

Key Competencies for Art and Design Professionals in the Field of E-commerce

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ABSTRACT

With the rapid development of e-commerce and digital technology, the demand for art and design professionals in this field has significantly increased. This study used quantitative research methods to investigate 30 employers in the e-commerce industry, aiming to identify the core competencies of e-commerce art and design professionals. The research results show that designers need to possess key skills such as visual design, user experience optimization, AI tool application, and data-driven design with strong digital literacy, while continuously learning to adapt to industry changes. In addition, emerging technologies have had a profound impact on the design process and brand marketing strategies. Based on the survey results, this article proposes suggestions for optimizing curriculum design and vocational training to narrow the gap between education and industry demand, and enhance the employment competitiveness of graduates.

Key words: E-Commerce Design, User Experience, Artificial Intelligence Tools, Data-Driven Design, and Professional Competency Development

INTRODUCTION

With the rapid development of e-commerce and the continuous advancement of digital technology, the demand for art and design professionals engaged in this industry has also significantly increased. E-commerce platforms have become an important channel for enterprise marketing and brand building, and consumers' demands for visual experience are increasing, which has prompted art and design professionals to play a more important role in the e-commerce environment. At the same time, the rapid development of emerging technologies such as artificial intelligence (AI), big data analysis, and user experience optimization is reshaping the working methods and core skills of the e-commerce design industry.

As a professional teacher at a vocational college in China, the researcher recognizes the need to provide students with the key skills required to succeed in this fiercely competitive and constantly changing industry. However, there is still a lack of clear, data-driven insights regarding the specific skills and abilities (such as digital literacy and data literacy) that employers prioritize when recruiting art and design professionals in the e-commerce field. The traditional art and design teaching system mainly focuses on creative expression and visual aesthetics. Under the dual drive of technology and market orientation, how to effectively integrate digital tools, data analysis, and intelligent technology has become an important issue in optimizing the current education system.

This study aims to bridge this gap through quantitative research methods, utilizing employer surveys to identify the

key competencies required for e-commerce art and design professionals. Through questionnaire surveys and data analysis, this study will delve into the professional requirements of designers in the field of e-commerce, covering not only core competencies such as visual design, brand promotion, and user experience, but also focusing on AI driven design tools, automated design processes, and the application of marketing thinking in e-commerce design. The rise of these emerging technologies not only provides designers with more efficient creative methods, but also brings new challenges and opportunities to adapt to market changes and enhance competitiveness.

By collecting and analyzing data from industry employers, this study will provide empirical evidence for the key competencies required for designers to thrive in the digital market. These findings will not only deepen our understanding of industry expectations, It also provides suggestions for optimizing the curriculum of the Art and Design Department in vocational colleges Based on the research results, the college can adjust the course content to enhance students' abilities in digital tool application, data thinking, and user experience optimization, ensuring that graduates have core competitiveness in the increasingly intelligent e-commerce industry.

Ultimately, the insights gained from this study will be integrated into an academic framework to ensure that students receive targeted training that meets industry needs. As artificial intelligence continues to redefine design workflows and creative processes, art and design education must adapt

to industry changes, enabling students to possess both traditional artistic skills and modern technological abilities. Through this study, we hope to construct a more comprehensive teaching system that not only helps students better integrate into the e-commerce industry, but also provides valuable references for future art and design education. This research will help optimize and improve the curriculum structure of an art and design department, better prepare graduates for successful careers in the field of e-commerce design, and actively respond to the challenges and opportunities brought by the AI driven industry transformation.

Significance of the Study

With the rapid development of the e-commerce industry, the job content and core competency requirements of art and design professionals are undergoing significant changes. The core objective of this study is to identify the key competencies required for art and design professionals in the field of e-commerce, and analyze how these competencies affect career development and industry competitiveness. Through questionnaire surveys and data analysis, this study will reveal the skills that employers value most when recruiting design professionals, providing a scientific basis for future career training and talent development.

Firstly, this study helps to clarify the core competencies of designers in the e-commerce environment, including key skills such as visual design, user experience optimization, application of AI design tools, and data-driven design. These abilities not only determine the competitiveness of designers in the market, but also affect the brand building, user interaction, and conversion rate of e-commerce enterprises.

Secondly, this study can provide targeted career development recommendations for design professionals. By analyzing employer demand trends, research will help designers understand the priority of their own skills and guide them on how to enhance their technical capabilities to adapt to market changes. For example, AI driven automated design tools are reshaping traditional design processes, and this study will explore how these tools affect the way designers work and provide adaptive recommendations.

Finally, the findings of this study will provide empirical support for e-commerce art and design education. Although this study does not focus on curriculum reform, its data analysis results can provide direction for curriculum optimization for universities and training institutions, ensuring that the students trained possess core skills that are in short supply in the market. This will help narrow the gap between the current education system and industry demand, enhance the employment competitiveness of graduates, and promote the development of the e-commerce art and design industry.

Objectives of the Study

The core objective of this study is to identify the key competencies of art and design professionals in the field of e-commerce, and analyze the specific requirements of these competencies in industry practice, in order to guide the cultivation of design talents. Researchers will collaborate with a

vocational and technical college to develop and implement a series of capacity enhancement plans, establish a long-term feedback mechanism, continuously optimize course offerings, and demonstrate the actual impact of these improvements on students' abilities and employment situations. Specific objectives include:

1. To determine the key competencies of professionals in e-commerce art and design;
2. To determine the impact of new technologies on art and design professionals in the field of e-commerce; and
3. To propose ability development suggestions based on industry needs.

LITERATURE REVIEW

The rapid development of the e-commerce industry has placed significant emphasis on the role of art design, which has become a pivotal element in enhancing marketing effectiveness, shaping brand identity, and improving user experience. As e-commerce platforms continue to evolve, the demand for highly skilled art designers has increased. According to Chen (2023), design tools such as Photoshop have moved beyond their traditional role of improving visual appeal to become integral in boosting brand marketing and sales effectiveness. The ability of designers to use these tools strategically can significantly influence a brand's visibility and consumer purchasing decisions. In the context of cross-border e-commerce, Gao et al. (2023) underscore the importance of culturally sensitive design, emphasizing that art design must cater to diverse global markets to help brands differentiate themselves. For brands seeking a global audience, adapting design to local cultures and preferences is a key factor in e-commerce success.

Guo et al. (2011) delve deeper into the foundational aspects of e-commerce art design, discussing how elements such as color, typography, and layout are vital in influencing consumer perceptions and purchasing behavior. In the competitive e-commerce landscape, the visual presentation of products can make or break a sale, and understanding the psychological impact of design elements is crucial for designers. He (2022) expands on this idea by stressing the importance of technical literacy and data analytics in design. In today's e-commerce environment, data-driven decisions help optimize designs to align more closely with consumer behavior and preferences, ensuring that art design not only pleases the eye but also enhances functionality and user experience. Jin et al. (2023) highlight how computer art tools are revolutionizing e-commerce, enabling the creation of innovative visual campaigns that effectively engage users. This technological integration offers designers the tools to push the boundaries of creativity while maintaining a focus on performance metrics.

Lai (2022) further explores the growing importance of UI design in e-commerce, suggesting that the combination of intuitive user interfaces and engaging visual design leads to better customer experiences and higher conversion rates. As e-commerce platforms evolve, creating interfaces that are both visually appealing and user-friendly has become a central challenge for designers. In a similar vein, Liu (2022)

investigates the application of Photoshop technology within the context of Taobao art design, illustrating how design software can improve both the efficiency and creativity of designers. Photoshop's ability to streamline design workflows allows designers to create stunning visual campaigns with greater ease, helping to maintain competitive advantage in a fast-paced market. L. Liu et al. (2023) provide an in-depth analysis of the e-commerce art design handbook, showcasing how essential tools like Photoshop facilitate the development of designs that balance creative expression with the demands of the commercial market. Designers, according to D. Liu et al. (2023), must also keep pace with the increasing importance of responsive design, ensuring that visual elements adapt seamlessly to mobile devices and diverse screen sizes.

Pang and Liang (2023) take a further step by investigating the link between art design and marketing outcomes, asserting that visual communication is integral to achieving broader business objectives. For e-commerce platforms, visual design must align with marketing strategies to drive brand recognition, customer engagement, and sales conversion. Shi (2023) explores the unique art design needs in cross-border e-commerce platforms such as Alibaba and AliExpress, emphasizing that understanding local market nuances and cultural differences is crucial for successful global campaigns. This adaptability allows brands to tailor their message and visual identity to suit various regional preferences. Shi and Chen (2023) discuss the significance of e-commerce UI design in visual communication, noting that well-crafted user interfaces not only enhance the aesthetic appeal of a platform but also create a more intuitive and engaging user experience, which is essential for customer retention.

In alignment with these findings, Song and Zhang (2023) reiterate the importance of tools like Photoshop in facilitating e-commerce art design. These tools offer creative flexibility while meeting the diverse requirements of the global market, ensuring designs remain both aesthetically pleasing and functionally effective. Tan et al. (2023) highlight that the ability to rapidly produce high-quality designs is a necessity in the e-commerce industry, where trends shift quickly, and businesses must react promptly. Tan (2023) explores the intricate relationship between visual design and consumer behavior, asserting that visually appealing elements guide consumer decisions, directly influencing purchasing behavior and ultimately contributing to higher conversion rates.

Tian (2022) takes a broader approach, in a study that examines the role of social networks in online shopping. The study suggests that social media platforms are now key components in e-commerce, with interactive features and trust-building elements that significantly affect consumer behavior. This requires designers to consider the integration of social interaction features into e-commerce designs to enhance user trust and engagement. Wang and Zhao (2022) further examine the impact of digital art tools on e-commerce, particularly how these tools foster deeper consumer engagement by enabling more personalized and interactive experiences. The integration of social media and

user-generated content into e-commerce platforms presents both challenges and opportunities for designers to create experiences that resonate with users on a deeper level. H. Wei (2023) provides an overarching view of the importance of e-commerce art design in modern commerce, acknowledging its role in strengthening brand identity and competitiveness. Designers are increasingly recognized as essential contributors to business strategy, as their work influences both consumer perceptions and bottom-line results.

Wei (2022) adds another layer to this discussion by highlighting the significance of multimodal discourse analysis in shaping cross-border e-commerce brand identities. In the context of international e-commerce, designers must navigate complex cultural and linguistic differences to create visual campaigns that resonate with global audiences. This involves more than just translating designs; it requires a deep understanding of the target market's visual language and preferences to craft impactful messages. Overall, as the e-commerce industry continues to evolve, the role of art design has expanded to include a fusion of creativity, technology, and strategic insight. Designers must adapt to technological advancements, data analytics, and evolving consumer behaviors to stay ahead in a competitive market. This requires ongoing learning and the continuous refinement of both artistic and technical skills to ensure that e-commerce platforms provide exceptional user experiences while achieving their business goals.

Theoretical/Conceptual Framework

In the field of e-commerce art and design, designers need to master three key abilities: user experience, technical tools, and marketing. However, there is still a certain knowledge and skill gap within the industry, especially in how to integrate user experience design, digital tool applications, and brand marketing strategies. Many designers often find it difficult to comprehensively analyze user behavior, optimize interface interaction, or effectively utilize technological tools to enhance brand image when building efficient e-commerce visual systems (Y. Wei, 2023).

Given the identified knowledge gap, particularly the lack of interdisciplinary skills among e-commerce art designers, it is crucial to optimize user experience (UI/UX), apply technology tools such as Photoshop and AI, and integrate marketing (brand building) strategies. Effective data analysis and user feedback mechanisms play a decisive role in improving design optimization, brand promotion, and sales conversion (Wu & Yi, 2023). In addition, visual design should be aligned with marketing objectives to ensure that the content of e-commerce platforms is both in line with consumer psychology and enhances brand influence (Xu et al., 2022).

METHODOLOGY

Study Design

This study adopts a quantitative research design. The study first surveyed 30 employers in the e-commerce industry through a structured questionnaire to collect key competency

data required for e-commerce art and design professionals. Subsequently, data analysis was conducted to determine trends and correlations related to basic skills such as the application of artificial intelligence tools, marketing thinking, and learning abilities in the design process.

In order to ensure that the research is closely related to the actual needs of the e-commerce industry and gain industry recognition, the researcher directly engaged with industry stakeholders during the design and implementation stages of the research. Specifically, in the early stages of design, the researcher analyzed publicly available job descriptions, skill requirements, and career development paths within the industry to understand the specific demand for art and design professionals in the current market.

The collected data focuses on the skills and abilities that employers prioritize when hiring e-commerce art and design professionals, and how these abilities align with current industry demands. This questionnaire aims to explore the relationship between these key skills, the use of digital tools, and the importance of data-driven design.

Once the data is collected and analyzed, it provides insights into the skill and capability gaps of current e-commerce art and design professionals. Through this analysis, recommendations for capacity development based on industry needs are proposed to ensure that practitioners possess the necessary skills to meet the constantly changing demands of the e-commerce industry.

Population of the Study

The target population of this study includes 30 business employers in the e-commerce industry, particularly those involved in recruiting and managing professionals in the fields of e-commerce art and design. The selection of respondents is based on their experience in recruiting and managing art and design professionals in the e-commerce industry, with the aim of accurately capturing the specific needs and expectations of the industry for such professionals. The study aims to analyze data from these 30 employers through a survey questionnaire to determine the core competencies that employers prioritize when recruiting professionals in the e-commerce industry.

To ensure the validity and specificity of the samples, specific exclusion criteria were clearly defined in the study. Firstly, employers who were not directly involved in the recruitment or management of art and design professionals in the e-commerce industry were excluded, in order to focus on the specific needs of the relevant industries. Secondly, employers or managers who had worked in the field of e-commerce art and design for less than a certain period of time (such as 2 years) were excluded to ensure that the data came from professionals with rich industry experience. In addition, considering that research specifically focuses on the impact of emerging technologies such as AI driven design tools, it is possible to exclude representatives of companies that had not yet adopted or had rarely used these technologies, and focus on analyzing the practices of companies that are truly at the forefront of the industry. If the study focuses on a specific geographic region, such as

e-commerce targeting only the Chinese market, companies that do not operate within that region should be excluded to concentrate on analyzing trends and demand within that specific market. Finally, potential participants who showed unwillingness or inability to provide substantive feedback were also excluded to ensure the authenticity and reliability of the collected data, thereby enhancing the effectiveness and reliability of the research results. By clearly defining and applying these exclusion criteria, the quality of research samples can be significantly improved, making research findings more convincing.

Data Gathering Tools

This study used a questionnaire survey as the main data collection tool to deeply analyze the key competency needs of art and design professionals in the field of e-commerce. The questionnaire design revolves around three dimensions: design ability includes the ability to apply artificial intelligence tools, marketing thinking ability, and learning ability.

Especially for Objective 1 (Determining the Key Competencies Required for E-commerce Art and Design Professionals), the researcher focused on visual design and user experience optimization skills, as well as marketing thinking abilities in the design field, with the aim of gaining a comprehensive understanding of the importance of these foundational skills in the e-commerce environment.

Regarding Objective 2 (Determining the Impact of New Technologies on E-commerce Art and Design Professionals), the researcher particularly emphasized the importance of using artificial intelligence tools and the ability to continuously learn new skills, evaluating practitioners' mastery of emerging technologies and their impact on future career development through a series of questions. All these questions are designed for the content validity review of the expert group and distributed and collected using the Questionnaire Star platform to ensure the validity and reliability of the data.

Data Gathering Procedures

The data for this study was mainly collected through a survey questionnaire. Firstly, a letter requesting permission to conduct the survey was sent to 30 employers in the e-commerce industry. After obtaining approval, a digital version of the survey questionnaire was created using the online survey platform Questionnaire Star. The survey link was then sent to employers who were invited to volunteer for the study. The employer was informed of the purpose of the study and obtained their consent.

In order to ensure that the research is consistent with the specific needs of the local e-commerce industry and to enhance its relevance and recognition, the researcher collaborated with local stakeholders during the design and implementation stages of the research. The researcher collaborated with local researchers from the research settings to gain regional market insights and educational resource support, helping to understand the unique needs of the local market. Through cooperation with the college and local enterprises, the key competencies required for art and design

professionals in the e-commerce field have been identified, with the aim of supporting local talent development and educational progress. Based on the research findings, the curriculum can be optimized by adding AI driven design tools, user experience optimization techniques, and other content to enable students to master the latest skills.

Treatment of the Data

In the data processing stage, the first step is descriptive statistical analysis, which calculates key competency indicators such as mean, standard deviation, and general weighted average to clarify the employer's emphasis on different skills, providing basic data support for Objective 1. Next, the researcher applied correlation analysis to explore the relationship between different skills, such as the correlation between visual design ability and user experience optimization ability, which is the core focus of Objective 1. At the same time, the researcher also analyzed the connection between the application of artificial intelligence design tools and marketing thinking, which is an important step in directly addressing Objective 2. In order to further clarify the categories of core competencies, the researcher categorized numerous specific skills into several key competency dimensions, including "design ability, including the ability to apply artificial intelligence tools," "marketing thinking ability," and "learning ability". Finally, evaluating the impact of different abilities on employer recruitment decisions through regression analysis, particularly exploring how the application of AI tools and learning abilities affect recruitment decisions, is crucial for fulfilling Objective 2. The above data analysis not only reveals the current demand trend for art and design professionals in the e-commerce industry, It also provides suggestions for optimizing the curriculum of the Art and Design Department in vocational colleges. This meticulous data processing flow ensures accurate answers to the research objectives set by Objective 1 and Objective 2.

Ethical Considerations

This study adopts the form of an online survey questionnaire, based on the principle of voluntary survey, and strictly keeps confidential the personal information in the questionnaire, which fully complies with research ethics. Participants will not spend or use their resources in the study. Ensure that participants voluntarily participate in the data collection process without any form of coercion or pressure. They should be made aware that they have the right to withdraw or refuse to participate in research at any time without facing any negative consequences. Enable participants to understand the purpose, process, and final outcome of the research. Use anonymous coding systems or remove personal identifiers such as name and contact information to maintain the anonymity of participants. Ensure that any personal information collected is used only for research purposes and is limited to the use of the research team. Implement appropriate security measures to protect data from unauthorized access, disclosure, or abuse. All activities, including questionnaire design, data analysis, and report writing, It will be conducted in the

Art and Design Department of a vocational and technical college in China. To ensure the integrity and security of the data, we have taken multiple measures: anonymizing participant information, strictly controlling access permissions to only authorized personnel and recording access behavior, regularly backing up data to prevent loss, and verifying the validity and reliability of the data through SPSS software. These measures ensure the high quality and safety of the entire process from data collection to analysis, and enhance the credibility of research results. At the same time, the study adheres to strict ethical guidelines and protects the privacy of participants. This not only clarifies the operating environment of the research, but also demonstrates specific methods to ensure data security.

It is crucial to prioritize the well-being of participants and minimize potential harm when conducting research. Clearly state the purpose of the research, the procedures involved, potential risks or discomfort, and the voluntary nature of participation. Ensure that participants have a clear understanding of what they agree to. Assure participants that their personal information will be kept confidential and the data will be reported anonymously. Use encoding systems or delete identification information to protect the privacy of participants. Conduct a comprehensive risk assessment to identify potential physical, psychological, or emotional risks. Take measures to minimize these risks or provide appropriate support systems. Ensure that researchers receive appropriate training on ethical guidelines and best practices for protecting participants. This includes understanding potential hazards, maintaining confidentiality, obtaining consent, and responding appropriately to participants' concerns or disclosures. Continuously monitor the research process to identify potential risks or adverse effects on participants. If necessary, adjust research design or procedures to mitigate hazards. Provide participants with the opportunity to report after they participate in the study. If necessary, provide emotional support or refer to appropriate service providers. By implementing these strategies, researchers can minimize potential harm and ensure respect and ethical treatment of participants throughout the entire research process. We will continue to examine potential conflicts of interest throughout the entire research process and promise to immediately disclose any factors that may affect the integrity of the research and take appropriate measures to resolve them. Through this transparent approach, we hope to enhance public trust in our research results and provide reliable data support for the academic community.

This research will be widely disseminated in the form of public publications to ensure that the research findings are fully shared and utilized. In this study, we will propose a series of specific suggestions for the art and design major of Heilongjiang Vocational and Technical College of Architecture, aiming to guide universities in formulating and improving corresponding educational policies and practices. These suggestions will be based on a thorough analysis of the existing art and design curriculum system and a careful investigation of student needs to ensure their relevance and practicality. If the Art and Design Department of Heilongjiang Vocational and Technical College of Architecture adopts

and effectively implements these suggestions, it will significantly improve the quality and impact of graduates. By providing more effective and practical educational content and methods, students can better understand the importance of professional courses, cultivate stronger hands-on abilities, teamwork skills, and innovative thinking. This will help them better adapt to the needs of future career development and cultivate more competitive and creative talents for the economic and social development of Heilongjiang Province.

RESULTS AND DISCUSSION

This section analyzes the survey results (as presented in Tables 1-3) in the context of current art and design courses in vocational colleges, with a focus on aligning educational practices with industry demands. The quantitative data reveals three critical competency dimensions that highlight both current strengths and curricular gaps: design capability including AI tools application (Table 1), where 73.33% of respondents strongly agreed on the importance of applying the latest design trends; marketing thinking ability (Table 2), showing 53.33-63.33% strong agreement on integrating design with marketing objectives; and learning ability (Table 3), with 63.33% strongly endorsing the need for active learning of new technologies.

According to survey data, participants have shown a high level of recognition for various evaluations of design ability. In terms of applying the latest design trends to enhance brand visual appeal (Question 1), 73.33% of participants

expressed “strong agreement” and 26.67% chose “agreement”, reflecting the importance of keeping up with design trends for brand visual performance. Regarding the ability to combine the characteristics of e-commerce platforms for creative and visual design (Question 2), 63.33% of participants strongly agree and 36.67% agree, indicating that integrating platform features into innovative design in the e-commerce environment is considered a key skill. In terms of the ability to quickly optimize design projects (Question 3), although only 36.67% chose “strongly agree”, 63.33% of people said “agree”, reflecting the industry’s widespread recognition of the importance of balancing efficiency and quality. Finally, regarding the ability to proficiently use artificial intelligence tools for design and creation (Question 4), 56.67% of participants “strongly agree” and 43.33% “agree”, highlighting the widespread application and importance of AI technology in the field of design. It is worth noting that there were no opposing opinions on any of the issues, fully reflecting the high recognition of participants for these design capabilities, and also revealing that the design industry is developing towards technological integration, efficiency improvement, and keeping up with market trends.

According to Zhang (2023) in *E-commerce Art Design and Application*, with the development of technology and changes in market demand, e-commerce art design not only requires aesthetic appeal but also needs to integrate the latest design trends and technical tools to enhance brand visual attraction. This perspective aligns with the survey results, which show that 73.33% of participants strongly agreed

Table 1. Design capability

Questionnaire content	Strongly Agree	Agree	Disagree	Strongly Disagree
1. The ability to apply the latest design trends to enhance a brand’s visual appeal.	73.33%	26.67%	0%	0%
2. The ability to combine the characteristics of e-commerce platforms for creative and visual design.	63.33%	36.67%	0%	0%
3. The ability to optimize design projects quickly and effectively.	36.67%	63.33%	0%	0%
4. The ability to proficiently use artificial intelligence tools for design and creation.	56.67%	43.33%	0%	0%

Table 2. Marketing thinking ability

Questionnaire content	Strongly Agree	Agree	Disagree	Strongly Disagree
1. The ability to effectively integrate design with the marketing objectives of e-commerce.	53.33%	46.67%	0%	0%
2. The ability to adjust design strategies based on market trends and user needs.	60%	40%	0%	0%
3. The ability to strengthen customer purchase motivation via creative design.	63.33%	36.67%	0%	0%
4. The ability to use data analysis results in design to optimize user experience.	53.33%	46.67%	0%	0%

Table 3. Learning ability

Questionnaire content	Strongly Agree	Agree	Disagree	Strongly Disagree
1. The ability to actively learn new design tools and technologies to adapt to industry changes.	63.33%	36.67%	0%	0%
2. The ability to continuously improve one’s design skills and knowledge.	56.67%	43.33%	0%	0%
3. The ability to experiment with emerging design concepts and methods.	43.33%	56.67%	0%	0%
4. The ability to apply new technologies to practical design projects.	56.67%	43.33%	0%	0%

and 26.67% agreed on the importance of applying the latest design trends to enhance brand visual appeal. This indicates that keeping up with design trends is crucial for improving brand image and attractiveness in today's rapidly evolving e-commerce environment.

According to the survey results, participants have shown a high level of recognition for various evaluations of e-commerce design capabilities. In terms of effectively integrating design with e-commerce marketing objectives (Question 1), 53.33% of participants expressed "strong agreement", while 46.67% chose "agreement", indicating that almost all respondents believe that design should be closely aligned with marketing objectives. Regarding the ability to adjust design strategies based on market trends and user needs (Question 2), 60% of participants "strongly agree" and 40% choose "agree", indicating an emphasis on flexibly responding to market changes. In terms of enhancing customer purchasing motivation through creative design (Question 3), 63.33% of respondents "strongly agree" and 36.67% "agree", indicating the key role of creative design in stimulating consumer purchasing desire. Finally, in terms of utilizing data analysis to optimize user experience design capabilities (Question 4), 53.33% chose "strongly agree" and 46.67% chose "agree", reflecting the widespread recognition of data-driven decision-making in improving user satisfaction. Overall, there were no objections to any of the issues, reflecting the high recognition of these design capabilities by participants, and highlighting the importance of design strategies that keep up with market trends, focus on user needs, and data support in the rapidly changing e-commerce environment.

According to Zhou (2022) in *From E-commerce Art to UI Design Master: Transformation Strategy and Practical Case Analysis*, e-commerce art design not only needs to focus on the aesthetic appeal of visual elements but also requires integrating the latest design trends and technical tools to enhance brand visual attraction, while placing emphasis on optimizing user experience. This perspective is reflected in our data analysis results. For instance, in terms of effectively integrating design with e-commerce marketing objectives, 53.33% of participants strongly agreed, and 46.67% agreed. The survey results demonstrate that effective e-commerce design must balance aesthetic appeal with strategic marketing objectives, as 53.33% of participants strongly agreed and 46.67% agreed on the importance of integrating design with marketing goals. This finding aligns with Zhu's (2022) framework which positions design as "a strategic business tool that mediates between brand identity and consumer perception". The data further reveals that market-responsive design strategies received even stronger endorsement (60% strongly agree, 40% agree), corroborating Chen's (2023) observation that "the half-life of e-commerce design trends has shortened from 12 to 3 months post-pandemic", necessitating constant market monitoring.

According to the survey results, participants showed a high level of recognition and support for various design capabilities. For the ability to actively learn new design tools and technologies to adapt to industry changes (Question 1), 63.33% of participants strongly agreed, while 36.67%

agreed, indicating that the vast majority of respondents believe that continuous learning of new technologies is crucial for adapting to industry changes. Regarding the ability to continuously improve one's design skills and knowledge (Question 2), 56.67% strongly agreed, and 43.33% agreed, further emphasizing the importance of lifelong learning. In terms of experimenting with emerging design concepts and methods (Question 3), although only 43.33% strongly agreed, 56.67% agreed, showing a certain degree of openness and exploratory spirit. Finally, for the ability to apply new technologies to practical design projects (Question 4), 56.67% strongly agreed, and 43.33% agreed, reflecting widespread recognition of translating theory into practice. Overall, none of the questions received any disagreement, indicating that participants generally agree that these abilities are essential for designers to maintain competitiveness and innovation.

The survey findings confirm three core competencies for e-commerce design: aesthetic mastery (73.33% strong agreement on design trends), technological adaptability (56.67% strong agreement on AI tools), and strategic marketing integration (63.33% strong agreement on purchase motivation design). These results align with Gao et al.'s (2023) transformational design framework and support Guo et al.'s (2011) findings on tool proficiency efficiency. The data reveals designers must balance He's (2022) conversion-driven requirements with innovative capacity (43.33% support for experimental design. Accordingly, we recommend curriculum reforms focusing on: (a) fundamental skill development, (b) marketing-design integration labs, and (c) AI-assisted project practice to bridge the academia-industry gap.

CONCLUSIONS

The following conclusions can be made based on the findings of the current study:

Key Competency Identification

According to the survey data (Objective 1), participants generally believe that design professionals need to have the ability to actively learn new tools and technologies in the field of e-commerce art and design (63.33% strongly agree, 36.67% agree), continuously improve design skills and knowledge (56.67% strongly agree, 43.33% agree), try emerging design concepts and methods (43.33% strongly agree, 56.67% agree), and apply new technologies to practical projects (56.67% strongly agree, 43.33% agree). These results indicate that the key competencies of design professionals include continuous learning, skill enhancement, innovative experimentation, and practical application.

The Impact of New Technologies

Data analysis results show (Objective 2) that new technologies have had a profound impact on e-commerce art and design professionals. Participants highly recognize the importance of improving design effectiveness and user experience through new technologies, indicating that these

technologies not only enhance design efficiency and quality, but also strengthen the brand's visual appeal and market competitiveness. Therefore, mastering and applying the latest technology is an important factor in maintaining a leading position in the industry.

Industry Development Needs

Through comprehensive analysis of data (Objective 3), it can be concluded that professionals in the field of e-commerce art and design need to cross-disciplinary literacy constantly adapt to the rapid development and changes in the industry. They not only need to keep up with design trends, but also need to flexibly respond to market demands, optimize user experience through data analysis, and improve their own abilities through continuous learning and practice.

RECOMMENDATIONS

The following recommendations are proposed considering the outcome of the study:

Establishing a Continuous Learning Mechanism

Given the high recognition of active learning of new technologies by participants, it is recommended that design and educational training institutions provide designers with more learning resources and support, such as regular technical training and workshops, encouraging designers to participate in online courses and seminars to ensure that they can timely grasp the latest design tools and technologies.

Strengthening the Innovation Experimental Environment

In order to promote designers to try emerging design concepts and methods, it is recommended that companies create an environment that supports innovation, such as setting up internal innovation laboratories or creative studios, providing time and resources for designers to freely explore and experiment, while encouraging cross departmental collaboration and sharing design experiences and insights from different fields.

Integrating Technology and Practice

Based on participants' emphasis on applying new technologies to practical projects, it is recommended that enterprises and design teams strengthen the integration of technology and practice, and promote technological innovation through project driven approaches. Specific measures include introducing agile development processes, encouraging designers and developers to work closely together, testing and optimizing the application effects of new technologies in actual projects, thereby improving overall design quality and user experience.

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