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Postprint of an Empirical Study on Factors Influencing the Cognitive Process of Intellectual Property Rights for Web-Native Digital Resources Based on Individual Characteristics

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Abstract

[Purpose/Significance] This study employs empirical methods to investigate factors influencing individual users during the first stage of decision-making (the ethical cognition stage) when faced with dilemmas concerning native digital resources on the internet. [Methods/Procedures] Using university students in the Inner Mongolia region as research subjects, three typical intellectual property dilemmas regarding native digital resources on the internet were designed and surveyed through situational questionnaires. After data collection, reliability analysis, validity analysis, and variance analysis were conducted to identify factors influencing the cognitive process of intellectual property rights for native digital resources on the internet. [Results/Conclusions] The results indicate that, from the perspective of individual characteristics, among the six factors of age, gender, education level, major, value orientation, and social experience, only age, education level, and social experience significantly influence the cognitive process of intellectual property rights for native digital resources on the internet.

Full Text

An Empirical Study on the Influencing Factors of the Cognitive Process of Intellectual Property Rights for Network-Native Digital Resources Based on Personal Characteristics

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Abstract

[Purpose/Significance] This study employs empirical methods to investigate the factors influencing individual users' cognitive processes during the first stage of decision-making (the ethical cognition stage) when confronted with dilemmas involving network-native digital resources. **[Method/Process]** Using university students in Inner Mongolia as the research sample, three typical intellectual property dilemmas related to network-native digital resources were designed and administered in the form of a situational questionnaire. After data collection, reliability analysis, validity analysis, and variance analysis were conducted to identify the influencing factors in the cognitive process of intellectual property rights for network-native digital resources. **[Result/Conclusion]** The results indicate that among six individual characteristics—age, gender, education level, major, value orientation, and social experience—only age, education level, and social experience have significant effects on the cognitive process of intellectual property rights for network-native digital resources.

Keywords: network-native digital resources; intellectual property; cognition; influencing factors

1. Introduction

Network-native digital resources represent a new type of digital resource that has emerged with the development of the Internet. Scholars both domestically and internationally hold different understandings of their meaning, and a unified definition has yet to be established. In foreign contexts, these resources are termed “born digital.” The American website “Word Spy” defines them as “digital resources that are created and exist solely in digital form” [1], while UNESCO defines them as “digital resources that exist in no other form but digital” [2]. Chinese scholars Chang E and Yuan Xilin define them as “original information resources spontaneously created by network users without fixed organizations, institutions, or commercial companies to manage them” [3]. Chen Hongxing and Zhang Shufang offer a similar definition: “network information resources that are directly generated through Internet activities or published exclusively on the Internet and disseminated, exchanged, preserved, and utilized only in digital form” [4]. Although definitions vary, one characteristic is undisputed: network-native digital resources emerge in the Web 2.0 environment, which endows them with a fundamentally different nature from traditional digital resources—namely, their grassroots character. This grassroots nature, combined with the virtuality of the network environment, makes it easier for users to overlook intellectual property ownership when using these resources, leading to frequent IP infringement issues.

Intellectual property issues have long been a typical subject of information ethics research [5]. According to Foucault, when a particular information morality—one that constitutes the foundation of the information concept—encounters

problems that are difficult to resolve, information ethics emerges [6]. In other words, intellectual property problems arise when users face ethical dilemmas. When individuals confront intellectual property moral dilemmas, intellectual property issues surface. How then should individuals make decisions when facing such dilemmas? Research on information ethical decision-making generally divides the process into four stages: information ethical cognition, information ethical judgment, information ethical intention, and information ethical behavior [7-8]. This means that before making a decision regarding an intellectual property dilemma, individuals undergo a cognitive process—becoming aware of the existence of the intellectual property issue. This cognitive stage serves as the prerequisite for all subsequent processes. The focus of this study is to examine which personal factors influence this cognitive process.

Foreign research on ethical decision-making began in the 1970s, with most findings concentrated in the business domain. Western ethics has established a relatively sound theoretical foundation, with most current research focusing on empirical studies that verify existing theories. In contrast, domestic research in this area is still in its infancy, primarily stagnated at the stage of absorbing Western ethical theories without forming an independent research system. Empirical studies remain at a nascent stage.

2. Literature Review

2.1 Review of Ethical Decision-Making Models

In 1986, J. R. Rest proposed a four-stage model of ethical decision-making based on decision-making theory [9], which can be briefly represented in Figure 1 [Figure 1: see original paper].

In 1985, O. C. Ferrell and L. G. A. Gresham proposed the ethical decision-making contingency model [10], primarily targeting marketing organizations. They argued that individual factors, opportunity factors, and significant referent factors are the main influences on ethical decision-making. After ethical behavior occurs, individuals evaluate their actions subjectively to provide experience for future decisions. This model can be briefly represented in Figure 2 [Figure 2: see original paper].

In 1986, L. K. Trevino extended the Ferrell-Gresham model by emphasizing the importance of organizational factors in the ethical decision-making process [11]. He argued that both individual moral development levels and organizational factors jointly influence ethical decision-making. His model is shown in Figure 3 [Figure 3: see original paper].

In 1991, T. M. Jones synthesized previous research to propose the issue-contingent model [12]. He noted that previous scholars had mostly sought influencing factors from external sources while neglecting the influence of the issue itself. In this model, Jones introduced the concept of moral intensity, which includes six dimensions: magnitude of consequences, probability of effect,

temporal immediacy, and others. He argued that moral intensity is a primary factor influencing ethical decision-making. This model is shown in Figure 4 [Figure 4: see original paper].

In 2004, Sha Zhongyong proposed that complete information ethical decision-making requires consideration of six aspects: clarifying relevant facts of the information ethics issue; identifying what constitutes proper information behavior; determining who should take action to promote proper behavior; identifying who should benefit from the decision; determining what procedures and methods the information ethics decision should follow; and identifying what steps should be taken to prevent similar moral issues from recurring [13]. This model is shown in Figure 5 [Figure 5: see original paper].

2.2 Review of Literature on Influencing Factors of Ethical Decision-Making

Foreign literature on influencing factors in ethical decision-making processes is extensive. After reviewing relevant foreign literature, these factors can be categorized into three types: individual factors, organizational factors, and moral intensity (the moral issue itself). This section focuses primarily on individual factors.

In 1978, W. H. Hegarty and H. P. Sims studied 120 senior university students and found that gender had no significant effect on ethical decision-making [14]. In 1985, L. B. Chonko and S. D. Hunt studied 1,076 senior corporate managers and found that women exhibited stronger moral awareness than men [15]. In 1996, F. N. Brady and G. E. Wheeler studied members of 14 financial institutions and found no significant gender effect on ethical decision-making [16]. In 1983, J. Browning and N. B. Zabriskie studied 145 sales personnel and found that younger managers were more ethical than those with many years of experience [17], suggesting that work experience significantly influences ethical decision-making. In 1987, J. M. Kidwell, R. E. Stevens, and A. L. Bethke studied 100 managers and found no significant age effect on ethical decision-making [18]. In 1992, D. Ruegger and E. W. King studied 2,196 students and found that senior students were more ethical [19], suggesting that age significantly influences ethical decision-making. In 1980, P. Arlow and T. A. Ulrich studied 120 students and 103 managers respectively, finding that managers were more ethical than students [20], indicating that education and work experience significantly influence ethical decision-making.

In 1984, A. J. Dubinsky and T. N. Ingram studied 116 sales personnel and found that education and work experience had no significant effect on ethical decision-making [21]. Chonko and Hunt's research also found that engineering graduates were more ethical than liberal arts graduates [15], suggesting that major significantly influences ethical decision-making. In 2014, Ma Manjiang analyzed the information ethical decision-making process of Chinese university students and found that "cautiousness" and "willingness to dedicate oneself"

were the main individual factors influencing the process [7]. In 2014, Li Yuelin, Li Ying, and Li Ang surveyed 200 university students in Tianjin and found that most had unclear cognition regarding online intellectual property issues [22]. In 2009, Hong Kefang studied 220 individuals from various professions in China and found that individual moral cognitive development levels significantly influence information ethical cognition [8].

This review reveals that foreign research on ethical decision-making is relatively mature, with most studies being empirical and concentrated in the business domain. Domestic scholars have introduced the concept of information ethical decision-making based on business domain research and have actively explored related models. This study follows this approach by investigating how personal factors influence the cognitive process of intellectual property rights for network-native digital resources.

3. Research Purpose and Innovation

As noted above, the grassroots nature of network-native digital resources and the virtuality of the network environment often lead users to neglect intellectual property protection when using these resources. This raises two key questions: When users confront typical intellectual property dilemmas involving network-native digital resources, do their personal characteristics influence their cognition of these dilemmas? If so, which factors are influential? This study aims to explore these influencing factors from the user perspective, specifically examining whether the four factors that significantly influence the cognitive stage of ethical decision-making in business contexts—major, gender, age, and education—also affect cognition of intellectual property rights for network-native digital resources. Additionally, this study incorporates two additional factors: value orientation and social experience.

The innovation of this study is twofold: (1) It provides an empirical investigation of influencing factors on the first stage of information ethical decision-making—information ethical cognition—from the perspective of network-native digital resource intellectual property rights, laying a foundation for further empirical research on influencing factors in information ethical cognition and decision-making processes. (2) By focusing on intellectual property issues of network-native digital resources, this study offers insights for improving individual awareness and behavioral quality regarding intellectual property protection in network environments.

4. Research Design

4.1 Design of Intellectual Property Dilemmas

Empirical research on information ethical cognition typically employs situational questionnaires that present typical dilemmas in the research domain and ask selected participants to respond. This study follows this approach. Three in-

intellectual property dilemmas involving network-native digital resources were designed: (1) citing blog viewpoints in a graduate thesis without proper reference attribution; (2) citing blog viewpoints in a graduate thesis with incorrect reference attribution; and (3) directly copying articles from Baidu Wenku to use as one's own thesis. Participants were asked to select responses for each scenario according to their own views and rate their attitudes using a 5-point Likert scale. Follow-up interviews revealed that most respondents considered these three scenarios relevant to their daily academic lives and widely acceptable as research stimuli.

4.2 Data Collection

Between December 20, 2015, and January 5, 2016, a questionnaire survey was conducted among university students at two universities in Inner Mongolia (Inner Mongolia University and Inner Mongolia Agricultural University). One hundred questionnaires were distributed at each institution, totaling 200. To ensure quality and address potential questions, all questionnaires were administered in paper form. Before distribution, the purpose of the survey was explained to participants, and questionnaires were only given to those who consented to participate and agreed to complete them carefully. After screening, 27 invalid questionnaires were eliminated, yielding 173 valid responses (86.5% response rate). Descriptive statistics are presented in Table 1 .

4.3 Data Analysis

4.3.1 Reliability and Validity Analysis SPSS software was used to analyze the questionnaire's reliability and structural validity, with results shown in Table 2 and Table 3 . The Cronbach's alpha coefficient was 0.959, and the KMO value was 0.724, both exceeding 0.7, indicating excellent reliability and good structural validity.

4.3.2 Variance Analysis To examine how different personal characteristics influence cognition of intellectual property rights for network-native digital resources, one-way ANOVA was conducted across six dimensions: gender, age, education level, major, value orientation, and social experience. Results are presented in Tables 4 through 9 .

Table 4 shows the ANOVA results for gender differences in cognition of network-native digital resource intellectual property rights. The Levene test for homogeneity of variances yielded a significance value of 0.139, exceeding the 0.05 threshold, indicating no significant variance differences between groups. Both F-test and Brown-Forsythe test results showed significance values of 0.340 and 0.349, respectively, far exceeding 0.01, indicating that gender has no significant effect on cognition of network-native digital resource intellectual property issues.

Table 5 presents ANOVA results for age differences. Both F-test and Brown-Forsythe test yielded significance values of 0.000, far below 0.01, indicating that

age significantly influences cognition of network-native digital resource intellectual property issues.

Table 6 shows results for education level differences. The Levene test significance value of 0.000 was below the 0.05 threshold, indicating significant variance differences between groups. Both F-test and Brown-Forsythe test significance values were 0.000, far below 0.01, indicating that education level significantly influences cognition of network-native digital resource intellectual property issues.

Table 7 presents results for major differences. The Levene test significance value of 0.968 far exceeded 0.05, indicating no significant variance differences. Both F-test and Brown-Forsythe test significance values were 0.0673, exceeding 0.01, indicating that major has no significant effect on cognition of network-native digital resource intellectual property issues.

Table 8 shows results for value orientation differences. The Levene test significance value of 0.417 exceeded 0.05, indicating no significant variance differences. F-test and Brown-Forsythe test significance values were 0.403 and 0.405, respectively, exceeding 0.01, indicating that value orientation has no significant effect on cognition of network-native digital resource intellectual property issues.

Table 9 presents results for social experience differences. The Levene test significance value of 0.000 was below 0.05, indicating significant variance differences between groups. F-test and Brown-Forsythe test significance values were 0.008 and 0.034, respectively. Given the significant variance differences, the Brown-Forsythe test result of 0.034 is primary, which is below 0.05 and approaches 0.01, indicating that social experience significantly influences cognition of network-native digital resource intellectual property issues.

5. Results and Discussion

These results demonstrate that among the six personal characteristics examined—gender, age, education level, major, value orientation, and social experience—only age, education level, and social experience significantly influence cognition of network-native digital resource intellectual property issues. No significant differences were found for gender, major, or value orientation. This can be explained in two ways: First, age, education level, and social experience are interrelated. Among the surveyed participants, older students generally had higher education levels and more experience publishing in academic journals. Compared to coursework, journal publication typically involves rigorous review processes (initial review, re-review, external review, etc.), providing training that makes published students more cautious in their writing and more respectful of others' intellectual achievements. Consequently, they demonstrate stronger awareness of network-native digital resource intellectual property protection. Second, this study surveyed students from four majors—zoology, Chinese language and literature, grass science, and agricultural mechanization engineering—without including students majoring in intellectual property law. Therefore, these findings apply specifically to

students in non-IP-related majors; whether they hold for IP majors requires further investigation.

As China's economy develops and informatization accelerates, the number of Internet users will increase rapidly. Combined with the virtuality of networks and the grassroots nature of network-native digital resources, intellectual property infringement will likely become more severe. Universities, as primary sites for student learning and living, should strengthen awareness through curriculum design, lectures, and campus forums to enhance student consciousness regarding network-native digital resource intellectual property protection.

6. Research Outlook and Limitations

This study examined only six dimensions of personal characteristics affecting cognition of network-native digital resource intellectual property rights. Previous research has identified additional factors such as individual moral cognitive intensity, profession, and nationality that influence ethical cognition processes. Whether these factors also affect cognition of intellectual property issues warrants further investigation. The sample selection was limited to four majors (zoology, Chinese language and literature, grass science, and agricultural mechanization engineering), excluding IP-related majors, which limits the generalizability of the conclusions. Additionally, the sample size of 173 was relatively small, affecting the precision of the findings. Future research should address these limitations.

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