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Research Article

Continuous Use Behavior of Knowledge Payment Platform Based on Edge Computing under Mobile Information System

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From 2015 to the end of 2016, the Internet set off a wave of payment for knowledge. Pay-for-knowledge platforms such as Fenda, iGet, and Qianliao went online quickly, and platforms such as Himalaya FM, Zhihu, and Qingting FM gathered to launch paid columns. The number of users increased rapidly, and payment for knowledge was considered to have reached the trend of development. This article aims to study the introduction of edge computing in the mobile information system into the existence and inevitability of the knowledge payment platform; analyze the advantages, dilemmas, and optimization paths of the knowledge payment platform; and try to provide a theoretical reference for promoting its development. This article puts forward an explanation of the related content of mobile edge computing and RFID technology overview, using comparative experiment and behavior analysis methods. The experimental results show that there are 98 people under the age of 18 in the questionnaire, accounting for 19.1% of the total, 201 people aged 18–29, accounting for 39.1% of the total, 142 people aged 30–39, accounting for 27.6% of the total, and 73 people over 40 years old, accounting for 14.2% of the total number. It can be seen from the data that the sample age is mainly concentrated in the 18–29 years old, followed by the 30–39 years old; the sample age is biased towards young people. It has well completed the continuous use behavior analysis of the knowledge payment platform based on edge computing under the mobile information system.

1. Introduction

Cloud computing has been dynamically promoted due to its low operating cost, strong dynamic scalability, and simple operation and maintenance. My country's cloud computing-related industries are developing rapidly. In cloud computing architecture, all data are transmitted over the network and stored in the cloud. The main characteristics of cloud computing are being dynamic, flexible, and on demand. Data required for cloud computing are collected by related equipment. Different types of terminals transmit a large amount of collected data to their respective cloud platforms and receive analysis results through a central function. At present, a large number of mature intelligent management cloud platforms have been used, but with the widespread use of distributed intelligent devices, a large amount of data transmission has caused the transmission channel to be blocked. There are many difficulties in using cloud computing technology to solve this problem, and cutting-edge computing technology provides an effective way to solve this problem.

With the popularity of the Internet, the explosive growth of content has led to a lack of public attention. Content parties can only attract attention by selling content for free or at low prices and then indirectly selling their attention to a third party for profit. With the gradual deepening of content grading, low-quality content is surplus, high-quality content is scarce, and the value of high-quality content begins to emerge, which eventually forms a basis for charging. Since the end of 2015, the payment of knowledge platforms has increased significantly. By the end of 2016, core payments for more than 10 knowledge platforms or subprojects had been launched. However, in less than two years, the knowledge payment platform and the subcolumns went hand in hand,

and industry competition was fierce. The platform is in a state of homogeneity or lending competition, and there are hidden dangers in the quality of the platform. After entering 2017, the number of popular payment knowledge platforms has gradually slowed down. With the weakening of the demographic dividend, the growth of users of payment knowledge platforms has slowed down, and problems such as the influence of Internet celebrities and content entertainment have begun to become prominent. Obviously, it leads to the logical payment of knowledge. Gender is controversial. How far the payment for knowledge can go and whether the payment for knowledge platform can continue to grow has also become a question of self-reflection for the payment for knowledge platform. To further improve the acceptance and use level of the public has become a real dilemma that needs to be solved urgently.

Kazimierski proposed fog computing in 2011 and then made a related definition, attracting more and more scholars to pay attention to and study fog computing. But his research did not propose the principles, systems, and application related content of fog computing [1]. Mata and others studied the use of fog computing to assist mobile applications. Through the experimental comparison of cloud computing and fog computing, they analyzed and compared the performance of cloud computing and fog computing in mobile application services with high latency requirements. The research results proved that fog computing can provide a better service. But his research did not propose specific algorithm content, which has limitations [2]. Ismail et al. proposed a PCICC cache strategy based on the characteristics of cache nodes in the literature. But his research did not explain the cloud computing and fog computing sensor network technology and network virtualization technology [3].

The innovations of this paper are as follows: (1) a design of the system hardware architecture is proposed, and the use type of edge computing equipment is selected. (2) The time delay theoretical model in the SD-CEN architecture is introduced, and subtasks are offloaded to each MEC device for distributed parallel computing to become the SD-CEN architecture. (3) Classification and analysis of the presenter qualifications and user types of several popular paid knowledge apps currently on the market are tackled, expressing the practical significance of the article. At the method level, this article cleverly uses the edge computing method to calculate the data collection node to ensure the continuous use of the knowledge payment platform under the mobile information system. Compared with the past, the security has been greatly improved.

2. The Method of Continuous Use Behavior of Knowledge Payment Platform Based on Edge Computing under Mobile Information System

2.1. System Hardware Architecture Design. In the computer edge system, the data collection of acne equipment is completed by each data collection node [4, 5]. Each node basically consists of a terminal device and many external devices [6]. For physical data, data collection is done through external equipment [7]. In the data collection process, all types of equipment will transmit the collected data to the terminal equipment in real time in a predefined format [8]. In order to be compatible with most external devices, the most advanced devices provide various forms of hardware interfaces, such as UART, USB, and wireless transmission interfaces [9]. When there are many sensors sending data to the most advanced equipment [10], whether it is physical data or network data, it must be cleared by the data processing unit inside the device [11, 12]. After that, the data are uploaded to the cloud in a predefined format [13, 14].

According to the system operation target and application script design, the first is the edge device [15]. Network congestion causes a series of problems such as packet loss and delay [16, 17]. Secondly, in order to meet the transmission requirements of various sensors on the market, the device must support various hardware communication interfaces, and finally it is aimed at specific scenarios that can be used [18, 19]. The system frame diagram is shown in Figure 1.

2.2. Knowledge Payment Platform. The traditional behavior of paying for knowledge has existed since the rise of education [20]. The knowledge payment referred to in this article is a more direct and spontaneous knowledge transaction relationship between the disseminator and the audience [21, 22]. It refers to users who use the knowledge payment platform to share personal knowledge with others to obtain economic benefits, and other users pay for knowledge online through the platform [23]. The knowledge payment platform is an Internet media system that provides a venue for the exchange of knowledge and money. It uses computer technology to support a new relationship of knowledge dissemination, and at the same time, it builds two realistic values of economic benefits and knowledge benefits for both parties [24, 25].

Knowledge is divided into subjective knowledge and objective knowledge [26]. Knowledge or thinking in the subjective sense includes mental state, state of consciousness, or the intention of behavior or reaction; knowledge or thinking in the objective sense includes problems, theories, and arguments [27]. Simply put, objective knowledge is knowledge without cognitive objects and has nothing to do with claiming to know or opposing it. There are currently two types of empirical scientific knowledge. One is to describe, explain, and test conclusions and inductive knowledge in the sense of "natural events", and the other is to conduct a systematic and critical investigation or interpretation of phenomenological experience knowledge in the sense of phenomenon content [28]. The theoretical point of view is that knowledge can be divided into actual knowledge and value knowledge. Real knowledge is a universal law that does not change with discipline, especially natural science knowledge. Value knowledge has the personal trace of the cognitive subject; that is, the cognitive object is the fact. Knowledge is processed based on knowledge such as

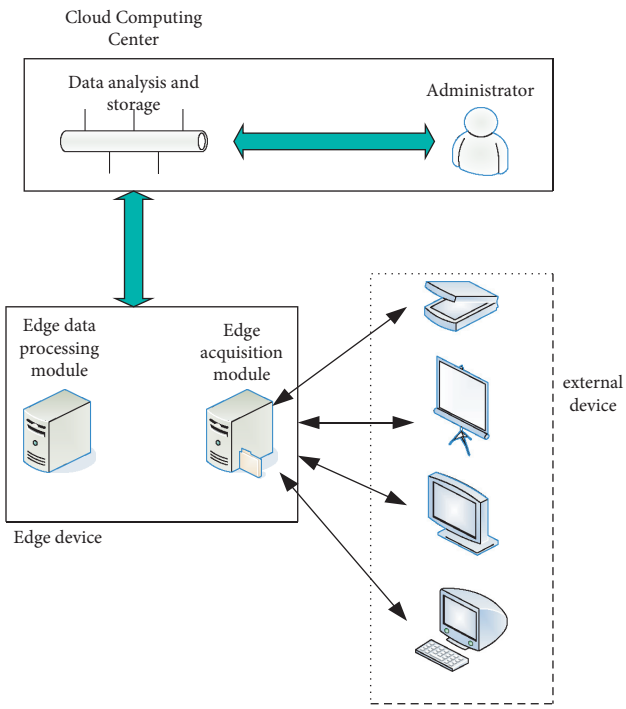

FIGURE 1: System hardware framework.

experience, ideas, and inspiration. Real knowledge and knowledge of value are scientific and not wrong at the current level of social knowledge. The former can help the public understand the natural world more accurately. Compared with the traditional knowledge of K12, the knowledge of the payment knowledge platform is mostly value knowledge, so the role of improving the social adaptability of the public is more obvious. The model diagram of the knowledge payment platform is shown in Figure 2.

2.3. Delay Theory Model in SD-CEN Architecture. Dividing tasks are reasonably according to the ratio, and offloading the subtasks to distributed parallel computing of each MEC device has become an urgent problem in the SD-CEN architecture. Modeling is as follows:

$$t = \max\left\{\frac{\delta_i \text{Task}}{c_{v1}} + W_{vi,vj} m_{vi,vj}\right\} + \frac{\text{Task}_{\text{pre}}}{C_c} + W_{vi,c}. \quad (1)$$

In order to optimize the service response delay and achieve the goal of minimum service response delay, the construction of the service response delay based on the SD-CFN network architecture can be expressed as follows:

$$\min \max\left\{\frac{\delta_i \text{Task}}{C_{vi}} + W_{vi,vj} m_{vi,vj}\right\} + \frac{\text{Task}_{\text{pre}}}{C_c} + W_{vi,c}$$
$$i, j = 1, 2, \ldots, k, \quad (2)$$
$$s.t. m_{vi,vj} = \begin{cases} 1, & \delta_i \neq 0 \\ 0, & \delta_i = 0 \end{cases} \sum_{i=1}^{k} \delta_i = 1.$$

The total service delay t can be expressed as follows:

$$t(\text{TA}) = \max\left\{\frac{\text{Task}_1}{C_{v1}} + w_{vi,vi} m_{vi,vi}, \ldots, \frac{\text{Task}_k}{C_{v_k}} + W_{vi,vk} m_{vi,vk}\right\} + \frac{\text{Task}_{\text{pre}}}{C_c} + w_{vi,c}. \quad (3)$$

The solution of the task allocation coefficient can be transformed into the solution of the vector TA, so (3) is modeled as the following optimization problem:

$$\min\{t(\text{TA})\}, \quad \text{TA} \in I, \quad (4)$$

$$s.t. \text{TA}(i) \geq 0,$$
$$\sum_{i=1}^{k} \text{TA}(i) = \text{Task}, \quad (5)$$

In (4), I represents the search space of the feasible solution TA, which is expressed as follows:

$$I = \prod_{i=1}^{k} [\text{Task}_{i\,\min}, \text{Task}_{i\,\max}] = \prod_{i=1}^{k} [0, \text{Task}]. \quad (6)$$

Using the firework algorithm to solve the optimization, (4) becomes the firework solving equation. The explosion radius Ai and the number of explosion sparks Si of each firework TAi are calculated as follows:

$$A_i = A \times \frac{t(\text{TA}_i) - t_{\min} + \varepsilon}{\sum_{i=1}^{N} (t(\text{TA}_i) - t_{\min}) + \varepsilon}, \quad (7)$$

$$S_i = Q \times \frac{t_{\max} - t(\text{TA}_i) + \varepsilon}{\sum_{i=1}^{N} (t_{\max} - t(\text{TA}_i)) + \varepsilon}. \quad (8)$$

In order to prevent fireworks with high fitness values from generating too many explosion sparks, and fireworks with lower fitness values will not produce too few sparks, the number of explosion sparks produced by each firework needs to be limited, as shown below:

$$\hat{S}_i = \begin{cases} \text{round}(a^* Q), & S_i < aM, \\ \text{round}(b^* Q), & S_i > bM, a < b < 1, \\ \text{round}(S_i), & \text{others}, \end{cases} \quad (9)$$

where a, b are both constants.

The selected z dimensions are calculated as follows:

$$z = \text{round}(d^* U(0, 1)). \quad (10)$$

The selected z dimensions form the set zs, and the resulting explosion spark is expressed as follows:

$$\text{T}\hat{A}_{ik} = \text{TA}_{ik} + A_i \times U(-1, 1), \quad k \in zs. \quad (11)$$

Update the value of this dimension according to the following formula:

$$\text{T}\hat{A}_{ik} = \text{TA}_{\text{LB},k} + \left|\text{T}\hat{A}_{ik}\right| \text{mod}\left(\text{TA}_{\text{UB},k} - \text{TA}_{\text{LB.}k}\right). \quad (12)$$

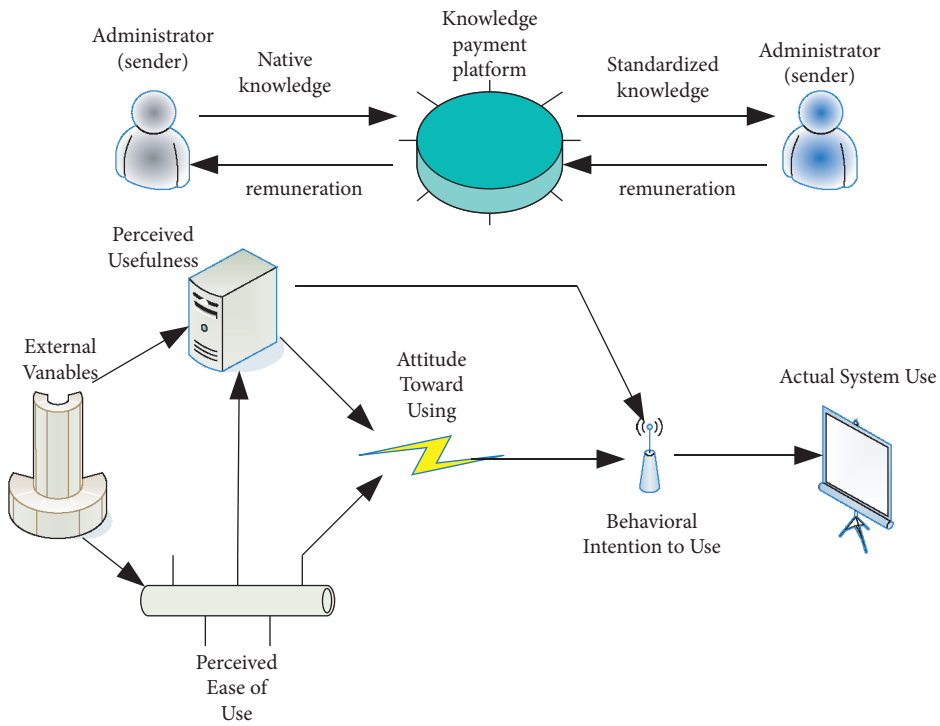

Figure 2: Knowledge payment platform model diagram.

The k-th dimension of the generated Gaussian mutation spark is calculated as follows:

$$\mathrm{TA}_{ik}^{'} = \mathrm{TA}_{ik} \times N(1,1). \tag{13}$$

From the current generation of fireworks, explosion sparks and Gaussian mutation sparks, select N fireworks as the new population to enter the next generation, and the fireworks individuals with the smallest fitness value will be definitely selected to enter the next generation. In order to maintain the diversity of the population, the remaining $N-1$ individuals are selected according to the roulette selection algorithm. The probability is calculated as follows:

$$P(\mathrm{TA}_i) = \frac{R(\mathrm{TA}_i)}{\sum_{\mathrm{TA}_j \in K} \mathrm{TA}_j},$$
$$R(\mathrm{TA}_i) = \sum_{\mathrm{TA}_j \in K} d(\mathrm{TA}_i - \mathrm{TA}_j) = \sum_{\mathrm{TA}_j \in K} \left\| \mathrm{TA}_i - \mathrm{TA}_j \right\|. \tag{14}$$

In the above calculation task offloading strategy based on the firework algorithm, it is necessary to obtain the total calculation tasks, the computing power, and communication resources of the cloud server and the MEC device in advance. Therefore, it is very necessary to introduce a central control node into the network to obtain the information of the entire network. The entire algorithm model introduces the SDN controller as the central node in the cloud-edge computing network architecture. The SDN controller collects the information of all devices, runs the firework algorithm to formulate the optimal computing task offloading strategy, and delivers the strategy to each MEC device through the flow table. Next, start the experiment.

2.4. Edge Computing. Edge computing refers to the use of an open platform that integrates network, computing, storage, and application core capabilities on the side close to the source of things or data to provide the nearest-end services nearby. Its applications are initiated on the edge side to generate faster network service response and meet the basic needs of the industry in real-time business, application intelligence, security, and privacy protection. Edge computing is between physical entities and industrial connections, or at the top of physical entities. While regarding cloud computing, you can still access the historical data of edge computing.

Automation is actually a "control" as the core. Control is based on "signal", while "calculation" is based on data. More meaning is "strategy" and "planning." Therefore, it focuses more on "scheduling, optimization, and routing." Just like the dispatching system of the national high-speed rail, every increase of the number of trains will cause the adjustment of the dispatching system, which is based on time and node operations and planning issues. The application of edge computing in the industrial field is more of this type of "computing."

Simply put, traditional automatic control is based on signal control, while edge computing can be understood as "information-based control".

3. Experiment and Analysis of Continuous Use Behavior of Knowledge Payment Platform Based on Edge Computing under Mobile Information System

3.1. Short Length to Adapt to Fragmentation Time. The fragmentation of Internet information leads to fragmentation of audience time and attention. Fragmented learning has become the mainstream. Therefore, fragmentation and dissemination of system knowledge are more in line with the audience's learning habits and reduce the effort of learning. The audiences of payment-knowledge platforms are generally busy, and the characteristics of fragmentation are more prominent. Figure 3 shows the duration of the unit paid course.

Through the analysis of the duration of paid courses of different APPs, it is not difficult to see that the main course time of APP1 is concentrated in the daytime and less time on weekends, while the course time of APP2 is mainly concentrated in the evening and weekends. This is better for learners.

The sample data of the system is shown in Figure 4.

The annual distribution of the number of articles published on the domestic and foreign knowledge payment platform research are shown in Figure 5.

The scatter diagram of the rotating component matrix is shown in Figure 6.

The descriptive statistics of each variable are shown in Figure 7.

3.2. Sample Description. Cultural capital theory believes that cultural consumption behavior is not only a way to embody self-identity, but also a social class reproduction strategy adopted to express one's own social identity and to occupy a more favorable social position and is a channel to achieve self-improvement. Therefore, the acquisition of cultural capital is extremely utilitarian, and it is an effort to obtain more material capital, although the "concealment and secrecy" of cultural capital investment may conceal the utilitarian characteristics of its behavior. For the tools used in the actual statistical process, EXCel is generally used to perform statistics and analysis of relevant data. Table 1 is a summary of several categories of paid knowledge.

From the above analysis of the content of Himalaya FM, iGet, and Zhihu Live, it can be seen that the three models use paid subscription, online Q and A, and online lectures as their core knowledge sharing models. In terms of the breadth and depth of content, these three platforms involve all aspects of life and work and have different content biases: the knowledge on these three platforms is both popular and professional, multilevel, and diversified. The content meets the different needs of users, and the trend of verticalization and IPization is obvious. Table 2 is a comparative analysis table of dissemination content.

The comparative analysis of the communication effects of the three platforms is shown in Table 3.

The qualifications of Zhihu Live speakers are shown in Table 4.

3.3. Node Address. Compared with wired networks, wireless networks have disadvantages such as weak anti-interference ability. The ZigBee network in the system uses a tree-like network topology that is more convenient to manage. The address of the sensor node in the ZigBee network can be determined by a distributed routing algorithm, and with the continuous addition of nodes, a stable tree network is formed. The following briefly introduces the formation process of the ZigBee network to realize the formation of the network topology on the mobile terminal. The corresponding relationship list of each node is shown in Table 5.

By looking up the node names in the above table, we can easily obtain the corresponding node address and calculate the top node address corresponding to it by adding the ZigBee tree network to the node address.

Several common network protocols are as follows

TCP/IP: in order to realize the interconnection between different networks, the US Department of Defense developed the TCP/IP architecture and protocol from 1977 to 1979.

NetBEUI: it is an enhanced version of the NetBIOS protocol, which has been adopted by many operating systems, such as Windows for Workgroup, Win 9x series, and Windows NT.

IPX/SPX protocol: it was originally a protocol developed by Novell dedicated to NetWare networks, but it is also very commonly used—most of the games that can be connected support the IPX/SPX protocol, such as StarCraft and Counter-Strike.

The last one is the SLIP protocol.

The calculation consumption comparison of the four protocols is shown in Table 6.

The improved protocol increases the computational consumption required by the user (mobile terminal) and the A and B protocols in the registration phase and the login phase, but it increases the protection of the user's identity ID and avoids the storage of confidential parameters in plain text.

Relevant classifications are made for the samples: gender, age, and education level are classified; gender is classified according to men and women, and age is classified based on 18, 30, and 40 years. The education level is classified according to the dividing line between undergraduate and master.

The basic characteristics of the sample are shown in Table 7.

From the perspective of gender distribution, there are 254 males in the questionnaire, accounting for 49.4% of the total, and 260 females, accounting for 50.6% of the total. The ratio of men to women is not much different, almost the same, but the number of women is slightly higher than the number of men.

From the perspective of age distribution, there are 98 people under the age of 18 in the questionnaire, accounting for 19.1% of the total, 201 people aged 18–29, accounting for 39.1% of the total, and 142 people aged 30–39, accounting for 27.6% of the total number of people; there are 73 people over

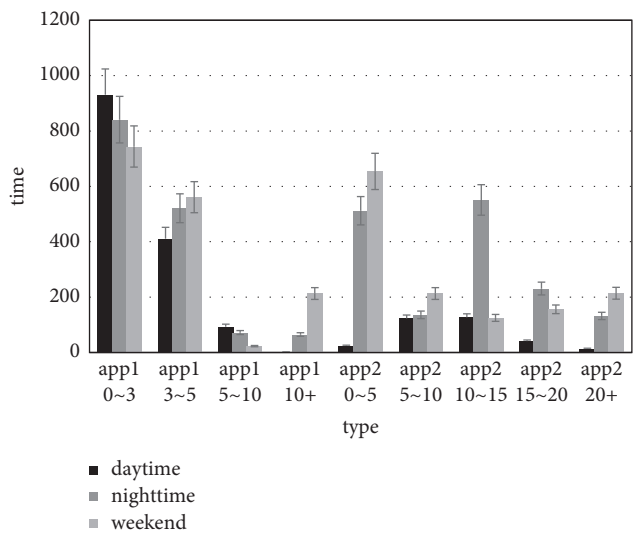

Figure 3: Unit paid course duration.

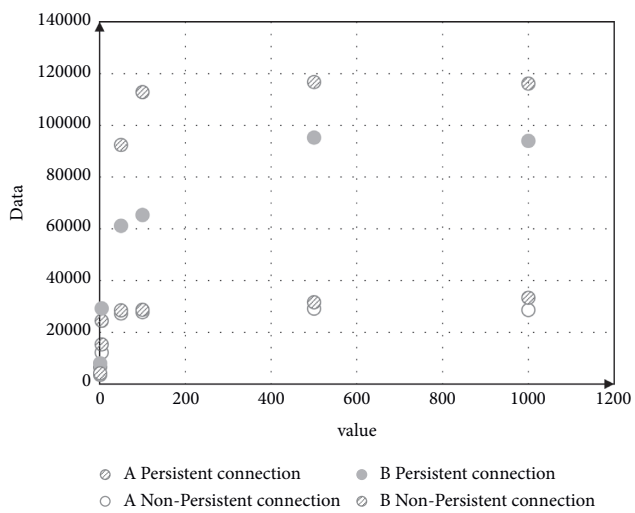

Figure 4: Number of data packets received by the node per second.

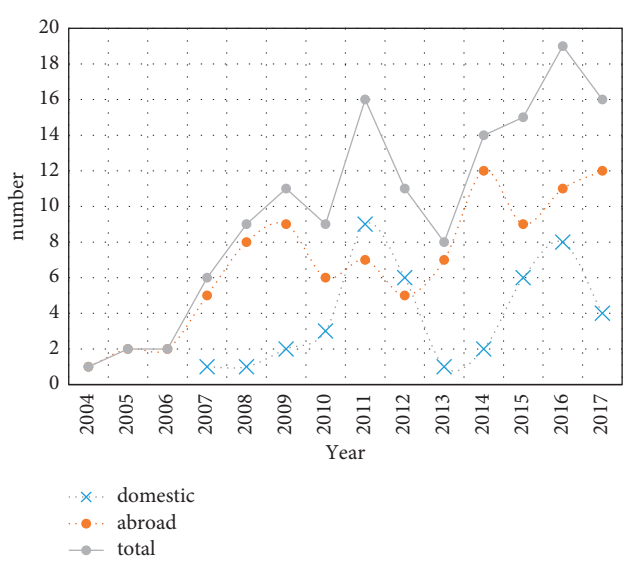

Figure 5: Paid knowledge platforms at home and abroad.

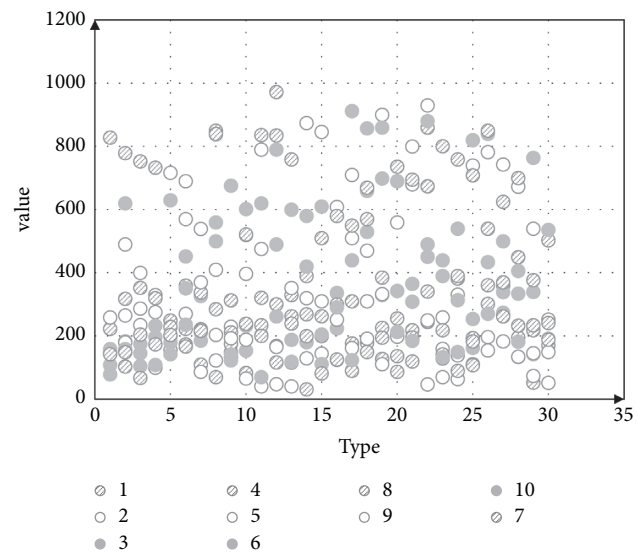

Figure 6: Rotating component matrix scatter plot.

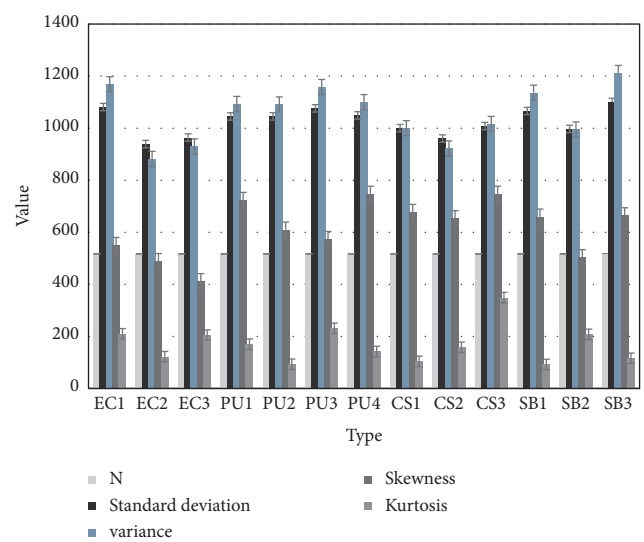

Figure 7: Descriptive statistics of each variable.

40 years old, accounting for 14.2%. It can be seen from the data that the sample age is mainly concentrated in the 18–29 years old, followed by the 30–39 years old; the sample age is biased towards young people. Such distribution characteristics are mainly related to the characteristics of the paid education platform itself, and young people are more likely to accept this emerging education. The data show that the vast majority of users who use paid knowledge platforms are mainly undergraduates. This distribution structure is mainly because the number of people with a bachelor's degree in China is much higher than the number of people with a master's degree or above; the second is because of the recycling. The questionnaire is mainly an electronic questionnaire. People with higher education are more likely to go online than those with lower education. Thirdly, people with higher education are more likely to accept new things and can keep up with market trends.

Table 1: Himalaya FM, iGet, Zhihu, and ZXYD paid course classification.

	Himalaya FM	iGet	Zhihu	ZXYD	Amount
Personal promotion	19	26	19	17	81
Parent-child education	43	3	7	0	53
Humanity history	24	10	2	0	36
Business finance	14	10	2	8	34
Emotional psychology	10	2	9	8	29
Foreign language sharp goods	9	1	5	0	15
Music life	7	1	4	0	12
Comic opera	3	0	0	0	3

Table 2: Comparative analysis table of dissemination content.

Disseminate content	Himalaya FM	iGet	Zhihu
Content form	Free/paid subscription	Q&A, community	Consultation, bookstore
Content scale	Over 10,000 paid courses	—	5000 lives
Content breadth	Top ten categories of boutique area	Ten commonly used categories	17 categories
Content depth	PUGC-based, utilitarian, high quality and depth, IP-based	UGC, strong purpose, strong practicability, vertical IP	PUGC-based, utilitarian, high quality and depth, IP-based
Content bias	Finance, emotion, literature	Health, workplace, popular science, psychology	Education and Internet

Table 3: Comparative analysis of the communication effects of the three platforms.

Spread effect	Himalaya FM	iGet	Zhihu
Daily active users	873.64	1.11	321.05
Number of starts per person per day	4.68	3.7	5.35
Average usage time per person per day	22.92	17.6	34.71
User experience	The boutique area has high audio quality, many usage scenarios, and a good community atmosphere	The early stage is too entertaining to produce a sense of boredom. After the improvement, the knowledge is enhanced and the community atmosphere is general	The live quality is high, the interaction efficiency is high, and the community atmosphere is good

Table 4: Qualifications of Zhihu Live speakers.

Topic of live	Speaker qualification
Psychology	Certificate of master's degree or above in psychology, certificate of national registered psychologist, certificate of employment in psychiatric hospital, certificate of employment in psychology clinic
Medical and health	Front desk blue label certification, relevant work certificate, medical qualification certificate
Finance and economy	CFA/CPA/FRM/RFC
Commercial finance/manager finance	Registered financial planner, financial planner, national financial planner, etc.
Legal	Legal professional qualification certificate, court work certificate, lawyer professional qualification certificate, lawyer practice certificate
Workplace	Hard skills or soft skills related certificates
Education	Proof of passing a certain professional title examination, etc.
Lifestyle	Fitness coach, medical practitioner, interior decoration designer certificate, contract photographer of photography agency, first-class architect, etc.
Tourism	At least one Q and A related to tourism edited and included
Music, film and games	Certificate of practice related to the field, etc.
Delicacy	Currently only accept invited guests

Table 5: Node relationship table.

Node name	Node address	Top node address
A	0 × 0000	0 × 0000
B	0 × 0001	0 × 0000
C	0 × 0025	0 × 0000
D	0 × 0049	0 × 0000
E	0 × 0002	0 × 0001
F	0 × 0026	0 × 0025
G	0 × 0027	0 × 0025
H	0 × 0003	0 × 0002
I	0 × 0004	0 × 0002

Table 6: Comparing the computational cost of the four protocols.

Protocol	Registration stage		Login authentication stage		
	Users	Gateway (H)	Users	Gateway (H)	Terminal node (H)
A protocol	—	3	3H	4	1
B protocol	1H	5	5H	5	1
C protocol	1H	3	7H	7	3
D protocol	2H	3	5H	5	1

Table 7: Basic characteristics of the sample.

Variable	Measurement item	Frequency	Frequency rate
Gender	Male	254	49.4
	Female	260	50.6
Age	Under 18	98	19.1
	18–29	201	39.1
	30–39	142	27.6
	Above 40	73	14.2
Education	Under undergraduate	174	33.9
	Undergraduate	275	53.5
	Master's degree or above	65	12.6
Monthly income	Under 2000	169	32.9
	2000–3000	112	21.8
	3001–5000	120	23.3
	Above 5000	113	22.0

4. Discussion of Continuous Use Behavior of Knowledge Payment Platform Based on Edge Computing under Mobile Information System

4.1. Validity Analysis. Validity test is mainly used to test whether the accuracy of the sample can effectively reflect the relationship between different variables. Generally speaking, the higher the validity of the measurement is, the more accurately the measurement result can reflect the degree of confirmation of the measurement elements. This article will examine the validity from two aspects: the validity of the content and the validity of the structure.

Content validity is also called usage validity, empirical validity, surface validity, or logical validity. The main statistical questionnaire data do not cover all the content that the researcher wants to study. Usually the score of a single object is used to reflect all the correlation coefficients of the total score of the object. If the correlation coefficient is not significant, it means that the explanatory power of the item is low, and the item must be eliminated. Since most of the latent variables in this study refer to the existing foreign literature, citing more mature scales, combined with expert evaluation and user in-depth interviews, the final scale is obtained after analysis, so its validity is effective.

Structure validity is an important indicator to judge whether a scale can measure variables. The text mainly uses convergence validity and discretion to test validity. Convergence validity is used to measure the degree of correlation between measurement elements of the same variable. If the correlation is high, the convergence validity is good. Instead, the measurement data must be corrected, usually using a load factor loader for testing. Discrete validity, also known as discrete validity, is used to measure the degree of correlation of measured data between different variables. The correlation between the measurement elements must be very low. Generally speaking, the average output variable of each latent variable on the measurement scale should be greater than the latent variable. Through the common variance of the variable and other latent variables or the average value of the correlation coefficient, the measurement scale has good resolution. Before analyzing the sample data, KMO test and Bartlett ball test will be performed on the collected sample data to confirm whether the sample is suitable for exploratory factor analysis. The value of KMO statistic is between 0 and 1. The closer the KMO value to 1, the stronger the correlation between the variables, and the more suitable the initial variables for factor analysis. Conversely, the closer the KMO value to 0, the weaker the correlation between the variable and the initial variable, which is not suitable for factor analysis.

4.2. Overview of RFID Technology. Perception technology can also be called information collection technology, which is the basis for the realization of the Internet of Things. Currently, information collection mainly uses RFID tags and

readers, EPC tags and readers, various sensors (such as temperature sensors, sound sensors, vibration sensors, and pressure sensors), GPS, and cameras, as well as complete data perception, identification, collection, and collection of information and control facilities for IoT applications. The perception technology used in mobile care systems is RFID (Radio Frequency Identification), which is a communication technology that does not use visual or mechanical contact to identify the system and a specific target.

The radio signal can be converted into an electromagnetic radio frequency field, and the data can be sent to the object through the tag to identify and monitor the marked object. According to the electromagnetic field emitted by the ID, certain tags can be activated during identification without the need for an additional battery. Some tags have their own power source and are modulated in a radio frequency electromagnetic field (which emits automatic radio waves). Tags store data electronically and can be identified within a few meters or first marked. The difference between barcodes is that the radio frequency technology does not need to be on the surface of the ID, and it can also be integrated into the object being monitored.

The signal emitted by the radio can be controlled by the electromagnetic field of the corresponding frequency, and the tag on the object transmits some data, which can be detected and identified. ID's electromagnetic field will make some tags get power without using another battery; some tags have their own power source and can automatically send radio signals. The tag mainly stores the data of the electronic storage device and can identify or send the first signal within a few meters. Unlike barcodes, radio frequency technology does not necessarily have to appear on the surface of the identifier, but can also be integrated into the object being monitored. According to the technology and structure used, readers can be divided into reading or reading/writing devices, which play the role of controlling and processing information in the RFID system. The reader usually consists of a transceiver, a connector, an interface, and a control unit. The implant and the reader usually use semi-two-way communication to exchange data. In actual operation, functions such as data collection and management such as object recognition and long-distance transmission can also be completed through Ethernet or WLAN. The information carrier of the RFID system is a transponder. When the reader sends the information, it first encodes the information, then selects the signal of a specific frequency to load, and then uses the antenna for external transmission. Such a pulse signal can be received from the electronic tag of the reader, formatted, decoded, and decrypted by a specific circuit on the chip, then judging what kind of command request is based on the result.

4.3. The Impact of Edge Computing on Customers' Continued Choice to Use Knowledge-Based Payment Platforms. In this scenario, the overall architecture of the edge computing system is divided into three parts: the edge device is used as the collection module, using web crawler technology, combined with the web code download module in the Python environment to complete data collection; the data processing module uses data processing and data integration related tools to send these data to the cloud computing center; the data storage module stores the data in the pre-reserved data tables through the MySQL database system. Among them, the data processing can be done by the edge device, or it can be processed by the cloud computing center after the data are uploaded to the cloud. Here, in order to maximize the advantages of the edge device, the edge device is selected to complete the data processing while capturing the data and then send the data to the cloud.

After the edge computing-based system is completed, the user's satisfaction will be analyzed in the form of a questionnaire and the variable characteristics are statistically analyzed.

The specific questionnaire recovery situation is shown in Table 8.

In order to explore the faster acquisition of platform information and improve users' satisfaction with the platform and to promote users to continue to use the knowledge payment platform, the content of variable characteristics is designed. The sample size required by each statistical method is different, and the study of structural equation models also needs to pay attention to the problem of this capacity. Maximum likelihood estimation is the most commonly used method in structural equation models. Generally, the number of samples is 100 as the lowest limit. A total of 514 questionnaires were collected in this article, far exceeding the minimum number of samples for studying structural equation models. In addition, the maximum likelihood estimation method can only be used when the measured variable is a continuous variable and obeys a multivariate normal distribution. Researchers usually use skewness and kurtosis to analyze whether the sample data conforms to the normal distribution. When the absolute values of skewness and kurtosis are both less than 2, we think that the sample data obey the normal distribution and can be estimated by the maximum likelihood method for data analysis. This paper uses Spss24.0 to measure the skewness and kurtosis of the sample data.

SPSS software: SPSS is the world's first statistical software that uses a graphical menu-driven interface. Its most prominent feature is that the operation interface is extremely friendly, and the output results are beautiful. It displays almost all functions in a unified and standardized interface. It uses Windows to display the functions of various data management and analysis methods, and the dialog box displays various function options. Users only need to master certain Windows operating skills and be proficient in statistical analysis principles, and they can use the software to serve specific scientific research work. SPSS uses a method similar to EXCEL form to input and manage data. The data interface is more general, and data can be easily read from other databases. Its statistical process includes commonly used and more mature statistical processes, which can fully meet the work needs of nonstatistical professionals. The output result is very beautiful, and it is stored in a special SPO format, which can be transferred to HTML format and text format. For users who are familiar with the old version

Table 8: Specific questionnaire recovery.

Distribution form	Quantity issued	Number of recycling	Number of valid questionnaires	Effective recovery rate (%)
Paper questionnaire	250	219	212	84.8
Electronic questionnaire	302	302	302	100
Amount	552	521	514	93.1

Table 9: Variable feature statistics.

Variable	Measurement item	Standard deviation	Variance	Skewness		Kurtosis	
				Statistics	Error	Statistics	Error
Expected confirmation	CO1	0.780	0.609	−0.197	0.185	0.067	0.368
	CO2	0.806	0.646	−0.238	0.185	0.521	0.368
	CO3	0.862	0.743	−0.422	0.185	0.115	0.368
Perceived usefulness	PV1	0.949	0.901	−0.288	0.185	0.129	0.368
	PV2	0.034	0.070	−0.412	0.185	−0.118	0.368
	PV3	0.951	0.904	−0.915	0.185	0.133	0.368
Satisfaction	SA1	0.958	0.918	−0.022	0.185	−0.041	0.368
	SA2	0.803	0.644	−0.525	0.185	0.752	0.368
	SA3	0.823	0.677	−0.860	0.185	0.400	0.368
Platform trust	TR1	0.975	0.951	−0.557	0.185	0.351	0.368
	TR2	0.978	0.951	−0.810	0.185	0.812	0.368
	TR3	0.200	0.209	−0.085	0.185	−0.587	0.368
Direct network externalities	DNE1	0.674	0.455	−0.963	0.185	0.264	0.368
	DNE2	0.601	0.362	−0.498	0.185	−0.632	0.368
	DNE3	0.607	0.368	−0.601	0.185	0.308	0.368
	DNE4	0.652	0.425	−0.610	0.185	0.537	0.368
Indirect network externalities	CNE1	0.283	0.173	0.871	0.185	0.151	0.368
	CNE2	0.993	0.987	0.611	0.185	−0.009	0.368
Habit	HA1	0.898	0.807	−0.237	0.185	−0.219	0.368
	HA2	0.979	0.958	−0.197	0.185	−0.450	0.368
	HA3	0.924	0.853	−0.029	0.185	−0.175	0.368
	HA4	0.949	0.900	−0.936	0.185	−0.555	0.368
Continuous use behavior	CUB1	0.983	0.966	−0.647	0.185	0.015	0.368
	CUB2	0.956	0.913	−0.554	0.185	0.387	0.368
	CUB3	0.930	0.866	−0.687	0.185	−0.328	0.368

of the programming operation mode, SPSS also specially designed a grammar generation window. The user only needs to select each option in the menu and then press the "Paste" button to automatically generate a standard SPSS program, a great convenience for middle and advanced users.

SPSS for Windows is a combined software package that integrates data entry, sorting, and analysis functions. Users can select modules according to actual needs and computer functions to reduce the requirements for system hard disk capacity, which is conducive to the popularization and application of the software. The basic functions of SPSS include data management, statistical analysis, chart analysis, and output management. The SPSS statistical analysis process includes several categories such as descriptive statistics, mean comparison, general linear model, correlation analysis, regression analysis, log-linear model, cluster analysis, data reduction, survival analysis, time series analysis, and multiple response. There are several statistical processes in the regression analysis, such as linear regression analysis, curve estimation, logistic regression, probit regression, weighted estimation, two-stage least squares, nonlinear regression, and other statistical processes, and each process also allows users to choose different methods and parameters. SPSS also has a special drawing system, which can draw various graphics based on data.

The results are shown in Table 9. The absolute values of the skewness and kurtosis of all variables are less than 2, which meets the normal distribution of the data and meets the requirements of structural equation analysis.

The results are shown in the table. It can be seen that the standardized path coefficient from expected confirmation to user satisfaction is 0.45, and the significance coefficient P is less than 0.01; the standardized path coefficient from expected confirmation to perceived usefulness is 0.80, and the significance coefficient P is less than 0.01, and the degree of confirmation indicates that the platform constructed in this article has a positive effect on perceived usefulness and user satisfaction.

5. Conclusions

The experimental results show that the continuous use behavior analysis of the edge computing-based knowledge

payment platform under the mobile information system proposed in this paper is better than the traditional knowledge platform, and the statistical indicators are more comprehensive. The article adds an explanation about the computing task offloading strategy of the firework algorithm, mobile edge computing, and an overview of RFID technology. In terms of simplification and interpretation of the algorithm, the optimal task allocation ratio is solved according to the computing and communication capabilities of the MEC equipment. This article uses the questionnaire survey method and the comparative experiment method to analyze the rotating component matrix. The experimental results show that there are 98 people under the age of 18 in the questionnaire, accounting for 19.1% of the total, 201 people aged 18–29, accounting for 39.1% of the total, 142 people aged 30–39, accounting for 27.6% of the total, and 73 people over 40 years old, accounting for 14.2% of the total number. It can be seen from the data that the sample age is mainly concentrated in the 18–29 years old, followed by the 30–39 years old; the sample age is biased towards young people. The shortcomings of this article are as follows: (1) the amount of data collected in the sample is relatively limited. In future research, the experimental sample can be expanded to obtain the credibility of the research results. (2) The firework algorithm designed in this paper does not have separate control variables in the process of simplifying the algorithm. Although the actual experimental results did not have an impact, the reliability of the algorithm should be more rigorously studied in future research.

Data Availability

No data were used to support this study.

Conflicts of Interest

The authors declare that there are no conflicts of interest with any financial organizations regarding the material reported in this manuscript.

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