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RESEARCH ARTICLE

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User Experience and Employee Satisfaction Improvement Strategies for Multimodal AI Digital Humans

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Abstract: This paper solves the problem of collaborative management of user experience and employee satisfaction caused by multimodal AI digital human anchors in county-level e-commerce live streaming. We construct a theoretical analysis framework centered on the technology acceptance model, social exchange theory, and job demand resource model, exploring how user experience affects employee satisfaction through two ways: job resources and job demand. From the analysis results, it can be concluded that the optimization of user experience needs to focus on both functional and emotional aspects. Through division of labor design optimization, construction of employee empowerment system, technology adaptation and other strategies, external experience and internal satisfaction can be jointly improved. Making technology truly useful for people not only improves efficiency, but also enhances employee satisfaction.

Keywords: AI digital human, user experience, employee satisfaction, county level e-commerce, customer service collaboration

1. Introduction

County level e-commerce, as the core carrier for the upward trend of agricultural products and the downward trend of industrial products, is a key lever for the development of rural digital economy. The digital economy has become an important engine for promoting county-level economic transformation and agricultural modernization. In this context, multimodal AI digital human anchors, as cutting-edge applications of artificial intelligence technology, are being introduced into the field of county-level e-commerce live streaming, providing a new path for agricultural product sales and brand building.

Artificial intelligence technology provides new solutions for the development of county-level e-commerce. In the marketing process, AI digital humans can achieve 24-hour uninterrupted live streaming, breaking through time and space limitations and reducing labor costs; In the service phase, it can interact with users at any time through intelligent Q&A, enhancing the shopping experience; In the operational process, customized image and language can help shape a unique county-level brand IP. However, the widespread application of AI anchors also faces dual challenges in user experience and organizational management. To address this issue, this study constructs a theoretical framework of "user technology employee" trinity based on the technology acceptance model, social exchange theory, and work demand resource model, in order to reveal the inherent connection between user experience and employee satisfaction, and explore the path of synergistic improvement between the two, thereby helping county-level e-commerce enterprises achieve sustainable development of human-machine collaboration.

The three innovative points of this article are as follows: (1) Theoretical innovation. This article

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constructs a cross level integrated theoretical framework of "technology experience satisfaction". Breaking the limitations of traditional single theoretical perspectives, creatively integrating the technology acceptance model (focusing on human-computer interaction), social exchange theory (focusing on interpersonal reciprocity), and job demand resource model (focusing on job design). This framework not only explains how users accept AI digital human technology, but also reveals how external user experience serves as an important social signal and work feature, transmitting and influencing internal employee satisfaction through two paths: "work resource gain" and "work demand balance", achieving a cross-level mechanism interpretation from external technology interaction to internal organizational psychology.

(2) Innovative perspective. This study regards user experience as a pre driving factor for employee satisfaction and proposes a collaborative management perspective from the outside in. It deeply points out that in the application scenario of AI digital humans; excellent external user experience itself is a key work resource that empowers employees. It directly drives the improvement of employee satisfaction by enhancing work meaning, reducing emotional labor, and verifying work value. This perspective elevates user experience management from a simple marketing strategy to a core organizational and human resource management strategy.

(3) Practice innovation. This article proposes a county-level e-commerce live streaming management strategy system for "human-machine collaboration". Compared to macro level exploration of technological applications, this study is rooted in the specific and complex scenario of "county-level e-commerce", and the proposed strategies are highly practical and targeted. We have gone beyond the simple logic of "tool substitution" and focused on "human-machine division of labor" and "employee empowerment".

The subsequent chapters of this article are arranged as follows: The second section is the theoretical foundation, which systematically constructs a theoretical framework centered on the technology acceptance model, social exchange theory, and work demand resource model; The third section is about the mechanism of action, which deeply analyzes how user experience affects employee satisfaction through two paths: "work resource gain" and "work demand balance"; The fourth section is about enhancing the strategy section, proposing a systematic strategy centered on division of labor design, employee empowerment, and technology adaptation; The fifth section, Conclusion and Outlook, summarizes the research findings and points out the limitations and future research directions of the study.

2. Theoretical Bases

2.1. Technology Acceptance Model (TAM)

The technology acceptance model was proposed by Davis (1989) to explain users' acceptance and usage behavior of information technology, with perceived usefulness and perceived ease of use being the core concepts of TAM. Among them, perceived usefulness is usually understood as the degree to which users believe that using a specific technology can improve their work or life efficiency. Research has shown that the perceived usefulness of AI assistants is a key factor in building trust in complex tasks or situations that require quick decision-making, such as government services, autonomous driving, etc. Perceived ease of use is another key element of TAM, referring to the level of ease that users feel when using a certain technology. The ease of use of AI assistants enables users to believe that they can quickly grasp product features, resulting in a more positive emotional experience, which is also the foundation for building trust. Given the widespread application of this theory and the potential for situational dependence, this study will analyze how user experience, through the mediating effect of job characteristics, ultimately affects employee job satisfaction.

2.2. Social Exchange Theory (SET)

Social exchange theory (Blau, 1964) refers to

individuals determining whether to maintain or end relationships by evaluating the rewards and costs of interactions. Among them, "return" refers to individuals obtaining positive results from interactions, and "cost" refers to the price paid to obtain these returns. Individuals decide whether to continue interacting by weighing these two factors. In information system research, SET has been extended as a key perspective for understanding the dynamic evolution of human-machine trust. In terms of returns, when AI assistants have high technical performance and can generate high-quality personalized recommendation results and efficient feedback, users establish trust in the system through this exchange relationship. In terms of cost loss, social exchange inevitably generates uncertainty and risks, such as privacy risks caused by data abuse. When users perceive that the returns provided by AI assistants continue to exceed the interaction costs, trust relationships are established and strengthened.

2.3. Job Requirements Resource Model (JD-R)

The JD-R model (Bakker, 2007) suggests that any work environment contains two types of elements: work resources and work requirements. The loss spiral and gain spiral provide the core argument for this study: positive user experience can be transformed into employees' "work resources", while negative user experience can become employees' "work needs".

3. Theoretical Bases

3.1. Transmission theory framework

In the live streaming scene of county-level e-commerce, the user experience of multimodal AI digital human anchors is transmitted to the organization through the work demand resource model. Positive user experience can be transformed into employees' work resources, while negative user experience will become employees' work demands. Specifically, when users give positive feedback on the professionalism, interactivity, and regional adaptability of AI anchors, this external positive feedbacks will be transformed into supportive resources by reducing employee workload and enhancing work autonomy; On the contrary, when users have negative experiences with AI anchors, these evaluations will create new job demands through increasing emergency response pressure, triggering role conflicts, and other means (Venkatesh, 2016). This transmission mechanism forms the theoretical basis for understanding the correlation between user experience and employee satisfaction, revealing the essential connection between external experience and internal organizational management.

3.2. Resource gain path

When users highly evaluate the professionalism and credibility of AI anchors, AI can accurately complete product basic explanations and routine Q&A, freeing employees from repetitive labor and allowing them to devote their energy to high-value creative planning and supply chain management work, thereby promoting greater autonomy in their work and enhancing their professional abilities. Users' trust in AI is rooted in their perception of the fairness and transparency of its decisions (Araujo et al., 2020). When users experience a smooth and natural interactive experience, the good atmosphere in the live broadcast room is maintained, and employees no longer need to frequently adjust their emotions and create an atmosphere. The emotional workload is significantly reduced, and team collaboration is smoother. Especially in county-level scenarios, the dialect interaction ability and local cultural identity demonstrated by AI anchors can enhance user trust and improve sales performance, which brings strong achievement feedback and value recognition to employees (Van De Voorde & Beijer, 2015). This work resources transformed from positive experiences together form an important foundation for improving employee satisfaction.

3.3. Job Requirements Resource Model (JD-R)

When AI anchors lack professionalism or have incorrect information, user queries and complaints will significantly increase the workload of employees, forcing them to frequently intervene to explain, clarify and remedy problems. This not only increases the additional workload, but also triggers employees' doubts about the reliability of technology and their

own work frustration (Dello Russo, 2020). When the interaction between AI anchors becomes stiff and response cards suddenly appear, the user's stay time and participation decrease. Employees need to spend more energy to make up for technical deficiencies and bear the performance pressure caused by poor live streaming results. The sense of achievement will continue to decrease. In county-level characteristic scenarios, if AI anchors lack dialect understanding and local knowledge, they will be forced to take on additional roles of "real-time translation" and "cultural interpretation", resulting in role ambiguity and an unreasonable increase in workload. These job demands transformed from negative experiences collectively harm employees' job satisfaction.

4. Collaborative Enhancement Strategy

4.1. Division of labor design optimization

In order to optimize job design, county-level e-commerce enterprises can construct clear human-machine responsibility boundaries based on systematic analysis of job characteristics and capability advantages. Successful organizations do not pursue complete automation, but are committed to designing complementary systems that can simultaneously leverage the unique judgment of humans and the powerful computing capabilities of AI (Raisch & Krakowski, 2021). By relying on work reshaping strategies, highly repetitive and standardized tasks such as product parameter broadcasting, explanation of discount rules, and order status queries can be clearly assigned to AI digital personnel, fully leveraging their efficiency advantages and stability characteristics. At the same time, tasks that require creativity, empathy, and complex decision-making, such as emotional marketing, complex complaint handling, and live streaming process planning, are classified as core areas of responsibility for employees. This specialized division of labor not only improves the efficiency of human-machine collaboration, but also effectively avoids resource waste and potential conflicts caused by overlapping responsibilities. By clarifying their respective strengths, we ensure consistency in user experience and create more valuable job content for employees.

4.2. Employee empowerment system

Enterprises should go beyond the limitations of traditional technical operation training and focus on building a comprehensive capability development system for "AI operation officers". From Maslow's proposition that individuals have a need for self-actualization, to the later emergence of the self-actualization hypothesis, and the emphasis on employee self-management in organizational development, it is evident that the self-motivation of organizational employees does not solely come from traditional material factors such as salary, bonuses, or benefits, but rather emphasizes the realization of self-worth and the highlighting of self-meaning. At the same time, modern employees are full of uncertainty in their career choices. Being content with the status quo and lacking in challenging work conditions no longer meet their career needs. Tasks with higher challenge difficulty can actually stimulate their interest.

Therefore, enterprise training content can include the following: AI data interpretation and analysis skills, enabling employees to record demand changes from user interaction data; Strengthen the skills of human-machine communication to ensure a natural transition in the live streaming process; Improve the AI fault emergency response process and enhance the ability to respond to unexpected situations. More importantly, it is necessary to establish an employee feedback and optimization mechanism, encouraging frontline teams to translate observed user needs and technical deficiencies into specific product improvement suggestions. In terms of incentive mechanisms, the comprehensive performance of AI lives streaming rooms, including core indicators such as user experience ratings and problem-solving efficiency, should be incorporated into the team and individual performance evaluation system, so as to closely link employee interests with AI operational results and stimulate employees to actively invest in AI optimization management.

4.3. Technical adaptation strategy

At the level of technological optimization, it is necessary to focus on building the professional capabilities and interactive experience of AI anchors. Improve the product's professional knowledge base and dialect voice interaction function to ensure that AI can accurately answer product questions and communicate naturally in dialects, ensuring the professionalism and affinity of live streaming from the source and reducing the burden of explanation for employees. At the same time, it is necessary to focus on improving the emotional expression of voice and the micro expression management of digital humans, enhancing users' enjoyment of watching through more vivid broadcasts, and indirectly reducing the emotional burden of employees maintaining the live broadcast atmosphere.

In terms of auxiliary support, it is also necessary to develop a real-time speech suggestion and user emotion warning system. When identifying confusion or impatience among users, the system needs to provide timely response suggestions to employees, transforming potential communication pressure into effective work support. All technological improvements should closely follow the characteristics of county-level e-commerce business, ensuring that each functional update can accurately meet the needs of users and the pain points of employees' work.

5. Conclusion and Prospect

This study focuses on the intrinsic relationship between user experience and employee satisfaction of multimodal AI digital human anchors in county-level e-commerce live streaming scenarios. By integrating the technology acceptance model, social exchange theory, and work demand resource model, a theoretical framework of "user experience work characteristics employee satisfaction" is constructed, which systematically explains the entire process of external user evaluation affecting internal employee work status.

This study suggests that user experience affects employee satisfaction through two ways: job resource gain and job demand pressure. In the specific context of county-level e-commerce live streaming, the user experience created by multimodal AI digital human anchors is not limited to the external consumer level, but will deeply affect the psychological state of employees within the organization through a dual path transmission mechanism. Positive user experience can be transformed into effective resources that reduce employee burden and enhance work autonomy. When users give positive feedback on the professional explanation and smooth interaction of AI anchors, these positive feedbacks will directly reduce the pressure of supervision and explanation for employees, allowing them to shift their energy to more creative product selection and marketing planning, thereby gaining ability improvement and a sense of achievement. Negative experiences will increase employees' remedial workload and emotional labor, forming new job demands. Specifically, when AI encounters response errors or interactive cards, the resulting user doubts and complaints will force employees to frequently intervene and remedy the situation. This not only brings about sudden and heavy additional work, but also increases the emotional labor required to appease user emotions, ultimately leading to a decrease in work frustration and satisfaction.

Therefore, this study proposes to clarify the boundaries of responsibilities between humans and AI through refined division of labor. The core of this approach is to go beyond simple task replacement logic and systematically divide the scope of responsibilities between humans and AI in areas such as script generation, real-time interaction, data analysis, and crisis management, achieving complementary advantages and risk isolation. And establish an "AI Operations Officer" training system that organically combines technology application with employee growth. This system aims to train and practice core employees from passive technology users to operational experts who can actively manage and optimize AI digital humans, ensuring that the introduction of advanced technology is not only a

tool for improving efficiency, but also an endogenous driving force for employee skill upgrading, career development, and value creation, ultimately achieving a synergistic improvement of business efficiency and employee satisfaction.

Future research can be based on this and adopt in-depth qualitative research methods, such as conducting in-depth interviews and participatory observations of live streaming rooms in multiple typical case counties, to further explore the specific situations under different team structures and management styles. These specific differences and performances not only make the theoretical framework of this study more realistic, but also have more guiding significance. Specifically, future research can select county-level cases that adopt different organizational models such as "centralized operation" and "village self-initiated", and analyze how human-machine collaboration models are generated and evolved in specific institutional environments and social relationships through long-term roots in the field. At the same time, the research perspective can be further deepened, focusing on the differences in interaction between different positions such as anchors, operators, and customer service in the behind-the-scenes operation team of the live broadcast room and AI, as well as the key regulatory roles of different management styles such as authoritative and empowering in the process of technology implementation. By delving into and comparing these complex scenarios, not only can we validate, revise, and enrich the theoretical model constructed in this study, but we can also identify key success factors and potential risk points that are easily overlooked at the macro level. This provides a solid and detailed empirical basis for how county-level e-commerce and other traditional industries can develop more adaptive and humanized human-machine collaboration strategies in digital transformation.

Conflict of Interest

The authors declare that they have no conflicts of interest to this work.

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