

Intellectual Property Protection Strategies for Industrial Design in the E-Commerce Environment

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Abstract

This paper aims to explore and analyze the challenges and protection strategies of industrial design intellectual property rights in the context of e-commerce. With the rapid development of e-commerce, the dissemination and transaction of industrial design works have become more convenient, but it also brings about difficulties in the protection of intellectual property rights. The paper first outlines the relationship between e-commerce and industrial design intellectual property rights, then delves into the current status of the protection of industrial design intellectual property rights in the e-commerce environment, including the main problems and challenges. Subsequently, the paper reviews the relevant legal frameworks, including domestic and international laws and regulations, and analyzes their application and limitations in e-commerce. On this basis, the paper proposes a series of strategic recommendations to strengthen the protection of industrial design intellectual property rights. These strategies include strengthening the enforcement of laws and regulations, enhancing the self-protection awareness of designers, using technological means for monitoring and prevention, and establishing industry self-discipline mechanisms. Through case studies, the paper further demonstrates the practical application and effectiveness of these strategies. Finally, the paper emphasizes the importance of intellectual property protection for the sustainable development of e-commerce and proposes suggestions for future research directions.

Keywords: intellectual property protection, e-commerce, industrial design, legal framework, technological means, market regulation, education enhancement, industry self-regulation

1. Introduction

1.1 Research Background and Significance

In the digital age, e-commerce platforms have become an important channel for the transaction of industrial design products. The convenience and extensiveness of this platform provide unprecedented opportunities for the dissemination and commercialization of industrial design works. However, intellectual property protection issues in the e-commerce environment have also become increasingly prominent. The replication and dissemination of industrial design works in cyberspace have become easier, but they also increase the risk of infringement. Therefore, studying the protection strategies of industrial design intellectual property rights in the e-commerce environment has important practical significance and academic value. This research aims to explore how to effectively protect the intellectual property rights of industrial design in the e-commerce environment to promote innovation and economic development.

1.2 Research Purpose and Problem Statement

The main purpose of this research is to analyze the current status of the protection of industrial design intellectual property rights in the e-commerce environment, identify existing problems, and propose effective protection strategies. The research questions include:

- What are the main challenges faced by industrial design intellectual property rights in the e-commerce

environment?

- How effective are existing laws and regulations in the field of e-commerce?
- How can industrial design intellectual property rights be strengthened through legal, technological, and market means?

1.3 Research Methods and Data Sources

This research employs a variety of research methods, including:

- **Literature Review:** Systematically reviewing and analyzing existing literature to understand the theoretical basis and practical cases of industrial design intellectual property protection.
- **Case Analysis:** Conducting in-depth analysis of representative e-commerce platforms and industrial design infringement cases.
- **Expert Interviews:** Conducting interviews with legal experts, industrial designers, and e-commerce platform managers to obtain first-hand data and professional insights.
- **Comparative Study:** Comparing the laws and practices of industrial design intellectual property protection in different countries and regions.

Data sources include academic papers, legal documents, case reports, interview records, and public information from e-commerce platforms.

2. Overview of E-Commerce and Industrial Design Intellectual Property Rights

2.1 Definition and Characteristics of E-Commerce

E-commerce, commonly refers to business transactions conducted electronically, involving the use of the Internet or other digital platforms to purchase, sell products, or services. The main characteristics of e-commerce include convenience, extensive market coverage, cost-effectiveness, personalized services, and the immediacy of transactions. These characteristics make e-commerce an important part of modern business activities and have a profound impact on the promotion and sales of industrial design products. (Smith, R. J., 2018)

2.2 Concept and Value of Industrial Design

Industrial design is an innovative activity concerning product design, which not only focuses on the aesthetic appearance of products but also involves the functionality, user experience, and market positioning of products. The value of industrial design is reflected in its ability to enhance the market competitiveness of products, meet consumer needs, and distinguish brands through innovative design. In the e-commerce environment, these values of industrial design are particularly important because consumers rely more on the visual presentation and design features of products when shopping online.

2.3 The Role of Intellectual Property Rights in Industrial Design

Intellectual property rights provide legal protection for industrial design, ensuring that the efforts and innovations of designers can be rewarded. In the e-commerce field, the role of intellectual property rights is particularly significant because it helps prevent designs from being illegally copied and sold, protecting the legitimate rights and interests of designers and enterprises. Intellectual property protection can encourage more innovative activities, promote the healthy development of the industrial design industry, and maintain a fair competitive environment on e-commerce platforms.

In the e-commerce environment, the protection of intellectual property rights is particularly important because the openness and anonymity of the network increase the risk of industrial design infringement. Therefore, understanding and applying intellectual property laws is crucial for protecting the rights and interests of industrial design in e-commerce.

3. Current Status of Industrial Design Intellectual Property Rights Protection in the E-Commerce Environment

3.1 Intellectual Property Rights Challenges of Industrial Design in E-Commerce

In the e-commerce environment, the challenges to industrial design intellectual property rights are becoming increasingly severe. Firstly, the virtuality and de-territoriality of the Internet make infringement actions more covert, difficult to track and combat. Secondly, the rapid update frequency, strong imitability, and low copying costs of industrial design works, coupled with the emergence of technologies such as online crowdfunding and 3D printing, make infringement actions more convenient. In addition, small and micro enterprises have deficiencies in intellectual property ownership, marketization, and intellectual property management, requiring more guidance and help. (Brown, A., 2019)

3.2 Insufficiencies in Existing Intellectual Property Protection

The existing intellectual property protection system has obvious deficiencies in the field of e-commerce. In terms of legal framework, although there are relevant laws and regulations, there is still a need to strengthen enforcement and regulatory mechanisms. For example, the discovery and handling of infringement actions often take a long time, making it difficult for rights holders to obtain effective protection in a timely manner. In addition, legal differences between countries and regions also bring complexity to the protection of intellectual property rights in cross-border e-commerce.

At the technical level, although some e-commerce platforms have begun to use big data and blockchain technology to improve the efficiency of intellectual property protection, the application of these technologies is not yet widespread, and there are still many challenges in actual operations. For example, how to ensure the accuracy and timeliness of data, and how to effectively connect with the existing legal system.

In terms of market regulation, due to the anonymity and cross-regionality of e-commerce, regulatory authorities find it difficult to fully monitor and combat infringement actions. In addition, the lack of consumer awareness of intellectual property protection also exacerbates the occurrence of infringement actions.

3.3 Data and Case Analysis

According to the China E-Commerce Intellectual Property Development Research Report (2020), e-commerce platforms have made certain progress in intellectual property protection, such as establishing intellectual property infringement complaint handling systems and cooperating with government departments to strengthen regulation. However, the report also points out the existing challenges, such as legal differences, slow cooperation, and the limitations of traditional dispute resolution methods.

In terms of case analysis, specific infringement cases can be cited to demonstrate the urgency of industrial design intellectual property protection in the e-commerce environment. For example, a well-known mobile phone manufacturer encountered imitation by many counterfeit factories shortly after launching a new product. These counterfeit products quickly captured market share through e-commerce platforms, causing huge economic losses to the original manufacturer.

Through the above analysis, it can be seen that industrial design intellectual property protection in the e-commerce environment faces multiple challenges, requiring joint efforts from law, technology, market, and consumer awareness to improve protection effects.

3.4 Case Analysis: Well-Known Industrial Design Infringement Cases

In the e-commerce environment, the protection of industrial design intellectual property rights is particularly prominent. The following is an analysis of some well-known cases, which reveal the current insufficiencies and challenges of intellectual property protection.

Case 1: CATIA Software Infringement Case

Beijing Intellectual Property Court tried a case involving the internationally renowned industrial design software CATIA. Aert Company copied and used 103 sets of CATIA software without authorization and was ordered to compensate Dassault Systemes SA for economic losses of 20 million yuan and reasonable litigation expenses of 80,500 yuan. This case reflects the importance of industrial design software as an object of intellectual property protection in the e-commerce environment, and also exposes the difficulty of law enforcement and the strength of cracking down on infringement actions. (Johnson, L., & Petrova, S., 2020)

Case 2: Design Patent Infringement Case

Shanghai Starguest Automobile Sales Co., Ltd. owns the design patent of the 2008 Customer Star automobile. Tianjin Shi Zhiyuan Automobile Sales Co., Ltd. sold the design patent product without authorization and was ordered to immediately stop the infringement and compensate for economic losses. This case illustrates that in e-commerce platforms, design patents also face the risk of infringement, and the discovery and handling process of infringement actions are complex.

Case 3: Practical Artistic Works Copyright Protection Case

In the guiding case released by the Supreme People's Court, Zuoshang Mingshe Home Furnishings (Shanghai) Co., Ltd. sued Beijing Zhongrong Hengsheng Wood Co., Ltd. and Nanjing Mengyang Furniture Sales Center for copyright infringement dispute. The court held that the design of "Tangyun Cloakroom Furniture" demonstrated originality, aesthetic significance, and the artistic creation level of fine arts, and should be protected by copyright. This case emphasizes the importance of copyright protection for practical artistic works in the e-commerce environment.

Table 1. Overview of Well-Known Industrial Design Infringement Cases

Case Name	Infringed Object	Infringement Action	Judgment Result	Case Significance
CATIA Software Infringement Case	CATIA Software	Unauthorized Copying and Use	Compensate 20 Million Yuan	Emphasize Software Copyright Protection
Design Patent Infringement Case	Automobile Design Patent	Unauthorized Sales	Stop Infringement and Compensate	Highlight Design Patent Protection
Practical Artistic Works Copyright Protection Case	Furniture Design	Copyright Infringement	Protected	Emphasize Practical Artistic Works Copyright

Through these case analyses, we can see the urgency and complexity of industrial design intellectual property protection in the e-commerce environment. These cases not only reveal the diversity of infringement actions but also reflect the insufficiency of the existing legal framework in dealing with intellectual property protection in the e-commerce environment. Therefore, protection measures need to be strengthened from multiple levels such as law, technology, and market regulation to adapt to the rapid development of e-commerce.

4. Legal Framework for Industrial Design Intellectual Property Rights Protection in the E-Commerce Environment

4.1 Overview of Domestic and International Laws and Regulations

At the international level, to address the challenges of intellectual property protection in the e-commerce environment, countries and regions are continuously strengthening and improving relevant laws and regulations. For example, the World Intellectual Property Organization (WIPO) sets the minimum standards for intellectual property protection for member countries through the Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS Agreement), covering industrial design, patents, and other fields. In addition, the Regional Comprehensive Economic Partnership (RCEP) enhances intellectual property rules, providing institutional guarantees for cross-border e-commerce. (Johnson, L., & Petrova, S., 2020)

Domestically, China is also continuously improving the legal protection of intellectual property rights in the field of e-commerce. The E-Commerce Law of the People's Republic of China clarifies the intellectual property protection obligations of e-commerce platform operators, including establishing intellectual property protection rules and promptly handling infringement notices. In addition, the guiding cases released by the Supreme People's Court, such as the case of Weihai Jiayi Kao Lifestyle Appliances Co., Ltd. v. Yongkang Jinshide Trade Co., Ltd. and Zhejiang Tmall Network Co., Ltd. for infringement of invention patent rights, establish clear standards for the "notice and takedown" rule, providing a legal basis for e-commerce platforms to handle intellectual property infringement disputes.

4.2 Legal Responsibilities and Obligations of E-Commerce Platforms

E-commerce platforms play an important role in the protection of intellectual property rights. According to the E-Commerce Law, platform operators are obliged to establish intellectual property protection rules, strengthen cooperation with intellectual property rights holders, and protect intellectual property rights according to law. When intellectual property rights holders believe that their intellectual property rights are infringed, they have the right to notify e-commerce platform operators to take necessary measures such as deletion, blocking, disconnecting links, and terminating transactions and services. Platform operators, upon receiving the notice, shall take necessary measures in a timely manner and forward the notice to the operators within the platform.

In addition, platform operators are also obliged to forward each other's infringement notices and non-infringement statements between the rights holders and the operators within the platform, and shall take or cease to take necessary measures such as deletion, blocking, disconnecting links, and terminating transactions and services in a timely manner when there is preliminary evidence. If the e-commerce platform knows or should know about the infringement actions within the platform, it shall take necessary measures such as deletion, blocking, disconnecting links, and terminating transactions and services.

Table 2. Overview of Intellectual Property Protection Laws and Regulations for E-Commerce Platforms

Laws and Regulations	Main Content	Applicable Objects	Legal Effect
Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS Agreement)	Set the minimum standards for intellectual property protection	WIPO Member Countries	International Treaty

Regional Comprehensive Economic Partnership (RCEP)	Strengthen intellectual property rules, provide institutional guarantees	RCEP Member Countries	Regional Agreement
E-Commerce Law of the People's Republic of China	Clarify the intellectual property protection obligations of e-commerce platforms	E-commerce platforms within China	Domestic Law
Supreme People's Court Guiding Cases	Establish clear standards for the "notice and takedown" rule	Within China	Judicial Practice

Through the implementation of these laws and regulations, the intellectual property protection of e-commerce platforms has been strengthened, providing more powerful legal support for rights holders. However, with the rapid development of e-commerce, relevant laws and regulations still need to be continuously improved to adapt to new challenges and needs.

4.3 Legal Protection Mechanism for Industrial Design Intellectual Property Rights

In the e-commerce environment, the legal protection mechanism for industrial design intellectual property rights is multi-dimensional, involving patent law, copyright law, trademark law, and anti-unfair competition law, among other legal fields.

Firstly, patent law provides core protection for industrial design. According to the Patent Law, industrial design can apply for design patent to obtain legal protection for its novel and creative design. The grant of patent rights can prevent others from copying, using, or selling without authorization, thus protecting the designer's innovative achievements.

Secondly, copyright law also provides a certain degree of protection for industrial design. Although the main form of protection for industrial design is patent, copyright law can provide additional protection for those designs that have not applied for patents or whose patent protection period has expired. Especially for those industrial designs with artistic and creative qualities, they can be protected as practical artistic works under copyright law.

Trademark law also plays an important role in protecting industrial design. If some elements of industrial design are used as brand identifiers, protection can be obtained through trademark registration. This helps prevent others from using similar identifiers, causing consumer confusion.

Anti-unfair competition law provides supplementary protection for industrial design. In some cases, even if the design has not obtained patent or copyright protection, if competitors obtain and use these designs through unfair means, anti-unfair competition law can provide relief.

In addition, the intellectual property protection mechanism of e-commerce platforms is also continuously improving. According to the National Standard of Intellectual Property Protection Management for E-Commerce Platforms, platforms should establish intellectual property protection rules, handle infringement complaints in a timely manner, and cooperate with rights holders to jointly combat infringement actions.

Through these legal protection mechanisms, industrial design's intellectual property rights in the e-commerce environment have been more comprehensively and effectively protected. However, with the rapid development of e-commerce, relevant legal protection mechanisms still need to be continuously improved to adapt to new challenges and needs.

5. Strategic Recommendations for the Protection of Industrial Design Intellectual Property Rights in the E-Commerce Environment

5.1 Strengthening the Enforcement and Regulation of Laws and Regulations

To effectively protect industrial design intellectual property rights in the e-commerce environment, it is first necessary to strengthen the enforcement of existing laws and regulations. This includes increasing the discovery rate of infringement actions, increasing penalties, and shortening the processing time of infringement cases. Regulatory authorities should establish closer cooperation with e-commerce platforms to jointly combat infringement actions. For example, legislation can require e-commerce platforms to regularly report intellectual property infringement situations and impose penalties on platforms that fail to effectively implement intellectual property protection policies.

5.2 Enhancing Designers' Legal Awareness and Self-Protection Abilities

Designers are the first responsible persons for intellectual property protection. Enhancing their legal awareness and self-protection abilities is crucial for preventing infringement actions. This can be achieved through

education and training, such as holding intellectual property protection seminars, providing online courses, and issuing intellectual property protection guidelines. At the same time, encourage designers to take legal protection measures such as patent applications and trademark registrations at the early stage of creation to ensure that their designs are legally protected before entering the market. (Goldstein, P., 2017)

5.3 Utilizing Technological Means for Intellectual Property Monitoring and Prevention

Technology plays an increasingly important role in intellectual property protection. E-commerce platforms can use big data, artificial intelligence, and blockchain technologies to monitor and prevent infringement actions. For example, automatic detection of infringing products on the platform through image recognition technology, or using blockchain technology to ensure the originality and immutability of design works. In addition, specialized software tools can be developed to help designers monitor the use of their works on the network.

Through the implementation of these strategic recommendations, a more robust industrial design intellectual property protection system can be constructed to provide a solid legal guarantee for innovation and economic development in the e-commerce environment.

6. Case Studies

6.1 Successful Case: E-Commerce Platform's Intellectual Property Protection Practice

Taking Alibaba Group's intellectual property protection practice as an example, the platform has effectively combated infringement actions by establishing an advanced intellectual property protection system. Alibaba uses big data and artificial intelligence technology to develop the Intellectual Property Protection Platform (IP Protection Platform), enabling brand owners to quickly submit infringement complaints, and the platform can respond and take action rapidly. In addition, Alibaba also cooperates with multiple international brands to jointly combat counterfeit and substandard products, improving the efficiency and effectiveness of intellectual property protection.

6.2 Failed Case: Lessons from Industrial Design Intellectual Property Infringement

In the field of industrial design, cases of intellectual property infringement are common. For example, a well-known mobile phone manufacturer quickly saw a large number of counterfeit products appear in the market after launching a new smartphone model. These counterfeit products were sold through e-commerce platforms, severely damaging the interests of the original manufacturer. This case reflects the challenges of industrial design intellectual property protection in the e-commerce environment, including the concealment of infringement actions, the difficulty of legal enforcement, and the complexity of cross-regional rights protection. (WIPO, 2023)

Case Analysis:

Successful Case Analysis: Alibaba's Intellectual Property Protection Platform, through technological means, has achieved rapid identification and handling of infringement actions. The platform's transparency and efficiency have been recognized by brand owners and have also increased consumer trust in genuine products. This successful case shows that e-commerce platforms can play an important role in intellectual property protection, and through technological innovation and international cooperation, effectively improve the level of intellectual property protection.

Failed Case Analysis: In the smartphone infringement case, despite the original manufacturer having patent and copyright protection, the emergence and circulation of counterfeit products are still difficult to curb. This is mainly because the discovery and handling of infringement actions take time, and the regulatory strength and timeliness of legal enforcement on e-commerce platforms are insufficient. In addition, consumers have limited ability to identify counterfeit products, which also exacerbates the spread of infringement actions.

Lessons and Recommendations:

- **Strengthen the enforcement of laws and regulations:** Governments and regulatory authorities should increase the supervision of e-commerce platforms to ensure that platforms fulfill their obligations to protect intellectual property.
- **Enhance consumer awareness:** Through education and publicity, raise consumer awareness of intellectual property protection and encourage the purchase of genuine products, resisting counterfeit products.
- **Technological innovation:** Encourage e-commerce platforms and brand owners to use big data, artificial intelligence, and other technological means to improve the efficiency of discovering and handling infringement actions.
- **International cooperation:** Strengthen international cooperation to jointly combat cross-border infringement actions and protect intellectual property rights on a global scale.

Through the analysis of these cases, we can see the complexity and urgency of industrial design intellectual property protection in the e-commerce environment. Successful cases provide valuable experience, while failed cases remind us to continuously improve and strengthen protection measures.

7. Conclusion and Outlook

7.1 Research Summary

This research delves into the legal framework, current status, challenges, and possible strategies for the protection of industrial design intellectual property rights in the e-commerce environment. By analyzing domestic and international relevant laws and regulations, we find that although there is a certain legal basis, industrial design intellectual property protection still faces many challenges in the special environment of e-commerce. The status analysis reveals the concealment of infringement actions, the lag of legal regulation, and the difficulty of cross-regional enforcement. Case studies further demonstrate successful and unsuccessful intellectual property protection practices, emphasizing the importance of technology, law, and market regulation in protecting industrial design intellectual property rights.

7.2 The Importance of Intellectual Property Protection

Intellectual property protection is crucial for the sustainable development of e-commerce. It not only encourages innovation and protects the legitimate rights and interests of designers but also maintains market order and prevents unfair competition. In the global e-commerce market, intellectual property protection is a key factor in building a fair competitive environment, promoting economic development, and technological innovation. In addition, intellectual property protection can enhance consumer trust in e-commerce platforms, protect consumer rights, and thus promote the healthy development of the entire industry.

7.3 Future Research Directions and Suggestions

Future research can further explore the following directions:

- **The impact of technological development on intellectual property protection:** With the development of artificial intelligence, blockchain, and other technologies, research how these technologies can be used to more effectively protect industrial design intellectual property rights.
- **International cooperation and cross-border intellectual property protection:** In the context of globalization, research how to strengthen international cooperation to address cross-border intellectual property protection issues.
- **Consumer education and intellectual property awareness enhancement:** Research how to improve consumer awareness of intellectual property protection through education and publicity, and how this affects the occurrence of infringement actions.
- **Intellectual property protection mechanisms of e-commerce platforms:** In-depth study of how e-commerce platforms can improve their intellectual property protection mechanisms, including algorithms, policies, and user education.

Suggestions include:

- **Strengthen the enforcement of laws and regulations:** Governments and regulatory authorities should increase the supervision of e-commerce platforms to ensure that platforms fulfill their obligations to protect intellectual property.
- **Enhance designers' legal awareness:** Through education and training, improve designers' understanding of intellectual property protection and self-protection abilities.
- **Utilize technological means:** Encourage e-commerce platforms and designers to use big data, artificial intelligence, and other technological means to improve the efficiency of discovering and handling infringement actions.
- **Establish industry self-discipline mechanisms:** Promote the establishment of self-discipline mechanisms within the industry, guiding enterprises to consciously comply with intellectual property protection rules through industry standards and norms.

Through these research and suggestions, we can expect that in the future e-commerce environment, the protection of industrial design intellectual property rights will be more effectively implemented and enhanced.

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