A Preliminary Study Exploring the Effects of Artificial Intelligence on Fintech Innovation Resistance

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ABSTRACT

As a cutting-edge financial technology (fintech), artificial intelligence (AI) has been incorporated into financial services, thereby facilitating the innovation of financial services. However, extant research has failed to explore users' resistance to AI-based fintech innovation. Accordingly, this paper develops a research model by employing innovation resistance theory (IRT) to understand the ways in which certain AI features, i.e., intelligence and anthropomorphism, impact fintech innovation resistance via innovation barriers (usage barriers, value barriers, risk barriers, traditional barriers, and image barriers) among fintech users. The proposed model helps us further understand the perceptions of individual users concerning the use of innovative fintech services in the context of AI.

Keywords: *Fintech, Innovation Resistance, Artificial Intelligence, Perceived Intelligence, Perceived Anthropomorphism.*

1. INTRODUCTION

The term fintech, which derived from the words finance and technology, appeared in the scientific literature in 1972. When fintech provides users with an efficient and convenient experience, it also changes the traditional ways in which users engage with fintech services, which may lead users to experience resistance to fintech innovation. Innovation resistance refers to a consumer's opposition to innovation due to potential changes in the consumer's existing state of satisfaction or conflicting beliefs [1].

The "Fintech + AI" model not only offers unprecedented opportunities to the financial industry but also subverts the traditional paths and channels by which can users experience financial services by offering new models such as smart payment, smart customer service, smart risk control, and robo-advising. Furthermore, as financial institutions shift their business models to digital self-service technology channels, the need for customers to feel comfortable interacting with AI agents is critical to the enhancement of customer experience and company performance [2]. According to the extant literature, AI has characteristics that differ from those other technologies, namely, perceived intelligence and perceived anthropomorphism. We define perceived intelligence as the degree to which the user perceives that the behavior of AI is efficient and autonomous, including the abilities to process and generate natural language and provide effective output; perceived anthropomorphism is defined as the degree to which the user perceives an agent to be humanlike based on typical and unique human characteristics, such as fluency, respect, or humor (traits that are unique to humans) and friendliness, happiness, or caring (which are also traits of humans) [3].

Against the backdrop discussed above, this paper aims to study the mechanism by which AI influences fintech innovation resistance. Based on innovation resistance theory and two characteristics of AI, i.e., intelligence and anthropomorphism, the investigation of this paper focuses on China. Previous studies have mainly focused on the adoption of AI in the context of fintech services [4][5], but less research has been conducted to examine the impact of AI perceived intelligence and perceived anthropomorphism on resistance to fintech innovation, which is related to fintech.

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2. LITERATURE REVIEW

2.1. Theories in fintech research

Although fintech has provided users with convenient services and assistance in production and life to some degree, some factors continue to cause users to delay their adoption of fintech or reduce the rates of such adoption, which in turn hinders the further development of fintech and reduces the scope and efficiency of financial services. Previous scholars have often employed the technology acceptance model (TAM) and the unified theory of user acceptance of technology (UTAUT) in their research concerning the adoption and continued use of fintech [4][5],and scholars mainly continue to focus on the factors driving fintech adoption, while limited attention has been given to the impact of innovation resistance generated by fintech. However, the task of understanding why people do not use a new product or service is just as important as understanding why they do use it. Understanding this is helpful at the development stage of new products and services.

2.2. Innovation resistance theory

Innovation resistance theory has been used widely by scholars to study the obstacles to users and sources of user resistance caused by different innovative products or services. Specifically, innovation resistance can be defined as referring to the changes that may be caused by alterations in existing conditions and deviations from existing belief systems resulting from the adoption of innovations and the behaviors of rational rethinking that ultimately influences decision-making [2]. The theory proposes five barriers: usage barriers, value barriers, risk barriers, traditional barriers and image barriers [1]. In the extant literature, scholars have conducted empirical research to investigate the resistance caused by various types of fintech products or services to users.

2.3. Effect of AI on fintech

In terms of the continued development of fintech and the increasing financial needs of users, AI represents a clear opportunity to drive the transformation of the financial industry by providing greater value to users and increased revenue for companies [4]. Fintech and traditional financial services have been and will continue to change at a faster rate due to the support of AI. Applications supported by AI often act directly or indirectly on financial products or services used by consumers; thus, users' perceptions are the result the influence of AI on fintech. Perceived intelligence refers to the user's perception that the behavior of AI is intelligent. The intelligence can be measured in terms of the user's perceptions of the AI's ability, knowledge, responsibility, and wisdom. Perceived anthropomorphism refers to the user's perceptions of the system's AI-supported behavior, i.e., the degree to which this behavior is perceived to be humanlike. Therefore, we believe that AI features intelligence and anthropomorphism affect resistance to fintech innovation.

3. DEVELOPMENT OF THE RESEARCH MODEL

Based on "innovation resistance theory (IRT)" [1], this study focuses on "usage barriers (UB), value barriers (VB), risk barriers (RB), traditional barriers (TB) and image barriers (IB)" drawn from IRT alongside the AI characteristics of perceived intelligence (PI) and perceived anthropomorphism (PA). A research model was established to analyze the impact of AI on resistance to fintech innovation (FIR), as shown in Figure 1.

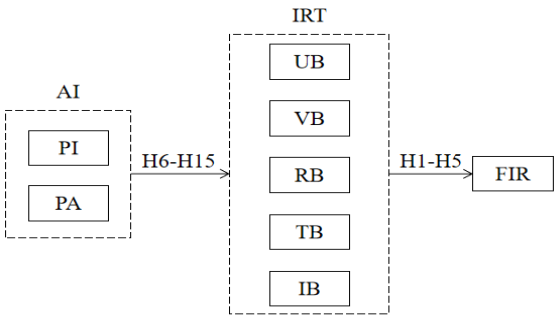

Figure 1 Research model.

3.1. The impact of innovation resistance on fintech resistance

For users who are accustomed to manual methods of financial transactions, fintech innovations require that devices such as computers or smartphones must be connected to the internet, thus increasing the usage costs of fintech innovations for users, and if fintech services cannot provide users with better prices and performance, usage barriers and value barriers to fintech innovation increases. Fintech innovations also entail new risks, they can threaten the personal interests of users, thereby creating risk barriers to fintech innovation. Moreover, for individual consumers, violations of social norms or societal and familial values create barriers. Traditional financial transaction activities must be handled and processed by professionals on specific occasions. In the context of fintech, the use of AI devices has changed our daily habits and fixed patterns, and issues such as the safety and change of fintech innovation cause users to adopt a wait-and-see attitude toward such innovations, thus delaying users' decisions to begin using the fintech innovation and increasing traditional barriers and image barriers to fintech innovation. Therefore, we hypothesize that:

H1-H5: Usage barriers, value barriers, risk barriers, traditional barriers, and image barriers increase resistance to fintech innovation, respectively.

3.2. The impact of AI on innovation resistance

Given the role of AI in the context of fintech and the impact of intelligence and anthropomorphism on innovation resistance, this paper proposes the following hypotheses.

3.2.1 Usage barriers

With the help of AI devices, users can conduct financial transactions flexibly without being limited by time and space. For example, we were originally required to contact financial professionals by telephone or trade stocks using computer terminals, but now we can use software or applets directly on mobile terminals such as smartphones to conduct such trades. Therefore, users perceive the practicality of AI equipment, which is conducive to changing the ways in which they use fintech innovation and reducing their barriers to use. The effects of humanlike characteristics of AI devices, such as the ability to conduct conversations and representational avatars, can be explained in terms of social presence and the sense of connectedness between users and their communication partners. However, when communicating with a customer service AI concerning business matters, the AI may simply reply based on keywords in the conversation with the user and cannot provide users with solutions. Therefore, although AI can cause interactions to become more natural and pleasant by imitating conversations among human beings, the depth and breadth of users' interactions with AI cannot currently be compared with the quality of offline human services, thus increasing user barriers to the use of such AI. Therefore, we hypothesize that

H6: Perceived intelligence reduces usage barriers.

H7: Perceived anthropomorphism increases usage barriers.

3.2.2 Value barriers

Compared with traditional human consulting services, the use of AI robo-advisors can reduce fees and provide financial opportunities, reinforce the pervasiveness of accessibility, and significantly reduce administrative fees [6]. Therefore, intelligent AI equipment is conducive to users' perceived ease of use regarding fintech innovations and exhibits performance improvements regarding the user experience process, thereby reducing value barriers. However, with respect to understanding fintech services, users are not merely required to interact with the anthropomorphic customer service AI in a manner like their interactions with real people offline; users must also be familiar with more professional financial or industry-specific terms, thus leading to increased value barriers. Therefore, we hypothesize that:

H8: Perceived intelligence reduces value barriers.

H9: Perceived personification increases value barriers.

3.2.3 Risk barriers

Security is a primary concern for consumers, and unsafe and reliable technology can increase users' perceptions of risk. AI equipment can use powerful algorithms to measure risks for companies or individuals accurately, provide detailed analysis reports for investees, reduce information asymmetry, and decrease credit risk. Therefore, AI algorithms can be used to record and identify potential problems with financial products, issue early warnings regarding possible risks, and provide feasible solutions to reduce users' concerns regarding their participation in financial transactions, thereby reducing risk barriers. Although the anthropomorphic nature of AI supports the use of intelligent robots or systems to improve the user's communication experience, risks are always involved in any form of electronic transaction due to factors such as data input and output, as no direct contact occurs between users and offline human service personnel. Risk, e.g., loss of personal information, results in a lack of confidence regarding online transactions, which may increase the risk barriers for users. we hypothesize that:

H10: Perceived intelligence reduces risk barriers.

H11: Perceived personification increases risk barriers.

3.2.4 Traditional barriers

As an hincreasing number of individuals and organizations become willing to accept the use of AI devices, users may view AI devices as efficient service delivery tools and become more willing to accept their use in service interactions [7]. For example, in daily life, due to the adoption of intelligent payment methods, users can make payments via QR codes. The convenience that people perceive with respect to the use of mobile payments can affect the behavior of surrounding people to some degree. Therefore, after users have a positive experience with AI devices, thus leading to a reduction in traditional barriers[7]. Customer service AI in the banking service can provide users with financial advice based on their personal characteristics. However, the depth of communication between the AI and the users is substantially less than that of the offline service. Traditional consulting services provided by human beings can offer solutions to users' problems more directly and flexibly after understanding the users' financial needs and can also make these solutions easy to understand. The interaction between the user and the AI device strictly follow the steps contained in the AI program. Therefore, we hypothesize that:

H12: Perceived intelligence reduces traditional barriers.

H13: Perceived anthropomorphism increases traditional barriers.

3.2.5 Image barriers

At present, most users employ AI technology to participate in fintech activities, such as in the case of Huabei, a subsidiary of Ant Financial. Using such consumer credit products, users can enjoy a shopping experience characterized by an ethos of "consume first, pay later", which can alleviate the pressures of limited funds in a short period of time. Therefore, existing intelligent equipment offers users a convenient and pleasant experience, and users have a good impression of the use of fintech AI, thus reducing image barriers to the use of AI equipment. However, AI may not be able to analyze and judge the emotions of users accurately and comprehensively when those users adopt and employ fintech products and services. Emotions have a great deal of influence on users' willingness to employ AI technology [7]. Thus, when users are dissatisfied with the empathetic and anthropomorphic aspects of AI, AI-enabled fintech cannot identify the users' needs, perceive their emotions and provide corresponding feedback during operation. This leads to reduce user interest in such fintech. Sensitivity and negative emotions greatly reduce the user's willingness to use AI-enabled fintech, and image barriers increase accordingly. Therefore, we hypothesize that:

H14: Perceived intelligence reduces image barriers.

H15: Perceived personification increases image barriers.

4. CONCLUSION: WHAT IS NEXT?

Today, AI technology has penetrated Fintech. How the AI features of intelligence and anthropomorphism affect user resistance to fintech innovation remains unknown. In this regard, we attempt to develop a research model by integrating AI features and IRT theory to explore users' resistance to AI-based fintech innovation. In the next stage of research, an empirical investigation will be conducted. It is hoped that through the discussions at this prestigious conference, valuable comments and suggestions can be gathering for aiding in the development of the model.

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