital employees can enhance user participation (Ye Di, 2012). At the same time, the degree of promotion of new things for user participation is much greater than that of familiar things (Xie Xuemei et al., 2019), so both digital elites and digital twins will positively affect enterprise resource utilization.

Enterprise resource creation is integrating and recreating the value of existing resources, which is the core source of competitive advantage and the necessary guarantee for the enterprise's survival. Digital employees can make decision-making suggestions, produce low-order creation products and provide essential management services for enterprise resource creation. Digital bilocation (Du Junfei, 2022) at the beginning of creation is fed with a large number of ontology-related information, relying on the ontology's thinking and action logic for output, while directly under the command and coordination of the ontology and suggestions for resource creation can only be made from the ontology's point of view, subject to the ontology's level of creativity. Digital elites (Ouyang Jinquan, 2022) are fed with a large amount of information related to their fictional identity backgrounds during creation to build them into top employees in the field, and their decisions on resource creation are the optimal solutions under the identity derived through extensive data analysis. Therefore, digital employees have a positive impact on corporate resource creation.

Resource optimization is the process of readjusting the resource allocation that one already has (Lan Baoxiong et al., 2011). For digital employees, in addition to making detailed records and analyses of the company's resource allocation situation, the most important thing is to present and return the results as an individual unit to help the top management of the enterprise formulate strategies. The hypothesis is formulated by analyzing the enterprise's four dimensions of resource management as described above.

H1a: Digital twin has a positive effect on enterprise resource management

H1b: Digital elites have a positive effect on enterprise resource management

4.2. The Mediating Role of Internal and External Management Capabilities of Enterprises

Internal organizational integration capability is the ability of a firm to coordinate and organize internal personnel, resources and production scale to adapt to changes in the competitive environment during

the management process (Eisenhard & Martin, 2019). At present, due to the immaturity of the virtual image technology of the digital employee, it still needs to rely on 2D or 3D devices to present and is not as intuitive and intimate as the real HR, which will have a negative impact on the coordination of internal personnel within the organization, the digital employee is the adjustment of the organizational resources and the scale of production as decided by the management. The digital twin can carry out personnel scheduling and small-scale resource adjustment by the identity and prestige of the "body", compared with the digital elite, who are in an unfavourable position due to the fictitious nature of their identity. To sum up, digital employees play a negative role in internal organizational integration, while digital elites play a more prominent role than digital twin. The integration of internal organizations emphasizes the optimization of organizational structure and the enhancement of organizational efficiency, which deepens the mastery of corporate resources and positively affects the utilization and optimization of corporate resources.

An enterprise's external relations coordination capacity is its ability to maintain its relationships with government departments, customers and suppliers to adapt to the requirements of the competitive environment. In the context of the firm's external environment, these relationships constitute the most important triggers for changes in the competitive environment. Therefore, the firm must dynamically adapt to these external relationships. Digital employees attend events and meetings with their unique virtual identities and images to maintain the relationship between the enterprise and the outside world, which can rapidly integrate information and present a high-tech image of the enterprise. However, at the same time, it may also lead to the external perception that the enterprise does not attach importance to maintaining its relationship with it. Compared to digital twin, digital elites present a higher level of technology and attract the attention of investors. Maintaining a good relationship between enterprises and the outside is an essential way for enterprises to obtain resources, improve the success rate of enterprise resource replacement, and at the same time, lay a good foundation for enterprise resource creation and facilitate enterprises to integrate into the ecosystem to obtain customer participation.

Accordingly, the hypothesis is formulated

H2a: The ability to coordinate external relationships mediates between the digital twin and resource management.

H2b: The ability to coordinate external relationships mediates between digital elites and resource management.

H3a: Internal organizational integration capabilities mediate between the digital twin and resource management.

H3b: Internal organizational integration capabilities mediate between digital elites and resource management.

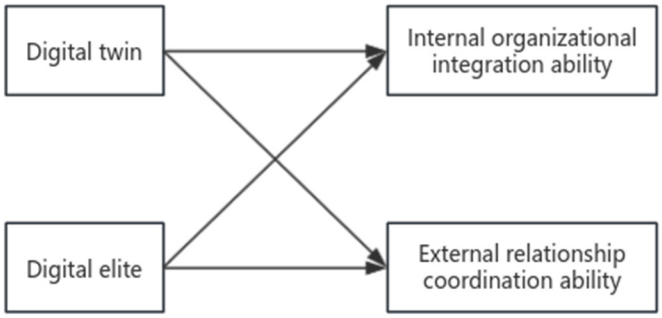

Figure 3. Schematic representation of the role of the digital workforce in the internal and external management of an organization

4.3. The Moderating Role of Organizational Categories

A flat organizational structure in the contemporary business environment has become increasingly popular due to its high efficiency and flexibility. Compared to traditional hierarchical organizational structures, flat organizations are characterized by simplicity of structure, greater autonomy of employees, faster flow of information and higher efficiency. There is no excessive hierarchy in a Flat organizational structure besides redundant and management positions. At the same time, in an organization of employees with greater autonomy and flexibility, simple decision-making employees prefer to deal with their own rather than have the digital elite perform on their behalf. At the same time, due to the simplicity of the organizational structure, a flat organizational structure requires more robust communication and cooperation. The deeper the communication between employees, the closer the cooperation becomes. Digital employees who are more familiar with their identity will be more motivated and enthusiastic. Therefore, a flat organization will affect the role of digital employees in internal and external management. At the same time, a flat organization has fewer layers and a more straightforward structure, thus increasing the average resource management tasks per employee and increasing the speed of information flow with a greater density of information carried in a single communication. A flat organization invariably creates a strong internal staff collation ability and accelerates the speed of resource flow. The internal organizational integration ability of the company has a significant impact on the comprehensive use of employees' personal qualities as well as the degree of staffing and resource control. Therefore, flat organization affects the role of internal organizational integration and inter-firm resource management. A flat organizational structure requires fewer management levels and higher external coordination ability when externally replacing resources.

Larger companies with complex structures, high levels of specialization and increased management difficulties often use verticalized organizations. In vertical organizations, the large size of resources, complex staffing structure and inefficient labour shortage are essential factors affecting the efficiency of their resource management. A large number of fundamental decisions are required in verticalized organizations. Thus, the decision-making recommendations made by digital employees through big data analytics and other means will primarily improve organizational functioning. At the same time, compared with the digital twin, the new appearance of the digital elite also makes it easier to correspond to a specific position in the vertical organization, filling the labour resource gap and maintaining its vertical structure. Verticalized organizations are prone to resource redundancy and irrational allocation in resource management due to their extensive system and many levels. Therefore, vertical organizations have higher requirements for internal organizational integration ability and higher expectations for external relationship coordination ability. The vertical organization has personnel, and the redundant information generated in management and practice is also more extensive, and the opportunity for resource replacement with the outside world increases. As a result, organizational structure impacts internal integration and external relationship coordination in resource management.

Accordingly, the hypothesis is formulated:

H4: Organizational structure plays a moderating role between (a) the digital twin and (b) the digital elite, and the ability to integrate organizations within the firm, i.e. flat and verticalized organizations, will affect the relationship differently.

H5:Organisational structure plays a moderating role between (a) the digital twin and (b) the digital elite's ability to coordinate with the firm's external relationships, i.e. flat and verticalized organizations will have different effects on this relationship.

H6: Organizational structure moderates between (a) internal organizational integration and (b) external relationship coordination and resource management capabilities, i.e. flat and verticalized organizations will affect this relationship differently.

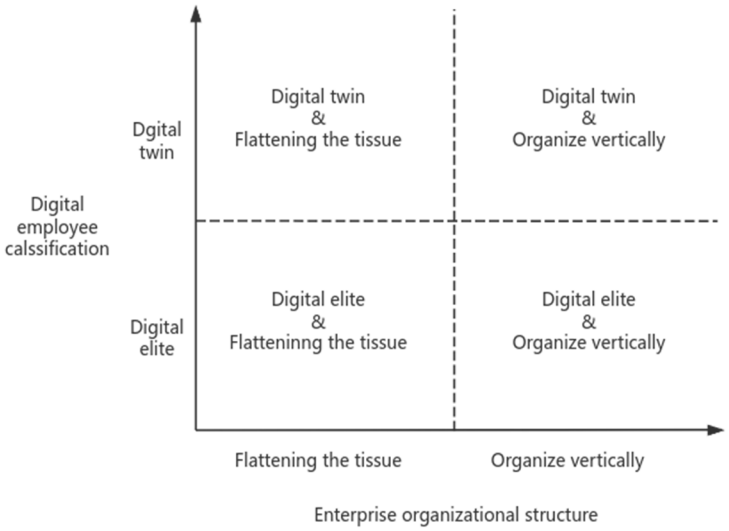

Figure 4. Schematic representation of the impact of organizational structure and digital workforce on business management.

5. Empirical Studies

5.1. Research Design

The main research variables in this paper include digital twin, digital elites, internal management capabilities of organizations, coordination capabilities outside of organizations, flattening and verticalization of organizational structures, and resource management capabilities of firms. For each variable, three questions in the questionnaire were set to investigate the respondents' perception level or evaluation of it, and the variables were measured by dividing the respondents' satisfaction level into five levels. The measurements of digital employees and digital elites refer to the ideas proposed by Wu Qiang (2023) in his study of digital twin; the measurements of internal and external management of enterprises refer to the organizational effectiveness scale proposed by Quinn et al. (2023) and the external relationship scale of enterprises proposed by Xu Jianzhong et al. (2017); the measurements of enterprise resource management refer to the Fan Lipo et al.'s (2020) development of the four-dimensional scale; and the relevant scales were adapted to the characteristics and requirements of the study in this paper.

5.2. Empirical Results and Analyses

1. Common methodological biases

In empirical studies based on questionnaires, if the same subjects answer all the observed variables in the questionnaire, it often triggers common method bias, affecting the study results. In this paper, the common method bias analysis of 183 questionnaires was conducted, and the contribution rate of the first principal component factor was obtained to be 26.716%, which is less than 40%, indicating that this questionnaire survey does not have significant common method bias problems.

2. Reliability and validity tests

In this paper, combined reliability (CR) and item loadings were used to test the reliability of the questionnaire, structural validity was tested by validated factor analysis, and AVE was used to evaluate the aggregation validity of the scale (see Table 1). In addition, this paper used whether the square root of the latent variable AV E was more significant than the correlation value between the latent variables to test the discriminant validity (see Table 2)

Table 2. Table of relevant variables

variable name		Title number	entry (in a dictionary)	reference source
Digital Workforce	digital twin	DT1	I think the digital twin has been involved in the running of the company	Wu Qiang et al. (2023)
		DT2	I think the digital twin has taken hold in the company	
		DT3	I think the digital twin involves a certain department of the company in the	
	The Digital Elite	DE1	I think the digital elite are already involved in the running of the company	
		DE2	I think the digital elite have taken over the company	
		DE3	I think the digital elite is involved in a certain department of the company in the	
Internal and external management	Internal organizational management	IO1	I think our company is very cohesive	Quinn et al. (1983)
		IO2	I think our company is very efficient	
		IO3	I think our company is flexible enough to respond to changes in the environment	
	External relations coordination	ER1	I think our company works better with external collaboration	Xu, Jianzhong et al. (2017)
		ER2	I think our company has a high level of interaction with external collaboration	
		ER3	I think our company is better at sustaining external collaboration.	
organizational structure	flatten	FO1	I think the company gives me more autonomy	Porter et al. (1964)
		FO2	I think the company communicates information quickly and efficiently	
		FO3	I think the organizational structure of the company is relatively simple	
	verticalization	TO1	I think I'm often the enforcer of the company's orders.	
		TO2	It takes some time to get the company's message across.	
		TO3	I think the organization of the company is very clear	
Enterprise resource management		RM1	I believe that businesses have easy access to the resources they need	Fan Libo et al. (2020)
		RM2	I think companies can use the resources they receive wisely	
		RM3	I think companies can create an appreciation of their original resources	
		RM4	I think companies can optimize the resources they receive	

From Table 1, we can see that the CRs for digital twin, digital elite, internal organizational management, external organizational coordination, flattening, verticalization, and enterprise resource management are 0.823, 0.889, 0.751, 0.732, 0.874, 0.901, 0.727, respectively, which are more significant than 0.7; the AVEs for the seven variables are 0.709, 0.728, 0.502, 0.578, 0.697, 0.752, 0.510, which are all greater than 0.5; and Cronbach's α for the 7 variables are 0.821, 0.889, 0.750, 0.735, 0.873, 0.900, 0.720, which are all greater than 0.7. As shown in Table 2, the square root of the AVE of the 7 variables is greater than the correlation coefficient between the latent variables. All of the above indicators show that the measurement scale has good reliability and validity.

Table 3. Indicators for evaluating the reliability and validity of measurement scales

first-order variable	second-order variable	type of question	factor loading	AVE	CR	Cronbach's α
digital person	digital twin	I think the digital twin has been involved in the running of the company	0.770	0.709	0.823	0.821
		I think the digital twin has taken hold in the company	0.727			
		I think the digital twin involves a certain department of the company in the	0.839			
	The Digital Elite	I think the digital elite are already involved in the running of the company	0.818	0.728	0.889	0.889
		I think the digital elite have taken over the company	0.853			
		I think the digital elite is involved in a certain department of the company in the	0.888			
	Internal organizational management	I think our company is very cohesive	0.706	0.502	0.751	0.750
		I think our company is very efficient	0.725			
		I think our company is flexible enough to respond to changes in the environment	0.694			
	Coordination of external organizations	I think our company works better with external collaboration	0.756	0.578	0.732	0.735
		I think our company has a high level of interaction with external collaboration	0.764			
		I think our company is better at sustaining external collaboration.	0.848			
organizational structure	flatten	I think the company gives me more autonomy	0.832	0.697	0.874	0.873
		I think the company communicates information quickly and efficiently	0.848			
		I think the organizational structure of the company is relatively simple	0.852			
	verticalization	I think I'm often the enforcer of the company's orders.	0.870	0.752	0.901	0.900
		I think the company communicates information quickly and efficiently	0.869			
		I think the organizational structure of the company is relatively simple	0.861			
	Enterprise resource management	I believe that businesses have easy access to the resources they need	0.723	0.510	0.727	0.720
		I think companies can use the resources they receive wisely	0.720			
		I think companies can create an appreciation of their original resources	0.654			
		I think companies can optimize the resources they receive	0.410			

Table 4. Square root of mean, variance and AVE of latent variables

first-order variable	second-order variable	latent variable mean	latent variable variance (statistics)	The square root of AVE
digital person	digital twin	3.231	0.752	0.842
	The Digital Elite	3.769	0.974	0.853
	Internal organizational management	3.891	0.508	0.709
	Coordination of external organizations	3.744	0.500	0.760
organizational structure	flatten	3.115	1.175	0.835
	verticalisation	3.115	1.203	0.867
	Enterprise resource management	3.759	0.434	0.714

3. Descriptive statistics

The means, standard deviations and correlation coefficients of the seven variables of digital twin, digital elite, internal organizational management, external organizational coordination, flattening, verticalization and enterprise resource management are shown in Table 5.

Table 5. Correlation coefficients between variables

first-order variable	second-order variable	average value	(statistics) standard deviation	1	2	3	4	5	6	7
digital person	digital twin	3.231	0.867	-						
	The Digital Elite	3.769	0.987	0.843**	-					
	Internal organizational management	3.891	0.713	0.831**	0.762**	-				
	Coordination of external organizations	3.744	0.707	0.781**	0.723**	0.700**	-			
organisational structure	flatten	3.115	1.084	0.793**	0.719**	0.801**	0.888**	-		
	verticalisation	3.115	1.097	0.804***	0.714**	0.787**	0.902**	0.980**	-	
	Enterprise resource management	3.759	0.659	0.860**	0.856**	0.789**	0.830**	0.832**	0.827**	-

Note: * is $p<0.05$, ** is $p<0.010$, *** is $p<0.001$

4. Hypothesis testing

In this paper, the research hypotheses are tested by linear regression, and the results of regression analysis are shown in Table 4-Table 7. Among them, model M1 is used to test H1 (direct effect); models M1, M2, and M3 are used to test H2 (mediating effect); models M1, M4, and M5 are used to test H3 (mediating effect); model M7, M8 is used to test H4 (moderating effect); model M8, M9 is used to test H5 (moderating effect). Models 4 and 8 were used to test H6 (moderating effect).

Table 6. Direct effects

modelling	M1	
variant	Enterprise resource management	
digital twin	0.653***	
The Digital Elite		0.571***
R^2	0.7399	0.7322
ΔR^2	0.7347	0.7269

Note: * is p<0.10, ** is p<0.050, *** is p<0.010, the same below

The test of the direct effect between digital employee categories and EAM was analyzed in a regression analysis with EAM as the dependent variable and digitally altered and digital elites as independent variables, respectively (see Model M1). The regression results show that digital alters significantly affect EAM (β=0.653, p<0.001). Therefore, H1a is validated. Digital elites significantly positively affect enterprise resource management (β=0.571, p<0.001). Therefore, H1b is validated.

Table 7. Intermediation

modelling	M2		M3		M4		M5	
variant	External coordination capacity		Enterprise resource management		Internal organizational management capacity		Enterprise resource management	
digital twin	0.636***		0.412***		0.683***		0.503***	
The Digital Elite		0.517***		0.357***		0.551***		0.406***
External coordination capacity			0.379***	0.414***			0.220*	0.300***
Internal organizational capacity								
R^2	0.6102	0.5221	0.8044	0.8264	0.6900	0.5809	0.7576	0.7766
ΔR^2	0.6024	0.5125	0.7964	0.8193	0.6838	0.5725	0.7477	0.7675

Note: * is p<0.10, ** is p<0.050, *** is p<0.010, the same below

For the test of the intermediary role of internal organization integration ability, the intermediary role of internal organization management ability and external coordination management ability are tested, respectively. Firstly, regression analysis was conducted with enterprise resource management as the dependent variable and digital twin and digital elite as the independent variables (see model M1). The regression results showed that the coefficient of the digital twin was β = 0.653, p < 0.001, and the coefficient of the digital elite was β = 0.571, p < 0.001; secondly, regression analysis was conducted with the external coordination and management capacity as the dependent variable, and digital twin and digital elite were respectively used as the independent variables for regression analysis (see model M2). The regression results of digital twin (β = 0.636, p < 0.001) and digital elite (β = 0.517, p < 0.001) both have a significant positive effect on external coordination and management ability; Finally, regression analyses were conducted with enterprise resource management as the dependent variable, and digital twin and external coordination and management ability, digital elite and external coordination and management ability, respectively, as the independent variables (see model M3). The

regression results show that digital twin (β = 0.412, p < 0.001) and digital elite (β = 0.357, p < 0.001) have a significant positive effect on enterprise resource management, and external coordination management capability has a significant positive effect on enterprise performance. According to Bootstrap's three-step method, the direct and indirect effects are significant, and external coordination management ability fully mediates. Therefore, the effect of digital human on enterprise resource management has an effect through the mediating role of external coordination management capability. That is, external coordination management ability plays a mediating role in digital twin and enterprise resource management, H2a is verified, and external coordination management ability plays a mediating role in digital elite and enterprise resource management, H2b is verified.

Regression analyses were conducted with internal organizational management capability as the dependent variable and digital alter egos and digital elites as the independent variables, respectively (see Model M4). The regression results in digital twin(β = 0.683, p < 0.001) and digital elite (β = 0.551, p < 0.001) both had a significant positive effect on internal organizational management capability; finally, regression analyses were carried out with EBM as the dependent variable, digital twin and internal organizational management capability, digital elite and internal organizational management capability, respectively, as the independent variables (see model M5). The regression results show that digital twin(β = 0.503, p < 0.010) and digital elite (β = 0.406, p < 0.001) have a significant positive effect on enterprise resource management, and internal organizational management capability has a significant positive effect on enterprise performance. According to Bootstrap's three-step method, the direct and indirect effects are significant, and internal organizational management capability fully mediates. Therefore, the effect of digital human on enterprise resource management has an effect through the partial mediating role of internal organizational management competence. That is, internal organizational management capability plays a mediating role in digital twin and enterprise resource management, H3a is verified, and internal organizational management capability plays a mediating role in digital elite and enterprise resource management, H3b is verified.

Table 8. Regulatory effects (1)

modelling	M6		M7		M8		M9	
variant	Internal organizational integration capacity				External management coordination capacity			
digital twin	0.630***		0.650***		0.246*		0.239*	
digital twin x Flat	0.091*				0.036*			
digital twin x Verticalisation			0.090*				0.052*	
The Digital Elite		0.498**		0.504**		0.301**		0.277**
Digital Elite x Flat		0.092*				0.074*		
Digital Elite x Verticalisation				0.088*				0.068*
R^2	0.7595	0.7320	0.7454	0.7183	0.8075	0.8158	0.8275	0.8366
ΔR^2	0.7445	0.7153	0.7295	0.7006	0.7955	0.8043	0.8167	0.8264

For the moderating role of organizational structure in digital human and firms' internal organizational integration capability, the moderating role of internal organizational integration capability and

external management coordination capability were tested separately. Regression analyses were conducted with internal organizational integration capability as the dependent variable, the interaction terms of digital twin, digital twin and flattening, and the interaction terms of digital elite, digital elite and flattening as the independent variables, respectively (see Model M6). The regression results show that the positive effect of the interaction term of digital twin and internal organizational integration on flattening is significant ($\beta = 0.91$, $p < 0.1$), indicating that organizational flattening has a significant positive moderating effect on the relationship between digital twin and internal organizational integration capabilities; the positive effect of the interaction term of digital elite and internal organizational integration on flattening is significant ($\beta = 0.092$, $p < 0.1$), indicating a significant positive moderating effect of organizational flattening on the relationship between digital elites and firms' internal organizational integration capabilities. Regression analyses were conducted with internal organizational integration capability as the dependent variable, the interaction terms of digital twin, digital twin and verticalization and the interaction terms of digital elite, digital elite and verticalization as the independent variables, respectively (see Model M7). The regression results show that the positive effect of the interaction term of digital twin and internal organizational integration on verticalization is significant ($\beta = 0.090$, $p < 0.1$), indicating that organizational verticalization has a significant positive moderating effect on the relationship between digital twin and internal organizational integration capabilities; the positive effect of the interaction term of digital elite and internal organizational integration on verticalization is significant ($\beta = 0.088$, p <0.1), indicating a significant positive moderating effect of organizational verticalization on the relationship between digital elites and intra-firm organizational integration capabilities. Therefore, organizational structure plays a moderating role between the digital twin and digital elites, and internal organizational integration capabilities of firms, i.e., flat and verticalized organizations, will have a different impact on the relationship, as validated by H4.

Regression analyses were conducted with external management coordination capability as the dependent variable and the interaction terms of digital twin, external management coordination capability, digital twin, and flattening and the interaction terms of digital elite, external management coordination capability, digital elite, and flattening as the independent variables, respectively (see Model M8). The regression results show that the positive effect of the interaction term of digital twin and external management coordination of the firm on flattening is significant ($\beta = 0.036$, $p < 0.1$), indicating that organizational flattening has a significant positive moderating effect on the relationship between digital twin and external management coordination capability of the firm; the positive effect of the interaction term of digital elite and external management coordination of the firm on flattening is significant ($\beta = 0.074$, p <0.1), indicating a significant positive moderating effect of organizational flattening on the relationship between digital elites and firms' external management coordination capabilities. Regression analyses were conducted with external management coordination capability as the dependent variable, split by the interaction terms of digital twin, external management coordination capability, digital twin and verticalization and the interaction terms of digital elite, external management coordination capability, digital elite and verticalization as the independent variables (see model M9). The regression results showed that the positive effect of the interaction term of digital twin and external management coordination of the firm on verticalization was significant ($\beta = 0.052$, $p < 0.1$), indicating that organizational verticalization had a significant positive moderating effect on the relationship between digital twin and the external management coordination capability of the firm, and that the positive effect of the interaction term of digital elites and external management coordination of the firm on verticalization was significant ($\beta = 0.068$, p <0.1), indicating a significant positive moderating effect of organizational verticalization on the relationship between digital elites and firms' external management coordination capabilities. Therefore, organizational structure plays a moderating role between the digital twin and digital elites' ability to integrate with the firm's external coordination management, i.e., flat and verticalized organizations will have different effects on the relationship, as validated by H5.

Table 9. Regulatory effects (2)

modelling	M10		M11	
variant	Resource management			
Internal integration capacity	0.646*	0.326*		
Internal integration capability x flattening	0.071*			
Internal integration capability x verticalization		0.091*		
External management coordination capacity			0.498***	0.504**
External management coordination capacity x flattening			0.067*	
External management coordination capacity x verticalization				0.158**
R^2	0.7387	0.7342	0.7453	0.7547
ΔR^2	0.7224	0.7175	0.7294	0.7394

For the moderating role of organizational structure between internal organizational integration and external relationship coordination and resource management capabilities, regression analyses were conducted with resource management as the dependent variable, and the interaction terms of internal organizational integration capabilities, flattening, internal organizational integration capabilities and flattening, and the interaction terms of internal organizational integration capabilities, verticalization, internal organizational integration capabilities and verticalization, respectively, as the independent variables (see Model M10). The regression results show that the interaction term of internal organizational integration and flattening has a significant positive effect on firm performance ($\beta = 0.071$, $p < 0.1$), indicating that flattening has a significant positive moderating effect on the relationship between internal organizational integration and resource management; the interaction term of internal organizational integration and verticalization has a significant positive effect on firm performance ($\beta = 0.091$, $p < 0.1$), indicating that verticalization has a significant positive effect on the relationship between internal organizational integration and resource management. Verticalization has a significant positive moderating effect between internal organizational integration and resource management. Regression analyses were conducted with resource management as the dependent variable and the interaction terms of external coordination management capability, flattening, internal organizational integration capability and flattening and the interaction terms of external coordination management capability, verticalization, external management coordination capability and verticalization as the independent variables, respectively (see Model M11). The regression results show that the interaction term of external management coordination and flattening has a significant positive effect on firm performance ($\beta = 0.067$, $p < 0.1$), indicating that flattening has a significant positive moderating effect between external management coordination and resource management, the interaction term of external management coordination and verticalization has a significant positive effect on firm performance ($\beta = 0.158$, $p < 0.05$), indicating that Verticalisation has a significant positive moderating effect between external management coordination and resource management. Therefore, organizational structure moderates internal organizational integration and external relationship coordination and resource management capabilities, i.e., flat and verticalized organizations will affect the relationship differently.H6 is validated.

5. Robustness tests

In order to test the robustness of the model, this paper uses the method of robust regression analysis. The results of the analysis are shown in Table 8. By conducting robust regression tests on the leading models designed in this paper and comparing the coefficients of the models in the robust regression test and the linear regression test, the coefficients of the two are equal in sign and close to each other, which indicates that the models are more robust, and vice versa, which indicates that the models are less robust. According to the results in Table 8, the sign of the robust coefficients of the 11 models used in this paper's regression test is consistent with the sign of the linear regression coefficients after the robust regression test based on the different independent variables involved. The two coefficients are close to each other in terms of value size, and the error is small, so the 11 main models involved in the study of this paper have better robustness.

Table 10. Robustness test table

modelling	Independent variables involved in the model	robust regression coefficient	linear regression coefficient
M1	digital twin	0.653***	0.653***
	The Digital Elite	0.571***	0.571***
M2	digital twin	0.636***	0.636***
	The Digital Elite	0.517***	0.517***
M3	digital twin	0.412***	0.412***
	The Digital Elite	0.357***	0.357***
M4	digital twin	0.683***	0.683***
	The Digital Elite	0.551***	0.551***
M5	digital twin	0.503***	0.503***
	The Digital Elite	0.406***	0.406***
M6	digital twin	0.630***	0.630***
	The Digital Elite	0.499***	0.498**
M7	digital twin	0.650***	0.650***
	The Digital Elite	0.504***	0.504**
M8	digital twin	0.246*	0.246*
	The Digital Elite	0.301**	0.301**
M9	digital twin	0.239*	0.239*
	The Digital Elite	0.277**	0.277**
M10	Flat organizational structure	0.073*	0.071*
	Verticalization of the organizational structure	0.091*	0.091*
M11	Flat organizational structure	0.067*	0.067*
	Verticalization of the organizational structure	0.158**	0.158**

6. Conclusion and Analyses

Virtual digital human refers to the existence of a virtual world based on computer graphics, graphics rendering, motion capture, deep learning, and other technologies to create appearance characteristics, interaction capabilities, and other human characteristics of the composite body. Although Du Junfei, White Dragon and others have paid attention to the concept of digital twin, the application of virtual digital humans in the field of enterprise still does not have a specific classification, only general with the digital employees to refer to. Moreover, with the development of the times, the continuous progress of science and technology and the increase of enterprise practice, the current digital employee presents a new situation. Accordingly, this paper will be divided into digital twin **(relying on the enterprise's existing employee identity) and digital elite (with a new identity of digital**

employees). It also discusses in detail the effect of digital employee selection on enterprise resource management capability.

Resource management in firms is an inaccessible part of firm organizational operations; Hu Yuanlin and Zhang Shuang (2018) explored the mediating role of resource management in environmental regulation on firm performance; Zhao Jianbo et al. (2009) found a strong correlation between resource management and firm performance; Wan Ru (2022) explored the value of resource management in firms in the communications industry; Liu Lijiang (2005) verified the benefits of resource management for firms from a technological level verified the benefits of resource management for enterprise development. Enterprise resource management has a significant impact on enterprise performance, and this paper starts from the generality of resource management and finally adopts the four-dimensional scale developed by Fan Libo et al., i.e., Resource Acquisition, Resource Utilisation, Resource Creation, and Resource Optimisation.

The study's findings show that digital twins have a positive effect on enterprise resource management, and digital elites have a positive effect on enterprise resource management. Existing research has shown that digital employees have a significant facilitating role in enterprise accounting information processing and internal resource integration but are independent of digital twin and digital elite status, reflected in the power of their underlying functions, for the use of external resources mainly from enterprise networked embedding, cooperative clustering, and user participation. The resource management of enterprise networked embedding and cooperative clustering requires the construction of an enterprise ecosystem, and the digital employees of a single enterprise cannot improve resource utilization. However, the virtual image of digital employees can enhance user participation (Ye Di, 2012). At the same time, the degree of promotion of new things for user participation is much greater than that of familiar things (Xie Xuemei et al., 2019), so both digital elites and digital twin will positively affect enterprise resource utilization.

The study's findings show that external relationship coordination ability mediates between digital alters and resource management, external relationship coordination ability mediates between digital elites and resource management, internal organizational integration ability mediates between digital alters and resource management, and organizational integration ability mediates between digital elites and resource management. Digital employees play a negative role in internal organizational integration, and digital elites play a more pronounced role than digital twins. Internal organizational integration emphasizes the optimization of organizational structure and the enhancement of organizational efficiency. It deepens the mastery of corporate resources, thus having a positive effect on the utilization and optimization of corporate resources. Enterprises must dynamically adjust their external relationships. Digital employees attend activities and meetings with their unique virtual identities and images to maintain the relationship between the enterprise and the outside world, which can achieve rapid integration of information and present a high-tech image of the enterprise, but at the same time, may also lead to the external perception that the enterprise does not attach importance to the maintenance of the relationship with it. Compared to digital twin, digital elites present a higher level of technology and attract the attention of investors. Maintaining a good relationship with the outside world is an essential way for enterprises to obtain resources, improve the success rate of enterprise resource replacement, and lay a good foundation for creating enterprise resources, which facilitates the integration of the enterprise into the ecosystem to obtain customer participation.

The findings show that organizational structure moderates the relationship between (a) the digital twin and (b) the digital elite's ability to integrate with the firm's internal organization, i.e., flat and verticalized organizations will affect the relationship differently, and organizational structure moderates the relationship between (a) the digital twin and (b) the digital elite's ability to coordinate with the firm's external relationships, i.e., flat and verticalized organizations will affect the relationship differently; Organizational structure plays a moderating role between (a) internal organizational integration and (b) the ability to coordinate external relationships with resource management, i.e. flat and verticalized organizations will affect the relationship differently. Flat organizations are characterized by a simple structure, greater employee autonomy, faster information

flow, and higher corporate efficiency; a complex structure, a high degree of specialization, and more incredible management difficulty characterize vertical organizations. Compared to the digital twin, the brand new appearance of the digital elite is also more likely to correspond to a position in the verticalized organization, filling the labour resource gap and maintaining the verticalized structure of the organization. Therefore, the ability of organizational integration within the enterprise and the ability of external relationship coordination have different impacts on flatness and verticalization.

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