Retraction

Retracted: VR Technology in Marketing From the Perspective of Customer Experience

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VR Technology in Marketing From the Perspective of Customer Experience

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ABSTRACT Virtual reality technology is a new media technology. On the one hand, virtual reality technology has brought a brand-new impact on people's production and life. On the other hand, our understanding of virtual reality is far from enough, and its derived social problems, Academic issues and ethical issues need to be further explored, and use correct theories to promote and guide the further development of technology. In the process of market segmentation being considered as the core concept of marketing strategy, many scholars at home and abroad have conducted a lot of research on market segmentation. Based on the research results at home and abroad, this article uses factor analysis, cluster analysis, comparative analysis, and inductive deduction as research methods to establish an analysis model for the application of VR technology in marketing from the perspective of customer experience. Based on the application of VR technology in marketing from the perspective of customer experience, the research results show that after using the research method of this article, the data error rate is significantly controlled, and the data error rate is maintained within five percentage points, compared with previous studies The method data accuracy rate is increased by 15%, and the data accuracy rate is higher, which has certain practical value.

INDEX TERMS VR technology, comparative analysis, inductive deduction, cluster analysis.

I. INTRODUCTION

Virtual reality is one of the topics that has attracted much attention in consumer electronics exhibitions in recent years. Virtual reality technology is an emerging science and technology. Only with the rapid development of electronic computers, the gradual maturity of simulation technology, and the widespread application of artificial intelligence, can consumers feel the real situation through related VR equipment. Sociality is the most basic characteristic of human beings, and one of the basic needs to maintain interpersonal communication is social communication. In fact, people's communication, communication and emotional expression are completely different under different technologies and media. In other words, the emergence of new technologies will surely open up new avenues. American Business Week pointed out that the expansion of the company's products and ideas is playing an increasingly important role and will

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play a key role in further expanding the company's long-term development. Especially under this change, in the new market environment, virtual reality strategic marketing is undoubtedly the inevitable choice for enterprises to achieve sustainable development.

Compatibility between customers in a consumer environment can help marketing managers ensure that customer-to-customer interaction (CCI) between heterogeneous customers will not affect any customer's service experience. However, few people have noticed exceptions so far. The Ekpo A E study examines CCI under heterogeneity, which is very important for managing an increasingly diverse customer base. The Ekpo A E research presents the collision phenomenon of two worlds: FurTime and Kaleidoscape conference. FurTime is a fur-based annual meeting. The Kaleidoscape conference is an annual conference, mainly people from underrepresented ethnic groups who are interested in pursuing a doctorate in business disciplines [1]. Ekpo A E uses network diagrams and reflection theory to understand how CCI affects the role of marketing managers in CCI

in the form of cultural adaptation, competition, cooperation, cooperation and territorialism. Hutchinson K aims to understand how small and medium enterprise (SME) retailers adopt and implement loyalty card programs as a marketing management decision-making tool. Hutchinson K uses a qualitative and longitudinal case study design. Collect data from multiple sources, including semi-structured interviews, company file analysis, and internal observations of retail SMEs [2]. In the Internet of Things (IoT), consumer products such as coffee machines and smoke detectors are connected to the Internet, which effectively extends the Internet to the physical world. Such products can collect and share data in the user's environment, so their widespread appearance will affect the established concepts proposed in the existing marketing literature. In order to provide unique contributions, we will focus on customer relationship management, product life cycle management, and business model development, and discuss the implications of IoT products' enhanced capabilities in these areas. Through extensive analysis of current theoretical and practical developments, Decker R systematically summarizes ten research propositions. At the end of the article, the research results are summarized, and the future research direction of IoT marketing management is prospected [3].

In recent years, a characteristic of many countries is that certain territories have become increasingly important at the national and international levels. A region is regarded as the primary level in the development of the national economic system. At the regional level, the development and management of a territory is viewed from the perspective of its target groups such as consumers, residents, businesses, investors, authorities and tourists. In order to attract tourists, investment and talents, territories compete on a global scale. "In the process of deciding where to invest, "soft" factors such as image and reputation have become more and more important. These factors are the direction of strategic regional marketing. The concept of sustainable development originated from the recognition of the dangers of using natural resources. In the context of the process of seeking a new civilized model in order to implement a strategy to meet the needs of the existing population in the area, and to provide the same economy, to provide social and ecological opportunities for future generations. Skorobogatykh I tried to use the concept of strategic marketing management to demonstrate the feasibility of sustainable development [4].

Based on previous theoretical and practical application research, this article summarizes and summarizes the technical issues of VR application in market research, involving well-known works in marketing, management and other disciplines. Using factor analysis, cluster analysis, comparative analysis, and inductive deduction as research methods, established an analysis model of the application of VR technology in marketing from the perspective of customer experience, and studied the application of VR technology in marketing from the perspective of customer experience Application in [7], [8].

II. RESEARCH METHODS OF APPLICATION OF VR TECHNOLOGY IN MARKETING

A. APPLICATION OF VR TECHNOLOGY IN MARKETING

The practical activities carried out through virtual reality technology are usually based on the digital virtual environment, and the practical process is composed of the subject, intermediary and object dynamics. In the process of practice, the subject uses certain means and tools to directly or indirectly act on the object through a series of actions. Possibility of practice is the essence of virtual practice. Virtual practice realizes people's ideas and vision in fields that human technology has not yet reached, thus greatly expanding the scope of human practice. Therefore, there are certain differences between the three components of virtual practice and traditional human practice [9], [10].

In traditional practice, the subject is an independent and active behavior sender, the holder of the practical purpose, and the subject that transforms the object through practical tools. This shows that the subject of practice must be a person or organization that exists in physical space. In the cyberspace created by virtual reality technology, people's thinking, feeling, and actions are closely connected with virtual reality equipment. Sensing signals are received by equipment and highly intelligent computers, and then act on objects of virtual practice. The role in this virtual state has its own attributes and settings in a specific space, which cannot be said to be a derivative of reality. For example, in a game environment, users can have different names, occupations, ages, and genders, and even have special abilities that do not exist in reality. Of course, they can also have many different identities at the same time. At this time, although the subject of practice still completes the practical activities in accordance with the user's will and actions, it is no longer a real user, but a derivative formed by the combination of a computer and a user according to the established procedure. Some scholars call it "human-machine integration" [11], [12].

The object of practice is the objective thing and object that the subject has a purposeful function and transformation in practice. The object in virtual practice gets rid of the "reality" of the traditional practice object, and is a "finished product" of technology with virtuality. The object of virtual practice is essentially digital symbol information, and the object of practice is the arrangement and combination of this information after processing. At present, most of the virtual practice objects are virtual relational reality. Through virtual practice, mankind is eager to get experience and conclusions that cannot be obtained in actual practice. Advanced virtual reality technology can often create cyberspace comparable to reality, and to a certain extent show the potential existence of undiscovered objects to the subject [13].

B. FACTOR ANALYSIS

It is a statistical method that extracts common phenomena from multiple factors. For example, there are many indicators in the growth of adolescents, such as height, weight, grip strength, jumping, writing ability, calculation ability, music

level, etc. We found that these indicators are not independent, and often several indicators are at a high or low level at the same time. From a statistical point of view, these indicators have a strong correlation. Factor analysis is to find out the hidden factors behind these indicators and determine the coordinated changes of these indicators. These reasons are called common factors, or factors for short. Because it is called a common factor, the number of factors is less than the number of indicators. At present, it is generally believed that factor analysis originated from the two-factor theory of British psychologist Spearman [14], [15]. So far, factor analysis has become a relatively mature statistical method. Factor analysis in statistics requires that the indicator is a linear function of the factor, and its purpose is to obtain the coefficient matrix of the linear function, because once the matrix is obtained, it is possible to analyze which factor or factors are most important to the indicator. Many methods have been proposed to obtain the coefficient matrix, such as principal component method, center of gravity method, maximum likelihood method, back extraction method, etc. [16]. Science and technology are the source of power to promote social development, and the progress of science and technology often comes from scientific experiments. With the continuous progress of modern science and technology, computer-based information technology has developed into an important subject, and various simulation teaching software developed by computers have become an important part of experimental teaching. Because the virtual teaching platform has the characteristics of easy construction, intuitive operation, low cost, and multiple use, it is used in experimental teaching systems by many universities and solves the problems of insufficient teaching resources, limited experimental time and space, and difficult management.

C. CLUSTER ANALYSIS METHOD
Cluster analysis is a special data analysis technique. It uses the given data information to analyze the relationship between data attributes. According to standards such as distance or correlation coefficient, the similarity between classes is lower and the similarity within classes is higher. Finally, the given data is divided into different types of processing [17].

The average distance between particles can describe the degree of dispersion among particles in a population. The larger the value, the greater the degree of dispersion of population distribution and the higher the diversity. Therefore, the Euclidean distance is, and the degree of aggregation C is defined as:

$$S_I = \sum_{D-1}^{N} (X - P)^2 \qquad (1)$$

$$C = \sum_{\substack{O-1 \\ \text{UB-LB}}}^{N} S \qquad (2)$$

Data clustering is the starting point of large-scale data analysis, and it is also the core of data mining. Data mining

algorithms suitable for different data types and formats can more scientifically show the characteristics of the data itself, and it is precisely because of this characteristic that the global statistics A variety of statistical methods recognized by scientists can go deep into the data to dig out some recognized valuable information. Another aspect is that these data clustering algorithms can achieve faster clustering of large-scale data. If an algorithm will take several years to reach a conclusion, then this algorithm is considered worthless for large-scale data.

D. COMPARATIVE ANALYSIS
QCA is also considered to be an iterative analysis technique. By iterating over the data, researchers can get more discoveries. But in QCA analysis, the application of theory is also essential [20], [21]. For example, in the analysis, the selection of variables and the operation of variables need to be guided by the corresponding theory and balanced with the number of cases. QCA technology also has considerable transparency. Not only does it enable researchers to make their own choices (rather than computers), but each option must also be carefully evaluated. In the multiple stages of the technology, researchers must decide for themselves how the case composition and/or theory are constructed, and present them to the reader along with the calculation results. In addition, QCA allows researchers to deal with phenomena that differ significantly in number and nature. In program operation, conditions and results can be manipulated. QCA can be used for at least five different research purposes. First of all, data statistics, that is, drawing a truth table to describe the case comprehensively, can also be used for data synthesis and typology construction. Secondly, this method can test the consistency of related or causal conditions in a series of given cases, and by discovering so-called "contradictions", researchers can discover the anomalies in the explanation model. Third, this method can evaluate existing theories [22], [23]. Therefore, QCA is a very effective theoretical test tool. Fourth, it can be used to evaluate new ideas, schemes or conjectures put forward by researchers and used for data mining. Fifth, qualitative comparative analysis can refine and perfect new theories. For example, it can not only test different cases in the research, but also guide researchers to further expand or improve existing theories, and then propose new theories [24], [25].

III. APPLICATION RESEARCH AND DESIGN OF VR TECHNOLOGY IN MARKETING
Establishing a system structure model is an effective method. Through some basic assumptions and related calculations of graphics and matrices, and then through the combination of humans and machines, the reachability matrix can be decomposed into a multi-level hierarchy. This article uses the K-means iterative segmentation clustering method to illustrate the detailed application process of the stepwise clustering method. For a particular data set, it is not necessarily the best technique. For different types of data sets, only by using

different clustering methods can good clustering results be obtained. The K-means clustering method is the best when the survey object's score in the multi-dimensional space is when the fabric is formed into a spherical shape.

According to the above design principles and the content of the question, the questionnaire of M company can be divided into three parts. First of all, question 1 and question 2 are the basic information of customers, which are open questions. The main purpose of the questionnaire survey is to understand the positions and responsibilities of customers in M company, so as to analyze the degree of influence of interviewed customers' satisfaction on M company.

The second part of the question, topics 3-9, mainly focuses on the software and hardware service satisfaction of M company. The software includes first-line sales and customer service quality; the hardware includes the system, website, shipping schedule, and space configuration. This part of the question mainly uses the net recommendation score scoring standard, which divides customer satisfaction into 10 levels, from 0 to 10, from very dissatisfied to very satisfied.

Finally, a separate non-scoring option "don't know" was added. In question 3, an open-ended question was added. In the first question, whether the respondent is willing to recommend company M's products to his friends or colleagues, the score is 0-6 or 7-8. The second question is: before you are more likely to recommend company M products, what specific improvements company M needs to make. When the respondent answers the first question, are you willing to recommend the product to your friends or colleagues with a score of 9-10 points? The second question is: How would you talk about the product with your friends or colleagues? This part The main problem is to understand the customer's satisfaction with company M's products and services, analyze the advantages and disadvantages of the company's products and services in detail, and then find out the problem and increase the potential.

The computer will find a point in space, and make the Euclidean distance between all sampling points in the class and the point become the center of gravity of the class. These centroids are considered to be a new class of cohesion points, and they are more meaningful than randomly selected points.

Calculate the distance from all sample points to each new center of gravity and start the next iteration. Assign each sample point to the class with the closest center of gravity, so that the sample is divided again, but this time in a space with denser sample points.

Before the center of gravity of each class is statistically redistributed, the center of gravity of each class will not be statistically redistributed. In the process of K-means algorithm, it should be noted that each step will cause the sample points to change back and forth between classes. Therefore, respondents who belong to the first category can be transferred to the second or other categories, and can also be transferred back to the first category.

There is no restriction on the movement of sample points and the size of the class. It may be that all classes are about

TABLE 1. Average table of customers' overall satisfaction with the company.

Customer satisfaction	N	MIN	MAX	MEAN
All samples	250	1	8	6.10
Key customers	33	5	8	5.54
Global freight forwarder	25	4	8	6.48
Freight collect	60	5	6	5.62
Freight prepaid	132	1	7	6.38

the same size, or some classes only account for a small part of the total sample, while other classes account for more than half of the total sample.

From this perspective, the K-means process can reflect the arbitrary distribution structure of the survey object in a multi-dimensional space.

There are two traditional methods in social science methodology: qualitative methods and quantitative methods. The qualitative method takes the complexity of social phenomena as a logical starting point and advocates a deep description of a single case in order to obtain an explanation of a unique result. On the contrary, quantitative methods focus on the generality of social phenomena and advocate variable-oriented large sample data analysis to obtain a general explanation of a phenomenon. However, any preference between generality and complexity cannot allow us to recognize social phenomena.

IV. ANALYSIS OF RESEARCH RESULTS

As shown in Table 1, according to customer types, important customers and global freight forwarders give recommendation scores to the overall satisfaction of VR-style experiential marketing, with an average score of 9 points or more; only customers with pre-paid freight give a "depreciation" score, with an average of only 6.45 points, the lowest value is 5 points; while the scores of all samples and shipping freight are in the middle level, and the average score is above 7 points. Since the analysis dissatisfaction score comes from freight payment and freight prepaid customers, then we can focus on the answers to the open questions for poor customers, and then we can understand the reasons for the poor reviews given by customers. According to the evaluation results of 5 and 6 points respectively, customers mainly pointed out the following problems, which can be summarized as follows: The profitability of a company is the most fundamental factor that affects the integration of VR into the strategic marketing model and the development of the company. The ultimate goal of corporate marketing is to increase sales, increase sales revenue, and achieve maximum profitability. Regardless of the marketing model, marketing technology and marketing concept adopted, the ultimate goal of the enterprise is to obtain better profitability on the basis of a better financial structure and higher operating capabilities.
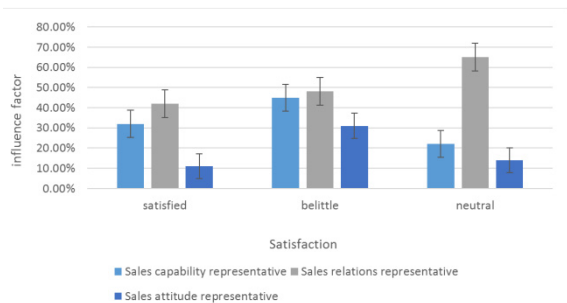
FIGURE 1. Customer and sales interaction satisfaction percentage.

Enterprise management includes marketing management, personnel management, strategic management and financial management. Integrated enterprise management refers to the clear division of labor between management levels and departments. The introduction of new technologies can increase the mobility of the department and can allow the introduction of new blood under the original fixed model. The introduction of virtual reality technology has changed the company's marketing model, and it also needs to train a large number of talents to optimize human resources. Through the analysis of the above theories and models, we have obtained the influencing factors of VR technology on the strategic marketing model and the promotion of the integration of VR technology on the strategic marketing model. In order to better realize the strategic goals of the M company, this article integrates virtual reality technology into the strategic marketing model of the original company. Through the strategic marketing model of virtual reality, in order to achieve the company's long-term strategic goals, the company will not compete in the fierce market. A place of defeat. In order to better integrate virtual reality technology into the company's strategic marketing model, it is necessary to optimize the unreasonable areas of the strategic marketing of related M companies to make it consistent with the fundamental purpose of the VR M company's strategic marketing, so that the company can develop better. As shown in Figure 1, although the respondents are still satisfied with the service attitude of the sales representatives, 19% of the respondents gave a low score on the difficulty of obtaining a quote. In addition, the relationship with sales and the quality of interaction also gave different degrees of dissatisfaction scores, and a considerable proportion of unknown options gave scores.

In order to further deepen the brand recognition of customers, the most fundamental point is to maintain the quality advantages of the products and gain the trust of customers from the perspective of the products themselves. The second is to improve the comprehensive after-sales service of products, provide customers with high-quality after-sales service, and solve various problems in the three guarantee period in time, and win a good reputation. From the perspective of a company, the most important thing to improve a company's brand awareness is to win customer satisfaction, and good after-sales service is the fastest way to gain the best reputation among all competitors. At the same time, companies
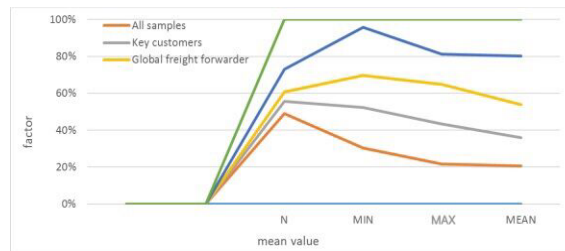

FIGURE 2. Change of customer experience satisfaction.

should also adopt corresponding propaganda methods or public activities to gain public attention and establish a high-quality corporate image in society. Through these optimization measures, customers' overall brand awareness of the company and its products will definitely increase significantly. As shown in Figure 2, although price is a very important consideration, it received the least recommended score. So we can understand this price. In fact, customers believe that a company's hardware, expertise, and service range are more important. These are the factors that affect the integration of VR technology into marketing. The so-called commodity sales association model is to analyze the sales association between commodities in e-commerce websites through the association analysis technology in data mining, and obtain the sales association rules between commodities, so as to provide users with the function of recommending goods based on sales information, taking users as the center, and providing users with the function of recommending commodities, To promote the transformation of users from visitors to buyers of network search marketing model.

In the specific process of relationship marketing, understanding the dynamics of customers and the attitudes of various stakeholders is the most important aspect. Relationship marketing includes providing and maintaining long-term relationships. This is not a one-time agreement. It relies on long-term relationships to develop customer value, especially customer lifetime value and customer personal influence. The company needs to add corresponding marketing departments in each department of the company to meet the requirements of marketing management and ensure the smooth progress of related marketing activities in the organizational structure. At the same time, according to the characteristics of different customers, stakeholders and product marketing stages, it is necessary for the management team to provide differentiated services to ensure a stable relationship with stakeholders.

As shown in Figure 3, according to the classification of respondents, there are 135 freight prepaid customers, 62 freight collect customers, 28 major customers, and 35 other customers. By region, there are 60 in North China, 110 in East China, and 90 in South China.

vr360 degree immersion can significantly improve marketing effects. Isolation of external interference can attract users' full attention. The VR marketing experience has a long memory and a deep impression, which can resonate and inspire deep resonance. It is very suitable for building brand image and enhancing users' stickiness and loyalty
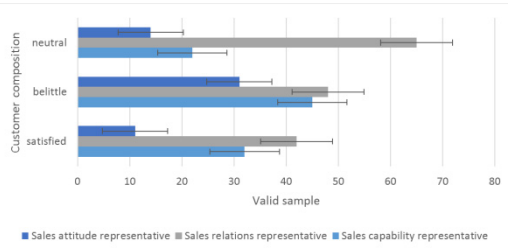
FIGURE 3. Composition of effective customers.

FIGURE 4. Overall customer satisfaction feedback.

satisfaction and customer loyalty. Using advanced and simple technology, through the age distribution of customers, we can see that the customers buying goods are relatively young, basically under this age group, mainly because young people such as computer technology and network applications are easier to master. Therefore, the website should continue to use advanced technology and reduce the content of the purchase technology to ensure that customers are satisfied with the purchase experience.

V. CONCLUSION

After human society has experienced agricultural economy, industrial economy and service economy, it has begun to enter the experience economy. In the economic environment of experience economy, people's desire for experience will be stronger than ever, personalized and diversified experience needs will continue to emerge, and the focus of customers' attention will shift from traditional efficacy and value to customers who focus on customer spiritual needs and subjective feelings Experience value. Companies will create more and more economic activities related to customer experience, and companies will win by providing excellent customer experience value. Therefore, in accordance with the objective laws of economic development, in order to meet the ever-increasing experience demands of customers, the sales industry must rethink and position corporate marketing models from the perspective of customer experience value.

Based on the research results at home and abroad, from the perspective of customer experience, using factor analysis, cluster analysis, comparative analysis and inductive deduction methods, established the application analysis model of virtual reality technology in marketing, and studied the application of virtual reality technology in Application in marketing. Research from the perspective of customer experience. The research results show that the most direct influence factors of virtual reality technology on the operation of the strategic marketing model are the immersion, conception and customer buying behavior of sudden industry development; interaction, marketing organization level, corporate brand culture, customer loyalty, customer satisfaction, Product added value and brand design are indirect factors; corporate profitability is the most fundamental factor affecting the operation of marketing models.

Due to the limitation of conditions, this article can only conduct some basic research on related content. There are still many shortcomings and areas that need improvement. For example, some more in-depth content will become the focus of the author's future research. The author will make further efforts in future work and study.

to brand advertising. Using virtual reality technology, the human brain can be elevated to another level of time and space. VR and data marketing quickly match and become the future of marketing. Almost every brand can sell products or services to consumers to a certain extent through virtual reality. Analyze the age, gender, occupation and preferences of online users, mine the individual needs of users, form individual data structures for users, and use data to drive precision marketing. This will generate value, break through the limitations of traditional two-dimensional impressions, put the right product or service owner in the right position, break the original inertial thinking, change the marketing concept, and transition from the traditional management product brand marketing model to virtual reality. The centripetal force of users to spread the brand marketing model. As shown in Figure 4, according to the analysis of the survey results, the VR marketing experience customer satisfaction results can be generated into a chart according to the type of customer as follows, and then it is recommended to depreciate the value with the blue line, the neutral and the green line and the red line. In this way, we can clearly see what kind of shipping company customers are satisfied with and dissatisfied with.

Through the analysis of customer purchases, we can clearly see that the use of VR technology to assist sales of its products is the largest. Whether from the perspective of logistics time or cost, this is an important reason for this result. Therefore, we should do our best to meet customer needs. Today's society is a fast-paced era. Customers lack a lot of time and attention to purchase a product. At this time, they need shopping flexibility. They want to minimize shopping channels and logistics costs. For example, we can connect online channels with retail channels, which not only facilitates customers, but also brings profits to retailers, thereby improving customer

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