

DISCUSSION ON THE INFLUENCING FACTORS OF MOBILE KNOWLEDGE PAYMENT

DISCUSSÃO SOBRE OS FATORES QUE INFLUENCIAM O PAGAMENTO POR CONHECIMENTO MÓVEL

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Abstract

Nowadays, knowledge has become a commodity in the form of digital information in mobile consumption scenarios, and consumers are willing to pay through knowledge product APPs on mobile platforms. In reality, mobile knowledge payment not only serves as an internal means to promote national spiritual consumption but has also become one of the hotspots in academic research. Current literature on knowledge payment mainly focuses on three areas: pricing research, business model research, and user behavior research. Among these, user behavior research primarily examines participation behavior and consumer choices, but there are still some shortcomings in exploring the factors influencing knowledge payment. This paper focuses on the concept of "knowledge payment" and uses the SOR (stimulus-organism-response) model as the basis to analyze the internal and external factors influencing knowledge payment. The dual purpose is to provide suggestions for the real industry and to supplement new academic theoretical perspectives. The study concludes that knowledge product quality, knowledge anxiety, knowledge opinion leaders, and APP marketing influence knowledge payment behavior through consumer perceived value and satisfaction.

Keywords: Knowledge Payment. Knowledge Anxiety. Knowledge Product Quality. App Marketing.

Resumo

Atualmente, o conhecimento tornou-se uma mercadoria na forma de informação digital em cenários de consumo móvel, e os consumidores estão dispostos a pagar por meio de aplicativos de produtos de conhecimento em plataformas móveis. Na realidade, o pagamento por conhecimento via dispositivos móveis não serve apenas como um meio interno para promover o consumo intelectual nacional, mas também se tornou um dos principais temas de pesquisa acadêmica. A literatura atual sobre pagamento por conhecimento concentra-se principalmente em três áreas: pesquisa de preços, pesquisa de modelos de negócios e pesquisa de comportamento do usuário. Dentre elas, a pesquisa de comportamento do usuário examina principalmente o comportamento de participação e as escolhas do consumidor, mas ainda apresenta algumas lacunas na exploração dos fatores que influenciam o pagamento por conhecimento. Este artigo concentra-se no conceito de "pagamento por conhecimento" e utiliza o modelo SOR (estímulo-organismo-resposta) como base para analisar os fatores internos e externos que influenciam o pagamento por conhecimento. O objetivo duplo é fornecer sugestões para a indústria real e complementar novas perspectivas teóricas acadêmicas. O estudo conclui que a qualidade do produto de conhecimento, a ansiedade relacionada ao conhecimento, os líderes de opinião em conhecimento e o marketing de aplicativos influenciam o comportamento de pagamento por conhecimento por meio do valor percebido e da satisfação do consumidor.



Palavras-chave: Pagamento por Conhecimento. Ansiedade Relacionada ao Conhecimento. Qualidade do Produto de Conhecimento. Marketing de Aplicativos.

1 INTRODUCTION

1.1 Research Background

Knowledge payment is an emerging field in China's Internet industry, relying on the digital economy and belonging to a sunrise industry. On the policy front, the State Council of China (2017) proposed in the "Guiding Opinions on Further Expanding and Upgrading Information Consumption and Continuously Releasing the Potential of Domestic Demand" to "support the development of knowledge-sharing platforms through market-oriented approaches," expressing the country's supportive attitude towards knowledge payment. Therefore, in such a rapidly growing market and a friendly policy environment, knowledge payment platforms have emerged like mushrooms after rain, and their mission is not only to create high-quality knowledge products based on their own business characteristics and to improve the knowledge service system centered on consumers but also to make good marketing plans to achieve their own commercial profits.

1.2 Current situation of knowledge payment

Knowledge payment first appeared abroad in 1997 when The Wall Street Journal began to charge for the content provided on its website. Subsequently, major European media institutions also launched similar services, which gradually spread to other platforms. The online content payment model they initiated is known in the industry as the "paywall." Currently, The Information, a platform founded in the United States, provides accurate news and consulting services in the form of online media. Skillshare, a skills-sharing platform, is committed to promoting the development of online education, and Udemy, a platform, creates professional large-scale open online courses (MOOCs). These are all well-developed knowledge payment platforms abroad (Lu Chuntian, Ma Suchuan, and Kong Yun, 2020).

In China, the sharing economy era has brought about the sharing of knowledge. With the improvement of the convenience and security of mobile payment technology, a reliable payment channel has been provided for the knowledge economy, enabling a large number of Internet users to shift from free to paid consumption. At the same time, the cultivation of intellectual property rights awareness, changes in copyright forms, and changes in consumer behavior have led to the rapid formation of China's unique and large-scale knowledge payment market (Zhao Baoguo and Yao Yao, 2017). The year 2016 is considered the starting year of knowledge payment in China, marking the beginning of the marketization of "knowledge" obtained through mobile Internet for highly condensed information from others (Zhang Yangyi, 2018). Since then, knowledge payment platforms such as Zhihu Live, Himalaya FM, Fenda, and Get have emerged like mushrooms after rain. After years of explosive growth, the Chinese knowledge payment industry has entered a stable development stage with a clear competitive pattern, where comprehensive platforms and vertical sub-category platforms stand side by side (Shenshi Report, 2021). According to iiMedia Research, the scale of knowledge payment is showing a steady growth trend. The market size reached 39.2 billion yuan in 2020 and is expected to reach 67.5 billion yuan in 2021 (iimedia, 2020).

1.3 The significance of knowledge payment

Since ancient times, the acquisition, exchange, teaching, and publishing of knowledge can all be called knowledge payment. Nowadays, with the advent of the Internet, knowledge payment has become an important form of the sharing economy. Its connotation refers to the economic phenomenon where the public shares idle resources (cognitive surplus) for the purpose of obtaining remuneration through online platforms, representing a brand-new mode of information interaction (Zhang Shuai, Wang Wentao, and Li Jing, 2017). As the industry further develops, both the business and academic communities have provided different definitions of "knowledge payment." Aurora Big Data (2017) pointed out in its "Knowledge Payment Industry Research Report" that consumers, for the purpose of enhancing their cognition, emotional satisfaction, and class belonging, voluntarily use electronic payment technology to obtain personalized knowledge, services, and information in vertical fields. Yuan Rongjian (2019) stated that knowledge payment is a market transaction behavior of knowledge through mobile

Internet platforms, that is, "payment for knowledge products or services," which is also the "productization" of "knowledge or services." Due to the different types of knowledge delivered and the diverse carriers of dissemination, knowledge payment can currently be divided into several types, including audio subscriptions, video subscriptions, social live broadcasts, and column subscriptions, as shown in Table 1:

Table 1.

Classification of Knowledge Payment Products

Classification	Form	For example
Paid Q&A category	For answering certain questions raised by users, the platform takes a commission from the revenue of the Q&A	Zhihu, Zaihang
Audio subscription category	An audio subscription platform for book audio courses or knowledge programs	Ximalaya FM, Kai Shu Tells Stories
Video subscription category	Most of the paid knowledge that is disseminated through video production are knowledge subscription platforms for online education	NetEase Premium Courses, Babytree
Column subscription category	A knowledge column subscription platform mainly based on PGC, presented in the form of audio and reading	Get APP, Wu Xiaobo Channel
Social live streaming category	The content sharing mode mainly featuring video and supplemented by audio enables direct communication and interaction, with high interactivity	Litchi Micro-Lessons, Qianliao

Source: Tian Weigang and Zhang Shicheng (2020) and summarized in this paper

1.4 Consumer behavior in knowledge payment

The increase in China's per capita GDP has not only led to an improvement in consumption capacity but also a change in consumption structure. Referring to Maslow's hierarchy of needs, after the basic survival needs are met and with the explosion of social information, the psychological state of knowledge anxiety and skill panic (Fang Jun, 2018) has made people's pursuit of self-improvement more urgent. Consumers are willing to participate in the knowledge payment trend through video, audio, and reading text. On the one hand, consumers realize that "there is no such thing as a free lunch, especially a delicious knowledge feast" (People's Daily Online, 2016). On the other hand, knowledge payment not only meets their continuous need to improve their own abilities and literacy but also effectively reduces the social anxiety faced with the vast amount of information and new knowledge in the Internet age (Chen Zhiqiang, 2018). The more knowledge payment products emerge, the more consumers will choose products with high self-value.

Therefore, it is more worthwhile for practitioners or scholars to study the factors that influence consumers' knowledge payment.

2 RESEARCH OBJECTIVES

Knowledge consumption is not only a reflection of the upgrading of people's consumption structure and the shift in demand but also a manifestation of the achievements of China's supply-side structural reform in the sharing economy (knowledge service) market (Ding Xiaowei, Wang Xueying, and Gao Shuping, 2018). Therefore, one of the purposes of this paper is to analyze the existing literature and the current situation of knowledge payment to identify the factors influencing consumers' knowledge payment and to provide suggestions for marketers from an industry perspective. In addition, how to summarize and conclude new viewpoints through the analysis of influencing factors and to make theoretical improvements and supplements to the research on consumer behavior in "knowledge payment" has become another research objective of this study.

3 LITERATURE REVIEW

3.1 Theoretical basis

3.1.1 Consumer behavior theory

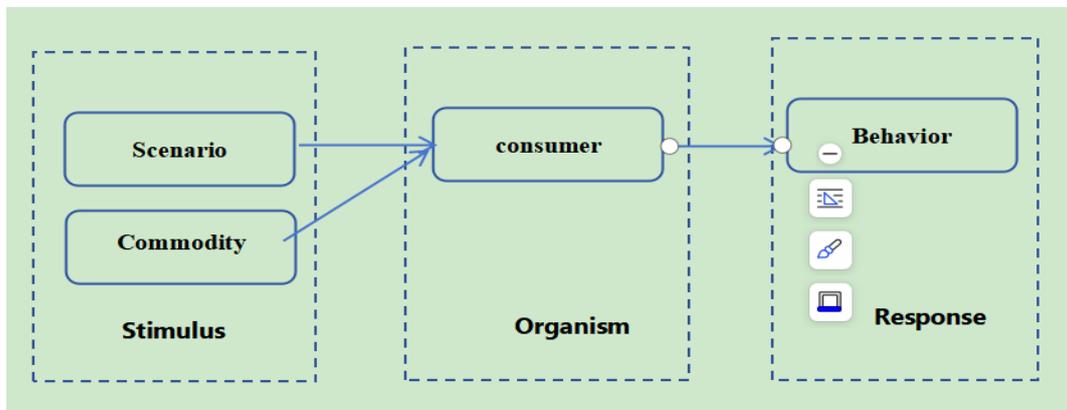
Despite the changes in times, people develop different consumption needs, such as mobile knowledge payment for virtual digital knowledge products. However, ultimately, mobile knowledge payment still falls within the scope of consumer behavior, that is, it is also a process of how individuals, groups, and organizations select, purchase, use, and dispose of products, services, experiences, or ideas to meet their needs and desires (Solomon & Behavior, 1994). Philip Kotler, the father of marketing, proposed the classic consumer behavior theory in his book *Marketing Management*. He believed that the consumer's purchasing process is generated under a series of internal and external constraints, including social, cultural, and personal factors. These factors further influence the next purchase decision. The starting point of consumer behavior and

decision-making is the marketing and environmental stimuli. When these stimuli enter the consumer's consciousness, a set of psychological processes reflecting consumer characteristics leads to purchase decisions and behaviors, specifically manifested as motivation, perception, learning, emotions, and memory.

Among them, the products and services provided by enterprises, the prices of products or services, corporate advertising, and the channels through which consumers obtain information and products or services are all direct marketing influencing factors. Meanwhile, factors such as the national economic and political environment, religious and cultural environment, and the level of technological development are indirect macro influencing factors. Together, they constitute the external stimuli for consumers. The internal consumer psychological motives, perceptions, learning, emotions, and memory, which are not easily detectable, are the "consumer black box" (Watson, 1914). They include the consumer's demand motives, perceptions of products or services, learning from experience, impulsive emotions towards shopping, and associative memories of brands. These psychological characteristics will ultimately form different consumer behaviors under the stimulation of external factors.

3.1.2 SOR consumption theory

Mehrabian & Russell (1974) proposed the S-O-R model of consumer behavior. In this model: S (stimulus) refers to the external environmental stimuli to an individual; O (organism) represents the organism receiving the stimuli; R (response) indicates the reaction after the stimulation. This model suggests that learning is not a mechanical or passive response of "stimulus-response" but an active processing and identification of stimuli by the organism (Liang Fu, Li Shuwen, and Sun Rui, 2017). In marketing activities, Belk (1975) was the first to organize the views of Mehrabian et al. (1974) and proposed the S-O-R model for consumers, as shown in Figure 1. Rescorla (1988) considered the reaction (R) as the final result of the purchase decision or the final behavior after the consumer's reaction, which includes both psychological reactions such as attitudes and actual behavioral reactions.

Figure 1:*S-O-R Model by Belk (1975)*

Source: Belk (1975)

In summary, this paper believes that consumer knowledge payment behavior is also influenced by external and internal psychological factors. Based on the above views, knowledge payment behavior often occurs under the premise of skill panic and information anxiety. The object of knowledge payment is a product presented in the form of video, audio, and text. Therefore, the quality of such "knowledge products" should also be one of the external factors influencing consumer behavior. Similarly, the production and sale of "knowledge products" cannot be separated from producers and sellers. Specifically, the producers are mainly "Internet celebrities" with professionalism and popularity, who can also be regarded as opinion leaders. Observing the attributes of knowledge payment, the sellers are the knowledge payment platforms developed based on mobile devices, that is, mobile applications (APPs). Naturally, a series of marketing activities to guide consumer knowledge payment will develop within the platform. Therefore, it is not difficult to see that "knowledge product quality," "knowledge anxiety," "opinion leaders," and "APP marketing" (for the sake of convenience, this paper uses the term "APP" hereinafter) may be factors that stimulate consumers to pay for knowledge. Of course, as internal psychological factors of consumers, consumers' perceived value of goods and their satisfaction with products may also be stimulated by the aforementioned factors, thereby influencing knowledge payment behavior.

4 LITERATURE REVIEW

According to the above analysis, this study proposes that the factors promoting knowledge payment in the S (external stimulus) stage of the SOR consumption behavior model may include "knowledge product quality," "knowledge anxiety," "opinion leaders," and "APP marketing." The factors in the O (internal stimulus) stage triggered by the external factors can be "consumer perceived value" and "consumer satisfaction." Therefore, the connections and influences between these factors are discussed below through a review of the literature.

4.1 Knowledge product quality

Compared with traditional tangible, tradable, and indirectly profitable knowledge products, new connotations have been given to knowledge products under the impetus of new Internet technology and new consumer demand. That is, knowledge payment products. The "knowledge" in "knowledge payment" refers to valuable content and information that has been refined, processed, organized, and solidified by experts and then disseminated and expanded through online platforms to transform knowledge into deliverable products, which are knowledge products (Lin Ziqi, 2018). The quality of knowledge payment products is the sum of the characteristics of the products and services contained therein that can meet consumers' existing and potential needs. The importance of knowledge product quality is not only related to the revenue of knowledge payment platforms but also affects the development of the industry. Since the advent of the knowledge payment year in 2016, knowledge products have been rapidly and favored by the market. However, as time went by, some knowledge products were not satisfactory in terms of output quality and utility, and even some consumers questioned the superficiality of the "knowledge" contained therein, leading to a "cooling off" phenomenon of knowledge products since 2019 (Peng Lan, 2020a).

Drawing on Philip Kotler's 1987 division of products from the inside out into five levels, namely the core product level, the tangible product level, the expected product level, the augmented product level, and the potential product level, the quality of knowledge products corresponds to the four aspects other than the tangible product level. They can respectively represent: the basic utility and benefits provided to consumers;

expectations for cost-effectiveness, convenience, and uniqueness; extensions for additional services and personalized services; and the satisfaction of potential consumer needs and the development of derivatives (Lin Ziqi, 2018).

4.2 Knowledge anxiety

In the era of information explosion, what is scarce is no longer paper or knowledge but people's time and energy. Yet, people always hope to understand all the information and expect to have a comprehensive understanding of the social environment in order to better control and make decisions about their lives. However, in the face of a vast amount of complex information, most people are overwhelmed and can only learn, understand, and absorb a limited amount with their finite time and energy. As a result, only a few can truly acquire knowledge. The remaining people, facing a large amount of complex information, often experience a sense of panic. It is against this backdrop that knowledge payment has emerged, primarily to address this psychological panic, known as knowledge anxiety.

Delving into the causes of knowledge anxiety, there are both objective and subjective reasons. On the objective side, the main reason is the anxiety marketing by knowledge payment platforms. Anxiety marketing creates a tense and anxious atmosphere to stimulate consumers' desire to purchase a particular product (Wang Jin, 2018). This common marketing strategy, which targets consumers' needs for abstract knowledge and skills, has been associated with knowledge consumption from the beginning. On the other hand, the subjective reason for knowledge anxiety lies with the consumers themselves. Chen Qian (2019) conducted a survey of 1,039 users on online media platforms and found that about 97% of the respondents had a tendency towards knowledge anxiety, with 25.51% indicating a high level of anxiety. The source of knowledge anxiety is often workplace pressure, as evidenced by the fact that about 85% of the respondents purchased workplace-related knowledge payment courses, with 28% indicating that they had bought many. This shows that the emotion of knowledge anxiety is widespread in the consumption behavior of knowledge payment.

The phenomenon of knowledge anxiety caused by knowledge payment has a similar concept in academia, namely information anxiety. In essence, knowledge anxiety is a manifestation of poor personal ability to analyze, process, and understand

information. It is essentially a form of information anxiety (Kuang Wenbo, 2019). Knowledge anxiety and information anxiety have the same connotation. The former is due to the inability of consumers to match their learning, understanding, and absorption of new cognition, new information, and new knowledge (Lu Chuntian et al., 2020), leading to psychological panic and anxiety. The latter is also due to the inability to meet the needs of information retrieval, personal cognition, and quality selection, resulting in a desire and anxiety for information.

4.3 Knowledge opinion leaders

Information is power, and those who have always held information have had significant influence in society. Therefore, people who can influence the flow of information have great social influence, which is the opinion leader (opinion leader). In the field of marketing, opinion leaders are often referred to as KOLs (Key Opinion Leaders), who have a significant impact on consumer behavior. This is first reflected in brand reputation research, that is, those who spread product reputation information are consumer opinion leaders (Hazeldine & Miles, 2010; Forbes, 2013). The influence of consumer attitudes, beliefs, and behaviors is a consumer opinion leader force (Rogers, 2003). Here, the opinion leader in the traditional communication context is distinguished, and the discussion is no longer about the KOL as an "intermediary" between mass communication and its audience, but rather as a source of information and opinions, influencing the direction of information and opinions in the network (Peng Lan, 2020b).

When opinion leaders are more involved in a particular product, their influence on consumers is stronger (Stokburger-Sauer & Hoyer, 2009). This is similar to the discussion of opinion leaders in the context of knowledge payment in this paper. As mentioned earlier, knowledge payment products contain PGC (Professionally Generated Content) by experts, and "experts" are also a type of opinion leader. The knowledge products they produce can significantly influence consumer payment behavior. Therefore, this paper defines the opinion leader in the context of knowledge payment as a "knowledge opinion leader." They are social elites with high professionalism and popularity who can provide knowledge products and services with unique knowledge views and personal charisma, making consumers willing to pay for them. This constitutes the dissemination and recreation of new knowledge to a certain extent.

4.4 APP marketing

Literally speaking, APP marketing is marketing through "APPs." However, since APPs are mostly used in mobile devices, that is, "mobile APPs" or "smartphone APPs," from a business perspective, APP marketing is a marketing activity carried out through the applications on mobile terminals such as smartphones, tablets, and e-readers that people use in their daily lives (He Jun, 2015). With the increasing number of mobile phone users, APP downloads have also exploded. The focus of APP marketing is essentially how to help enterprises use mobile applications to market to consumers on smart terminals. Therefore, enterprises will develop their own third-party platforms (Wu Yongyi, 2014).

As a new form of marketing, APP marketing is of vital importance to enterprises, especially with the integration of mobile payment. The ability for consumers to pay with one click within an APP makes it even more significant. Compared with traditional marketing, first, APP marketing, relying on electronic applications, is not only lower in cost but also provides comprehensive information. Second, the widespread use of mobile terminals makes APP marketing continuous and available at any time. Third, APP marketing enables enterprises to market across time and space, and within the APP world, there is strong interactivity between merchants and consumers. Finally, APPs can capture data from mobile phones to market precisely to each consumer. This is incomparable to traditional marketing, which relies on file storage of information to establish a deep connection with consumers (Zhao Shun, 2016).

Based on this, around the phenomenon of knowledge payment, various knowledge payment enterprises such as Himalaya APP, Get APP, and Zhihu APP have turned APPs into platforms that integrate shopping, entertainment, and social functions. They carry out marketing activities within the APP to achieve the marketing goals of promoting knowledge products, guiding consumer knowledge payment, and conveying brand image and value. This process can be regarded as APP marketing.

4.5 Consumer perceived value

Consumer perceived value (customer perceived value, CPV), also known as customer perceived value or user perceived value, was first proposed by Porter (1985) in

the 1980s. He suggested that customer perceived value is the trade-off that consumers make between the perceived performance of a company's products or services and the expenditure involved in purchasing them. Subsequently, Zeithaml (1988) stated that consumer perceived value is the subjective perception of the quality and price trade-off of products or services, and the overall evaluation made after use is consumer perceived value. However, this overall assessment by consumers of the quality and price of products or services is a change in perception, not an actual comparison of quality and price (Sánchez-Fernández & Iniesta-Bonillo, 2007). In the field of marketing, Philip Kotler, the father of modern marketing, regarded consumer perceived value as the difference between the total benefits evaluation of a particular offering by potential consumers and the total cost evaluation.

Consumer perceived value is not only an assessment of product attributes but also a combination of preferences for various aspects such as product attributes and performance, usage conditions, and results (Parasuraman, 1997). It even includes the psychological satisfaction utility of consumers (Bai Changhong, 2001). Therefore, it is not difficult to conclude that the connotation of consumer perceived value is also applicable to the context of knowledge payment. Hence, this paper defines consumer perceived value in knowledge payment as: the subjective value judgment and preference choice of consumers towards the knowledge products and services provided in knowledge payment.

4.6 Consumer satisfaction

The concept of consumer satisfaction has not yet reached a unified definition. The widely accepted definition is provided by Oliver (1999): Consumer satisfaction is a psychological reaction that occurs when consumer needs are met, that is, the degree to which consumers believe that a particular product or service meets their needs. In the new century, the definition of consumer satisfaction has not only appeared in two perspectives of evaluation and cognition but also in new application scenarios. For example, Lok and Crawford (2001) stated from the perspective of enterprises that consumer satisfaction has become increasingly closely linked to profitability and has become an important measurement indicator in corporate accounting and reports. It is reflected in consumers' evaluation of a company's products, services, and brands. From a cognitive standpoint,

Philip Kotler said in his book *Marketing Management*: The feeling state brought about by the utility that consumers experience after purchasing a product compared to their expectations can be pessimistic or optimistic.

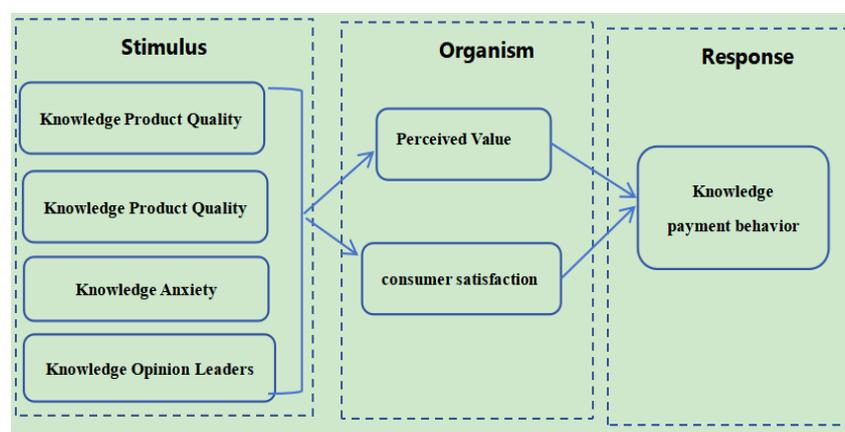
Therefore, consumer satisfaction describes the psychological evaluation result or an emotional expression of attitude regarding the comparison between the actual utility of a product and the expected effect in the process of consumption, which can further guide subsequent consumption behavior. This also fits the characteristics of knowledge payment consumption. First, knowledge payment scenarios are a form of experiential consumption, where the stimulation of knowledge products directly affects purchasing actions. Second, the products consumed in knowledge payment are not physically delivered; consumers' use of them is an absorption at the cognitive level, and their satisfaction is highly subjective. Finally, the expected effect of knowledge payment products relies on the consumer's own learning and practice after use to make a judgment, and the expression of satisfaction is delayed.

5 CONCLUSION

Regarding the factors influencing consumer knowledge payment discussed earlier, combined with the SOR consumption behavior model, this study has preliminarily summarized the conceptual framework shown in Figure 2. Based on the literature and observations of real knowledge payment scenarios, the following conclusions are drawn.

Figure 2:

Conceptual Model Based on SOR



Source: Compiled by this paper

5.1 The Impact of Knowledge Product Quality on Knowledge Payment

5.1.1 *The impact of knowledge product quality on perceived value*

In research on knowledge payment platforms, Zhou Tao et al. (2019) argued that due to the particularity of knowledge content, there is an information gap between platforms and users. Knowledge products are "non-refundable once paid," which brings uncertainty to users' perceptions. Therefore, there is a demand for the quality of information content from users. If users perceive that the content quality meets their expectations, they will consider the knowledge product useful and valuable to them. Similarly, high-quality services contained in knowledge products can help consumers learn and use knowledge payment more efficiently, which is also effective in improving users' perceived value. Likewise, in research on knowledge payment Q&A communities, Zhang Ying et al. (2018) proposed that service quality has a significant positive impact on perceived value. Based on data from college students' knowledge payment, Cha Lijuan et al. (2019) verified that perceived quality (of products and services) significantly positively affects consumer perceived value. Therefore, knowledge product quality can positively impact perceived quality.

5.1.2 *The Impact of knowledge product quality on consumer satisfaction*

Consumer satisfaction is a psychological perception of whether the cost and return of one's own consumption are appropriate (Harward, 1969). The earliest satisfaction theory model was proposed by Fornell & Johnson (1996) as the SCSB model (Swedish Customer Satisfaction Index model), which includes five variables: perceived quality, customer expectations, customer satisfaction, customer complaints, and customer loyalty. In 1994, Fornell added the dimension of perceived value to the SCSB model, forming the ACSI model (American Customer Satisfaction Index model). According to this model, perceived quality not only directly affects perceived value but also has a direct positive impact on customer satisfaction, that is, consumer satisfaction (Fornell et al., 1996). In traditional industries, Oliver (1997) and Tang Yinying & Li Weiwei (2016) have shown that service quality has a positive impact on satisfaction. In the knowledge payment industry, Cha Lijuan et al. (2019) and Zhu Zuping et al. (2020) have indicated that

perceived quality is a prerequisite for satisfaction, including perceived product and service quality. Therefore, knowledge product quality can positively impact consumer satisfaction.

In summary, knowledge product quality can influence consumers through its impact on perceived quality and satisfaction, thereby inducing knowledge payment behavior.

5.2 The Impact of knowledge anxiety on knowledge payment

5.2.1 The impact of knowledge anxiety on perceived value

Essentially, knowledge payment products aim to address people's inner anxiety. Paying for high-quality and valuable knowledge products not only meets consumers' desire to continuously improve their own literacy but also effectively reduces their anxiety when facing a vast amount of new information and knowledge (Yang Jinhua, 2018; Chen Zhiqiang). Knowledge anxiety is an emotional imbalance caused by the mismatch between consumers' strong desire for knowledge and the limitations of time and space. The emergence of knowledge products breaks the spatial and temporal constraints to a certain extent, alleviating anxiety. Knowledge providers, based on their own cognition, integrate books, documents, reports, and other materials to systematize and structure complex information, outputting valuable knowledge products to consumers (Sun Jinhua et al., 2021). Zheng Chengde, Liu Xiu, and Yang Xue (2012) found early on that anxiety, as a negative emotion, also has a negative impact on consumers' perceived value. Although knowledge products cannot guarantee "buying and learning immediately," when consumers perceive that the paid knowledge can alleviate their anxiety, they will tend to believe that the knowledge product is valuable (Wei Ze, 2019), thus triggering a purchase action. Therefore, knowledge anxiety may induce consumers' perceived value of the product.

5.2.2 The impact of knowledge anxiety on consumer satisfaction

People generally like knowledge but dislike anxiety because anxiety is a very complex emotion. Although moderate anxiety can help complete tasks, excessive anxiety

can be exhausting. Under the drive of knowledge anxiety, the sense of uncontrollability in life increases, and information black holes are everywhere, making people feel less free. In contrast, satisfaction is essentially an overall evaluation and emotional response of consumers to a particular product or service (Oliver, 1980), which includes both positive and negative states. Tian Yun, Yang Qingsong, and Zhang Lingcong (2020) have shown that trait anxiety and state anxiety are negatively correlated with life satisfaction. Similarly, missed anxiety is also negatively correlated with life satisfaction (Yang Lijuan, 2020). Therefore, knowledge anxiety may negatively and negatively impact consumers' judgment of product satisfaction.

In summary, knowledge anxiety may positively impact consumers' perceived value of knowledge products but may negatively impact their satisfaction with the products, thereby influencing consumers to engage in knowledge payment behavior.

5.3 The impact of knowledge opinion leaders on knowledge payment

5.3.1 The impact of knowledge opinion leaders on perceived value

Perceived value is the overall evaluation made by consumers after weighing the costs and benefits comprehensively (Zeithaml, 1988). Based on this, Li Zouzhi (2018) proposed that the professionalism and product involvement of online opinion leaders influence consumer purchasing behavior conversion efficiency by acting on perceived value. Gnams et al. (2013) indicated that individuals with higher professional capabilities and knowledge and who can express themselves effectively are more likely to influence others. In the context of knowledge payment, it is these individuals with high professionalism and popularity who constitute "knowledge opinion leaders." As knowledge providers, knowledge payment platforms and opinion leaders complement each other and achieve mutual success. Platforms must not only ensure the stable knowledge output of opinion leaders but also attract more content-producing opinion leaders (Tian Weigang, 2020). Opinion leaders, on the other hand, use platforms to spread their influence and achieve both fame and fortune. At the same time, the content of knowledge products produced by professional teachers is highly attractive, leading to increased product sales (Chen Zhiqiang, 2018; Liu Guo et al., 2020). Therefore, opinion leaders can enhance consumers' perceived value of knowledge products.

5.3.2 *The impact of knowledge opinion leaders on consumer satisfaction*

Yang, Lai, Chao, Chen & Wang (2009) found in their survey on employee satisfaction that social network relationships have a certain impact on satisfaction, but they did not quantify this aspect. Zhang Ce (2013) then inferred from this and constructed the independent variable "social network relationship" based on the key role of opinion leaders in social networks. He conducted a study on consumer behavior in B2C e-commerce shopping scenarios from the perspectives of consulting relationships and friendship relationships. The results showed that social network relationships have a significant positive effect on customer satisfaction, with friendship network relationships having a greater impact. This indirectly indicates that opinion leaders have a certain influence on customer satisfaction. The "knowledge opinion leaders" studied in this paper also play an important role in social network relationships, and their words and deeds can have different impacts on consumer behavior.

In summary, knowledge opinion leaders may positively impact consumers' perceived value of knowledge products and may also influence their satisfaction with the products, thereby leading to knowledge payment behavior.

5.4 **The impact of APP marketing on knowledge payment**

5.4.1 *The impact of APP marketing on perceived value*

Regarding the impact of APP marketing characteristics on different consumption scenarios, Xiong Xiaotong (2014) indicated that factors such as the richness of APP types, the timeliness of APP updates, and the relevance and interest of the content provided can directly affect consumers' perceived use value. Meanwhile, the interactivity, profitability, and interest of APP marketing constitute the antecedent factors for perceived trust. For example, Ye Jinfeng (2017) pointed out that the entertainment and convenience of brand APP marketing significantly impact consumers' perceived value, with convenience being the most significant factor affecting perceived emotional value. In addition to these, the reliability of APP marketing will also jointly impact perceived social value. Knowledge payment is an industry driven by knowledge products. Pure knowledge producers must rely on the power of platforms to realize the value of "knowledge." Therefore, a

knowledge payment platform APP is a product, a brand, and a service. Thus, the marketing of knowledge payment platform APPs can affect the perceived value of knowledge products among internal consumers.

5.4.2 The impact of APP marketing on consumer satisfaction

Consumer satisfaction is the psychological feeling that consumers have after comparing their consumption expectations with their actual consumption experience. Therefore, for the use of mobile applications and consumption through APPs, there is also a comparison of consumption satisfaction. Zhao Shun (2016) proposed that APP marketing characteristics have a significant positive effect on satisfaction. Based on the characteristics of APPs and the information system success model, he divided APP marketing characteristics into three sub-dimensions: system quality, information quality, and service quality. He used structural equation modeling to verify the relationship between these three and satisfaction. The results showed that system quality and information quality both made APP users very satisfied, while service quality did not have the same effect. Lin Lin et al. (2014) empirically demonstrated that consumers have a positive consumption tendency towards APPs with reliable content, accurate and timely information, and low risk. The more positive consumers' attitudes towards APP consumption, the stronger their willingness to consume. In general, scholars' research on APP marketing characteristics is mostly focused on a wide range of APP usage studies. So far, no research has been applied to the knowledge payment field. This may make some research results not applicable to this industry. However, the author believes that the essential consumption logic of "marketing stimulus - perceived value and satisfaction - consumption behavior" remains unchanged.

In summary, APP marketing in knowledge payment platforms may positively enhance consumers' perceived value of knowledge products and may also strengthen their satisfaction, thereby further promoting knowledge payment behavior.

6 SUGGESTIONS

It is not difficult to see from the literature review that knowledge payment, although a new type of Internet consumption in the era, faces a younger consumer group.

However, the principle of consumption decision-making is still the five stages of need recognition, information collection, alternative evaluation, etc. Marketers face the same consumer behavior black box. Therefore, to generate a "knowledge payment" behavior, appropriate marketing stimuli should be given to consumers. According to the summary of some scholars' views, this study believes that the factors influencing consumer knowledge payment behavior are knowledge product quality, knowledge anxiety, knowledge opinion leaders, and APP marketing. However, these factors do not directly act on knowledge payment behavior but indirectly influence it through two internal factors: consumer perceived value and consumer satisfaction. Consumers are more likely to pay for virtual knowledge when they enjoy high-quality knowledge products, alleviate their own knowledge anxiety burden, follow the knowledge opinion leaders they recognize, and are attracted by the marketing activities within the APP. Therefore, it is natural to pay for virtual knowledge.

Of course, there are limitations in the study. The conclusions drawn in this paper are the result of a comprehensive literature review, and there are deficiencies in rigor and universality. To more accurately prove whether knowledge product quality, knowledge anxiety, knowledge opinion leaders, and APP marketing are the antecedent factors inducing consumer knowledge payment behavior, further empirical testing is needed. In addition to the above factors, a relationship model should be established between perceived value and satisfaction, along with knowledge payment behavior, and data should be verified. Only then can the research results be more scientifically standardized. Moreover, this paper is based on the background of China's Internet knowledge payment, so its implications for knowledge payment research in other countries may be limited. For example, Amazon Kindle and knowledge community Quora in the United States. The domestic situation is different from that abroad, and the different views and management of "intellectual property rights" in China have given rise to this unique Internet field. Therefore, in future research on "knowledge payment," factors such as "knowledge management" and "intellectual property rights" can be included to draw more universal conclusions.

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Authors' Contribution

Both authors contributed equally to the development of this article.

Data availability

All datasets relevant to this study's findings are fully available within the article.

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