

Research on the Influence of Quasi-Employees on the Quality of Artificial Intelligence Artworks

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ARTICLE INFO

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Keywords:

AI Art; Quasi-Employees; User Characteristics; AI Technology

Article history:

Received: 26/03/2024

Revised: 29/03/2024

Accepted: 21/06/2024

Available online: 30/06/2024

How to cite:

Fei, W., & Sawetwatana, S. (2024). Research on the Influence of Quasi-Employees on the Quality of Artificial Intelligence Artworks. *Journal of Philosophical Vision*, 29 (1), 276-290.

ABSTRACT

The paper takes AI painting in artificial intelligence art as an example and examines the two core human resource elements, users and AI, in AI painting creation from the perspective of human resource management. In order to stimulate user creativity and the potential for human-machine collaboration, this study combines theoretical guidance from motivation theory etc, and conducts empirical analysis on factors affecting the quality of AI artwork. Research hypotheses are proposed based on specific application scenarios of AI products, and a research model is constructed in this paper. The relationship between human-machine collaboration and user collaboration, user characteristics, and high-quality AI technology on the quality of AI artwork are explored. A total of 319 valid questionnaires are collected through online distribution of surveys, and data analysis is conducted using SPSS 22 software to verify the proposed research hypotheses. The results indicate that good individual creative states and high-quality AI technology are important factors influencing the quality of AI artwork. We believe that democratic human resource management can inject vitality into the establishment of AI art platforms, stimulate the creative potential of users and AI, and contribute to the flourishing development of AI art.

1. Introduction

In recent years, the collision between Artificial Intelligence (AI) and art has been constantly refreshing people's understanding. AI art is changing the traditional art creation ecology with its rapid development, attracting the attention and favor of the general audience. At present, AI art creation practices involve poetry, painting, video, music and other art fields.

Production or business partners who join the production or management activities of the enterprise due to the use or "consumption" of the company's products and services become "quasi employees" of the enterprise. For example, customers may be involved in the design and development process of new products. The significance of customers as production or business partners to enterprise HRM lies in reducing a certain number of employees and correspondingly reducing employment costs. The catering industry adopts self-service consumption to meet the personalized needs of customers, and consumers unconsciously become the "waiters" of enterprises. Enterprises adopt user participation in production to improve product quality or services, resulting in a customer-oriented human resource management model argued that customer-oriented HR management is an effective strategy to increase customer satisfaction and loyalty, while creating an innovative and productive workplace. The boundary between employees and users is becoming increasingly blurred, and the roles of employees and users overlap with each other. The same person is both a user and an employee (Bai et al., 2016).

With the rise of the internet and social media, users have gained more power to influence the design, development, and production of products and services. According to Franke, N. & Shah, S. (2003), user participation can be classified into three types: user innovation, user co-creation, and user involvement. User innovation refers to the development of new products or services by users themselves. User co-creation refers to the collaboration between users and producers in the creation of new products or services. User involvement refers to the participation of users in the testing, evaluation, and feedback of products or services. Von Hippel (1988) defined user innovation as "the development of a new product or service that is novel to the innovator and potentially useful to others." User innovation can occur in various fields, such as software development, medical devices, and sports equipment. Nikolaus, et al. (2003) found that user innovation is more likely to occur when users face a problem that cannot be solved by existing products or services. They also found that user innovators tend to have more knowledge and skills than average users. User co-creation has also attracted much attention from researchers. Prahalad, C. K., & Ramaswamy, V. (2004) defined user co-creation as "the joint creation of value by the company and the customer; allowing the customer to co-construct the service experience to suit their context." User co-creation can take various forms, such as online communities, open innovation platforms, and crowdsourcing. Füller et al. (2009) identified four types of user co-creation: ideation, design, production, and marketing. They found that user co-creation can enhance customer satisfaction, loyalty, and innovation. User involvement is another type of user participation in production. Luethje, C., Hasrat, C., & Hippel, E. V. (2005) defined user involvement as "the active participation of users in the development process of new products or services." User involvement can take various forms, such as surveys, focus groups, and usability tests. User involvement can provide valuable feedback to producers and improve the quality and usability of products or services. However, user involvement can also be time-consuming and costly. User participation in production can

bring various benefits to both users and producers. For users, user participation can provide a sense of empowerment, ownership, and self-expression. Users can also benefit from the customization, personalization, and innovation of products or services. For producers, user participation can enhance customer satisfaction, loyalty, and innovation. Producers can also benefit from the cost-saving, risk-reducing, and market-expanding effects of user participation.

Human resource management is an essential part of modern organizational operations. It aims to achieve the strategic goals and sustainable development of an organization by effectively managing and developing the human resources within the organization. Human resources are crucial to the success of an organization. An outstanding team of employees is the cornerstone of organizational success. Highly skilled and professionally capable employees not only produce excellent products but also enhance the competitiveness of the organization effectively.

AI has been widely used in the field of art form, forming a brand-new AI art form, continuously refreshing people's understanding. AI art creation platforms emerge one after another like mushrooms after rain. These new platforms subvert the construction mode of traditional art creation platforms, and there have also been fundamental changes in human resource management. The framework of AI art creation platforms is becoming simpler and simpler, but with artificial intelligence becoming more and more humanized, and users joining the creative team, the HRM connotation and extension of AI art creation platforms will be further expanded. The current theoretical research has not yet had a close look at these new HRM practices.

Art enterprises are inherently distinctive from other organizations, and the newly emerged AI art creation platforms are even brand-new operation and creation models. How to improve the quality of art works, how to stimulate the creativity of AI art creation subjects? These are questions that need to be answered urgently.

In comparison to traditional art enterprises, artificial intelligence art enterprises involve not only artists but also users and the artificial intelligence itself as part of their human resources. This shift implies that artificial intelligence art enterprises need to reexamine and plan their human resources.

To enhance the quality of artificial intelligence artwork, it is essential to effectively manage and develop the human resources of artificial intelligence art enterprises, and leverage the strengths of users and artificial intelligence. Microscopically speaking, the current research on Human Resource Management mainly focuses on the studies of the effects of organization factors, management models, leadership styles, workplace, environment atmosphere, identity positions, knowledge updates, compensations and etc. on employees' creativity. These researches are mainly applicable to traditional enterprises' HRM and have certain general values. However, the current human resource management systems in place are no longer able to keep up with the pace of development in artificial intelligence art and therefore require a reconstruction of the human resource management system in artificial intelligence art enterprises.

2. Objectives

1) To study the relationship between User's creative status and the quality of artificial intelligence artworks.

Artistic creation is a process filled with passion and creativity, originating from the deep emotions and experiences within the artist. In art, the artist's mood often becomes an important element of expression, directly or indirectly influencing the themes, forms, and emotional experiences conveyed to the audience. The artist's mood plays a significant role in artistic creation.

In AI artistic creation, there is a certain correlation between the user creator's mood and emotions and the themes and styles of the artwork. Different emotional states can lead user creators to choose different artistic forms and creative styles, thus influencing the results of AI-generated creations.

Creators with strong creative desires often possess stronger inner drive and willpower. They are more likely to overcome difficulties and persistently pursue excellence. This positive attitude and effort often directly reflect in the finesse, expressive power, and uniqueness of the work, thereby enhancing its quality. The level of creators' dedication also affects the integrity and aesthetics of the work. Creators treat each creation seriously, paying attention to detail handling and balance of composition, making the work more harmonious and moving.

There is a certain relationship between the user's creative environment and the quality of artificial intelligence artwork. The creative environment plays a crucial role in the comfort and focus of the creative process. A conducive creative environment provides the quiet and focused space that creators need, allowing them to better utilize their creative talents. Different creative environments can have varying effects on the creation of AI artwork. In a comfortable environment, artists may be more motivated and energized to explore and utilize AI technology, thereby producing higher-quality works.

2) To study the relationship between artificial intelligence technology and the quality of artificial intelligence art works

Artificial intelligence art algorithm models serve as the foundation for generating AI artwork. The art algorithm models learn and analyze large amounts of artistic data and patterns. For example, in the field of painting, algorithm models can analyze a vast number of artworks to understand the techniques, subject selection, and use of lines across different periods. These patterns can then be applied by the algorithm models to generate new artworks that are similar to or even surpass real artworks in terms of skills and style.

Artificial intelligence art dataset refers to a collection of data used to train and generate AI artwork. It can include various forms of data, such as images, audio, and videos, which are analyzed and processed through algorithms to produce original artworks. A good AI art dataset needs to meet several requirements. There is a close relationship between AI art datasets and the quality of AI artwork. Excellent datasets possess better creative ability

and artistic expression. With diverse, accurate, large-scale, and up-to-date datasets, AI art can better meet people's needs and expectations for art.

Computing power is a crucial driving force behind AI art creation. The continuous improvement of computing power enables AI to create artwork in a more efficient and precise manner, opening up new possibilities for the quality of art pieces. Enhanced computing power allows AI to focus more on details and creativity during the creation process. In the past, computing power was quite limited, which constrained the performance of AI in artistic creation. However, with the advancement of hardware technology and increased computing capabilities, AI now has the ability to handle more complex tasks in shorter periods.

3) Hypothesis

H1: Positive user characteristics have a positive impact on the quality of AI artwork.

This hypothesis is proposed based on the understanding that humans are often influenced by their emotions, cognition, aesthetics, skills, and other factors when creating artwork, which indirectly affects the quality of the artwork.

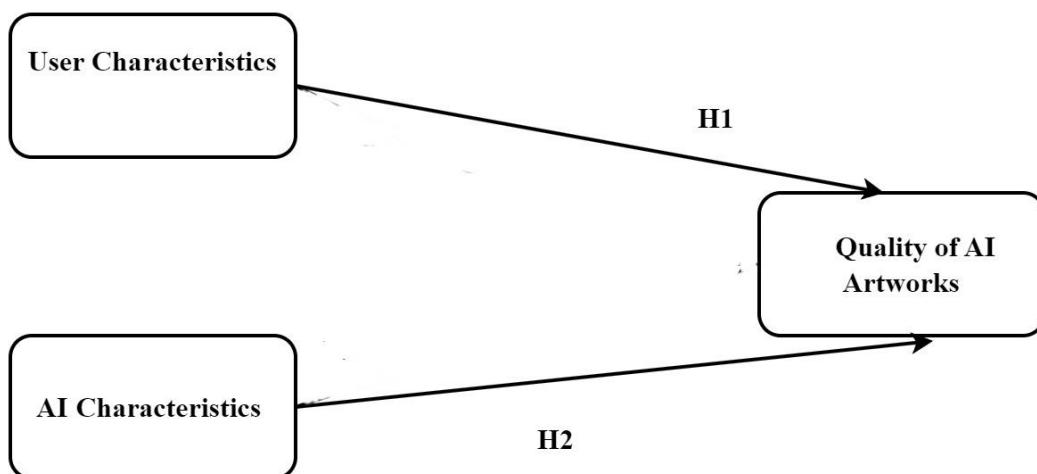
Firstly, an individual's emotional state greatly influences artistic creation. When we are in a good mood, we are more likely to generate positive creative emotions. Additionally, maintaining a positive mindset consistently can also lead to an improvement in the quality of artistic creations. Secondly, the creative environment in which users find themselves also impacts the quality of artwork. If a user is in a comfortable environment, they are more likely to immerse themselves in the world of artistic creation and produce higher-quality works. In conclusion, based on the considerations mentioned above, we propose Hypothesis 1 because we believe that user characteristics and environments indirectly impact the quality of AI artwork.

H2: High-quality artificial intelligence technology has a positive impact on the quality of AI artwork.

The continuous advancement of artificial intelligence technology has led to an improvement in the quality of AI artwork. For example, high-quality algorithm models, high-quality training datasets, and powerful computing capabilities all have significant effects on the quality of AI artwork. High-quality artificial intelligence technology can create more accurate and innovative art pieces while combining with human creativity to achieve deeper levels of artistic expression.

4) Conceptual framework

The paper mainly studies the impact of human resource management on the quality of artificial intelligence art works, focusing on the two related subjects of users and artificial intelligence technology in artificial intelligence art creation. It examines the organizational mode of human resource management in artificial intelligence art creation, identifies the main factors that affect the quality of artificial intelligence artworks and stimulates the creativity of users and artificial intelligence technology. Promote the democratization of human resource management in artificial intelligence art enterprises through the democratization of artificial intelligence art creation. The research framework is as follows:



Source: Compiled by the author

Concept

Quasi-employees

Production or business partners who join the production or management activities of the enterprise due to the use or "consumption" of the company's products and services become "quasi employees" of the enterprise. For example, customers may be involved in the design and development process of new products. The significance of customers as production or business partners to enterprise HRM lies in reducing a certain number of employees and correspondingly reducing employment costs.

According to the Theory of planned behavior (TPB), Cheng, X., & Shao, Y..(2020) conducted a questionnaire survey to explore the influencing factors of mobile short video users' participation in content production and their interaction mechanism. The research results show that users' behavioral attitudes and perceptual behavioral control are important factors that have a positive impact on the production of short video content. This indicates that short video content producers have a strong willingness and ability to explore emerging media, and are more inclined to showcase their uniqueness, reflecting the characteristics of independent self-construction. This discovery provides valuable insights into the behavior of mobile short video users.

Shang, J., &Fan, Y. (2019) believe that with the rapid development of internet technology, information transmission methods have shown the characteristics of "decentralization" and "re centralization". In this new world, previously insignificant individuals and massive organizations have become information nodes, integrated into a vast network. The small resources on each node are activated, and new rules of interconnection and equal interaction are forming. With the rapid development of internet technology, the media industry should attach importance to the status of users, be user oriented in content creation, and encourage users to participate in the process of content production. Only through close cooperation with users can we promote the common progress of the media industry and users, and jointly create new boundaries in content

production. Transforming users into employees is to stimulate and utilize their communication value, cognitive value, service value, and sales value.

The Two-Factor Theory

The Two-Factor Theory, also known as the Motivator-Hygiene Theory, is a management theory proposed by American behavioral scientist Frederick Herzberg in 1959. Herzberg believed that individuals live within a specific social environment where various factors influence their behavior, which can be classified into two categories: hygiene factors and motivator factors. Hygiene factors are external factors related to the work environment and conditions, such as salary, management style, status, safety, work environment, and interpersonal relationships. The absence of these factors can lead to dissatisfaction and reduced job motivation, while their presence can prevent individuals from experiencing negative emotions towards their work. However, hygiene factors alone are not sufficient to foster a positive attitude towards work. On the other hand, motivator factors primarily include achievement, recognition, promotion, the work itself, career development, and responsibility. The presence of motivator factors contributes to increased satisfaction and higher job motivation.

In the specific application of human resource management, employee motivation can be mobilized from two aspects: direct satisfaction and indirect satisfaction. Direct satisfaction refers to the satisfaction obtained within the scope of work tasks. It is the satisfaction a person derives through their work, the work itself, and the relationships with others during the work process. It enables employees to learn new knowledge and skills, generate interest and enthusiasm, and experience a sense of pride, responsibility, and accomplishment. As a result, it can stimulate intrinsic motivation and generate high work enthusiasm. Managers should attach great importance to this form of motivation. Although it may sometimes require more time, once employee motivation is stimulated, it not only improves productivity but also endures over time. Indirect satisfaction, on the other hand, refers to the satisfaction obtained outside of work tasks. This satisfaction is not derived directly from the work itself but rather obtained after completing the work. Examples include promotions, titles, awards, material rewards, and benefits. Among these, benefits such as salary, bonuses, cafeteria, daycare centers, employee schools, clubs, etc., are considered forms of indirect satisfaction. Although indirect satisfaction has some connection to the work employees are involved in, it is not as direct. Therefore, it often has limitations when it comes to motivating employees, as they may feel less concerned about the actual work itself. Researchers suggest that while this form of satisfaction can significantly improve work efficiency, it is not always sustainable and can sometimes have negative effects if not handled properly. The Two-Factor Theory provides important insights for the human resource management of AI art platforms.

Maslow's Hierarchy of Needs

Maslow developed his Hierarchy of Needs theory in the 1940s, proposing that human beings have five basic needs: physiological, safety, love/belonging, esteem and self-actualization (Maslow, 1943). Maslow argued that these needs must be met in a hierarchical fashion, with the lower needs being fulfilled before higher needs can be addressed. Maslow

argued that in order for an employee to be motivated to perform various tasks, they need to have their lower-level needs fulfilled first. If these needs are not met, then the employee will likely feel dissatisfied and unmotivated to perform well or engage with tasks. Therefore, it is essential that employers provide a supportive work environment that meets the needs of the employees in each of the five levels. Being able to fulfill the lower-level needs of the employees such as providing good pay, benefits and working conditions can lead to a better performance overall (Avoliot, B. J., & Gardner, W. L., 2017).

Maslow's Hierarchy of Needs theory holds significant importance in human resource management. It provides strong theoretical support for enterprise human resource management, establishing and improving a multi-level, differentiated, and personalized incentive system that fully stimulates employees' creativity and subjective initiative. Effective delegation of authority is reflected in the management of empowering employees, promoting special promotion for exceptional talents, and providing platforms for them to unleash their potential.

User involvement in art creation on the Artificial Intelligence Art Creation Platform has moved beyond just material and security needs, and is now motivated by higher-order needs.

3. Research Methodology

Research Design

This questionnaire is mainly based on a survey of artificial intelligence painting users. The questionnaire design is mainly divided into three parts. The first part contains basic information about users. The second part focuses on the basic characteristics of users in the creative process and explores the characteristics of artificial intelligence technology. The third part uses the Likert five level scale, divided into four dimensions, with options ranging from very disagree to very agree. The higher the degree of agreement, the higher the score. Prior to the formal survey, this study conducted a pre survey to revise and improve the questionnaire design to ensure the authenticity and validity of the obtained data. The pre survey used a small-scale questionnaire distribution method, collecting a total of 52 feedbacks. Through analyzing the feedback opinions, the questionnaire was modified and adjusted, including the logical order of the questions, clear and understandable expression of option descriptions, etc. At the same time, some inaccurate or unnecessary items were deleted, ultimately forming a formal questionnaire. The questions for each dimension are as follows:

Table1:

Research Measurement Items

Dimension	Entry
User Characteristics (UC)	Good Mood
	Effective Motivation
	Comfortable Environment
	technical level
	Creativity and Imagination

Research Measurement Items

Dimension	Entry
Human-Machine Cooperation And User Cooperation (HMC&UC)	Mutual Understanding Mutual Communication Accurate Prompt Friendly operation interface
AI Characteristics (AC)	High Quality Dataset Excellent Algorithm Model Powerful Computing Power
Quality of AI Artworks (QAA)	Originality Effective Novelty Emotional expression Creative efficiency

The Research Population

According to the 2023 "AIGC interested users" insight report released by QuestMobile on April 11, 2023, there are more than 10 million AI painting users in Chinese Mainland. AI painting applications reached a peak of activity in November 2022, with multiple apps and WeChat mini programs having a monthly active user base of one million.

Random Sampling

This study primarily adopted a random sampling method for research purposes. The widely recognized Chinese online survey platform, Wenjuanxing (<https://www.wjx.cn/>), was used to invite eligible target participants from its own sample database to complete the questionnaire. Wenjuanxing has over 2.6 million samples and can precisely target participants based on various sample attributes, such as gender, age, region, occupation, and industry. To ensure the authenticity and validity of the samples, methods such as setting screening pages and using trap questions during the survey were employed to filter out ineligible respondents. Additionally, manual inspections were conducted to further verify the samples.

Questionnaire Survey Method

Only users who meet the screening criteria are eligible to fill in the questionnaire, which is mainly distributed to AI users in Chinese Mainland.

IBM SPSS Statistics

Mainly used for survey questionnaire statistics, using IBM SPSS Statistics for data analysis to draw conclusions.

Data collection

The AI painting user survey questionnaire was distributed on the Wenjuanxing platform. Two rounds of distributing the questionnaire were conducted, with a cumulative total of 7071 questionnaires sent out online. A total of 515 survey responses were received, of which 319 were deemed valid, while 196 responses were deemed invalid after screening.

Data analysis

Table2:

Personal Profile of Respondents			
		Frequency	Percentage
Gender	Male	117	36.68
	Female	202	63.32
		319	100.0
Age	18-19	38	11.91
	20-21	133	41.69
	22-23	87	27.27
	Over 24-25	61	19.12
		319	100.0
Education level	High school	36	11.29
	College and bachelor	261	81.82
	Master and above	22	6.90
		319	100.0
Major	Painting related	80	25.08
	Non painting related	239	74.92
	Total	319	100.0

4.5.1 The Reliability and Validity Analysis of the Questionnaires

Table 3:

Reliability Statistics			
Dimension	Cronbach's Alpha	N of Items	
UC	0.779	5	
HMC&UC	0.709	4	
AC	0.777	3	
QAA	0.795	5	

Table 4:
KMO and Bartlett's Test

		UC	HMC&UC	AC	QAAk
Kaiser-Meyer-Olkin Measure Sampling Adequacy		.824	.752	.701	.826
Bartlett's Test of Sphericity	Approx. Chi-Square	375.097	212.991	258.422	416.124
	df	10	6	3	10
	Sig.	.000	.000	.000	.000

Table 5:
Creation and communication platform recharge income

Items	Categories	N	Percent (%)	Cumulative Percent (%)
Are you willing to pay for artificial intelligence painting software?	Yes	226	70.85	70.85
	No	93	29.15	100.00
What is your recharge amount on the artificial intelligence painting software platform (in RMB or equivalent)	0 yuan	78	24.45	24.45
	1-100 yuan	183	57.37	81.82
	101-500 yuan	50	15.67	97.49
	501-1000 yuan	6	1.88	99.37
	Above 1000 yuan	2	0.63	100.00
What are the benefits you will receive on the artificial intelligence painting software platform (in RMB or equivalent)	0 yuan	182	57.05	57.05
	1-100 yuan	85	26.65	83.70
	101-500 yuan	32	10.03	93.73
	501-1000 yuan	8	2.51	96.24
	Above 1000 yuan	12	3.76	100.00
Total		319	100.0	100.0

Description and statistics of each dimension

Table 6:
User Characteristics Descriptive Analysis

Items	Mean	Std. Deviation	Median	Sort
Good Mood	3.38	1.08	3	3
Effective Motivation	3.4	1.07	3	2
Comfortable Environment	3.26	0.98	3	5

technical level	3.34	1.03	3	4
Creativity and				
Imagination	3.42	1.07	3	1
UC	3.36	0.76	3.4	

4. Results

The paper used the Cronbach's Alpha coefficient to test the inherent reliability of the survey questionnaire. The survey results show that various aspects of the questionnaire α A coefficient greater than 0.7 indicates that the overall reliability of the questionnaire is relatively good and has good internal consistency. This indicates that the questionnaire has good reliability and the measurement results are reliable. The reliability test results of this survey questionnaire are shown in Table 3.

From the table 5, it indicating that these users are more concerned about the creative experience and software features, rather than using the platform for rewards.

We used the Likert scale for the user dimension, where a higher score indicates a higher level of recognition. The average of Good Mood is 3.38, and the average of Effective Motivation is 3.4. The mean of Comfort Environment is 3.26, and the mean of technical level is 3.34. The average of Creativity and Imagination is 3.42. The average of the overall user dimension is 3.36. From the average score of the user dimension, the scores for good mood and comfortable environment are the lowest, indicating that creators need to improve their mental state.

5. Discussion

There are significant differences in User Characteristics, Human Machine Coordination and User Coordination, AI Characteristics, Quality of AI Artworks, and other aspects among samples from different professional backgrounds. Especially in the professional background related to painting, the opinions and evaluations on the above four aspects are relatively high. Users majoring in painting have a deeper understanding and understanding of the combination of art and technology, and pay more attention to the intersection and integration of art and technology. In addition, Users majoring in painting may place greater emphasis on the visual effects and innovation of artistic works, resulting in a relatively high evaluation of Quality of AI Artworks. However, majors that are not directly related to painting may have a relatively balanced evaluation of AI related characteristics and advantages and disadvantages, with an overall evaluation slightly lower.

The level of education has a significant impact on people's understanding and cognition of artificial intelligence, and those who have received higher education may be abler to understand and utilize the benefits that artificial intelligence brings to humanity, and are more likely to collaborate effectively and efficiently with artificial intelligence systems. At the same time, the evaluation of Quality of AI Artworks is also the same. The higher the level of education, people may attach more importance to the visual effects and innovation of artistic works, so the evaluation of AI creation is also higher. Choose people who are willing to pay for artificial intelligence painting software and are more receptive to the changes brought about by artificial intelligence technology, holding a positive attitude

towards the potential and advantages of artificial intelligence. At the same time, they also have higher requirements for the performance and quality of artificial intelligence systems, so they will also put forward higher requirements for the quality and creativity of artworks produced by artificial intelligence.

6. Conclusion

The study reveals significant differences in user characteristics, human-machine coordination, user coordination, AI characteristics, and the quality of AI artworks among individuals from various professional backgrounds. Notably, users with a background in painting exhibit higher opinions and evaluations in these aspects.

Professional Background in Painting

Users majoring in painting demonstrate a deeper understanding of the interplay between art and technology, emphasizing the integration of these fields. They particularly value the visual effects and innovation in AI artworks, resulting in higher evaluations of the quality of these creations. In contrast, individuals from non-painting backgrounds tend to have more balanced views on AI-related characteristics, with overall evaluations being slightly lower.

Impact of Education Level

Education level significantly influences users' understanding and perception of artificial intelligence. Those with higher education levels are better equipped to comprehend and leverage the benefits of AI, leading to more effective collaboration with AI systems. Similarly, individuals with higher education levels place greater importance on the visual effects and innovation of artistic works, thereby providing higher evaluations for AI-generated art.

Willingness to Pay for AI Painting Software

Users willing to invest in AI painting software generally exhibit a positive attitude towards AI and its potential advantages. These users tend to have higher expectations for the performance and quality of AI systems and the creativity and quality of AI-generated artworks. This group's proactive approach towards embracing AI technology reflects their readiness to adapt to technological changes and demand high standards from AI applications.

In summary, this study underscores the importance of professional background, education level, and willingness to invest in AI technology in shaping users' perceptions and evaluations of AI characteristics and AI-generated artworks. These findings can inform the development of AI systems and tools tailored to meet the diverse needs and expectations of different user groups, ultimately enhancing the integration of AI in artistic and creative fields.

7. Suggestion

To advance the understanding of how quasi-employees influence the quality of AI-generated artworks, several research avenues should be considered.

Firstly, it is crucial to investigate the specific skills and knowledge that quasi-employees from different professional backgrounds bring to the creation of AI art. This includes a deeper examination of how their expertise in fields like painting, digital art, and computer science impacts the quality and innovation of AI-generated artworks. By identifying the unique contributions of various professional backgrounds, we can develop more effective training programs that enhance human-machine collaboration in the artistic domain.

Secondly, the impact of education level on the interaction between quasi-employees and AI systems warrants further exploration. Research should focus on how advanced education in both the arts and technology can facilitate a better understanding and utilization of AI tools, leading to higher quality and more innovative art. This could involve longitudinal studies tracking the progress of individuals with varying educational backgrounds as they engage with AI art systems over time.

Additionally, future research should delve into the motivations and attitudes of users willing to pay for AI painting software. Understanding the characteristics of this group can provide insights into how to market and improve AI art tools. This could include surveys and interviews to capture their expectations, preferences, and feedback on AI-generated art. It is also important to explore the dynamics of human-machine coordination in the creation of AI artworks. Studies should examine how quasi-employees and AI systems interact during the creative process, identifying best practices for enhancing synergy and minimizing friction. This might involve real-time observation and analysis of collaborative art sessions, as well as experiments to test different coordination strategies. Moreover, the role of user coordination in teams of quasi-employees working with AI should be investigated. Research can focus on how collaboration among users from diverse professional and educational backgrounds influences the outcome of AI-generated artworks. This includes studying communication patterns, decision-making processes, and the division of tasks within teams.

Finally, developing tailored AI systems and tools to meet the needs of different user groups is essential. Future research should aim to design and test AI art tools that cater to specific preferences and skill levels of quasi-employees. This could involve iterative design processes, incorporating user feedback to refine and improve AI systems for artistic creation. By addressing these areas, researchers can enhance the integration of AI in the artistic field, ensuring that AI-generated artworks meet high standards of quality and innovation. This holistic approach will not only advance the technology but also enrich the creative process, benefiting both artists and audiences.

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