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Research in the Design of Cloud Service Platform for Tea Product Design Based on Consumers' Will in the Background of Blockchain

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Abstract. Traditional tea sets are biased on the design, manufacture and sale of handicrafts. In the context of Blockchain, the comparison of tea makers' consumer wishes and data statistics, combined with the design cloud service platform, will inevitably bring about a huge change in the design industry chain. Through two experiments, this paper reveals the relationship between consumer and product closeness, psychological distance and social distance. At the same time, based on the research and analysis of tea product design impact factor, it is uploaded to the product design cloud service platform. Let users mine design requirements, set up design teams, establish an open and shared industrial design, network interaction environment, and realize the design life cycle process through collaboration between front-end and back-end of the cloud service platform, combined with corresponding access technologies and virtualization technologies. Sharing and collaboration will also provide data and technical support for the breakthrough of the block industry chain in the later period.

1. Introduction

Blockchain is the most discussed topic in the industry at present. Its core is that each small "Block" is composed of a chain. The point-to-point transmission and encryption algorithm connects unit of transaction list-distributed data storage, Form a complete timeline industry chain. At present, the domestic industrial chain has taken shape, from platform services, security services to design services, as well as talent services and media terminals. The main areas of use in the block industry chain are smart contracts, intelligent trading, smart energy, intelligent supply chain, intelligent health record, smart passport, intelligent cross-border payment, smart home appliances, etc. According to the "2018 China Blockchain Industry White Paper" statistics, this application field will also have large-scale industrial application and expansion. As the core of various industries, industrial design and product design undoubtedly have great application space. This space will have greater development under the cloud service platform. Designing a cloud service platform as a service platform for cloud computing complication, software and platform can be used as service terminals, thereby using distributed data storage and platform transactions as a means to break through the traditional design BUG and achieve virtual reality of product design. The combination of the two, with its high reliability, versatility to achieve on-demand services and through socialized business crowd funding and other means to greatly reduce costs. Tea design is a product design category that favours traditional handicrafts. If the power of the cloud service platform is introduced, it will inevitably lead to design innovation and crowd funding, thus completing the value of its block industry chain. Based on the background of Blockchain,



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this paper uses consumer's willingness analysis as the argument of distributed data storage, attempts to establish networked collaborative design, and introduces customer participation in design decision-making and multi-objective quantitative evaluation system in designing cloud service platform. Through the comparison of consumers' willingness in social space and the field investigation and data statistics of tea design, the design influence factors of tea products are quantified and uploaded, so as to promote the BLOCK base point of the design cloud service platform, and draw a multi-objective creative design pair. They shared value of product design cloud platforms. Through the data exchange of WeChat, website and a mobile phone application APPS and other social platforms, the legal and brainstorming design spread, and finally improve the design of tea set products from the perspective of traditional crafts, integrate the tea set design into the cloud service platform, and improve this Block industry chain in the design field.

2. Comparison of consumer wishes for tea design

2.1. *Psychological distance in the network environment affects consumers' willingness to preset*

The traditional tea set products were very slow in the initial stage of the establishment of e-commerce. Many consumers have maintained a wait-and-see attitude towards the traditional tea products e-commerce, and dare not try it easily [1]. Many scholars start from different dimensions of psychological distance and explore their influence on the willingness to purchase online. Martin et al. explored how time distance affects consumers' willingness to purchase online [2]. Henderson et al. proposed that spatial distance and time distance have similar effects on human behaviour. The spatial distance is close, people tend to use specific thinking, and when the distance is far away, people tend to use abstract thinking [3]. Tangari concludes that there is an interactive influence between time distance and social distance on the purchase intention of environmentally friendly energy-saving products [4]. Lee proposes that psychological distance increases the willingness of consumers to purchase online by affecting trust [5].

Nowadays, a new model of e-commerce for tea products comes into being, namely the tea business e-commerce in the socialized business environment. It is the process of e-commerce of tea products by retail individuals through social platforms, and the tea products under the socialized business environment. E-commerce is an emotional sale. When sellers sell goods, they are also selling the feelings between friends. At present, there is relatively little research in the theoretical field: whether the acquaintance relationship can better eliminate the consumer's concern about online shopping tea products, thereby increasing consumers' willingness to purchase. Therefore, studying the influencing factors of consumers purchasing tea products on social platforms has become an urgent need for the development of e-commerce of tea products under the current socialized business environment.

2.2. *Experimental design and results analysis*

2.2.1. *Experimental preparation.* Randomized grouping: The biggest difference between the experimental method and other empirical methods are the randomization of the subjects. In order to avoid the experimental result error caused by the non-randomized groups, this time, the online experiment was used, and the subjects were randomly grouped using the questionnaire topic. Since there are several sub-experiments in this paper, it is necessary to divide the subjects into several groups.

2.2.2. *Experiment: The impact of social distance on purchase intention.* The purpose of the experiment was to explore the impact of the social distance between sellers and consumers on the willingness of online shopping. Verification Hypothesis 1: In the socialized business environment, the closer the seller is to the consumer society, the greater the willingness of consumers to purchase tea products.

1. Experimental design. Experiment adopts inter-group design (social distance between seller and consumer: close distance, long distance), in which social distance is manipulated as an independent

variable. Participants completed the questionnaire online, as required. The questionnaire was randomly divided into two groups by setting randomizes questions. In the first experiment, the two groups of participants will read different text materials, aiming to create different online shopping tea sets for the subjects, and let the two groups complete the questionnaire under different social distance manipulation.

(1) Variable measurement and manipulation test. First, the experiment sets the randomization problem through the questionnaire and divides the subjects into 2 groups (social distance: near, far). In this study, the experimental purpose was achieved through the manipulation of the social distance of the independent variables. The two groups of subjects were treated differently, which made them feel different from the social distance of the seller. In the first experiment, a classmate of the subject's imaginary unit sold the tea set on the QQ group, and was planning to purchase the tea set product through the Internet. The reasons for setting this scenario are as follows: The students are the main people who are in contact with each other, and the relationship between the students is relatively stable. At the same time, the QQ group is currently the largest social platform in China, with the largest number of users, and is widely used in work and life; With the rise of social commerce, buying tea products on the Internet is no longer unfamiliar to everyone, and it is entirely up to them to choose which seller to buy tea products. Therefore, the social distance between sellers and consumers can be reasonably manipulated through the setting of experimental scenarios.

Participants in the Near Social Distance group will read the following text:

“Assume that your best friend sells tea sets through the QQ group or WeChat group, the price is within your acceptable range, and you have recently planned to buy tea sets. Will you buy them?”

Participants in the Far Society Distance Group will read the following text:

“Assume that your newly-recognized classmates sell tea sets through the QQ group or WeChat group, the price is within your acceptable range, and you have recently planned to buy tea sets. Will you buy them?”

The two kinds of text materials are manipulated by different social distances to achieve the purpose of the experiment. The "best friend of the unit" corresponds to the manipulation of the social distance, and the "new classmate" corresponds to the remote social distance manipulation. The social distance manipulations commonly used by scholars before are: self, friends, members of the group, intimate roommates, etc; typical remote social distance manipulations are: others, strangers, members outside the group, same-sex students who are known in the public elective class. How to judge whether an experiment is successful depends on whether its manipulation achieves a significant difference. How to manipulate to achieve the effect is the difficulty of the experiment. The reason why this study defines the manipulation of social distance as “the best friend in the unit” is because this kind of processing can bring the social distance between consumers and sellers closer; the reason why the manipulation of far distance is defined as “new classmates” "Because the new students came to the first time, the relationship with the classmates was relatively unfamiliar, which could widen the social distance between consumers and sellers."

The manipulation of the independent variables is as follows: The near social distance group replies “How close is your friend and your intimacy in the unit”, the distance from the distance group to answer “How close is your new classmate to you?” (1 means very alienated, 4 expresses very close).

In addition, the experiment also added the item to check the validity of the questionnaire, in order to exclude the invalid questionnaire and improve the credibility of the experimental results. The item set in the questionnaire is “Which reason may be that you are not willing to buy a tea set in the best classmate/new classmate of the unit”, this question is a fill-in-the-blank question, at least two items are listed.

(2) Measurement of the dependent variable. The dependent variable of the study is the willingness to purchase online tea products. After a lot of the literature review, the willingness to purchase online is defined as: The likelihood of consumers purchasing products or services over the Internet. The measurement of this variable is mainly based on the research results of Jaeki Song et al. [6]

2. Experimental results. The total number of questionnaires retrieved in the experiment was 90. According to the question of screening invalid questionnaires, 12 invalid questionnaires were excluded. According to the answering method, the use of more than 18 minutes will be regarded as the principle of invalid questionnaires, and 5 invalid questionnaires will be excluded. Therefore, the experiment rejected a total of 25 invalid questionnaires, 73 valid questionnaires, and the efficiency of the questionnaire reached 81.1%. The male to female ratio is close to 3:5, 29 males and 44 females.

(1) Manipulation check of independent variables. First, the participants in the questionnaire responded to the best friends of the unit (new students and their own relationship.) After the data collection, the study used the independent sample t test to test the social distance manipulation of the subjects, the close group The distance group showed a significant social distance difference ($P < 0.01$), and the social distance perceived by the short-distance group ($M = 5.35$, $N = 36$) was significantly higher than the social distance perceived by the distant group ($M = 4.11$, $N = 37$). From the above data, the manipulation of the social distance in Experiment caused a significant difference in the social distance between the two groups of participants and the merchants.

Table 1. Descriptive statistics of purchase intention

Social distance group	Sample size	Mean	standard deviation	standard error means
Near social distance	36	5.3494	1.56171	0.26037
Far social distance	37	4.1111	1.68959	0.26957

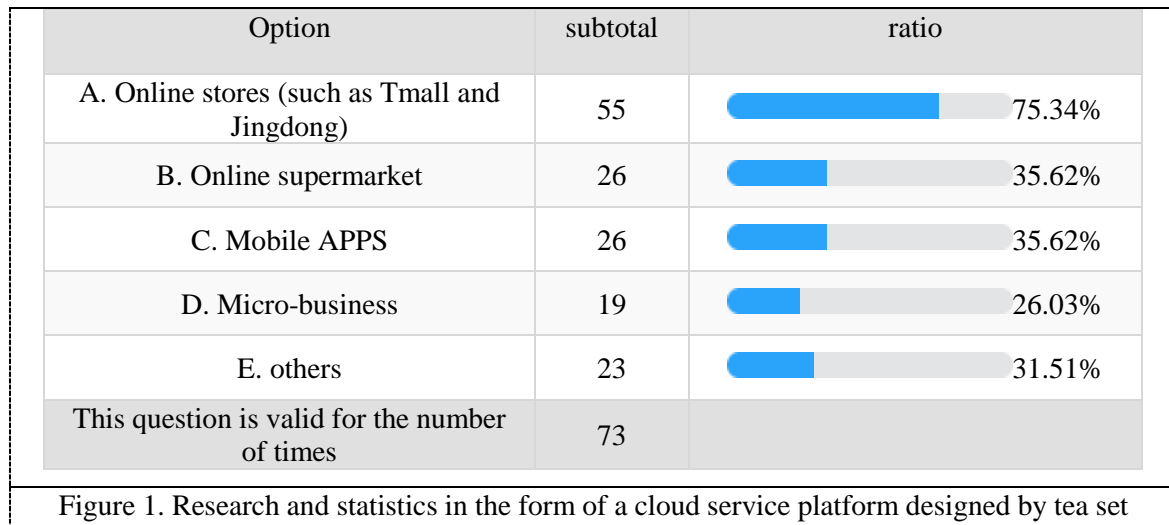
According to the survey data, experiment verifies the main effect of Hypothesis 1: The social distance between sellers and consumers on the willingness of online shopping tea products. Compared with the social distance, when the social distance is far away, people's willingness to purchase is weakened. At the same time, according to the survey data analysis, when the seller and the consumer are in close social distance, the seller tends to use figurative thinking, resulting in lower perceived risk, thereby further increasing the consumer's willingness to purchase; and when the seller and the consumer are far away from society Sellers tend to use abstract thinking, and the association of perceived risk is too abstract, resulting in increased perceived risk, which makes consumers' willingness to purchase decline.

Summary and Outlook: This experiment only verifies the impact of social distance on purchase intention. Social distance is only one dimension of psychological distance, and then other dimensions, such as time, distance, spatial distance and probability, will also have an impact on purchase intention.

3. Forecasting and Statistical Blockchain——Consumer Willingness of Tea Set Products under the Background of Internet of Things

The purpose of Experiment 2 is to predict and count the consumer's willingness of tea products under the background of Internet of Things, in order to facilitate the network statistics and data cloud achievement of the later consumers' willingness, paving the way for the research of tea service design cloud service platform.

In the data statistics, the survey audience will be classified, and through data comparison, the appearance, color, material, creativity, packaging and other aspects of tea set product design subdivision design points will be transmitted to the cloud platform, in order to carry out targeted product design for consumers and the market. At the same time, with the help of websites and mobile APPS applications, consumers can add and upload new design breakpoint data at any time to continuously improve the data and increase the credibility and extensiveness of data collection.



Integrated research and statistical data, the current demand for the largest consumer demand for tea design is: the appearance of individuality, the color of the national and simple style of the route, the style of ceramic materials. At the same time, consumers have higher requirements for the production process and precision of tea sets designed for tea sets, accounting for 63.01%. Secondly, the appeal of the design of tea sets accounted for 56.16%; once again, the appeal for integrating local cultural characteristics accounted for 46.58%; color, material, appearance, surface pattern decoration and functional improvement are less occupied. Uploading the above-mentioned series of factors to the design cloud service platform will undoubtedly greatly improve the design of the tea set. For the formal survey of the design cloud service platform, the main choice of consumers is the service platform built by network providers, accounting for the vast majority - 75.34%; the mobile application APPS and the network super are the second choice, accounting for 35.62%, Other forms accounted for 31.51%.

4. Product design cloud platform based on consumer wishes

Based on the previous consumer willingness comparison, design impact factor research and data uploading, the user sets up the design team after the cloud service platform releases the requirements, establishes the user database, translates the user requirements into evaluation goals, and builds a scheme design based on quality function configuration model. At the same time, the designer can use the data analysis of the product cloud service platform to conduct a user-evaluation network for the next tea product design. The multi-objective particle swarm optimization algorithm based on decision preference is used to conflict the tea product design and determine the optimal innovative design.

Under the support of internet technology, the creative design of networked collaboration has begun to transform into an economical industrial design cloud service platform [7]. According to the user's release requirements, the network virtual team [8] was established, and the ideas and effectiveness of the optimal tea design innovation were verified through the modules of creative factory, cooperation space and sharing station [9].

5. Conclusion

In the construction of the tea service product design cloud service platform, users can participate in the whole process of platform demand release, design team formation, project start, project progress and project end. With the cloud service platform as the application background, it provides effective resource support by building an industrial design interaction environment with open sharing and service innovation. Through the collaboration between the front-end and back-end of the cloud service platform, combined with the corresponding access technology and virtualization technology, the sharing and collaboration of the design life cycle process is realized. In the construction of the tea equipment product design cloud platform, the process model of the system construction network

evaluation product industrial design and evaluation is a core indicator. The model based on the cloud platform, through open sharing and service innovation of industrial design, interactive environment, gather information services, product design and all kinds of design knowledge base and other industrial design relevant resources, the early stage of the research and design for tea product scheme design optimization of the late group evaluation, process evaluation, such as the provision of effective resource support.

How to study the high efficiency and accuracy of tea set product design data collection and application on the cloud service platform is the next problem to be solved in this case. Future research will focus on reflecting users' personalized needs into the innovation process of designing cloud service platform, and combining cloud service platform with 3D printing personalized customization. Fundamentally improve the layout of the existing tea set design block industrial chain.

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