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A Survey on the Social Application Dilemmas of Virtual Digital Humans from the Perspective of Digital Ethics

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Abstract

Advances in artificial intelligence and virtual-physical integration have enabled widespread adoption of digital human technology across media, finance, healthcare, and entertainment sectors. Based on their service characteristics, social applications of digital humans fall into three categories: service-oriented, companion-oriented, and assistant-oriented. Growing intelligence, broader accessibility, expanding scenarios, and extending boundaries bring urgent ethical challenges. This study employs questionnaires and interviews to examine public understanding of digital ethics, technology adoption, social impact, and future outlook across all age groups and professions. The research identifies key issues in cognition, application, social impact, and legal regulation. Four directions emerge: fostering rational technological ethics, clarifying social and corporate responsibilities, strengthening government oversight to alleviate public anxiety, and improving laws for multi-party governance. These findings offer guidance for healthy industry development and ethical governance.

Keywords: Digital Human; Digital Ethics; Classification of Social Applications; Public Cognition; Supervision Suggestions

1. Introduction

A digital person is defined as a humanoid entity that is generated through computer graphics technology, constructed through modeling, driving, rendering and other processes, driven by real people or algorithms, and can be presented on multimodal devices. It simulates human services and interactions. Assigning it a specific identity, designed to reduce psychological distance, and enabling more realistic emotional interaction (Chen, 2025). They usually possess three characteristics: anthropomorphic appearance, anthropomorphic behavior, and anthropomorphic interaction capabilities.The rapid development of industries and the continuous expansion of market scale are the characteristics of the current development of digital humans in China. They have been widely applied in various industry scenarios such as e-commerce, media, tourism, and

finance.According to the "China Digital Human Development Report (2024)", the core market size of digital humans in China is expected to be extremely large, surpassing 40 billion yuan by 2025 and driving the growth of related industries to an amount of over 600 billion yuan.In this context, accurately defining its legal nature and clearly delineating the boundaries of its activities are regarded as of crucial significance for promoting the healthy development of the industry and fostering new productive forces.

The development of digital humans has always been a core area where multiple disciplines intersect. As a result, the impact brought about by this intersection has widely permeated the social, technological and economic fields.At the technical and industrial level, Li et al. (2022) defined the subfields of companion-type digital humans. They defined the core attributes of companion-type digital humans as being driven by emotions, also explaining the key user characteristics such as the home environment and the Z-generation, and more importantly, they also proposed specific suggestions for the design of the appearance and the optimization of interaction.The situation in terms of ethics and social impact is more complex. Zhao et al. (2025) conducted an analysis based on generative AI. The risks such as the value orientation of digital human-related applications, technical decision-making deviations, and value loss have been clearly identified. The three-dimensional path for ethical reconstruction has thus been emphasized. This is something that requires vigilance. Liu et al. (2025) approached from the perspective of human subjectivity, analyzed the problems such as weakened autonomy and reversed subject-object relationship caused by digital humans, and advocated achieving human-machine symbiosis through technological ethics reconfiguration and boundary delineation. Zhao et al. (2025) addressed the issues of protecting portrait rights in the application of digital human technologies such as AI face-swapping, and pointed out that there are three major dilemmas in this regard. They also highlighted that the challenges at the legal regulation level are equally prominent. We propose a solution involving the collaboration of multiple laws and the construction of scenario-based rules. This is the key way out.

In summary, the current research direction is more focused on exploring the cutting-edge characteristics of digital humans in multiple dimensions and across multiple disciplines. It also integrates resources from various disciplines such as computer science, sociology, and law for interdisciplinary research, and has identified research topics such as technological iteration, industry expansion, and exploration of specific scenario demands.However, as digital humans are widely applied in various scenarios, ethical conflicts and risks have become increasingly prominent. Moreover, the existing research lacks the definition of digital human ethics and the analysis of risk governance.This article focuses on the cognition and impact of ethical and moral risks in the application of digital humans, providing theoretical support and practical references for the healthy and sustainable development of the digital human industry.

From the perspective of the technological evolution process, the development of digital humans can be roughly divided into four stages (as shown in Figure 1). From the 1980s to the early 21st century, the early digital humans were mainly used in film and television production, relying on manual creation, with long production cycles and high costs. In the 21st century, with technological advancements, the industry entered its infancy stage. Digital humans shifted

towards a profit-oriented direction, and virtual idols gradually emerged. After 2010, the industry entered its growth period and fully embarked on the path of industrialization. Digital humans utilized digital technologies to enter fields such as virtual influencers and online hosts. Since 2020, the integration and breakthrough of technologies such as deep learning, computer vision, AIGC and large models have enabled digital humans to enter the era of intelligence. They possess perception, understanding and interaction capabilities, and can achieve low-cost, large-scale and scenario-based applications, becoming intelligent digital entities capable of multi-modal interaction, with exclusive knowledge and preliminary emotional capabilities.

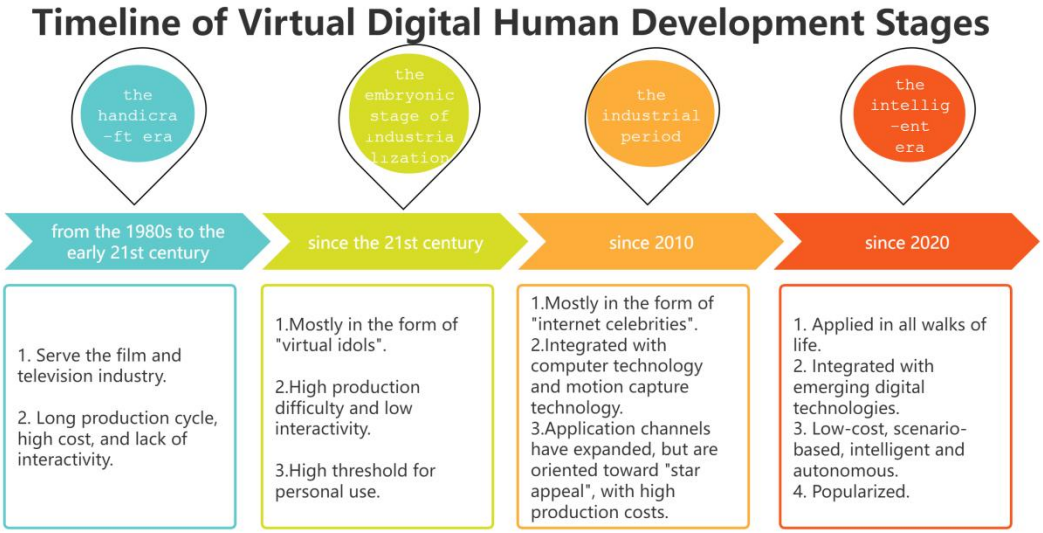

Figure 1. Time chart of digital human development stage

2. Social Application of Digital Human

After 2020, with the deep integration of digital technology and artificial intelligence, the digital person industry has accelerated its development, with diverse application scenarios, and has widely penetrated into multiple industries such as media, finance, and healthcare.Based on the differences in core functions and application goals, the social applications of digital humans can be classified into three types: service-oriented, companion-oriented, and assistant-oriented (as shown in Figure 2).

2.1. Service

The core objective of service-oriented digital humans is to replace or assist real humans in completing standardized service processes. The ultimate goal is to reduce costs, increase efficiency, and enhance user experience.For instance, through AI computing, large language models, the relevant industry knowledge bases and industry business rules and requirements that they serve, as well as after learning and understanding, special digital humans. Service-oriented digital humans have relatively mature application scenarios in the media and financial fields.Due to its commercial goals and practical application, the online media industry is the most mature industry for the implementation of digital humans. According to the data from "The

Comprehensive Collection of Digital Human Application Scenarios in China (2024)", media-based digital humans account for 50% of the total number of scenarios in the nutrition sector. Specifically, they are divided into 5 types: virtual idols, media hosts, etc. In the financial industry, service digital humans have achieved efficiency improvement and process innovation through AIGC (Artificial Intelligence + Generative Creativity). In the field of online media, digital characters such as "Gu Xiaoyu" from Zhejiang Satellite TV incorporate "traditional culture", possessing cultural IP. They have successfully conveyed typical cultural scenarios and have gained widespread attention and affection. This has also brought considerable popularity to similar traditional Chinese-style virtual characters. The creation of these digital characters has given rise to a series of digital IPs and digital film and television works for promotion.The representative in the financial field is the "digital employee" of China Construction Bank. The digital person takes on roles such as online "intelligent customer service" and "wealth management consultant", leveraging technologies like AI and big data to become a typical carrier of intelligent services for industry research and customer care that are available 24 hours a day and highly efficient and accurate.

However, the widely used service-oriented digital humans also face many related risks and concerns regarding application ethics:In the field of media, cultural and creative IP digital characters are prone to issues such as infringement of portrait rights and personality rights, and also involve the issue of digital personality. The intelligent customer service in the financial sector has issues such as the leakage of users' personal data. Moreover, the algorithms have biases and there are phenomena of service discrimination, which violate basic ethical principles such as informed consent, the minimum necessary use of data, and data security. Furthermore, the phenomenon of digital humans replacing traditional jobs will also further highlight the issue of employment anxiety in society, and increase the ethical conflicts related to the rights and fairness of workers affected by digital technology substitution.

2.2. Companion

One of the goals that companion digital humans aim to achieve is to meet users' emotional needs, such as social companionship, emotional comfort, and emotional support. To fulfill these functional requirements, advanced AI technologies, large language models, emotional computing, storage and memory technologies, and artificial intelligence are needed to create digital humans that are emotionally expressive and logical.Due to the rapid and intense development of modern technology and the fast-paced lifestyle, people have a strong need for emotional companionship in their solitary lives. This includes young people living alone and elderly people in empty nests, etc. This has led to an increasing demand for companion digital humans (Li, 2022). These products can provide personalized companionship for users across different time and space. They can express emotions and offer psychological comfort to users in front of various user groups. In China, such products exist, such as Xingye and Cat Box App. There are also digital humans that users can choose to create digital human images for chatting and playing, opening up more demand scenarios.

Excessive reliance on digital humans will prevent people from leaving the real world to interact with them, leading to a decline in their social skills and making it difficult for them to interact

with others. Moreover, since collecting and storing emotional data is an infringement of privacy, the "fake empathy" of digital humans will cause people to lose their true emotions, resulting in emotional dislocation and hindering the normal recovery of their psychology. Therefore, people are all worried that these "human-like non-human" digital beings might not be able to withstand the scrutiny of moral and ethical standards, potentially causing significant ethical and moral issues.

2.3. Assistant

The main purpose of using assistant-like digital humans is to serve as an enabler in an individual or a specific professional field, aiming to assist users in performing certain tasks and enhancing their productivity, decision-making ability, etc. Digital humans can invoke various tools and complete tasks in multiple scenarios, achieving task automation and a one-stop experience, thereby saving users' working time and energy. The assistant-type digital humans will be positioned as "tools" to enhance the productivity and decision-making ability of users. They can be frequently invoked and perform tasks in multiple scenarios. The application of such human-machine collaborative digital humans as tools in the medical field is aimed at improving industry efficiency and providing innovative services (Liu et al., 2025). For instance, Tencent's "Miying" serves as a digital doctor for assisting in medical diagnosis and screening. It can facilitate early disease screening and possesses core functions of AI medical imaging and AI medical diagnosis, which can alleviate the problem of insufficient medical experience among grassroots doctors.

However, the controversy caused by the "misdiagnosis" liability brought about by digital human doctors in the medical field, the "black box" nature of the algorithms in decision-making, and the emergence of digital human assistance tools, in turn, will also give rise to key factors such as criticizing the "true skills" and "true profession" of professionals.

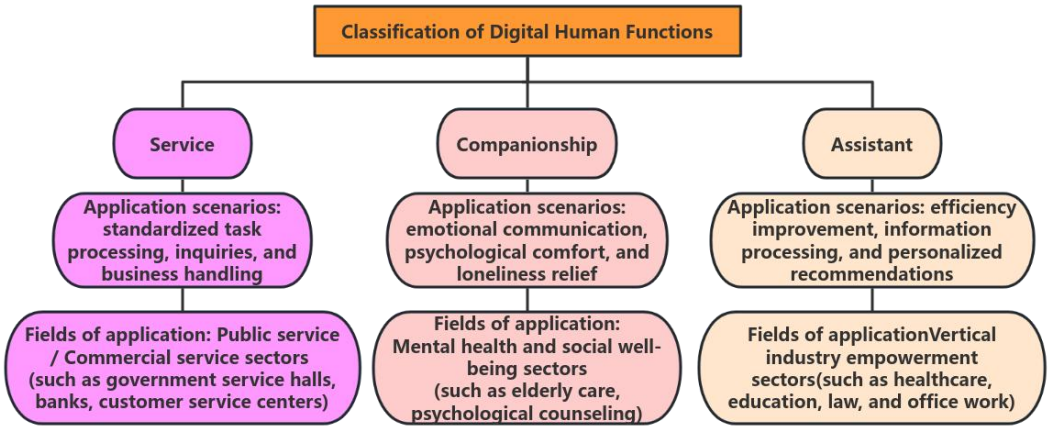

Figure 2. Classification diagram of three function types of digital human

3. Overview of Digital Humans

With the rapid development of artificial intelligence technology, digital humans will undergo more significant technological innovations and have broader application prospects. However, the digital ethical issues that arise during its application in society also urgently require a correct

understanding.Based on this, this article conducts questionnaire and interview surveys to explore many digital ethical issues arising from the social applications of digital humans.The questionnaire survey was conducted through random sampling, and a total of 654 valid questionnaires were collected. The gender distribution of the samples was balanced, and the age range covered all stages, with a majority being young people. The occupations of the interviewees covered a wide range, with students and enterprise employees being the majority, and the population structure was representative.The questionnaire survey was conducted from three major dimensions: the ethical perception of digital humans, the social applications of digital humans, and the impact of digital human applications on society. At the same time, interviews were conducted with the users and stakeholders of the three types of digital humans, thereby achieving more detailed data results and enabling multi-dimensional analysis.

3.1. Ethical Cognition of Digital Human

To explore the differences in the perception of ethical responsibilities and risk boundaries regarding digital humans among various identity and occupation groups, this study conducted a survey on the ethical issues that digital humans might bring about (see Figure 3). It can be seen that the student group is most concerned about "risk of privacy data leakage" (36.05%), "replacement of human jobs" (37.98%), and "algorithm bias and discrimination" (46%). Professionals have more prominent concerns about "emotional deception" and "job replacement". Employees of public institutions, educators, and the elderly group have relatively balanced risk concerns.This indicates that there are significant differences in the perception of digital risks among different identity and occupational groups. The student group, due to their higher educational level and better understanding of digital technology, is more sensitive to core risks. While the working and middle-aged elderly groups have a more dispersed perception of risks and place greater emphasis on the impact on their own rights and interests, reflecting the significant influence of identity and occupational scenarios as well as interests concerns on the perception of digital technology risks.

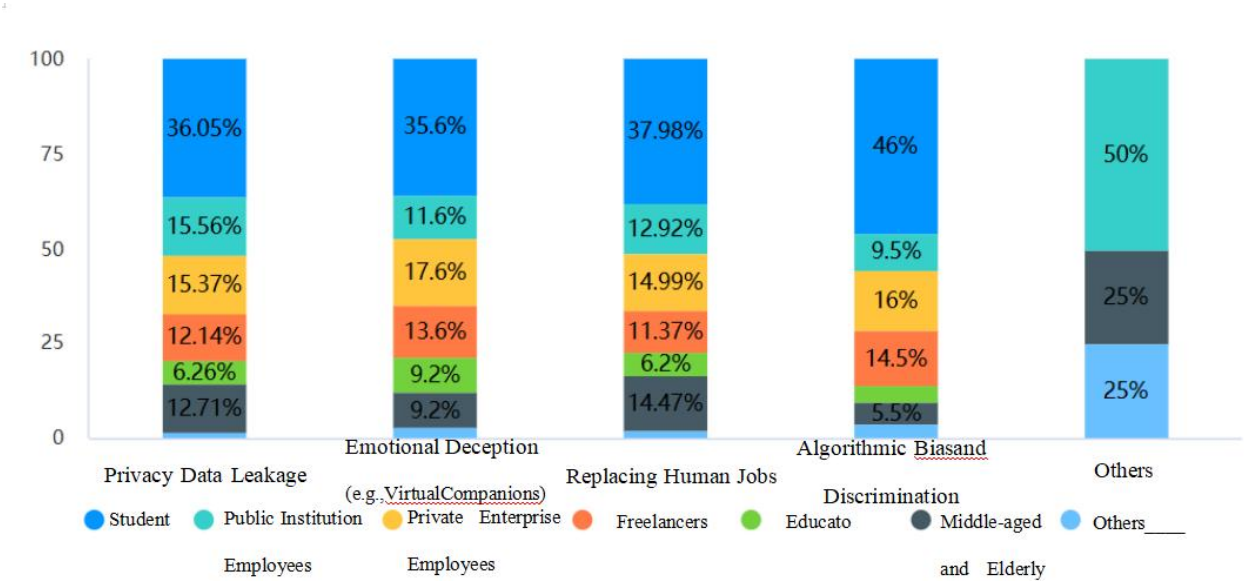

Figure 3. Ethical issues that digital human may cause in the opinion of respondents with different identities and occupations

In order to study the respondents' perception of the adequacy of current legal regulation for digital humans, the "evaluation of the adequacy of digital human legal regulation" and the "whether they support the government to formulate specific ethical norms for digital humans" were cross-analyzed (see Figure 4). Among those who believe that the current regulatory framework is "very complete", the proportion of those who support the government in formulating ethical norms is 97.36%, while in the "partially covered" group, the proportion of those who support the formulation of norms is 97%. Overall, it shows that "the group that has a strong perception of the adequacy of digital person legal regulation is more supportive of the formulation of digital person ethical norms".This result indicates that the concept of regulatory awareness is an important foundation for consolidating the social consensus on digital person ethics governance. The public's trust in the existing regulatory system directly affects their acceptance and support for the construction of ethical norms. It also provides important insights for the government to promote the formulation of digital person ethical norms and to unite social forces. That is, it is necessary to first enhance regulatory education and raise the public's awareness of the existing regulations, so as to better promote the implementation of specialized ethical norms and form a governance pattern where regulation and ethics work together.

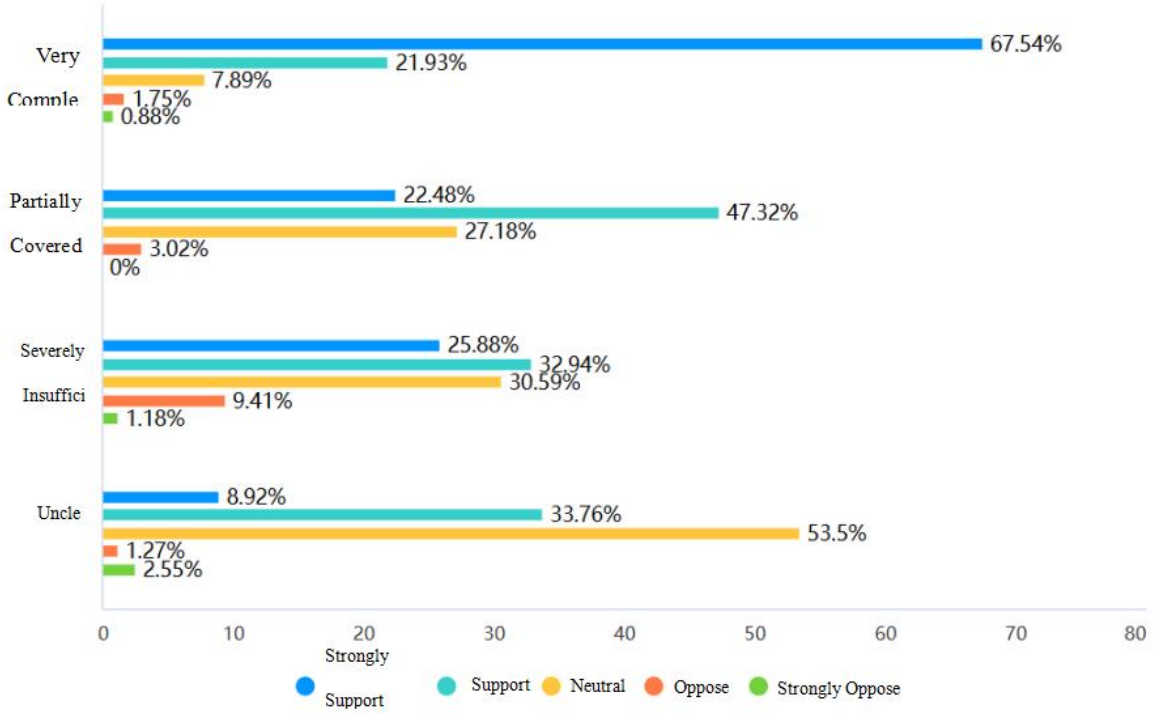

Figure 4. Whether it supports the development of digital human ethics norms and the cognition of the adequacy of digital human legal supervision

Furthermore, in order to gain a deeper understanding, we sought to explore the respondents' perceptions of digital humans. The results indicated that 58.72% of the respondents stated that they would clearly mark the "non-human nature" of digital humans to ensure the transparency and right to information. This reflects, in a certain way, the commonality that the application of digital human technology requires regulation.60.4% of the respondents believe that the widespread use of digital humans will not undermine interpersonal relationships, and they have expressed their support for the future development of digital humans.Currently, digital humans are still in the

nascent stage. More than half of the respondents have expressed an optimistic or neutral attitude towards their interpersonal impact. As future technologies continue to evolve and applications become more mature, the positive value of digital humans in social scenarios will become more prominent, and public concerns related to them will gradually be alleviated.

To explore the preference scenarios for service-oriented digital humans among different age groups (Figure 5), among the scenarios preferred by people under 25 years old, the majority of those who use e-commerce platforms/app customer service (46.55% and 41.48%) are teenagers. The 26-35 age group has the highest concentration of preference for digital representatives of financial institutions and government services (62.02%); the 36-50 age group has relatively balanced preferences across various fields. Among people over 50 years old, those who prefer digital services related to government affairs have the highest proportion (41.18%). This indicates that the preference habits of different age groups are highly consistent with the "focus" of their lives. The "focus" of the youth group leans more towards high-frequency, life-oriented services in their daily lives, while the "focus" of the middle-aged and elderly groups tends to be on financial and government-related functional services. In order for these digital humans to better design and reasonably arrange the needs of consumer scenarios, these data are worthy of reference.From this, it can be seen that the preferences of different age groups vary greatly. The precise layout and differentiated demands in the digital human industry are supported by data and guided in a certain direction.

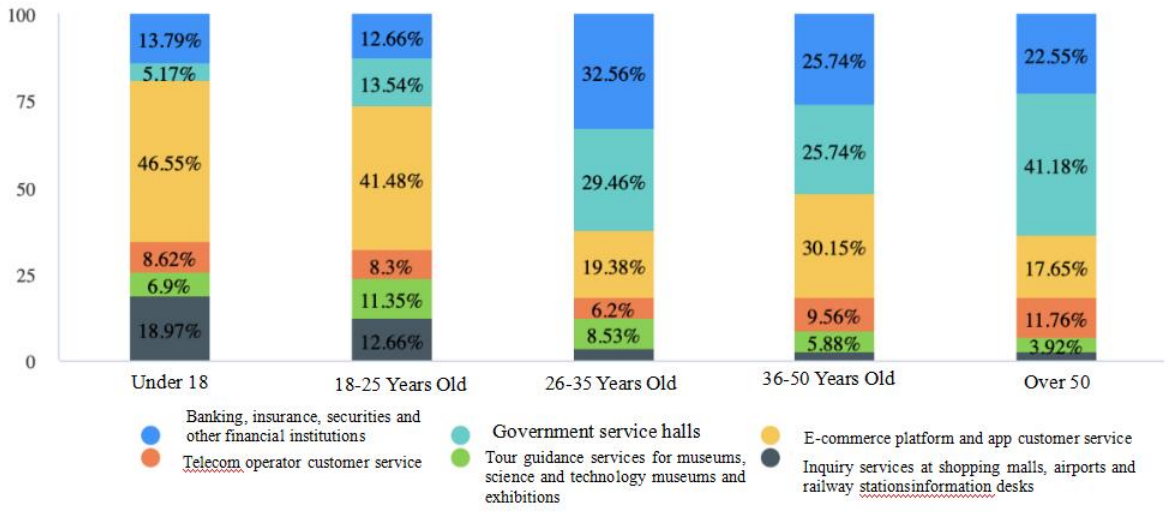

Figure 5. Application scenario preferences of digital human of respondents of different ages

Through the investigation, it was found that the perceptions of the surveyed groups with different identities and occupations were different. The respondents believed that the reasons for the rapid development of digital humans were focused on the ability to reduce long-term labor costs, improve the efficiency and stability of services, collect data, and optimize products (see Figure 6). This indicates that digital humans have become a trend in the digital transformation of various industries. They achieve significant reduction in long-term labor costs and stable improvement in service efficiency by replacing repetitive human work. At the same time, they provide data sources for product optimization by collecting user interaction data. Therefore, digital humans have demonstrated extensive application value in multiple scenarios such as

government affairs, business, and public services, adapting to the digital needs of different identity and occupation groups, and becoming an important technical force driving the development of the digital economy.

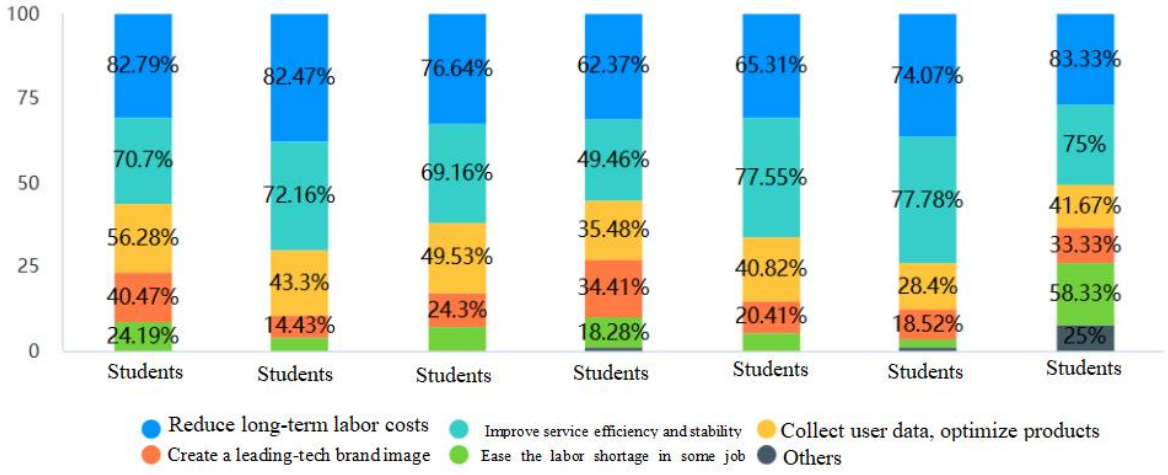

Figure 6. reasons why respondents with different identities and occupations think digital humans are developing

3.2. Social Application of Digital Human

At present, digital human applications have permeated multiple fields such as media, finance, healthcare, and tourism. On the basis of benefiting various fields, the main motivation for enterprises to deploy digital humans is to reduce labor costs, improve service stability, and optimize products.

To explore the preferences of respondents for the use of service-oriented digital humans, a cross-analysis was conducted on the types of service-oriented digital humans that different occupational groups of respondents were more inclined to use (see Figure 7). There were significant differences in the preferences of different identity groups for the application scenarios of service-oriented digital humans.Students prefer to use the customer service of e-commerce (50%), inquiries at shopping malls/airports/train stations (61.54%), and guided tours at museums/science centers (50.94%), etc. Private enterprise employees use it in financial business scenarios such as banking, insurance, and securities (37.23%). Public institution staff members use it in government service halls (31.54%); middle-aged and elderly people's choices are mainly concentrated in government service halls (24.83%) and operator customer service (15.79%). Young people attach great importance to the related scenarios in their daily lives. The salaried workers are concerned about the "practical scenarios" that are closely related to their work and life. The elderly prefer to use a certain type of basic "public services".This indicates that an individual's identity and occupation have a significant impact on the preferences for service-oriented digital humans. Different social groups have different living scenarios, living habits, and actual needs, which directly affect the willingness of the groups to use such digital humans.

Therefore, when implementing the promotion of service-oriented digital humans, it is necessary to conduct differentiated design and service design based on different user scenarios, in order to enhance their applicability and acceptance.

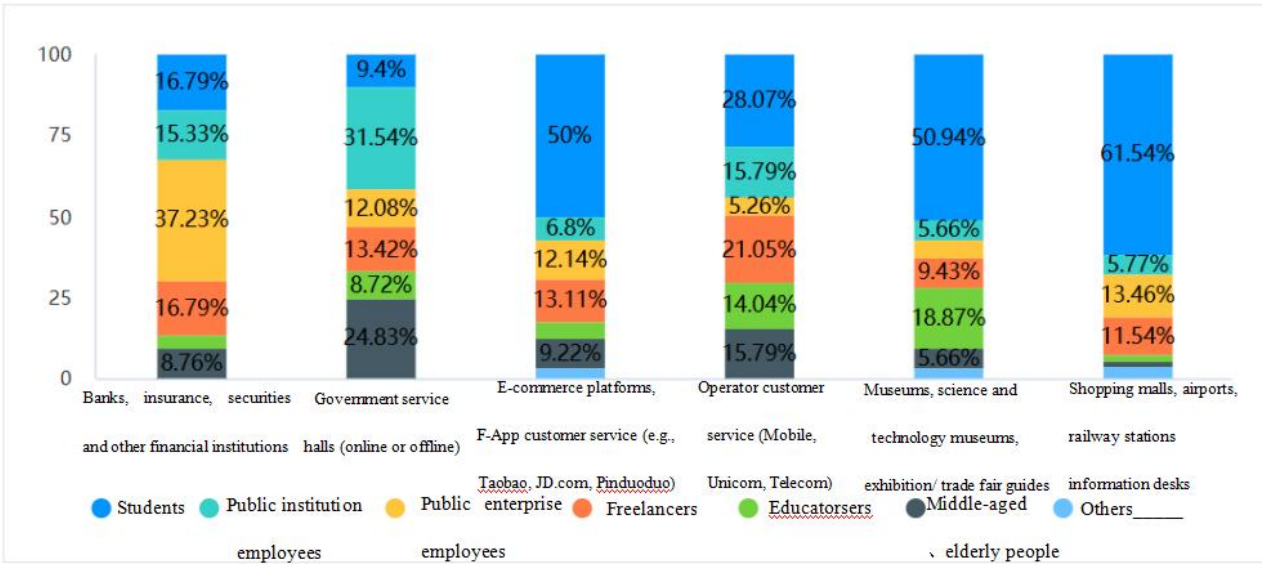

Figure 7. Scenario of service digital human used by respondents with different identities and occupations

In order to study the respondents' preferences for using companion-type digital humans, we analyzed the readiness of representatives from different social and occupational groups to form emotional attachments with such digital characters (see Figure 8). Among the student group, the proportion of those who answered "not very prepared" was particularly high (43.48%); while the responses of government officials, self-employed individuals, and educators were relatively balanced. The proportion of employees in private enterprises who "completely refuse" is particularly high (25%); while the elderly have the highest proportion indicating "complete willingness" (20.99%).From the analysis of intentions, it can be seen that the willingness to use is highly correlated with the needs of the group and usage habits. Therefore, when implementing the promotion of service-based digital products, it is necessary to simplify the operation for different groups and make appropriate scene adaptations, so as to enhance the overall acceptance and usage rate, and strengthen trust building.

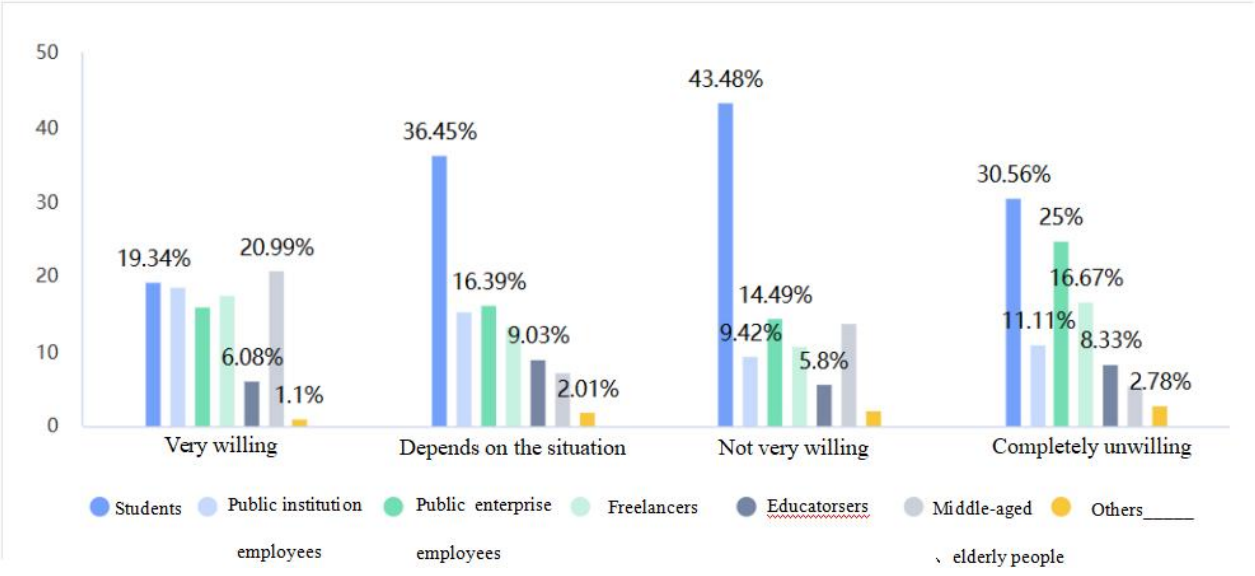

Figure 8. Willingness of respondents with different identities and occupations to place emotional sustenance on accompanying digital human

In order to investigate the preferences of respondents for the use of tool-type digital humans and the reasons for their usage among different occupational groups, this study conducted an in-depth analysis of the chart data (see Figure 9). In terms of the results, the student group showed a recognition rate for each of the various usage motivation options that was consistently over 30%, far exceeding that of other groups. The working class tend to have a higher balanced proportion in recognizing the functional value among the practical motives; the middle-aged and elderly group, on the other hand, have a relatively lower overall proportion in each motive option (below 15%), and they are only relatively interested in the option of more vivid and interesting interaction experience / feeling more intimate and accompanied. The tool-type digital humans that have been widely adopted are closely related to the motivation and professional identity of their usage. Students are easily attracted by novelty and use it out of curiosity; the working class pays more attention to practical functions and the ability to achieve real value; while the needs of the middle-aged and elderly tend to be more towards traditional services. It can be known that the user's motivation for using the product is closely related to their age and occupational identity, as well as the usage scenario. Therefore, focusing on the work scenario to achieve differentiated adaptation for the target audience is a key point during the product's launch and promotion.

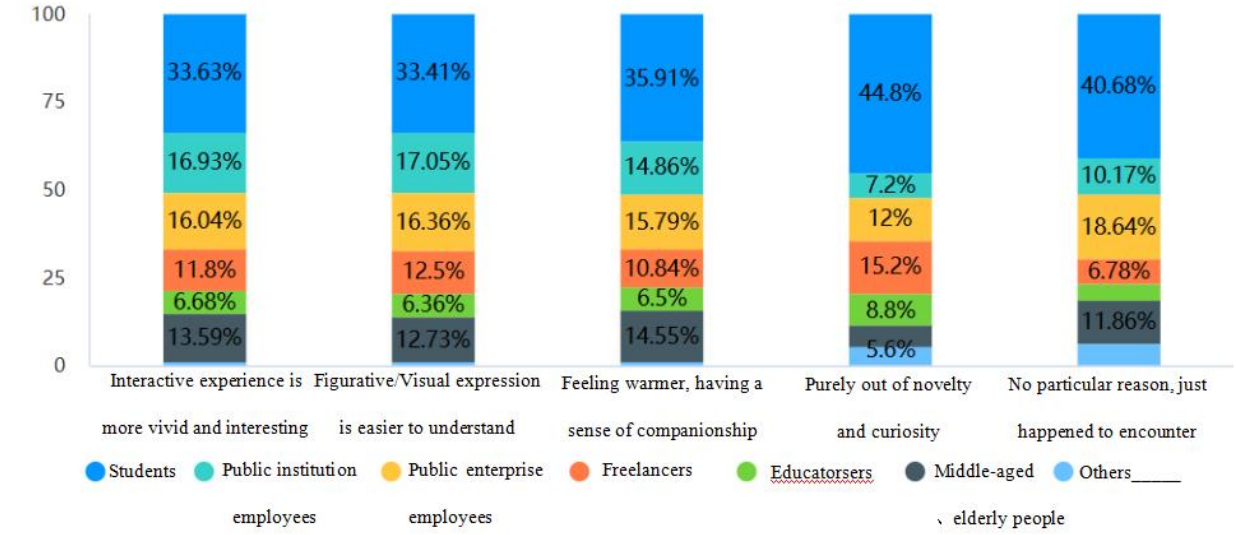

Figure 9. Reasons why respondents of different identities and occupations use tool digital human

3.3. Future Prospects of Digital Human

With the widespread application of digital humans in various industries, they are having an equal impact on all aspects of human society - including work, learning and daily life.The majority of opinions are positive - they believe that the use of digital humans can help enhance efficiency, promote economic development (76.91%), and change the form of social interaction (53.98%). However, some groups also expressed concerns that it might "aggravate the from this, it can be seen that the motivation for usage is closely related to age, occupation, and usage scenarios. When implementing the product's launch and promotion, one should focus on the working scenarios and carry out differentiated designs.unemployment problem" (45.87%) and trigger "new ethical controversies" (26.76%). At the same time, 69.27% of the respondents

believe that in the next ten years, digital humans will replace some occupations. This not only reflects a rational understanding of the impact of technology, but also shows concerns about different application scenarios. The majority hold an optimistic attitude.

The overall attitudes of respondents of different identities and occupations towards the development of digital human technology show a differentiated distribution (see Figure 10). The student group is more inclined towards "cautious (requiring strict supervision) (38.43%)", "neutral" (34.12%), and "optimistic" (30.70%), presenting a characteristic of expecting development while also attaching importance to risks. The employees of private enterprises (24.32%) and self-employed individuals ("pessimistic" 21.62%) have relatively higher proportions of such attitudes. The attitudes of employees in public institutions, educators, and the elderly group are more moderate, with a relatively balanced distribution of "optimistic", "cautious" and "neutral" attitudes.It can be seen that social and occupational identities significantly influence attitudes towards the development of digital humans. The student group is characterized by both optimism and caution. Market practitioners have a more acute perception of technological risks, while public service workers and the elderly tend to show a more stable attitude.This reflects the varying degrees of the connection between different professional fields, life scenarios and digital technology, which in turn affects their acceptance and trust of digital technology.

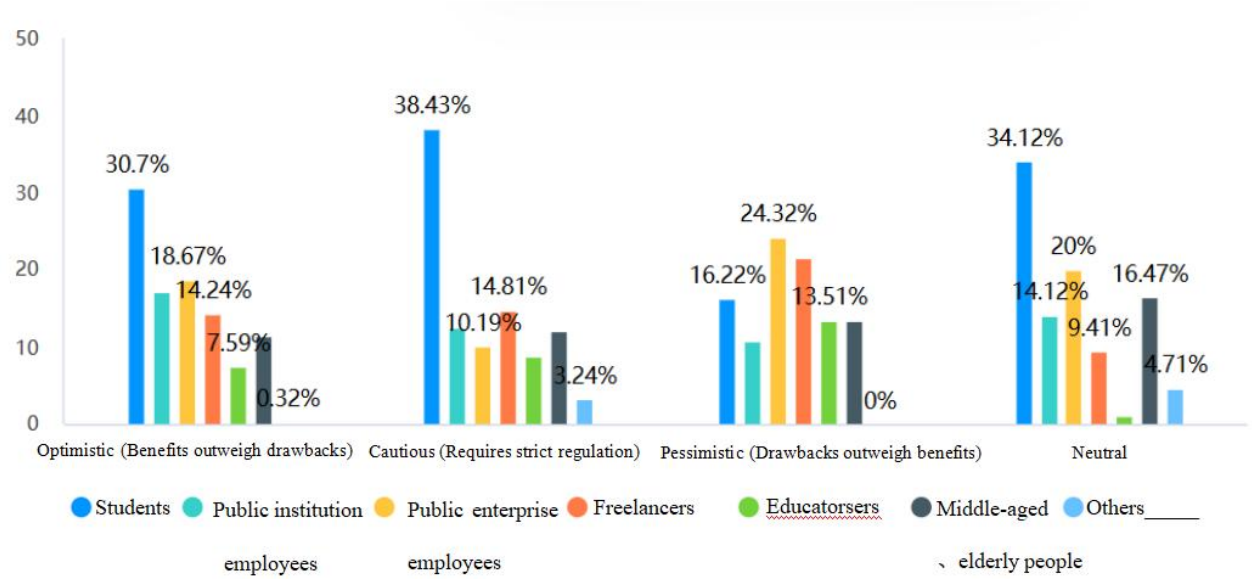

Figure 11. Overall attitudes of respondents with different identities and occupations towards digital human technology development

4. Challenges Faced by the Social Application of Digital Human from the Perspective of Digital Ethics

4.1. Cognitive Level: Technology Trust, Information Symmetry, Lack of Ethical Standards

The overall perception of digital humans and artificial intelligence technology among the general public is relatively fragmented. The primary difference lies in the fact that people from different occupations and social statuses have significant variations in their perception and

preferences towards digital humans, which consequently affects their confidence and acceptance of this technology. For instance, people in their middle age or older, and those who prefer the digital world, place greater emphasis on the "importance of ethical responsibility". Secondly, the problem of information asymmetry is quite serious. In the current application of digital humans, the openness and transparency of information are insufficient, which fails to guarantee the right to know of consumers. Moreover, the public also lacks a clear understanding of the laws and regulations related to digital humans.Finally, there is the issue of lacking ethical norms. Although everyone agrees that digital humans should have ethical requirements and behavioral restrictions, currently there is no specific and executable standard in the industry to measure what constitutes reasonable ethical behavior.This has led to a chaotic situation in terms of ethical management. People from different occupations and with different identities have different understandings of the ethical risks associated with digital humans. Due to the lack of unified standards for judgment, various ethical disputes have made people more skeptical about the safety of this technology, thereby affecting the healthy development of the entire industry.

4.2. Application: Deficiencies in Technology Risk Control, Vertical Research and Development, and Data Security

Digital humans are confronted with three major challenges: technical risks, research and development barriers, and security hazards. Firstly, the risk of "artificial intelligence hallucinations" in professional scenarios is particularly prominent.In professional fields with strong industry attributes such as finance, healthcare, and law, the information produced by digital humans often suffers from information distortion and logical errors. Ordinary people, lacking professional knowledge, have difficulty in distinguishing between true and false information, which leads to property losses or erroneous decisions. Secondly, there are significant gaps in the research and development of these industries. Even though the technology for general-purpose digital humans is relatively advanced, the development costs for specialized digital humans for various different niche fields are extremely high, it is difficult to break through key core technologies, and the required resources are enormous. For small enterprises, this is an unbearable burden, thus resulting in uneven technological research and development levels across the entire industry. Finally, there is an increasing concern regarding personal privacy and information security. Currently, many people have doubts about the data security protection capabilities. During the communication with digital humans, digital humans will obtain users' personal information, voice data, preferences, and even some biological features, etc. During the storage, transmission, and application processes, there is a possibility of being leaked, abused, and illegally traded, which greatly reduces people's willingness to use related technologies.

4.3. Impact: Lack of Employment Security, Emotional Guidance and Social Psychological Counseling

The public has dual concerns regarding the application of digital humans - namely, job replacement and emotional alienation. Nearly half of the respondents are worried that the widespread use of digital humans will exacerbate the unemployment problem, with risks concentrated in repetitive labor positions such as customer service, shopping assistants, and basic assistants, especially in fields that have already adopted AI and digital human-assisted

applications.The risk of alienation at the emotional level beyond this also attracts attention. With the rapid development of digital human application, there is basically no necessary social psychological counseling.The research found that nearly 70% of the respondents expressed varying degrees of concern about the potential emotional impacts that digital humans might have.The long-term use of companion-type and emotionally interactive digital humans may cause users to gradually become overly dependent on virtual relationships, resulting in a weakening of their willingness and ability to engage in real-life interpersonal interactions. This, in turn, can deepen feelings of loneliness and reduce social skills, potentially impacting emotional connections in the real world[4].However, with the rapid development of digital human applications, there is basically no necessary social psychological counseling.

4.4. Legal Supervision: Deficiency of Rights and Interests Definition, Classified Supervision and Legislative Adaptation

The main problem in the industry is the lagging of laws and regulations. Digital humans have various attributes such as identity, property, and personality. The rights holders and objects are complex. However, the relevant legal systems in our country have not made clear provisions on this matter. There are also no corresponding regulations regarding infringement of rights and how to assume responsibility.However, due to the different application fields, there is no unified classification and regulatory approach for digital humans. At present, there is also no good connection in terms of ethical and moral requirements, technical standards, and legal regulations. Moreover, the law itself also has certain lagging characteristics.Due to the current imperfect legal provisions in our country, there are no clear and specific regulations. As a result, it is difficult to make fair and reasonable judgments in judicial practice. What is more serious is that because of the rapid development of digital human technology, new application scenarios, ethical issues, and infringement forms have emerged, causing the legal regulations to lag behind the development needs of the industry. The disconnection between law and reality has brought greater challenges to the protection of rights and the governance of the industry.

5. Countermeasures and Suggestions

5.1.Rationally Recognize Technical Ethics and Establish the Concept of Technical Ethics

Digital humans are an emerging industry that has emerged as a result of the development of artificial intelligence. It requires the public to possess the necessary digital literacy and AI discrimination skills, so that they can make independent judgments in daily use and neither blindly rely on nor one-sidedly deny digital human technology.In the face of new issues such as career changes and emotional interactions brought about by technology, we should view them from a developmental perspective and actively adapt to the lifestyles and working methods of the digital age. Rationally understand the working characteristics of digital humans, resist false information, be vigilant against rumors and hype about AI and digital humans on the internet, actively identify the sources of information, and not spread unverified negative remarks. While enjoying the convenience of technology, we should consciously abide by network norms, establish correct technical ethics concepts, use technology reasonably and express ourselves

rationally, jointly create an objective, inclusive and positive public opinion environment. At the same time, with an inclusive attitude, we should witness the technological iteration, and take practical actions to eliminate the adverse effects on public opinion, laying a good social foundation for the healthy and orderly development of the digital human industry (Research Group of the Political and Legal Affairs Commission of the CPC Shenzhen Municipal Committee, 2025).

5.2. Clarify the Responsibilities of Society and Enterprises, and Jointly Build an Ethical and Moral System

As the main body for the research and application of current digital technologies, enterprises must prioritize the establishment of an ethical and moral framework as a common defense line. Therefore, it is necessary to enhance data verification capabilities and introduce cross-information and verification mechanisms to ensure the accuracy and authenticity of the output content. Moreover, information generated by AI should be forcibly labeled with the source and thinking chain, so as to serve as a verification prompt in sensitive fields such as finance and healthcare, thereby avoiding the risk of "artificial intelligence illusion". In addition, enterprises should continuously establish automated and risk warning mechanisms, attach importance to the timely correction of algorithmic deviations and other issues within the enterprise, and conduct large-scale tests before the launch of enterprise technical algorithms to ensure the quality of information. At the same time, enterprises should jointly build industry-related standards, unify industry security standards, and consolidate the dual foundations of technology and ethics.

The corresponding society should also establish a diversified joint supervision mechanism to create a rational and favorable environment. The public should view new technologies without discrimination and accept the arrival of the digital age with an open mind. They should objectively assess the impact of new technologies on employment and emotional communication, and refrain from making sweeping condemnations. The society should have positive publicity to resist false information and create a favorable public opinion environment. In addition, a collaborative governance mechanism integrating social supervision, industry self-discipline, and public participation can guide all parties in society to participate, adopt an open and inclusive attitude to accompany technological iteration, cooperate with enterprises, and jointly promote the healthy, orderly and sustainable development of digital person technology.

5.3. Strengthen Government Supervision and Promote the Resolution of Moral Bottom Line Anxiety

The public's concerns about digital humans are essentially a projection of their anxiety regarding digital ethics, encompassing not only ethical and privacy issues but also other real-world concerns. More importantly, there are also deep concerns regarding job replacement and emotional alienation. Additionally, it is necessary to consider how to accelerate the establishment of regulatory standards and ethical norms for the digital person industry, clearly define the boundaries of technology application, data security requirements, and responsibility division, and implement specialized supervision in key areas such as finance, healthcare, and education. This

indicates that a sound mechanism for content review and risk warning is extremely necessary. Implementing mandatory requirements such as source annotation and verification for AI-generated information can effectively prevent potential risks brought about by AI illusions. Therefore, the government needs to promote full-process supervision while encouraging technological innovation. To achieve this, the government should not only stimulate technological innovation but also implement the entire chain supervision, improve the cross-departmental collaborative governance system, and increase the punishment for data leakage and infringement abuse. By using institutional constraints and continuous supervision, a safe and regulated environment can be created for the development of digital humans. To address public concerns, it is necessary to collaborate with industry associations to promote the popularization of digital person ethics and safety knowledge. Targeted publicity should be conducted for different groups to enhance the overall digital literacy of the public, which is also crucial. Through various forms such as short videos and public service advertisements, technical norms can be explained in a more accessible way. This helps to reduce misunderstandings caused by information asymmetry. To foster a rational and inclusive social cognitive environment, it ultimately requires the long-term joint efforts of multiple parties.

5.4. Improve Laws and Regulations and Establish a Multi Party Co Management Mechanism

According to the preliminary investigation, it is known that the current respondents generally believe that there is a need for unified and comprehensive laws and regulations to regulate the morality, application scope, and rights-related aspects of digital humans. Therefore, it is necessary to classify and legislate for the different application scenarios of AI and digital humans, clarify the responsibilities and authorities, and promulgate relevant legal provisions. The government should take the lead, and all major enterprises should respond positively (Wang et al., 2025). Classify and regulate digital human services in fields such as finance, healthcare, and law, and clearly ensure the security of user data and the accuracy of products. Relax the regulation on digital humans in fields such as culture, tourism, and IP promotion, so as to provide them with development space. At the same time, it is necessary to strengthen supervision over related contents such as portrait rights and copyrights (Zhao, 2025). Multi-party supervision is implemented, with the government departments, enterprises and users mutually supervising each other to ensure that digital humans continue to be used according to their original functions. In addition, in the implementation and supervision of laws and regulations, a multi-party supervision mechanism should be established. Through government supervision, enterprise self-discipline and user supervision, the boundaries of each party's rights and responsibilities should be clarified to achieve a regulatory closed loop. The government departments should undertake the responsibilities of legislation, law enforcement and supervision. Enterprises should fulfill their main responsibilities and compliance obligations. Users should have the channels of supervision, reporting and rights protection. The three parties should collaborate to form a united force to ensure that the digital human technology always operates within the framework of the law, and to lay a solid legal foundation for the long-term healthy development of the industry.

6. Conclusion

Driven by technology, digital humans are rapidly integrating into all aspects of social life. They are becoming a new driving force for the growth of the digital economy and are supporting all social developments in various application scenarios. With the rapid development of related industries, various potential risks have emerged, and various discussions have also involved ethical conflicts, data application security issues, and widespread concerns from the public, etc., which have greatly hindered the long-term healthy development of the digital person industry. Among these risks, the most prominent one is the risk of data privacy security. From the research, production to implementation of digital persons, a large amount of personal information data needs to be collected and processed. If the data is leaked or used illegally, it is very likely to cause irreparable harm to users. The feedback from the questionnaire shows that we can indeed see that the public is deeply concerned about this.

Meanwhile, service-oriented and assistant-type digital humans, due to their efficiency and low cost, are likely to replace real-world jobs (in some service industries) and some administrative positions. The change in existing employment types has caused social employment anxiety. The companion-type digital beings may also lead to emotional alienation. If users become overly dependent on companion-type digital beings, it will cause them to gradually lose their social skills in real-life situations, leading to a detachment from real-life interpersonal relationships. There is another major problem with the current state of the digital being industry: the related supporting systems and supporting frameworks are not yet complete. Relevant policies lag behind the development of technology, the criteria for identifying infringement are not clear enough, and there are many gaps in supervision. The emergence of these problems will inevitably affect the legitimate rights and interests of the majority of users, trigger a social trust crisis, and are not conducive to the development of the digital being industry. In response to the above discoveries about digital beings, it is necessary to form a multi-party joint and coordinated governance, accelerate the formation of a complete ethical governance system, speed up the unified formulation of reasonable global ethical rules, and conduct normative constraints on all stages of the development and application of digital beings, ensuring their innovation, always maintaining safety and compliance, and laying a foundation for the healthy and stable development of digital beings.

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