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Research on the Economic Impact of Software Industry Piracy on Large Enterprises

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Abstract: The problem of piracy has always been an important factor affecting the operation and development of software technology companies, and the core purpose of studying piracy is to enable enterprises to deal with the impact of piracy in a reasonable and effective way to the greatest extent. This paper examines the impact of piracy on the economic cost, brand independence, product innovation, and network externalities of leading large enterprises in the software industry. Finally, it is concluded that the impact of piracy actually has advantages and disadvantages, and enterprises can offset the negative impact of piracy to the greatest extent by adopting reasonable means of copyright protection, active product innovation strategies, timely product promotion and online marketing. Harness the positive impact of piracy.

Keywords: Software Industry, Piracy, Economic Impact, Enterprises

1. Introduction

At this stage, piracy abounds in various industries, and most of the evaluations of the impact of piracy in the existing research literature are negative, and most of the reasons for rampant piracy will reduce the cost of consumer acquisition, reduce the company's operating profits, and curb the innovation of product technology emphasize the negative impact of piracy, and in individual industries, there are also a small amount of data showing that piracy has a certain role in promoting the development of companies, and this phenomenon is especially obvious in the software industry. However, few articles have studied the specific impact mechanism of piracy in the software industry on enterprise operations. This paper will take large enterprises as the research object, combined with theoretical analysis and literature research methods, and try to study the influence mechanism of piracy on the economic interests of large enterprises in the software industry, so that we can take more perfect measures to deal with piracy according to the characteristics of enterprises themselves, minimize the negative impact caused by piracy, and at the same time give full play to the positive effects brought by piracy as much as possible. The significance of this study is to provide some measures to improve the current situation where software piracy has a huge impact on technology companies that mainly profit from product patents. On the other hand, it can also help readers understand the current situation and problems of illegal copying and dissemination of genuine software and applications. By demonstrating these negative impact mechanisms, entrepreneurs and consumers can be alerted. Furthermore, by reading this article, we can also understand some beneficial effects of piracy and have a more comprehensive understanding of illegal business activities.

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2. An overview of the phenomenon of piracy in the software industry

2.1. Definition and form of software piracy

Referring to Globerman's [1], software piracy generally refers to the unauthorized storage, use, and distribution of software's digital applications. Software piracy is also a special form of intellectual property theft, which is mainly through a large number of copies of genuine software, and then sells it at a price much lower than that of genuine software, and has a certain market share through price competitive advantage [2].

2.2. Analysis of the causes of piracy

The high cost of using most genuine software leads to a high demand for pirated software, and the limited affordability of consumers has significantly contributed to its rise [3]. Another important factor in the popularity of pirated software is that in certain countries, some genuine software has a large download limit. Due to national security protection issues and distribution channels, consumers find it challenging to use genuine software. The conflict between users' software demands and mandatory laws and regulations creates a significant market for pirated software.

3. The specific mechanism of the impact of piracy on large software enterprises

3.1. Operating costs and product marketing of enterprises

From the perspective of the economic cost of enterprise operation, the increase in the additional cost brought about by the fight against piracy is a major factor causing the economic loss of enterprises. From the perspective of enterprises, Yang Renwen [4] argues in her article that the cost of copyright protection for large companies to combat piracy is extremely high, while the cost of piracy is very low, and genuine companies need to pay an additional cost to maintain product production and research and development. On the whole, the high cost of rights protection to be paid to crack down on piracy has further compressed product profits, forcing enterprises to raise product sales prices, and then reducing the market competitiveness of genuine products to a certain extent, and enterprises have naturally fallen into a vicious circle. Not only do businesses suffer, but consumers also bear the consequences. From the consumer's point of view, both Yoon [5]and Bae (forthcoming) [6] argue that the rights protection of genuine companies will increase consumers' private costs and further reduce consumers' demand for original products. This is an analysis of the negative impact of piracy on enterprise costs, and there are also some articles that analyze the positive impact of piracy, mainly reflected in the role of product marketing. For example, Sanjay Jain [7] pointed out in his article that piracy can lead to more product copying, reduce product price competition and promote product publicity to a certain extent, and thus increase the company's sales profit and brand awareness, and Givon et al. [8] also mentioned the related benefits in their article. However, from the perspective of the actual situation of enterprises, the large-scale copying and dissemination of such pirated products mainly acts on emerging Internet celebrity brands, and for the large enterprises at the head of the industry studied in this paper, their products themselves have a high reputation, and correspondingly there are more infringements and higher rights protection costs, which amplify the negative impact on costs. From the economic perspective of enterprise operating costs and product marketing, we can conclude that the impact of piracy on large enterprises in the software industry causes more harm than good. This is because the communication impact of piracy on popular IPs with great popularity is minimal, and it significantly damages the brand effect and scarcity value of the product itself.

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3.2. The innovative development of enterprise products

Previous studies have provided many different interpretations of the impact of piracy on firm innovation, from different perspectives. It is also mixed. Milan Miric and Lars Bo Jeppesen [9] argue that piracy will lead to a reduction in the repair of minor bugs in genuine products, which will hinder the improvement and upgrading of genuine products. This is typical of negative effects. On the other hand, Halimin Herjanto and Sanjaya S. Gaur [10] have pointed out that the frequent outpouring of pirated products has a certain stimulating effect on the innovation of genuine products, because pirated products are also innovative in their own right. There is even a phenomenon that the quality of pirated products is higher than that of genuine products. The above article shows that different people have different interpretations of whether the impact of piracy is positive. Linking the impact on product innovation with the actual situation of large enterprises, along with the findings of Rayna [11] and Choi and Perez [12], suggests that piracy can stimulate enterprise innovation. This is because the improvement and upgrading of pirated products can reduce the unique advantages of genuine software, leading consumers to no longer pay for genuine products. Therefore, enterprises must strive to enhance their innovation capabilities to maintain the uniqueness of genuine products and maintain profitability in the face of pirated products. However, for most large enterprises, their products themselves have a monopoly and strong irreplaceability, and they have mastered cutting-edge technology and very complete production lines, which cannot be copied and surpassed by ordinary pirated products in a short time. Therefore, it is analyzed that piracy poses less threat to most large enterprises in terms of product innovation, and the innovation driving force of genuine products is also smaller, and it interferes more with the improvement of existing products in the later stage, so it still causes negative effects [10].

3.3. The network externalities

In the network, the phenomenon of one person influencing others without any form of remuneration is called network externality [13]. And in the context of software piracy in this article, cyber externalities refer to a person's willingness to share their experience of digital piracy with others [10]. Piracy can enhance a company's network externalities. And according to Givon et al [8]. The study found that network externalities have a large positive effect on promoting product dissemination and improving profit margins.Takeyama[14] Combines the positive effects of this network externality with big business derived in the monopoly market of the software industry,network externalities bring more benefits to leading genuine enterprises. For the leading companies in the software industry, their products are largely free of competitors, and the pirated reproductions of such products have a large gap with genuine products in terms of quality. Under this restrictiveness, consumers are often willing to pay a higher price for genuine products, this further increases the profitability of the enterprise. Shy and Thisse [15] also argue in the article that increasing network externalities can further increase the demand for a product, and then play a role in promoting the effect of enterprise revenue. According to Chen Hongmin's 2007 study [16], there is a clear substitution relationship between network externalities and the economies of scale of enterprises. Stronger network externalities lead to stronger economics, which in turn enhances the overall influence of the enterprise. From the perspective of network externalities, piracy has a great positive impact on the online marketing and brand influence of enterprises.

3.4. Summary and discussion of the impact of piracy

Based on the three core entry points of enterprise operating costs and marketing, product innovation and improvement, and network externality, this paper studies the impact of piracy on enterprises in the software industry with large enterprises as the main body. It is concluded that the negativity of

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piracy is mainly reflected in increasing the operating costs of enterprise copyright protection and the private costs of consumers, weakening the perfection and irreplaceability of genuine products, reducing the demand and profit margin of genuine products to a certain extent, and destroying the uniqueness of the products themselves. The enthusiasm of piracy is mostly reflected in the role of enhancing the network externality of genuine enterprises, so as to play a role conducive to the marketing of genuine products. This study's limitation stems from the selection of only a limited number of articles for discussion with the company, and the lack of accurate data on the company's production and sales, which potentially undermines the credibility of the conclusions. The significance of this study is that through the above analysis, we can understand the specific impact mechanism of piracy more comprehensively and in detail, and take targeted countermeasures in a timely manner.

4. Discussion on the adoption of measures

4.1. Developing an appropriate copyright protection system

Sanjay Jain [7] argues in the article that a weaker copyright protection regime can reduce price competition. And whether to reduce price competition is related to the strength of the network externalities of the enterprise itself, for periods when network externalities are stronger, the adoption of a relatively strong copyright protection regime would reduce price competition, and for periods when the effectiveness of the network is weak, less copyright protection reduces price competition. Therefore, applying appropriate piracy countermeasures according to the company's own current situation can also help the marketing of genuine products. It was mentioned in the article that the adoption of local laws to combat piracy was also a common approach, Yang Renwen [4] It also explains in the article that taking legal measures is a more effective and cost-effective way to combat piracy at this stage. Recently, the Civil Code and the Copyright Law have improved the definition and punishment of illegal acts of piracy, Malicious copying and distribution also require more stringent regulatory sanctions. From the above research, it can be seen that the active and reasonable application of relevant laws is the most cost-effective way to protect the independence of one's own products and to curb piracy.

4.2. Reasonable use of the positive influence of piracy for promotion and marketing

The above analysis primarily reflects the benefits of piracy to business operations, which include the diffusion effect of reproduction, the stimulation of innovation and improvement, the increase in profits due to increased network externalities, and the reduction of unnecessary marketing activities. Genuine software can also take advantage of the readily availability of pirated software to increase brand awareness and establish a positive corporate image [17]. In recent years, leading digital companies have begun to improve their online influence and economies of scale by cooperating with self-media, and piracy itself has a similar impact. For example, the popularity of genuine Windows 10 systems comes largely from the popularity of pirated Windows 10. Secondly, during the process of product development and improvement, enterprises should prioritize the development of pirated products that are derived from their own products. Some pirated products may even offer superior selling points compared to genuine products. By leveraging the advantages of pirated products, enterprises can further enhance and innovate their own products.

5. Conclusions

This paper concludes that the impact of piracy on large enterprises is multi-dimensional, with positive and negative effects. Piracy primarily impacts enterprises negatively by destroying their copyright

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independence, increasing operating costs, undermining brand credibility and scarcity, and hindering product innovation and improvement. Motivation is reflected in increasing product sales, hindering competitors from entering the market, reducing price competition, and enhancing network externalities. By utilizing local legal assistance, reasonable copyright protection measures, and promoting product updates, enterprises can mitigate the negative impact of piracy. Additionally, they can leverage the price competitive advantage, the short-term transmission effect of product copying, and the significant network externalities resulting from piracy to enhance the positive impact of piracy.

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