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Research Article

Study of Sichuan Art College Students' Usage Behaviour on Digital Libraries under the Background of Digital Intelligence

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Abstract: This study examines the usage behavior of art college students of digital libraries within the context of digital intelligence in Sichuan. It explores how motivational factors, knowledge, and traits influence students' engagement with digital resources. The research highlights that intrinsic motivations, such as personal interest and creativity, significantly drive students to utilize digital libraries effectively. Additionally, the level of digital literacy and familiarity with available resources plays a crucial role in determining usage frequency and depth. Personality traits, such as openness and conscientiousness, also influence how students interact with these platforms. By understanding these dynamics, the study aims to provide insights for educational institutions to enhance digital library services, ultimately fostering better academic outcomes and career readiness for art students in a rapidly evolving digital landscape. The findings suggest that student usage behavior correlates with the influence of motivation, knowledge, and traits in a sample of 385 art college students.

Keywords: Digital Intelligence, Digital Libraries, Students' Usage Behavior.

1. Introduction

The Generation Digital intelligence is a key driver of economic growth in today's world. The adoption of emerging technologies, including big data, artificial intelligence (AI), blockchain, and the Internet of Things (IoT), is leading to significant changes across various industries, which in turn are reshaping labor market needs [1] College students, as representatives of the future workforce, are encouraged to enhance their employability to adapt to these changing market demands and succeed in the complex digital employment landscape. Among many essential employability skills, the ability to innovate digitally has become crucial for career success in the digital age. Recognizing the importance of this skill has become a top priority for higher education, as it directly contributes to improving students' employability and helps them prepare for the future job market [2] Digital innovation capability focuses on enhancing the level of organizational innovation through digital means, especially in the context of digital transformation.

This concept was first introduced in research on digital capability and is defined as the ability to innovate using digital technologies. It encompasses not only technical proficiency but also a deep understanding of digital advancements, allowing students to creatively apply these technologies to products, services, and business models. This ability combines technical skills with innovative thinking and interdisciplinary knowledge. In an increasingly globalized world, a country's level of technological innovation has a significant impact on its global standing. As emerging researchers and experts, college students have the potential to enhance their country's innovation capabilities by developing their digital skills [3]). By mastering digital technologies, these students can tackle pressing societal challenges and contribute to significant initiatives, such as the development of innovative cities, advancements in healthcare, and efforts toward environmental sustainability. In the education sector, enhancing students' digital innovation skills can promote reform by leveraging online education, virtual reality, and artificial intelligence tutoring. These technologies

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can provide personalized learning experiences, ultimately fostering equity and improving the quality of education [4]

2. Research Objectives

This study examines the interaction of students at Sichuan Arts University with digital library resources related to digital intelligence. It analyzes how motivation, knowledge, and personal traits influence their usage, highlighting challenges such as information overload and navigating databases. The research highlights the need for customized training programs to enhance digital library skills [5] Ultimately, it offers insights for library services and educational strategies that better address the learning needs of art students in the digital age with the following objectives:

To examine the influencing mechanisms of Sichuan Art College students' usage behaviour through digital libraries based on motivational influence, knowledge influence, and trait influence.

To offer suggestions for the development of digital libraries of Art Colleges in Sichuan on improving students' usage intention through the value perception and self-motivation.

3. Theoretical Foundation

Definition of Self-Determination Theory on Usage Behaviour in Digital Libraries

Self-Determination Theory (SDT) focuses on how motivation and psychological needs, such as autonomy, competence, and relatedness, influence student behavior. For art students using digital libraries, SDT suggests they engage more with resources that match their interests and allow for creative expression, satisfying their need for autonomy. When students are motivated, they engage more effectively, which is essential for successful learning [6]. In digital libraries, meeting these needs can boost students' internal motivation and engagement. For example, digital support strategies can help fulfill students' needs, predicting how engaged they will be. Also, when teachers offer choices and support self-expression, students are more likely to join in learning activities and feel better overall. SDT can help us understand how students use technology in learning environments. Students who feel competent are more likely to find a helpful system and easy to use, which strongly affects their intention to keep using the technology [7] (Marrie, 2023)

Definition of Situated Learning Theory in Art Digital Libraries

Situated learning theory highlights the idea that learning is most effective when it occurs within the same context where knowledge will be applied. This approach emphasizes the importance of real-world environments and social interactions in the learning process[8]. Rather than memorizing abstract concepts in isolation, students are encouraged to develop skills and understanding through active participation in tasks that reflect real-world challenges and problems. The acquisition of knowledge becomes closely tied to the context in which it is applied. About digital libraries and art students, this theory suggests that students achieve optimal learning outcomes when they engage with digital resources in ways that emulate authentic artistic practices. For instance, this can include utilizing digital libraries for collaborative projects, accessing expert performances, receiving constructive feedback, and creating and sharing their artwork within a community of practice. As a result, the focus shifts from passive reception of information to active participation in a rich and meaningful learning experience [9].

Definition of Terms

a. Student behavior in digital libraries, particularly in the context of digital intelligence, involves how students utilize the various resources that these platforms offer. This behavior is significantly influenced by their ability to navigate the digital world, critically assess information, and apply what they learn effectively. Digital intelligence encompasses essential skills such as critical thinking, digital literacy, and the ability to distinguish between trustworthy sources and misleading information. As students explore digital libraries, their engagement demonstrates their ability to effectively utilize technology for research, creative projects, and learning. This usage is influenced not only by their skills but also by important factors such as the user-friendliness and organization of the digital libraries, the quality and relevance of resources related to their education and interests, and the social interactions they have in these online spaces. Together, these elements create a more effective experience that supports and enhances student learning[10].

b. Motivational influences on student usage of digital libraries, particularly within the framework of digital intelligence, refer to how students' intrinsic and extrinsic motivations affect their engagement with digital resources. When students are motivated, they are more likely to explore, utilize, and benefit from digital libraries. This motivation can stem from various sources, including personal interests, the relevance of resources to their studies, and the perceived value of using digital tools for their learning and creative processes [11]
c. Knowledge influence concerning student usage of digital libraries in the context of digital intelligence refers to how a student's existing knowledge base affects their ability to engage with digital resources effectively. This influence manifests in several ways, including the ability to search for, evaluate, and apply information retrieved from digital libraries. Students with a strong foundational knowledge in their subject areas are likely to navigate digital libraries more efficiently, as they can identify relevant resources and discern valuable information from less applicable content[12]
d. The influence of individual traits on student interactions with digital libraries in the realm of digital intelligence underscores how factors such as personality traits, learning styles, and cognitive abilities shape the way students engage with digital resources. These characteristics play a crucial role in determining the effectiveness of students' navigation, utilization, and engagement with digital libraries. For example, students who possess a natural curiosity are likely to explore a broader range of resources. At the same time, those with a more analytical approach may focus on critically evaluating the information they encounter. This variation in trait influence underscores the importance of understanding individual differences in optimizing the use of digital libraries for educational purposes [13]

Conceptual Framework

The framework includes demographic and independent variables—motivational, knowledge, and trait influences—to evaluate their impact on art college students' use of digital libraries within the context of digital intelligence. Demographic variables, such as age, gender, academic level, and socioeconomic background, provide essential context for understanding how various student groups engage with digital libraries. These factors can influence access to technology, familiarity with digital resources, and overall levels of engagement[14]

Motivational influence refers to the intrinsic and extrinsic factors that drive students to utilize digital libraries. This includes personal interests, academic aspirations, and the perceived value of available resources. Analyzing motivational influences reveals what encourages or hinders students from fully engaging with digital library offerings [15] Knowledge influence focuses on the students' level of digital literacy and their ability to navigate and effectively use digital library resources. A greater understanding of digital tools can enhance students' confidence and willingness to explore available materials, which in turn influences their usage behavior[16]

Finally, trait influence examines individual characteristics, such as personality traits like openness to experience and conscientiousness. These traits can significantly affect how students approach and interact with digital libraries, impacting their overall satisfaction and engagement.[17]

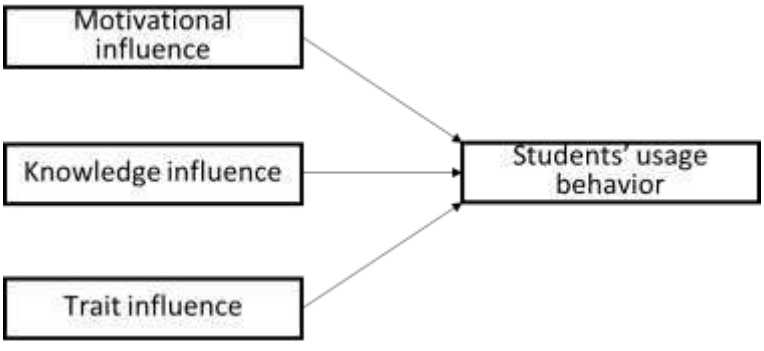

Figure 1. The Conceptual Framework

4. Research Restriction

First, accessibility to digital resources can be limited by technological infrastructure and internet connectivity issues, particularly in rural areas. Additionally, variations in digitalliteracy among students can affect their ability to effectively navigate and utilize these libraries, potentially leading to underutilization of available resources [18]

Another restriction may stem from the diversity of academic programs within the college, which could influence the relevance and engagement with specific digital resources. Furthermore, individual differences in motivation and personal traits can create disparities in usage patterns, as some students may be more inclined to engage with digital libraries than others [19]

Lastly, the study may face challenges in obtaining comprehensive data due to privacy concerns or reluctance to participate in surveys, which could limit the generalizability of the findings. These factors must be considered to accurately interpret the research outcomes and develop effective strategies for enhancing digital library engagement among students [20]

Research Hypothesis

The Correlation between Motivational Influence and Students' Usage Behavior

The proposed hypothesis explores the relationship between motivational influences and the usage behavior of art college students in digital libraries. It suggests that intrinsic motivations—such as a personal interest in art and a desire for creative exploration—encourage students to engage more actively with digital resources. In contrast, extrinsic motivations, including academic obligations and peer influence, may also affect the frequency and effectiveness of students' library use. This hypothesis aims to investigate how various motivational factors impact not only the frequency of library usage but also the depth of engagement with digital content. Ultimately, these factors are expected to influence students' overall learning experiences and outcomes in their art studies [19]

H1 There is no positive correlation between motivational influence and students' usage behaviour of digital libraries in the background of digital intelligence.

The Correlation between Knowledge Influence and Students' Usage Behavior

The proposed hypothesis suggests that knowledge has a significant impact on the usage behavior of art college students in digital libraries. It suggests that students with a greater understanding of available digital resources are more likely to use these libraries actively. This influence can arise from prior experiences, academic training, or familiarity with various digital tools and platforms. The hypothesis aims to investigate how increased knowledge of digital library resources can improve both the frequency and depth of usage, thereby impacting students' learning processes and outcomes in their art education. Furthermore, it suggests that students' knowledge may shape their perceptions of the value and relevance of digital content, which in turn can motivate greater engagement with these resources [21]

H2 There is no positive correlation between knowledge influence and students' usage behaviour of digital libraries in the background of digital intelligence.

The Correlation between Trait Influence and Students' Usage Behavior

The proposed hypothesis suggests that personality traits have a significant influence on the digital library usage behaviors of art college students. Specifically, it asserts that individual characteristics such as openness to experience, conscientiousness, and self-efficacy can shape engagement with digital resources. For example, students high in openness may be more likely to explore a wide range of digital content and utilize various library tools. In contrast, those with high conscientiousness might approach digital libraries more methodically, focusing on research activities. The goal of this hypothesis is to investigate how these personality traits affect both the frequency and nature of digital library usage, which in turn may impact students' academic performance and overall satisfaction with their learning experiences in art studies. Furthermore, the hypothesis underscores the importance of understanding these traits to tailor digital library services better to meet the diverse needs of student populations [22]

H3 There is no positive correlation between trait influence and students' usage behaviour of digital libraries in the background of digital intelligence.

Research Methods

Population and Sample

This research population of Art college students was selected in Sichuan, China, and their usage behavior on digital libraries under the background of digital intelligence. A sample of 385 was collected for this study's analysis in June 2025 through the WeChat Survey Platform. This study's minimum research sample size is based on the study of Kadam Bhalerao (2010)

1. The margin of error (confidence interval) – 95%
2. Standard deviation 0.5
3. 95% - Z Score = 1.96
4. Sample size formula = (Z-score) ² * Std Dev*(1-StdDev) / (margin of error)²
5. (1.96) ² x 0.5(0.5) / (0.05) ²
6. (3.8416 x 0.25) / 0.0025
7. 0.9604 / 0.0025 = 384
8. 384 respondents would be needed for this study based on a confidence level of 95%

Research Model

Correlation Analysis

Correlation analysis is widely used to measure the degree of association between two or more variables. The Pearson correlation coefficient is commonly used to assess the strength of correlation. The value of the correlation coefficient (r) indicates the strength of the correlation between variables, while the significance level of the correlation is shown in the P-value.

Correlation Analysis of Knowledge Influence and Students' Usage Behavior

The correlation coefficient r between knowledge influence and students' usage behavior is 0.792, and P = 0.000 is less than 0.01. Thus, knowledge influence significantly correlates with the Art college students' usage behavior.

5. Conclusions

Research Results

Research findings indicate that a complex interplay of motivational, knowledge, and personality traits significantly impacts the usage behavior of art college students in digital libraries, particularly within the realm of digital intelligence.

Motivational influence encompasses both internal and external factors that motivate students to utilize digital resources. Internally, students' love for art and their desire to explore creatively motivate them to engage with digital content. Externally, academic requirements and peer support also influence how often and effectively students utilize digital libraries. The interaction between these motivational factors influences the frequency with which students visit the library, which can significantly impact their learning outcomes [23]

Knowledge influence highlights the importance of students' familiarity with digital resources. Students who understand these tools well—due to past experiences, academic training, and exposure to various digital platforms—tend to use digital libraries more actively. This familiarity leads to more frequent visits and deeper exploration of content, helping them see the value in digital resources and enhancing their engagement [23] Trait influence shows how individual personality traits impact usage behavior. Traits such as openness to new experiences, conscientiousness, and self-efficacy influence how students interact with digital libraries. For example, students who are open to new experiences may explore a broader range of resources out of curiosity. Conscientious students might use library tools in a more structured and organized way for their research. Understanding these traits can help digital library services better meet the diverse needs of art students, improving their educational experience and engagement with digital content [24]

H1 There is a positive correlation between motivational influence and art college students'usage behavior of digital libraries in Sichuan.

H2 There is a positive correlation between knowledge influence and art college students'usage behavior of digital libraries in Sichuan.

H3 There is a positive correlation between trait influence and art college students' usage behavior of digital libraries in Sichuan

Managerial Implications:

The findings of recent research suggest several managerial strategies for enhancing the career development of Sichuan Art College students by utilizing digital libraries.

First, it is essential to curate digital collections that directly support various art career pathways. This includes resources such as portfolio examples, industry trends insights, and tutorials for creative software. Emphasis should be placed on materials that connect academic skills with professional practice, like digital archives featuring successful artist portfolios, design patents, and multimedia industry case studies. Additionally, these resources should be linked to discipline-specific workshops that aim to transform library materials into competencies, preparing students for their careers [25] Another recommendation is to develop AI-

driven recommendation systems that tailor digital library content to align with students' personality traits. For example, extroverted students may benefit from collaborative platforms, while those who are more open to experiences might prefer niche visual databases. Implementing trait assessments during orientation can help in customizing resource navigation training, ensuring that conscientious students acquire proficiency in systematic research tools. At the same time, exploratory learners can focus on innovation-driven content discovery.[26]

Lastly, collaboration with faculty is crucial for co-creating assignments that necessitate advanced usage of digital resources. Examples include utilizing VR art collections for immersive projects or referencing AI-generated designs. Tracking usage data can help identify skill gaps among students, leading to the development of just-in-time micro-modules on digital literacy. These modules may cover topics such as copyright literacy for freelance work and skills related to metadata for optimizing online portfolios [27]

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