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How Does the Autonomy of AI Products Affect Consumers' Purchase Intention

Mimi Tao*, **Shengxiang She**

College of Business Administration, Guizhou University of Finance and Economics, Guiyang, China

Email address:

secretao226@hotmail.com (Mimi Tao)

*Corresponding author

Abstract: As intelligent technology matures, AI products are progressively marketed in the AI era, profoundly changing consumer behavior patterns and life habits. While AI products bring convenience to consumers, they also bring negative experiences to consumers. Especially AI products with certain autonomy will make consumers feel offended and have psychological resistance. This paper explores the intermediary role of psychological resistance in the influence of AI product autonomy on consumers' purchase intention, based on the psychological resistance theory, which is a hot research topic in psychology. The questionnaire data was collected on the Credamo platform, and SPSS26.0 was used to process the data and verify the model assumptions, it is finally concluded that the higher the autonomy of AI products, the easier it is for consumers to feel the threat, generate the psychological resistance, and then reduce the purchase intention, this conclusion has certain theoretical and practical significance for understanding and improving consumers' purchase intention in the AI era. Artificial intelligence products continue to introduce new ones, but consumers generally have a low evaluation of the experience of such products. Intelligent products with a certain degree of autonomy conflict with consumers, which limits their autonomy. Therefore, it is necessary to find a balance between the autonomy of developing AI products and consumer demand in the era of AI.

Keywords: The Autonomy of AI Products, Psychological Resistance, Consumptional Purchase Intention

1. Introduction

Artificial intelligence has been widely used in recent years, both theoretically and practically. And the development of artificial intelligence has entered a new period of strategic opportunities. The development of related technologies will release the great energy of scientific and technological revolution and bring profound changes to all fields of society. Especially with the support of big data and 5g communication technology, artificial intelligence technology has been widely used in all kinds of products and services. At the same time, the AI industry has increased, and the interaction between AI and people is increasing. Arti fi, and some intelligent technologies, such as the higher consumer exclusivity of AI services relative to human services [1, 2]. Consumers are worried and anxious about artificial intelligence products. These negative attitudes may stem from the identity threat caused by "artificial intelligence will

replace human beings." Although AI products are becoming increasingly powerful and widely used, consumer evaluations of such products have been inconsistent, with some consumers experiencing negative emotions and even directly turning off the product's intelligent capabilities. While bringing convenience to the consumer, AI products also bring negative experiences. Therefore, this study explores consumers' purchase intention from intelligent product autonomy and closely excavates the relationship between consumers and AI products.

2. Literature Review

2.1. Autonomy of AI Products

Generally speaking, autonomy refers to an individual's self-perception and the motivation and ability to do things according to an individual's thoughts [3]. And AI products that are endowed with autonomy can, without command,

autonomously make a set of decisions for consumers through the collected data, such as which goods to purchase and when and where, etc. Some highly specialized AI products can even manage more complex decision systems [4, 5], such as providing advice to consumers on what to wear based on prior choices of consumers combined with weather and other factors. The autonomy of AI products can revolutionize consumer behavior and life habits by reducing or even eliminating the need of humans for decision-making, thereby altering traditional human-machine interaction. And for those AI products with higher autonomy, decisions may be made opposite to those of the consumer because these products have a high decision-making power [6, 7]. The decisions made by intelligent products with high autonomy may be contrary to the subjective wishes of consumers, so there will be autonomy conflict between products and consumers due to the competition for autonomy. The autonomy of AI products may enable AI to make autonomous decisions without consumer orders. This creates a sense of resistance among consumers, which reduces consumers' purchase intention.

2.2. Psychological Resistance

Psychological resistance arises when an individual's freedom to act is restricted or threatened [8]. In such cases, people usually have a motivation to regain independence. Psychological resistance is a state of inspiration to regain the freedom that is triggered when an individual's behavior or attitudes are threatened and can directly lead to negative attitudes (e.g., dissatisfaction) and negative emotions (e.g., discomfort, anxiety) in individuals [9]. Edwards et al. (2002) divided psychological resistance into two dimensions inferred with obsessive-compulsive and manipulative intentions [10]. So far, many results have been obtained from the research on the theory of psychological resistance. Most relevant studies focused on information persuasion, consumer behavior, education, psychological counseling, and treatment. There is also literature on the theory of psychological resistance integrated with marketing to explain user psychology in active marketing. For example, some scholars analyzed the effects of information factors, situational factors, and Consumer Factors on consumer psychological resistance (compulsivity, manipulation intention inference, and perceived goal barriers) by constructing structural equation models and found that under the "information cocoon room "effect, information recommendation is easy for consumers to generate psychological resistance [11]. Some scholars have also applied psychological resistance theory to active recommendation services in e-commerce and found that time pressure significantly affects consumers' compulsive perception of recommendation and manipulation intention inference [12]. In artificial intelligence, both obsessive and controlling sensations caused in human-machine interactions may trigger psychological resistance in consumers. For example, in online retail, when human-machine interaction activities (e.g., personalized recommendation, pop-up advertising, etc.) lead to the generation of perceived operational attempts and compulsions for consumers, it triggers consumer psychological resistance against merchants [13]. Based on previous research, this study focuses on the psychological resistance that consumers develop in response to the autonomy of AI products.

3. Hypothesis

3.1. Autonomy of AI Products and Psychological Resistance

With the development of technology, artificial intelligence is being applied in cognitive system engineering, human-machine interaction, and artificial intelligence products are also gradually becoming popular. It has been found that intelligent assistants, adapted services, limitations in system functioning, etc., are regarded as potential constraints of freedom in human-machine interaction. The autonomy of AI is a possible factor in depriving consumer preferences and alternative consumer decisions and threatening consumer autonomy [1]. Compulsion and manipulation influence an individual's perception of freedom to some extent, and the more influential the individual is aware of behavioral freedom, the higher the degree to which space is threatened or weakened. Thus the higher the autonomy of AI products and the higher the perceived threat of release by consumers, the more likely psychological resistance will arise. Therefore, hypothesis 1 is proposed:

H1: Autonomy of AI products positively influences Psychological resistance.

3.2. Psychological Resistance and Purchase Intention

The information processing model of psychological resistance holds that the unfavorable perceptions triggered by psychological resistance and negative emotions lead to a higher likelihood that consumers refuse to be persuaded, and the two are intertwined and produce an additive or subtractive effect, which in turn will reduce consumers' participation willingness [14]. Compelling feelings and manipulative intent inference have been shown to have a significant negative relationship with willingness to accept a recommendation. It has also been demonstrated that the stronger the customer obsessive-compulsive and manipulation intention infer, i.e., the stronger the psychological resistance, the lower its customer satisfaction, purchase intention, positive word of mouth [15]. Therefore, when the autonomy of AI products is higher, consumers are more likely to develop psychological resistance, which will reduce their purchase intention. Thus, hypothesis 2 is proposed:

H2: Psychological resistance negatively affects purchase intention.

3.3. The Mediating Role of Psychological Resistance

When using smart products with high autonomy, consumers generate risk perceptions and restrictiveness that may perceive their decision freedom as threatened or violated, so that perceived risk and perceived restrictiveness may render consumers resistant. Many scholars at home and abroad have applied psychological resistance theory to marketing, especially in active recommendation marketing. In recent

years, a few scholars have also emerged to use psychological resistance as the mediating variable to study consumers' experiential feelings about products or services, purchase intention, attitude, and behavior, etc. This study focuses on psychological resistance as a mediating variable to explore how the autonomy of AI affects consumer purchase intention.

Therefore, hypothesis 3 is proposed:

H3: Psychological resistance plays a mediating role between the autonomy of AI products and the willingness to purchase.

In conclusion, the conceptual model of this paper is shown in Figure 1:
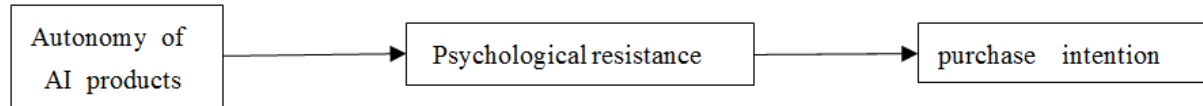

Figure 1. *The Conceptual Model.*

4. Data Analysis

4.1. Variable Measurements

The autonomy of AI products contains two question items, and psychological resistance contains two question items. Consumer purchase intention contains two question items. The scales in this study were all derived from the ripening scale, and the question items were modified in combination with the context of the study. The questionnaire was administered on a 7-level Likert scale, and respondents rated each item on request, with 1 indicating complete disagreement and 7 indicating entire agreement.

4.2. Reliability and Validity

As shown in Table 1, reliability and validity analyses using SPSS revealed Cronbach alpha scores above 0.6 for autonomy and above 0.7 for combined reliability (CR) of the AI products, indicating acceptable scale reliability. The Cronbach's alpha of psychological resistance and purchase intention was above 0.8, and the combined reliability (CR) was above 0.8, which indicated that the scale's reliability was good. In terms of validity testing, the factor loadings of all the questions were above 0.6, indicating that the scale had good convergent validity. As shown in Table 2, the ave values were all above 0.6, and its square root was more significant than the absolute value of the correlation coefficient, which indicated that the discriminant validity of each variable was good.

Table 1. *Variable Measurement Items.*

Variable	Measurement Items	Factor Loading
Autonomy of AI products Cronbach α=0.810 C.R=0.764 AVE=0.620	PA1: This product will act as it is thought	0.755
	PA2: This product serves its purpose	0.784
Psychological resistance Cronbach α=0.817 C.R=0.883 AVE=0.719	PR1: This product is going to interfere with my own decisions	0.826
	PR2: I think this product is trying to influence my decisions	0.836
Purchase intention Cronbach's Alpha=0.810 C.R=0.784 AVE=0.549	PI1: I think the product is pretty good	0.835
	PI2: I think the product is quite appealing	0.837
	PI3: I have a high probability of buying it	0.831

Table 2. *Correlation Coefficients among Variable.*

Variables	Mean	S. D	PA	PR	PI
PA	5.43	1.124	0.787		
PR	5.64	1.227	0.142**	0.847	
PI	2.91	1.359	-0.124**	-0.397**	0.889

4.3. Path Verification

The data were fitted by structural equation path model (SEM). The model fitting parameters were Cmin / DF = 0.096 < 3, RMSEA = 0.067 < 0.08, GFI = 0.998, CFI = 0.991, NFI = 0.994 and IFI = 0.928. These indicators show that the model fits well, and the path is significant in the 95% confidence interval. As shown in Table 3, the autonomy of AI products has a positive impact on psychological resistance (ß = 0.142, P = 0.000), supporting H1; Psychological resistance negatively affected purchase intention (ß = -0.397, P = 0.000), supporting H2.

4.4. Intermediary Test

This study uses the bootstrap confidence interval method to verify the mediation effect, analyze through the process mediation analysis plug-in of SPSS, and set the confidence interval to 95%. As shown in Table 4, psychological resistance plays a partial intermediary role between the autonomy of artificial intelligence products and purchase intention. That is, hypothesis 3 is true.

***Table 3.** Model Regression Coefficient.*

X	→	Y	Non-standardized path coefficient	SE	z (CR value)	P-value	Standardized path coefficients
PA	→	PR	0.180	0.137	1.311	0.000	0.142
PR	→	PI	-0.434	0.110	-3.945	0.000	-0.397

***Table 4.** Mediation Test Edition Test of Perceived Information Value.*

Effect	Gross effect	Mesomeric effect	Direct effect	Result
PA⟶PR⟶PI	-0.035**	-0.179	-0.044**	Partial mediation

5. Conclusion

With the maturity of technology, artificial intelligence products emerge one after another and gradually occupy the market—however, few studies on the characteristics of artificial intelligence products and consumers' purchase intention. By constructing the influence model of the relationship among autonomy, psychological resistance, and purchase intention of artificial intelligence products, taking psychological ownership as the intermediary, this paper explores consumers' purchase intention of highly autonomous artificial intelligence products and collects data through a questionnaire survey. It is confirmed that the higher the autonomy of artificial intelligence products, the lower consumers' purchase intention; that is, the autonomy of artificial intelligence products negatively affects the purchase intention, and psychological resistance plays a partial intermediary role between them.

6. Discussion

Self-awareness is a prerequisite for autonomy and an important basis for judging moral responsibility, and it is also a sign of being human. "Self-awareness" is the act of "thinking about the self", which is the act of looking at and evaluating oneself through the eyes of others [16]. People often suspect that highly autonomous AI products may be self-aware, and people will show resistance or even fear of self-aware AI products, thus reducing the willingness to consume such products.

This paper extends the exploration of the causes of consumers' negative attitudes towards AI products. Previous studies have proposed that products using artificial intelligence technology will make consumers think that it is artificial intelligence technology rather than their manipulation of the product, which reduces the value that the product can reflect the identity characteristics of consumers, this is similar to this study. Therefore, while giving products artificial intelligence technology, we should clarify the autonomy of artificial intelligence products. Consumers' negative attitude towards artificial intelligence is not irreconcilable. Without changing the functions of artificial intelligence products, if consumers think that artificial intelligence products will assist their decision-making rather than replace their decision-making, consumers will not have psychological resistance.

This paper only studies the autonomous characteristics of artificial intelligence products. Future research can explore the boundary of the characteristics of artificial intelligence products. It is committed to learning the harmonious and balanced development between artificial intelligence and human beings.

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