Influence Mechanism Research on the AI Marketing Technology of Online Shopping Platform on Consumers' Purchase Intention
—— Structural Equation Model Based on Flow Experience

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ABSTRACT
Based on the "S-O-R" model, this paper creatively establishes three dimensions of AI marketing technology experience of online shopping platform: accuracy experience, insight experience and interactive experience as stimulus variables. We used consumer flow experience as intermediary variable and constructed the influence mechanism model for online shopping platform AI marketing technology experience on consumers' purchase intention. The empirical results show that: the three dimensions of AI marketing technology experience have good validity and reliability, which verifies that flow experience can mediate between AI insight and purchase intention and flow experience can also mediate the interaction and purchase intention of AI, but accuracy can directly promote the occurrence of purchase intention, while flow experience does not. At the same time, among the three dimensions, insight has the greatest impact on consumers' purchase intention.

Keywords: *AI marketing, AI, Flow experience, Consumer purchase intention, S-O-R.*

1. INSTRUCTION

With the popularization of IT in e-commerce platform, Marketing has developed from one-way marketing of Web1.0 to interactive marketing of Web2.0, then to precision marketing with big data, and now to intelligent marketing supported by artificial intelligence (AI)[1]. Nowadays AI technology has been used on e-commerce platforms for online shopping. Alibaba took the lead in the establishment of Dharma Institute to strengthen the research and development of AI technology. The customer service robot which named "Ali Xiaomi" undertakes 95% of the customer consulting services for the e-commerce platform. The machine intelligent recommendation system "Luban" generates more than 100 billion exclusive shelves on the day of Double 11and designed hundreds of millions of marketing posters for consumers. AI chat robot, content recommendation system and consumer feature recognition system have become artificial agents of AI marketing activities [2]. However, from the perspective of quantitative research, the research on the mechanism through which AI marketing technology affects consumers' purchase intention is still blank. Flow experience was always used for online shopping purchase as a intermediary variable in the past research. Therefore, this paper discussed how AI marketing technology experience affects consumers' purchase intention through flow experience.

2. LITERATURE REVIEW AND HYPOTHESIS

2.1. Definition of Research Category

2.1.1. SOR Model.

SOR model was first proposed by Mehrabian and Russell (1974). It is believed that the process of human body assessment is different from that of machines. Various stimuli (S) in the environment, such as olfactory, visual, auditory and other sensory stimuli, will cause changes in the internal emotional and cognitive mechanism (O), and then cause the response (R) of the actor [3].

2.1.2. AI Marketing Technology Experience of Online Shopping Platform.

Based on the analysis and summary of the existing literature on AI marketing at home and abroad, this paper believes that the AI marketing technology of online shopping platform for consumers is to bring direct AI marketing experience to consumers through intelligent identification and search, intelligent push and virtual assistant. Therefore, this paper innovatively takes the experience effects of the above three types of AI marketing applications, namely accuracy experience, insight experience and interactive experience, as the connotation of online shopping AI marketing technology experience.

2.1.2.1. Accuracy Experience.

At present, China's leading online shopping platforms such as Taobao, Jingdong, Pinduoduo, etc. used AI technology to help consumers quickly screen and recommend in massive data. When consumers input keywords, voice or pictures in the search bar, e-commerce platforms can use text analysis, voice analysis and image recognition technology to identify problems and search, find matching items and sort by priority [4]. In the field of image recognition, autonomous learning neural network reduces the error rate of image recognition from 30% in 2010 to 4% in 2016[5]. In the field of speech recognition, the speech recognition rate of iFLYTEK has reached 98% in 2018, and it is predicted that artificial intelligence speech recognition will reach the same level as human beings in 2021. In the era of big data, the increase of data volume leads to the increase of the complexity of individual decision-making, which makes full decision-making and optimal decision-making impossible. Marketing engine can help users extract noise, so as to find target goods more accurately. The above reflects the accuracy function experience that AI marketing technology brings to consumers.

2.1.2.2. Insight Experience.

Machine learning can customize the content of the company's website to maintain the consistency of user preferences and willingness to pay, so as to connect customers in all channels and devices seamlessly and personalized. The combination of big data and AI helps e-commerce enterprises to achieve accurate positioning of consumers, accurate mining of consumer demand and accurate advertising, AI helps enterprises gain insight into the whole process of consumer shopping and provide personalized advertising push interface for consumers[6]. AI marketing technology uses a large number of consumer behavior trajectory and consulting data to realize insight into the future behavior of

consumers and uses the recommendation engine to recommend products that may be of interest to consumers. Using AI technology to carry out "intelligent" advertising precision marketing effect is more significant than traditional retail. Therefore, the above review reflects the insight functional experience that AI marketing technology brings to consumers.

2.1.2.3. Interactive Experience.

With the development of natural language interaction technology, AI customer service began to replace manual customer service, helping enterprises to carry out member marketing and sales services, recording customers' behavior and preferences to adapt to different customers. The virtual assistant of online shopping platform has begun to play the role of intelligent customer service, especially in the scene of consulting common questions such as product information, purchase suggestions, inventory, logistics and return matters[7].The above fully reflects the interactive functional experience that AI marketing technology brings to consumers.

2.1.3. Flow Experience.

The concept of flow experience was first proposed by Csikszentmihaly, In 1995, Csikszentmihaly defined it from nine dimensions: clear goals, timely feedback, the balance between challenges and skills are the conditional factors for the occurrence of cardiac flow experience, high concentration of attention, loss of self-consciousness, sense of control, distortion of time, integration of action and experience and the purpose of experience itself [8]. With the birth of IT and the popularization of its application, flow experience has been widely used by Webster et al. from the perspective of website interaction[9], Jiang Shen discussed the influence of flow experience as an intermediary on consumer behavior[10].

2.1.4. Consumers' Purchase Intention.

Carlota LR (2016) divides consumer behavior response into internal and external states. Internal state refers to consumer emotion, cognition and satisfaction tendency, while external behavior refers to actual willingness to approach and purchase [11]. In this paper, the online purchase intention of consumers is defined as the internal purchase tendency, which refers to the consumption tendency after subjective evaluation of relevant factors in the consumption process in order to satisfy the actual and psychological needs.

2.2. AI Marketing Technology Experience of Online Shopping Platform and Flow Experience

After the use of AI marketing technology on the online shopping platform, the relationship between patterns and behaviors in the data is found by machine learning. Common predictive suggestions and personalized recommendations are applied to online shopping platform to help consumers find target products more accurately ,which also can recommend related products and reduce consumers' manual browsing and retrieval through navigation, helping consumers save time and energy. According to Csikszentmihaly's conditions of the generation of flow experience. AI intelligent search and intelligent recommendation can assist consumers to achieve clear commodity retrieval and timely information feedback.AI customer service can answer questions raised by consumers quickly and give feedback right away. In the process of interaction, consumers' self-communication skills can be selected and changed according to the situation. Therefore, the following hypothesizes are given:

H1a: AI marketing accuracy experience of online shopping platform has a positive effect on the flow experience.

H1b: AI marketing insight experience of online shopping platform has a positive effect on the flow experience.

H1c: AI marketing interaction experience of online shopping platform has a positive effect on the flow experience.

2.3. Flow Experience and Consumers' Purchase Intention

At present, a large number of researches on the relationship between flow experience and consumers' purchase intention are based on the consumption under the network environment. It is believed that the higher the intensity of the flow experience, the stronger the consumer's purchase intention will be[12]. In the process of constantly mining and insight into consumer information, AI interacts with consumers in depth and comprehensively, satisfies consumers' enjoyment and pleasure experience to a certain extent, brings sensory stimulation and impact and makes consumers "deeply involved" in online shopping and unwilling to leave. Therefore, based on the research conclusions of the above literature and the functional experience of AI marketing technology, so following hypothesis is given:

H2: Flow experience generated by AI marketing technology of online shopping platform can

significantly positively promote the consumers' purchase intention.

2.4. AI Marketing Technology Experience of Online Shopping Platform and Purchase Intention

In 2017, the domestic e-commerce giant Alibaba established an AI laboratory to be responsible for the research and development of its consumer AI products. In 2017, Jingdong established an AI research institute, Pinduoduo and other e-commerce enterprises had established AI R&D centers to explore the AI technology's empowerment for the e-commerce industry. Goldman Sachs predicts that by 2025, AI will save the retail industry at least $54 billion in costs and create $41 billion in new revenue. Therefore, as an important sales channel of the retail industry, we make the following hypothesizes:

H3a: Accuracy experience of AI marketing technology in online shopping platform can promote the consumers' purchase intention.

H3b: Insight experience of AI marketing technology in online shopping platform can promote the consumers' purchase intention.

H3c: Interactive experience of AI marketing technology in online shopping platform can promote the consumers' purchase intention.

3. RESEARCH DESIGN

3.1. Variable Measurement and Scale Design

The measurement of AI marketing technology experience. This paper mainly studies the following information: 1) the literature review of the current AI marketing technology experience research; 2) the actual functional scenarios of the current e-commerce platform AI marketing; 3) the experience effect of AI marketing proposed by industrial workers; 4) marketing experts' opinions. Through the summary of the above information: the three questions of accuracy measurements are: "AI technology of online shopping platform can let me accurately retrieve the goods I want through text, picture and voice respectively". For insight measurements, refer to the views of Kumar et al[5],Jordan and Mitchell[6] , the AI technology designed as an online shopping platform can "Recommend the products I want according to my browsing habits", "Provide a useful interface that conforms to my preferences", "The part of read and see again / guess what you like / recommend for you can provide the products I may buy.". The measurement of interactivity refers to the responsiveness measurement dimension in Jiang Shen[10] online interaction,

designed as "AI virtual customer assistant can reply my questions", "AI virtual customer assistant can reply my questions in time", "AI virtual customer service assistant answers my questions closely related to my questions". Refers to the flow experience scales of Jiang Shen[10] and Huang[13], questions are designed as browse online shopping platform with AI marketing technology can makes me feel "Time flies by", "I can control my whole shopping process", "Make me feel that the spirit of online shopping is highly concentrated and makes me forget other trivia". Consumer purchase intention questions refer to the scale of Carlota et al[16]is designed to shopping on the online platform supported by AI marketing technology, "I am likely to browse the products or services recommended by the platform many times", "I am likely to buy the products or services recommended by the platform", "I am likely to buy the products or services recommended by the platform", "I am likely to buy the goods or services unplanned".

3.2. Data Collection and Analysis Methods

The research object of this paper is the consumers of China top three Taobao, Jingdong and Pinduoduo e-commerce platforms in 2019. Through the Wenjuanxing platform design the questionnaire, and through online channels to send and fill in the questionnaires. In this study, 345 questionnaires were collected, 306 were valid, and the effective rate was 89%. The effective sample size was at least 5 times that of the measurement items.

In this paper, SPSS 25.0 and Amos 23.0 were used to analyze and test the data. First, we tried to analyze the reliability, validity test and exploratory factor of the sample data of the scale; second, we tied to analyze the confirmatory factor of the structural equation model; finally, we had the overall path coefficient analysis of theoretical model.

4. ANALYSIS OF RESEARCH RESULTS

4.1 Reliability and Validity Analysis

The Cronbach'a values of all latent variables were greater than 0.5, the combined reliability values are higher than 0.7, and the Cronbach'a values of the whole sample data reach 0.801, so data had a good reliability for the measurement of variables. The KMO value of validity analysis was 0.833, more than 0.8, and Bartlett's spherical test level was significant (P < 0.001), indicating that the above data were suitable for factor analysis. Through factor analysis by SPSS 25.0, the factor loaded of all items on their latent variables were measured. All factor loaded were more than 0.6, and the average variance extraction value (AVE) of each latent

variable was greater than 0.5, which indicated that the measurement of variables had good convergences.

4.2. Common Method Deviation Test

In order to reduce the common method bias, this study adopted the Harman single factor analysis method which was approved by most researches. The factor variance contribution rate with the highest degree of explanation was 25.72%. It could be considered that the common method deviation problem in this paper was not significant.

4.3. Hypothesis Test and Conclusion

In this paper, Amos 23.0 software was used to construct structural equation for model fitting. CMIN/DF was 2.41 less than 3, the values of AGFI, NFI, IFI, CFI were 0.855, 0.812, 0.818, 0.904 and RMESA was 0.057, which met the recommended standard of model fitting and were suitable for path analysis. The standardized path coefficient index was used in the hypothesis test of this paper. Figure 1 shows the standardized path coefficient and significance level of the established structural equation.
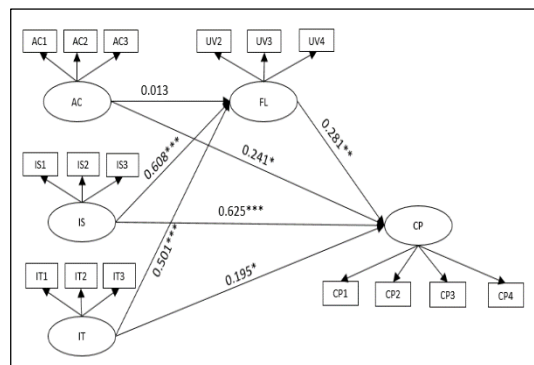
Figure 1 Model and path coefficient

Table 1 shows the results of model hypothesis test: H1a(β=0.013,p>0.05)did not hold, which means that the accuracy experience of AI marketing of online shopping platform cannot promote the formation of consumer flow experience. H1b(β=0.608,p<0.001), H1c(β=0.501,p<0.001) were pass hypothesis test, which means that the insight and interaction experience of AI marketing of online shopping platform can promote the formation of consumer flow experience. H2(β=0.281,p<0.01)were pass hypothesis test, which means that flow experience of AI marketing of online shopping platform experience has a significant positive effect on consumer purchase intention. H3a(β=0.241,p<0.05),H3b(β=0.625,p<0.001),H3c(β=0.195,p<0.05) were pass hypothesis test, which means that the accuracy experience, insight experience and interactive experience brought by AI marketing technology of online shopping platform can promote consumers' purchase behavior.

Table 1. Results of model hypothesis test

H	Path	Estimate	C.R.	P	Result
H1a	AC→FL	0.013	0.055	0.941	unsupported
H1b	IS→FL	0.608	3.823	***	supported
H1c	IT→FL	0.501	4.453	***	supported
H2	FL→CP	0.281	2.94	**	supported
H3a	AC→CP	0.241	2.022	*	supported
H3b	IS→CP	0.625	4.621	***	supported
H3c	IT→CP	0.195	2.342	*	supported

5. CONCLUSION

AI marketing technology accurately helps consumers to search accurately and fuzzily in massive commodity data and bring accurate retrieval results for consumers. However, accuracy is not enough to produce illusion of time, control of shopping process and high concentration of mind. Therefore, the accuracy of AI marketing technology cannot promote the formation of flow experience. The insightful experience and interactive experience of AI marketing technology in online shopping platform can promote the formation of consumers' flow experience and then form their purchase intention. The flow experience generated by AI marketing technology of online shopping platform can directly promote the formation of consumers' purchase intention. Among the three AI marketing technology experiences, insight plays the most important role in the flow experience and purchase intention. It can be seen that consumers recognize the guiding role of AI technology insight in the shopping process. Online shopping platform enterprises should deepen the application of AI technology in the field of e-commerce marketing, deepen the application of accuracy, insight and interaction technology, and promote the conversion rate of potential customers. Continue to develop AI deep learning, natural language processing and other technologies to gain insight into consumers' browsing behavior and trading behavior. Using knowledge mapping technology to more accurately analyze the consumption preference of consumers and related personnel, achieve more accurate recommendation in more dimensions, and promote the formation of purchase intention. To strengthen the autonomous intelligent learning ability of AI virtual robot and virtual customer service, constantly enrich the corpus of AI customer service, provide consumers with more accurate, timely and intimate reply, and promote the transformation of consumers' purchase intention into purchase behavior.

AUTHORS' CONTRIBUTIONS

This article innovatively proposed that AI technology can influence consumers' purchase intention on online shopping platform through flow experience. It is confirmed that the insight and interaction of artificial intelligence technology can influence consumers' purchase intention through flow experience which is the progress of research on the mechanism of technology influencing purchase intention.

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