



## **Predicting Egyptian Customers' Intention to Use Financial Technology Services in Banking Sector in the era of COVID-19: Testing a Mediating Role of Theory of Planned Behaviour (TPB) model**

**Dr. Sherif Taher Mohammed Farid**

*Sadat Academy for Management Sciences,  
Faculty of business, Egypt.  
[Sherif-taher@hotmail.com](mailto:Sherif-taher@hotmail.com)*

**Dr. Arwa Mohammed El Sayed**

*Sadat Academy for Management Sciences,  
Faculty of business, Egypt.  
[arwa.ali7707@gmail.com](mailto:arwa.ali7707@gmail.com)*

***Scientific Journal for Financial and Commercial Studies and Researches (SJFCSR)***

Faculty of Commerce – Damietta University  
Vol.3, No.2, Part 1., July 2022

### **APA Citation:**

**Farid, S. T. M. and El Sayed, A. M. (2022).** Predicting Egyptian Customers' Intention to Use Financial Technology Services in Banking Sector in the era of COVID-19: Testing a Mediating Role of Theory of Planned Behaviour (TPB) model, ***Scientific Journal for Financial and Commercial Studies and Research***, Faculty of Commerce, Damietta University, 3(2)1, pp. 81-128.

**Website** <https://cfdj.journals.ekb.eg/>

---

---

**Predicting Egyptian Customers' Intention to Use Financial Technology Services in Banking Sector in the era of COVID-19: Testing a Mediating Role of Theory of Planned Behaviour (TPB) model**

**Dr. Sherif Taher Mohammed Farid**

**Dr. Arwa Mohammed El Sayed**

**Abstract:**

**Purpose** – Financial Technology (Fin-tech) has attracted a wide range of attention and is rapidly proliferating. In addition, it is often seen today as the new marriage of financial services and information technology. So that This paper examines the determinants of the individual's intention to use Fin-tech services. The study highlights the importance of the Theory of Planned Behaviour (TPB) to predict whether individuals will accept the use of Fin-tech. Finally, the purpose of this paper is to examine the relationships among dimensions of Financial Technology service quality (Reliability, service security, Ease of Use) towards the overall behavioral intentions to use Fin-tech services in the Egyptian banking sector through the COVID-19 pandemic situation and explain the indirect effects between service quality and behavioral intentions to use Fin-tech services using TPB variables as the mediating variables.

**Design/methodology/approach** – The data were collected from 323 customers in Egypt through a questionnaire. The participants were selected based on their experiences using Financial Technology services (Fin-tech). The data obtained from the participants were analyzed using a structural equation modelling approach.

**Findings** – The statistical techniques revealed that several major factors, including reliability, service security, and ease of use have a significant positive direct and indirect

---

---

effect on the behavioral intention to use Fin-tech services, while Ease of use does not have an indirect effect on the behavioral intention to use Fin-tech services through the mediating effect of subjective norms (SN). This paper establishes a theoretical framework based on TPB, which strengthens the relationship between dependent and independent variables. Additionally, the study explores the key factors influencing customers' behavioral intention to use Financial Technology services.

**Originality/value** – Identifying service quality aspects that affect behavioral intentions to utilize online banking has been the focus of research. Building on prior work in the field of Fin-tech services, this article objectively explores the entire direct and indirect connections between the quality of Fin-tech services, TPB, and behavioral intents. The study has many practical implications, as it disclosed that banks, which want to boost their Fin-tech adoption rate should concentrate on making it simple for customers to use, and that Fin-tech should emphasize offering benefits to customers. Furthermore, promotional communications should not ignore the critical function of peer and role models in influencing customer's intention actions. It also provides major practical contributions by identifying the essential factors that customers consider when deciding whether to use Fin-tech services especially under social distancing. That, consequently, aids in the development of appropriate goods that entice them to utilize Fin-tech services.

**Keywords:** Financial Technology Service (Fin-Tech), Electronic Service Quality (E-SQ), Theory of Planned Behaviour (TPB), Intention to Use, Structural Equation Modeling , Egyptian Banking Sector, COVID-19

**Paper type:** Research paper

---

---

### **1. Introduction:**

Shocks of many kinds can spur unanticipated technological adoption. Further, these shocks have the potential to cause long-term changes in society and economies. The COVID-19 pandemic represented a crisis to public health and healthcare systems. Nevertheless, due to the virus's nature and its rapid spread, communities have been forced to accept "social distancing" or harsh government-imposed lockdown restrictions. This has been evident across both locations where COVID-19 has spread and areas where it has not. COVID-19 has produced some benefactors and possible bright spots, despite the huge human and economic costs associated with its spread. Anecdotal data suggests that the technology sectors, particularly those that enable long-distance communication and exchanging services and products, have witnessed significant growth in adoption and utilization. Such services were demonstrated to be vital in assisting many families and other businesses in mitigating many of the pandemic's health hazards and negative socioeconomic impacts while allowing various critical components of daily life to continue as usual (Marcu M., 2021).

As a result, banks began to look for new directions to implement social distancing throughout Fin-tech services, and they became interested in using banking technologies that make continuous electronic banking services' improvements to continue in the wake of the Corona pandemic. Numerous new goods and practices throughout the economy have been facilitated by digital and big data developments (David W., 2020). Important advances are not often implemented by all banks in a given industry. There are early adopters, and if the invention proves to be significant enough, all Egyptian market banks will eventually embrace it. Following the financial crisis of 2008, worldwide financial

---

---

centers (GFCs) and banking institutions have been looking for fresh business expansion prospects to help them stay stable. For doing so, they adopted innovative information and online services to improve the delivery of their banking services as one of their most current works. Many people claimed that banks were approaching extinction, and close to being overtaken or dramatically impacted by Fin-tech enterprises, following the global recession due to the advancements enabled by digital technology. For example, Gartner's incorporation predicted in 2018 that "by 2030, most conventional financial organizations will be useless due to digitalization." (Acharya, et al.,2013). Fin-tech, especially Blockchain, as an approach for secured data and information technology, is expected to encourage the growth of advanced banking services and products and improve operational efficiency across the financial services sector (Guo and Liang, 2016; Zhu and Zhou, 2016).

The world financial sector is currently undergoing major restructuring owing to the advancement in finance and information technologies that are at the heart of global transformation. The financial sector has benefited from digital banking in a variety of ways, including opening accounts for online payments, utility bill payments, money withdrawing, and international transactions. Customers will be more content with using e-banking than with using the manual financial system as it can provide them with quick, trustworthy services (Nurpur J,2010). Furthermore, banks have broadened their banking services by partnering with several companies that use current financial technologies (e.g., Alibaba, Walmart, and Amazon). Banks also provide transaction services on behalf of clients who shop at various e-commerce sites throughout the world (Aduda J, Kingoo N.,2012).

---

---

Financial Technologies (Fin-techs) have been shown in numerous studies to be particularly advantageous to clients, including cost savings, reduced time and space constraints, and speedy replies to complaints. However, despite the potential benefits that Fin-tech delivers to users, its popularity has remained restricted, particularly in developing nations, whose customers prefer to conduct banking transactions in traditional ways for their ease and security. To reap the benefits of Fin-tech, the bank should first examine the users' opinions and experiences toward the technology's implementation using the theory of planned behavior (TPB) framework.

In terms of the academic side of the study question, it has been discovered that no research has been done explicitly regarding the quality of Fin-tech service and its impact on customers' intentions to employ these commercial bank services in Egypt. Additionally, a research gap is represented by the lack of Arab studies in examining the relationships among the study variables, which the present study intends to fill by offering a more comprehensive insight into Egyptian clients' reactions to Fin-tech, particularly in Egyptian banks. Also, this study can help the Egyptian financial sector enhance its implementation of efficient financial technologies. The limited proportion of Egyptian online customers has provided chances for banks to reach out to a larger customer base. Nonetheless, many customers tend to use traditional methods (i.e., personal contact) for obtaining financial services when performing business that could explain the low Fin-tech adoption rate. To boost usage, banks must monitor and control the variables that influence customer's acceptance of digital banking and financial technology services (Montazemi and Qahri-Saremi, 2015), and bring in new customers as well (Calisir and Gumussoy, 2008; Thornton and White, 2001) by simply

---

---

making online services quite appealing, useful, and simple to use. If they do not understand the most relevant elements, bank managers are inclined to maintain floundering and wasting time, cash, and perhaps other resources. Customers must be informed of online banking services and need to feel comfortable and secure utilizing Fin-tech services, as these services are fundamentally novel to them. Both financial institutions and regulators must understand customers' reasons for implementing digital banking to grow adequate strategies for ensuring effective adoption and usage of Fin-tech and improve the adoption rates of e-banking (Liébana- Cabanillas et al., 2017). As a result, bank executives must be aware of the elements that can impede or promote the acceptance and use of Fin-tech services for developing strategies to increase online banking adoption (Tarhini et al., 2016).

The study's goal was to figure out the aspects of financial technology service quality that may influence people's intent to utilize it. Hence, a pilot research study was done to confirm the key aspects in creating a user intent. The pilot study highlighted three parameters of Fin-tech service quality, which are security concerns, usage convenience, and reliability of digital services. Similarly, the researchers built on earlier work in the field of Fin-tech service quality that suggested reliability, convenient usage, and security as major predictors of the E-banking services quality (Cyrus et al., 2020; Ikramuddin et al., 2019; Suman, 2016).

---

---

## **2- Literature Review:**

### **2.1 Financial technology services (Fin-tech)**

The term (Fin-tech) is a made-up word that combines the words “financial” and “technology” to describe the intersection of new web-based technologies and existing banking sector business operations (Gomber, P., et al.,2017). It is a combination of finance and technology or a computer-centered application that allows customers to conduct electronic financial transactions without binding them to a certain physical presence (Parameshwar et al., 2019).

Fin-tech appears to be keeping pace with the continued growth and enhancement of smartphones, analysis of big data, online processing, data backup, and new opportunities for simplicity, flexibility, and personalization (Dapp, T.,and Slomka, L., 2015). Many Fin-tech services, including low-cost, legitimate payments and loan approvals (Xihui Chen et al.,2021), have had a major impact on people's daily activities. Since Fin-tech already has a significant effect on the banking sector, every financial organization must establish competency to exploit and expand Fin-tech to stay competitive (Lee, I., Shin, Y. J., 2018).

Enabling financial services using information technology offers prospective applicability in two primary areas. To begin, traditional financial organizations incorporate emerging technologies into their digital banking operations, and innovative consumer options (Ernst & Young Global Ltd, 2015).



---

---

Allowing real-time diving into a massive quantity of data encompassing clients' demographic and psychographic traits and tendencies, for example, can help assist automated investing guidance. Second, current, or new digital businesses potentially disrupt the structured banking industry by introducing innovative solutions and/or business strategies. For example, credit card companies could be challenged by smartcards or electronic wallets (PwC, 2016; Accenture, 2015).

Fin-tech firms can be classified into four different categories of initiatives, as stated below:

- (1) A convenient payment procedure: Fin-tech provides improved payment processing solutions (e.g., banks and credit cards), as it enables quicker transactions across borders at reduced transaction costs, via portable devices, electronic wallets, online currencies, etc (Bottomline Technologies, 2016; Avergun and Kukowski, 2016).
- (2) Robo-adviser: Using huge data, which outranks human brain ability and even conventional computing databases, Fin-tech employs artificial intelligence and data-mining techniques to develop Robo-advisers for investment planning and funding management. Robo advisors aim to capture every conceivable data and relevant trend, generating informed choices and diverse portfolio spreads, by eliminating the innate bias of human choice taking (Allen and Overy, 2016).
- (3) Peer-to-peer (P2P) platform for loans and deposits: Fin-tech uses a P2P portal to conduct their borrowing and funding operations (Avergun and Kukowski, 2016). Plenty of them takes advantage of P2P communication network, rather than going through a centralized server (Kwok, 2016). By avoiding the interchange and any intermediates, transaction costs are reduced, saving money to lenders and depositors.

---

---

(4) Crowdfunding: These financial technology programs create an online platform for different schemes and business endeavors to fundraise from a substantial percentage of contributors or investors (Allen and Overy, 2016; Taylor Wessing, 2016). Crowdfunding is common among startups for acquiring sponsors or funders and for attracting new consumers, who might be the same group of individuals. Another suggested benefit for crowdfunding is that it would make investment transmission easier, permitting inexperienced investors to depend on more competent ones.

On the other side, in a market where nearly all competing organizations offer comparable products, providing high-quality services is critical for all banking institutions. Consequently, banks are leveraging the increasing trend of digital technologies to automate their operations as a strategy to differentiate themselves from rivals, particularly in addressing client needs (Cyrus et al., 2020). Cyrus et al. (2020) and Parasuraman (2004) proposed eleven digital service quality parameters (e-SQ), which include access, easy navigation, convenience, customization/personalization, safety, reactivity, validation, price expertise, site attractiveness, consistency, and adaptability. They also created E-S-QUAL, a multi-item instrument for assessing the quality of e-services. This instrument involved four dimensions that are effectiveness, satisfaction, service availability, and confidentiality. Through professional interviews and user questionnaires, this study explored, in-depth, three aspects that drive users' behavioral intents to utilize Fin-tech services: security concerns, simplicity of use, and dependability of digital services. As a result, the following hypothesis was formulated:

*H13: Financial technology service quality has a statistically significant positive effect on customer's intention to use financial technology services.*

---

---

### **2.1.1 Reliability**

Reliability relates to a company's capacity to consistently deliver the desired quality, as well as how it approaches customer service issues, such as performing the appropriate services the first time, delivering services on schedule, and keeping a clean record (Ibrahim, et al., 2016). Banks are known for their consistency and reliability when it comes to completing banking chores, but it's equally crucial to depict this consistency through internet services (Syed et al., 2020). As a result, the hypotheses that follow have been developed:

*H1: Reliability has a statistically significant positive effect on customer's attitude toward behavior (ATB)*

*H2: Reliability has a statistically significant positive effect on customer's subjective norms (SN)*

*H3: Reliability has a statistically significant positive effect on customer's perceived behavior control (PBC)*

### **2.1.2 Service security**

Security is a major concern in financial institution management, and it is connected to a wide range of bank operations (Jaroslav et al., 2016). The four primary aspects for confidentiality and security issues in Fin-tech comprise risk associated with it, threats associated with it, rising Fin-tech challenges, as well as financial privacy concerns (Sobia et al., 2020). Encoding, virtual signatures, and access controls are all good ways to improve security (Bhimani, 1996). Customer views of digital security, on the other hand, pose different worries. Even if it were possible to objectively quantify the

---

---

level of security in each transaction, it is uncertain whether this evaluation would accurately reflect customers' perception of security. In the hazardous situation of e-commerce operations, the empirical, scientific viewpoint is usually distinct from the personal, intuitively grounded one (Shumaila et al., 2010).

Most recent studies have expressed substantial worries about security and privacy when utilizing Fin-tech. Only 35% of organizations were found to be confident in their security, according to Silicon Valley Bank estimates (K. Gai, M. et al., 2016). This is mostly due to using technology to achieve business objectives. As a result, the following hypotheses emerge:

*H4: Service security has a statistically significant positive effect on customer's attitude toward behavior (ATB)*

*H5: Service security has a statistically significant positive effect on customer's subjective norms (SN)*

*H6: Service security has a statistically significant positive effect on customer's perceived behavior control (PBC)*

### **2.1.3 Ease of use**

One of the most important factors of client satisfaction is the ease of usage (Suman, 2016). It refers to the extent to which the consumer perceives the system as requiring no effort (Deniz et al., 2015). Customers are more inclined to adopt emerging technologies if they appear to be easy to use and involve little time and energy (Feng et al., 2021; Li Min et al., 2016). Consequently, both the usage frequency and the user-system interface can determine the system's usability. The more widely used system

---

---

demonstrates that its users are more familiar with it and find it easier to operate and use (Meryl et al., 2020). Hence, the following hypotheses are formed:

*H7: Ease of use has a statistically significant positive effect on customer's attitude toward behavior (ATB)*

*H8: Ease of use has a statistically significant positive effect on customer's subjective norms (SN)*

*H9: Ease of use has a statistically significant positive effect on customer's perceived behavior control (PBC)*

## **2.2 Theory of Planned Behavior (TPB)**

Ajzen created the Theory of Planned Behavior (TPB), based on the Theory of Reasoned Action (TRA). TPB differs from TRA in that the former includes the perceived behavioral control (PBC) dimension that is utilized to clarify TRA shortcomings (Jui-Chand, 2019). The additional variable, PBC, denotes the perceived ease with which the behavior can be carried out. It indicates the availability of resources related to behavior (e.g., time, money), along with self-confidence in making decisions (Korbkul and Tatre, 2018). The TPB is a well-known psychological concept that tries to predict and interpret human behavior (Ding et al., 2021; Prabanga et al., 2015). It is built on the idea that individuals use knowledge in a structured fashion to reach a rational behavioral decision, and it links people's intentions to their actions (Lutz et al., 2011). Conferring to this theory, attitude, normative beliefs, and behavior control may all be employed to understand and anticipate people's actions throughout most situations, according to this theory (Oteng et al., 2020).

---

---

### **2.2.1 Attitude toward behavior**

In the TPB model, the primary element of behavioral intent is attitude, which describes the extent to which a person views a particular behavior positively or negatively (Ding et al., 2021). It goes on to say that individuals will have a favorable attitude toward a specific behavior if they believe that doing so would result in largely positive results (Oteng et al., 2020). The more positive individuals' attitude is, the stronger their behavioral tendency is. Conversely, the more negative an individual's attitude is, the weaker their behavioral tendency becomes (Rajdeep et al., 2018). As a result, the following hypothesis emerges:

*H10: Attitude toward behavior (ATB) has a statistically significant positive effect on customer's Intention to use financial technology services*

### **2.2.2 Subjective norms**

Believed social pressure to execute or not execute the action is referred to as a subjective norm (Chechen et al., 2007). To put it another way, subjective norms are individuals' important beliefs that counsel them to do or not do specific actions and motivation associated with a readiness to perform or not perform something that was deemed important (Christina, 2017). Beliefs influence subjective norms in the same way they influence attitudes toward behavior. The distinction is that attitudes toward behavior are a consequence of persons' thoughts in the ability to do specific behavior (behavioral belief), whereas subjective norms are a product of persons' thoughts based on other people's perceptions about their attitudes (normative belief) (Noni and Ika, 2020). As a result, we come up with the following hypothesis:

*H11: Subjective norms (SN) has a statistically significant positive effect on customer's Intention to use financial technology services.*

---

---

### **2.2.3 Perceived Behavior Control (PBC)**

Perceived behavior control (PBC) is the third defining factor depending on the TPB and is broadly utilized in multiple studies to examine individuals' behavioral intent (Kiriakidis, 2017). The accessibility of skills, assets, and possibilities, as well as a person's appraisal of the relevance of them to perform a specific behavior, influence the person's PBC (Prabanga et al., 2013). In other words, it corresponds to people's perceptions of how easy or difficult it is to perform the desired behavior (Ding et al., 2021).

Individuals who have a high sense of control will constantly be driven and strive to succeed as they consider their ability to overcome any obstacles they confront assessed by any available opportunities and resources (Noni and Ika, 2020). As a result, the following hypothesis emerges:

*H12: Perceived behavior control (PBC) has a statistically significant positive effect on customer's intention to use financial technology services*

### **2.3 Intention to utilize financial technology services**

According to Oanh (2020), the willingness to employ technological services is defined as the user's awareness of their potential to utilize these services. It is a critical notion for maintaining a persistent interaction between an organization and its stakeholders, and it is considered a crucial concept alongside technology acceptance (Ji-Hee and Jae-Ik, 2019). There seems to be a pressing need to research Egyptian customers' acceptability, expectations, and preparedness for Fin-tech services that are seen to assist

---

---

individual financial requirements and the business sector, hence promoting the expansion of the digital market. Numerous motivational elements contributing to the intention can affect consumers' intent to utilize the service (Fortes & Rita, 2016). The Technology Acceptability Theory is one of the most widely utilized models in the literature to investigate the level of acceptance for Fin - tech services. In 1989, Davis created the Technology Acceptance Model (TAM), intending to assess or interpret the usage conduct of information technology consumers (Jui-Ch and Chun, 2019). According to this idea, two key elements influence a user's behavioral intention to embrace a particular technology: apparent usefulness and ease of use (Yusuf and Adam, 2020). The level to which a person thinks that utilizing a certain technology would be effortless is referred to as perceived ease of use (Youngcheoul et al., 2021). Acceptance of technology is also affected by anticipated usefulness, defined by a person's conviction that a particular piece of technology improves work performance (Vernell and Michael, 2018). Technology adoption elements such as usefulness and usability have a favorable impact on the users' attitude, as they think the benefits offered by Fin-tech services are valuable (e.g., they can accomplish their working tasks more quickly) and convenient to use (e.g., they can get started without assistance), which helps improve users' perceptions of Fin-tech services. Consumers' attitudes about using Fin-tech services are also better if they consider Fin-tech services as more valuable for their business or simpler to use. So, perceived usefulness and ease of using Fin-tech are behavioral characteristics that influence consumers' willingness to embrace Fin-tech service (Li-Min et al., 20). Therefore, the following hypotheses are created:



- 
- 
- H14: Reliability has a statistically significant positive effect on customer's intention to use financial technology services through the mediating effect of customer's attitude toward behavior (ATB)*
- H15: Reliability has a statistically significant positive effect on customer's intention to use financial technology services through the mediating effect of customer's Subjective norms (SN)*
- H16: Reliability has a statistically significant positive effect on customer's intention to use financial technology services through the mediating effect of customer's perceived behavior control (PBC)*
- H17: Service security has a statistically significant positive effect on customer's intention to use financial technology services through the mediating effect of customer's attitude toward behavior (ATB)*
- H18: Service security has a statistically significant positive effect on customer's intention to use financial technology services through the mediating effect of customer's subjective norms (SN)*
- H19: Service security has a statistically significant positive effect on customer's intention to use financial technology services through the mediating effect of customer's perceived behavior control (PBC)*
- H20: Ease of use has a statistically significant positive effect on customer's intention to use financial technology services through the mediating effect of customer's attitude toward behavior (ATB).*

---

---

*H21: Ease of use has a statistically significant positive effect on customer's intention to use financial technology services through the mediating effect of customer's subjective norms (SN)*

*H22 Ease of use has a statistically significant positive effect on customer's intention to use financial technology services through the mediating effect of customer's perceived behavior control (PBC)*

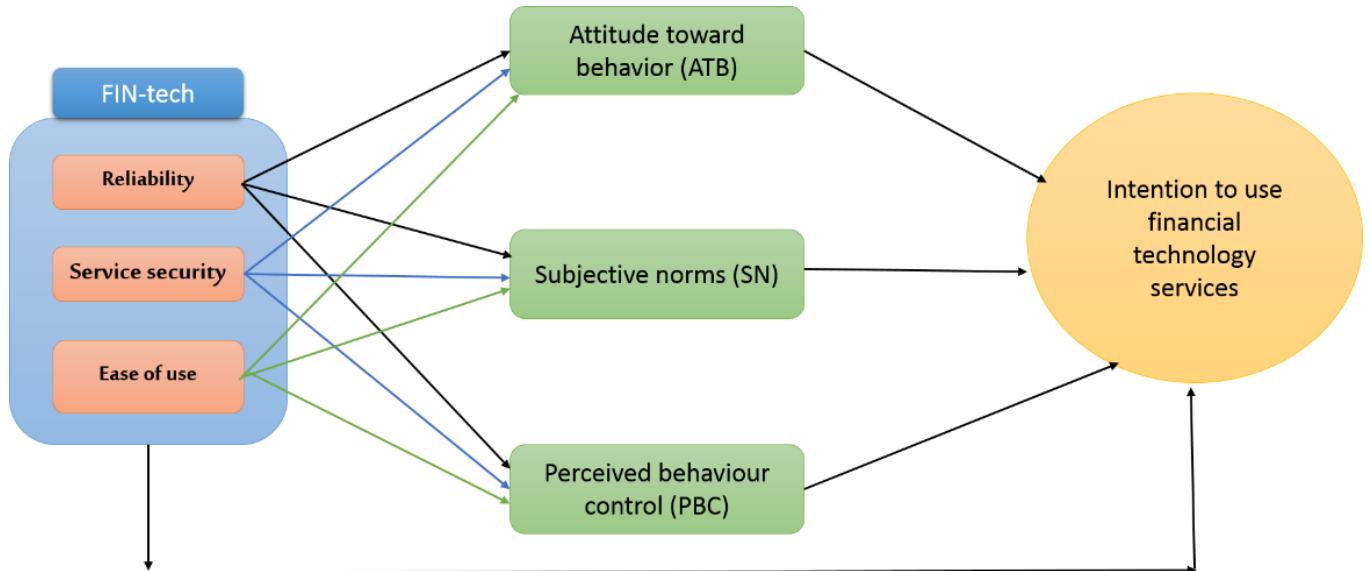


Figure 1: Conceptual diagram describing the Research Model.

---

---

### **3- Research Methodology**

The current study is primarily based on the observational descriptive design, which entails librarian surveying concerning previous research to construct a theoretical foundation for the proposed research, as well as descriptive research strategies and a field survey framework for data collection using a focused questionnaire.

#### **3.1 Data Collection and Sample**

The questionnaire method was used in this study to obtain data for model testing using the post-positive perspective. As a result, non-probability sampling, specifically the purposive sample approach, was used in this investigation. To include the purposive sample technique into the data collection procedure, participants were expected to use at least bank services, and the study was confined to Egyptian clients throughout the study period. The sampling approach was selected for gathering data for the consumers' field study because of the enormous size of the customer base, the timing, and cost factors that all operate as research restrictions. Following the act of big numbers, the sample size was tested and calculated (384 participants).

A questioner was used to collect data, and a Likert scale of five points ranging from strongly disagree (1) to strongly agree (5) was used to analyze every attitude item. We received 323 replies, with 380 being selected for further analysis. , the data gathering lasted about three months (from May 2021 to August 2021). The statistical package for social sciences (SPSS) and the smart partial least squares (Smart-PLS) software version 3.2.7 were used to conduct the data analysis.

---

---

### **3.2 Measures:**

The Partial Least Squares (PLS) technique was used to examine this research model, which was done with the Smart-PLS 3.2.7 program (Ringle, Wende, & Becker, 2015). Reflective constructions (Anderson & Gerbing, 1988; Ramayah, Lee, & In, 2011) advocated a two-step analytical technique, which was followed by the current study. As a result, a measurement modeling test for validity and reliability of the constructs was done, proceeded by a structural model inquiry (i.e., testing of hypotheses) (Ramayah, Jasmine, Ahmad, Halim, & Rahman, 2017). To test the relevance of the path coefficients and the loadings, a bootstrapping method was used (Hair et al., 2017).

As indicated in Table (1), some prior studies are considered to acquire the measurements of included variables and the items' number. The study involved three sorts of variables; Fin-tech, as the independent variable, intention to use Fin-tech as the dependent variable, and TPB as the mediating variable. The questions were developed and revised using literature as a guide, and the replies were scored on a Likert scale of five points.

Table 1: The measures used in the study

<b>Variable</b>	<b>Number of items</b>	<b>Reference</b>
<b>Fin-tech</b>	<b>14</b>	(Chen et al.,2021; Cyrus et al., 2020; parameshwar et al., 2019)
<b>Intention to use Fin-tech</b>	<b>4</b>	(Oanh, 2020; Ji-Hee and Jae-Ik, 2019)
<b>TPB</b>	<b>12</b>	(Ding et al., 2021; M. Oteng et al., 2020; Korbkul and Tatre, 2018)

#### 4- Results and Findings:

For quantitative statistics, and SEM-PLS modeling, this paper was analyzed with SPSS, version 26, and Smart PLS 3.2.7, respectively. For quantitative statistics, and SEM-PLS modeling, this paper was analyzed with (SPSS V. 26) and (Smart PLS 3.2.7), respectively. The first part is concerned with demographics. The second section entails the technique used for data preparation, while the third section involved the assessment of reliability and validity of the instruments. The fourth part contains several created descriptive statistics as well as bivariate correlations. Following that, in the last part, a conceptual framework for testing mediating variables was established.

##### 4.1 Demographic Characteristics

Table 2: Demographic analysis

Variable	Category	Count	%
<i>Gender</i>	Female	147	45.5%
	Male	164	50.8%
<i>Age</i>	20-30	165	51.1%
	30-40	89	27.6%
	40-50	45	13.9%
	More than 50	17	5.3%
<i>Income</i>	2000-5000	145	44.9%
	5000-10000	58	18.0%
	10000-15000	40	12.4%
	More than 15000	50	15.5%
<i>Educational Level</i>	Student	111	34.4%
	Bachelor	107	33.1%
	Licentiate	2	0.6%
	Masters	70	21.7%
	PhD	19	5.9%

---

---

The respondents' demographic attributes were described in table (2). Male participants were about 51% of the sample, while females were 46% of the sample. 51% of the respondents were aged between 20 and 30, 28% were aged between 30 and 40, 14% were aged between 40 and 50, and 5% were aged more than 50 years. About 45% of the sample have incomes from 2000-5000 LE, 18% have incomes from 5000 to 10000 LE, 12% have incomes from 10000 to 15000, and 16% have incomes other than that. Of the respondents, there were 34% were students, 33 have a bachelor's degree, 1% have a licentiate degree, 22% have a master's degree, and 6% have a Ph.D. degree.

#### **4.2 Data Examination**

Missing data, outliers, and the common method bias (CMB) should all be investigated (Hair et al., 2017). SPSS was used to investigate such primary data problems. The presence of any missing data has been investigated, and it was discovered that certain indicators had missing data of less than 5% (4.6), so we imputed missing data using the EM analysis technique, which represents the best estimates at all missing data stages (Little and Rubin, 2019). There were zero outliers within the study dataset. Harman's single-factor, a test widely used by researchers, can identify CMB. The presence or absence of bias is determined by the percentage of the factor's variance. with an overall factor's variance <50%, the data remains unaffected by the CMB. The first factor was found to account for 38.55 percent of the overall variation. Because the value was less than 50%, the CMB problem was assumed to be absent. Furthermore, the VIF values were below 3.3, indicating that there was no concern (Kock, 2015).

### 4.3 Measurement model Assessment

This part included a review of the measuring model and some descriptive analysis for each element. Internal consistency, concurrent validity, and divergent validity are all factors to consider when assessing a measurement model. The outcomes of internal reliability and convergent validity are shown in table (3), represented by factor loadings, Cronbach's alpha, the composite reliability (CR), and the average variance extracted (AVE).

Table 3: Reliability and validity analysis

Variable	Item	Mean	SD	Loadings	Cronbach's Alpha	rho_A	CR	AVE
<i>Reliability</i>	FT1	4.21	0.820	0.795	0.82	0.825	0.875	0.585
	FT2	3.893	0.929	0.768				
	FT3	3.976	0.898	0.847				
	FT4	4.494	0.760	0.688				
	FT5	4.517	0.756	0.715				
<i>Service security</i>	FT6	4.428	0.765	0.732	0.766	0.767	0.851	0.588
	FT7	4.158	0.879	0.814				
	FT8	3.930	1.030	0.776				
	FT9	4.177	0.840	0.742				
<i>Ease of use (EU)</i>	FT10	4.198	0.944	0.815	0.726	0.794	0.818	0.500
	FT11	3.996	0.951	0.85				
	FT12	4.031	0.968	0.828				
	FT13	3.051	1.362	0.461				
	FT14	3.087	1.275	0.422				

<i>Attitude Toward Behavior (ATB)</i>	ATB1	4.263	0.771	0.808	0.798	0.801	0.868	0.622
	ATB2	4.464	0.755	0.75				
	ATB3	4.209	0.843	0.809				
	ATB4	4.225	0.881	0.786				
<i>Subjective Norms (SN)</i>	SN1	3.928	0.940	0.762	0.762	0.769	0.848	0.583
	SN2	3.498	1.202	0.721				
	SN3	4.102	0.886	0.782				
	SN4	4.128	0.923	0.786				
<i>Perceived Behavior Control (PBC)</i>	PBC1	4.357	0.870	0.772	0.787	0.796	0.863	0.613
	PBC2	3.453	1.150	0.683				
	PBC3	4.122	0.878	0.83				
	PBC4	3.706	1.080	0.837				
<i>Intension to Use Financial Technology Services (IUFTS)</i>	IUFTS1	4.187	0.889	0.846	0.756	0.786	0.846	0.582
	IUFTS2	4.166	0.922	0.857				
	IUFTS3	3.539	1.199	0.689				
	IUFTS4	4.035	1.112	0.636				

Cronbach's alpha is a measure of the correlations among all indicators within a concept. It has an established value of 0.7, and all the values in the table (3) were higher than that. In contrast, CR assesses internal consistency while considering that every indicator has a different outside loading. All CR values were higher than the threshold of 0.7 (Hair et al., 2017). Because the factor loading values were more than 0.4 and the AVE values were more than 0.5, the convergent validity of reflecting assessment models was confirmed, and no items were eliminated (Hair et al., 2017).



Table 4: Discriminant validity (Fornell-Larcker criterion)

	<i>ATB</i>	<i>EU</i>	<i>IUFTS</i>	<i>PBC</i>	<i>Reliability</i>	<i>SN</i>	<i>Service security</i>
<i>ATB</i>	<b>0.789</b>						
<i>EU</i>	0.627	<b>0.702</b>					
<i>IUFTS</i>	0.668	0.635	<b>0.763</b>				
<i>PBC</i>	0.674	0.691	<u>0.788</u>	<b>0.783</b>			
<i>Reliability</i>	0.695	0.543	0.59	0.586	<b>0.765</b>		
<i>SN</i>	0.69	0.48	0.673	0.703	0.587	<b>0.763</b>	
<i>Service security</i>	0.704	0.637	0.636	0.645	0.693	0.595	<b>0.767</b>

Table 5: Discriminant validity (HTMT ratio)

	<i>ATB</i>	<i>EU</i>	<i>IUFTS</i>	<i>PBC</i>	<i>Reliability</i>	<i>SN</i>
<i>EU</i>	0.783					
<i>IUFTS</i>	0.84	0.807				
<i>PBC</i>	0.834	0.849	<u>1.02</u>			
<i>Reliability</i>	0.857	0.697	0.734	0.721		
<i>SN</i>	0.862	0.583	0.864	0.899	0.733	
<i>Service security</i>	0.889	0.814	0.824	0.824	0.868	0.769

It is imperative to consider the discriminant validity now that the convergent validity has been established. Discriminant validity evaluates how different a construct is from others, and it is commonly determined based on either the Fornell-Larcker criterion or the heterotrait-monotrait ratio (HTMT) of the associations. Table (4) illustrates Fornell-Larcker criterion results, as the square root of AVE for each construct is presented on the major diagonal of the table, while the remainder of the stated values is

---

---

the inter-correlations in between the construct. According to this test, the AVE square root of each construct should be bigger than its maximum correlations with any of the constructs.

However, the HTMT method is defined as the proportion of between to within-trait correlations. Table (5) demonstrates the results of HTMT values, which should be less than 0.90 (Henseler et al., 2015). Using the preceding guides of both Fornell-Larcker criterion and HTMT values, the discriminant validity was determined except for PBC and IUFTS.

#### **4.4 Descriptive Statistics and Multiple Correlations**

As shown in Table (6), both the descriptive statistics and the associations among the key variables are listed. *Fin-tech* was shown to have mean ( $M$ ), standard deviation ( $SD$ ), and coefficient of variation ( $CV$ ) as ( $M = 4.021, SD = 0.587, CV = 14.60\%$ ) with a significant positive intermediate correlation with *IUFTS* since ( $r(323) = .677, P < 0.001$ ). *Attitude toward behavior* has descriptive statistics as ( $M = 4.290, SD = 0.641, CV = 14.94\%$ ) with a significant positive medium relationship with *IUFTS* since ( $r(323) = .642, P < 0.001$ ).

Table 6: Descriptive statistics and multiple correlations

	<i>FT</i>	<i>Reliability</i>	<i>SS</i>	<i>EU</i>	<i>ATB</i>	<i>SN</i>	<i>PBC</i>	<i>IUFTS</i>
<i>FT</i>	1	.846***	.875***	.838***	.755***	.595***	.701***	.677***
<i>Reliability</i>		1	.676***	.526***	.689***	.571***	.570***	.563***
<i>SS</i>			1	.577***	.684***	.575***	.630***	.611***
<i>EU</i>				1	.571***	.391***	.593***	.559***
<i>ATB</i>					1	.664***	.644***	.642***
<i>SN</i>						1	.685***	.638***
<i>PBC</i>							1	.786***
Mean	4.021	4.2172	4.1732	3.6726	4.2903	3.9139	3.9096	3.9818
SD	0.58715	0.63797	0.67673	0.75104	0.64108	0.75584	0.77717	0.77659
CV	14.60%	15.13%	16.22%	20.45%	14.94%	19.31%	19.88%	19.50%
Skewness	-0.443	-0.544	-0.602	-0.261	-0.768	-0.304	-0.403	-0.494
Kurtosis	-0.295	-0.51	-0.215	0.045	-0.028	-0.634	-0.399	-0.277

\*\*\*P < 0.001

*Subjective norms* have descriptive statistics as ( $M = 3.914, SD = 0.756, CV = 19.31\%$ ) with a significant positive intermediate relationship with *IUFTS* since ( $r(323) = .638, P < 0.001$ ). *Perceived behavior control* has descriptive statistics as ( $M = 3.910, SD = 0.777, CV = 19.88\%$ ) with a significant positive strong relationship with *IUFTS* since ( $r(323) = .786, P < 0.001$ ). The values of Skewness and kurtosis are within the range (+2, -2), indicating that the associated variables are normally distributed (Trochim & Donnelly, 2006; Gravetter & Wallnau, 2014).

---

---

#### 4.5 Structural model Assessment

Coefficient values, collinearity tests, determination coefficient (R<sup>2</sup>), effect size (f<sup>2</sup>), predictive relevance (Q<sup>2</sup>), and model fit criteria are all used to examine the structural model. Figures 2, 3 depict the research framework with calculated path coefficients and accompanying p-values. The results of the first three hypotheses in the table (6) show that; *Reliability* has a statistically significant positive effect on *Attitude toward behavior* ( $\beta = 0.354, P < 0.001$ ), *Subjective norms* ( $\beta = 0.309, P < 0.001$ ), and *Perceived behavior control* ( $\beta = 0.182, P < 0.01$ ). Hypotheses from 4 to 6 indicated that *Service Security* has a statistically significant positive effect on *Attitude toward behavior* ( $\beta = 0.303, P < 0.001$ ), *Subjective norms* ( $\beta = 0.302, P < 0.001$ ), and *Perceived behavior control* ( $\beta = 0.229, P < 0.001$ ). Hypotheses from 7 to 9 indicated that *Ease of use* has a statistically significant positive effect on *Attitude toward behavior* ( $\beta = 0.246, P < 0.001$ ), *Subjective norms* ( $\beta = 0.127, P < 0.05$ ), and *Perceived behavior control* ( $\beta = 0.455, P < 0.001$ ). The tenth hypothesis revealed that *Attitude toward behavior* has a statistically significant positive effect on *IUFTS* since ( $\beta = 0.188, P < 0.001$ ). The eleventh hypothesis indicated that *Subjective norms* have a statistically significant positive effect on *IUFTS* since ( $\beta = 0.154, P < 0.01$ ). The twelfth hypothesis showed that *Perceived behavior control* has a statistically significant positive effect on *IUFTS* since ( $\beta = 0.553, P < 0.001$ ). Finally, the thirteenth hypothesis showed that *Fin-tech* has a statistically significant positive impact on *IUFTS* since ( $\beta = 0.199, P < 0.01$ ).

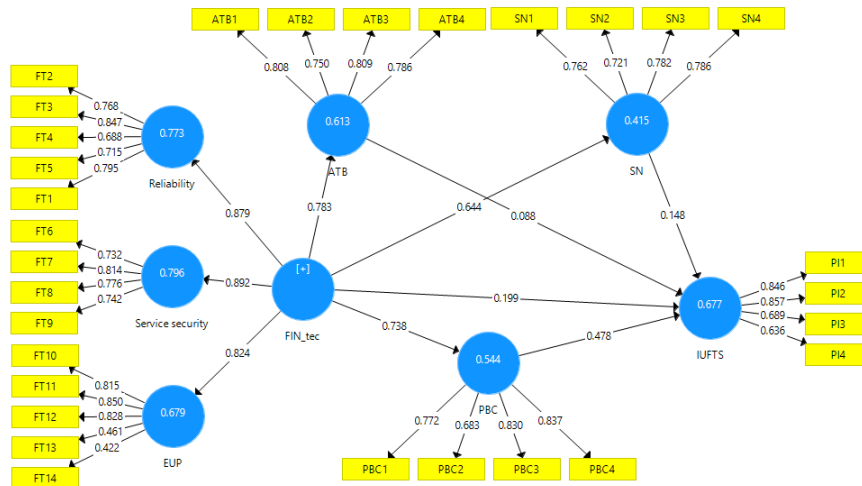


Figure 2: Measurement model assessment (factor loadings).

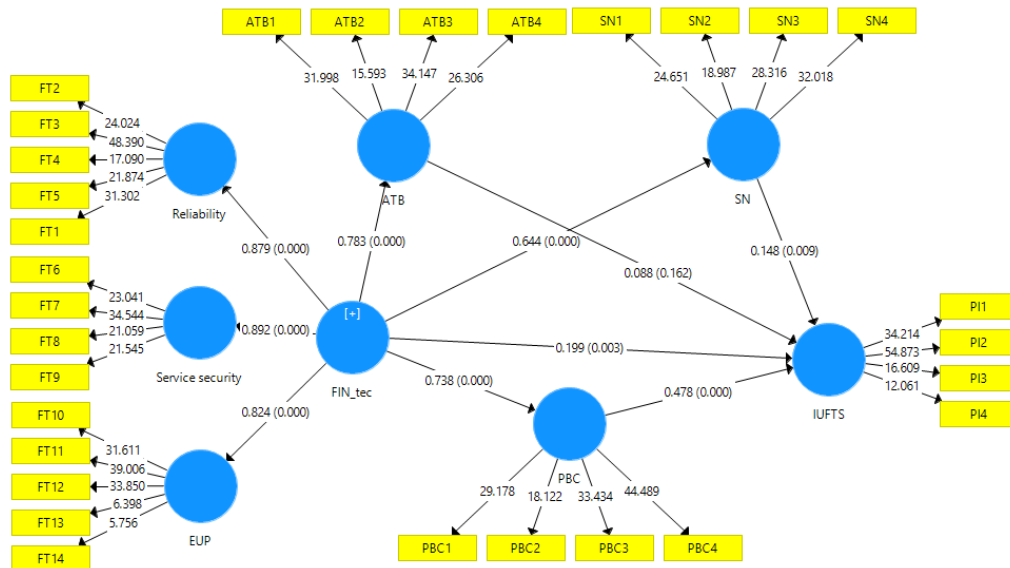


Figure 3: Path coefficients including the effect of Fin-tech.

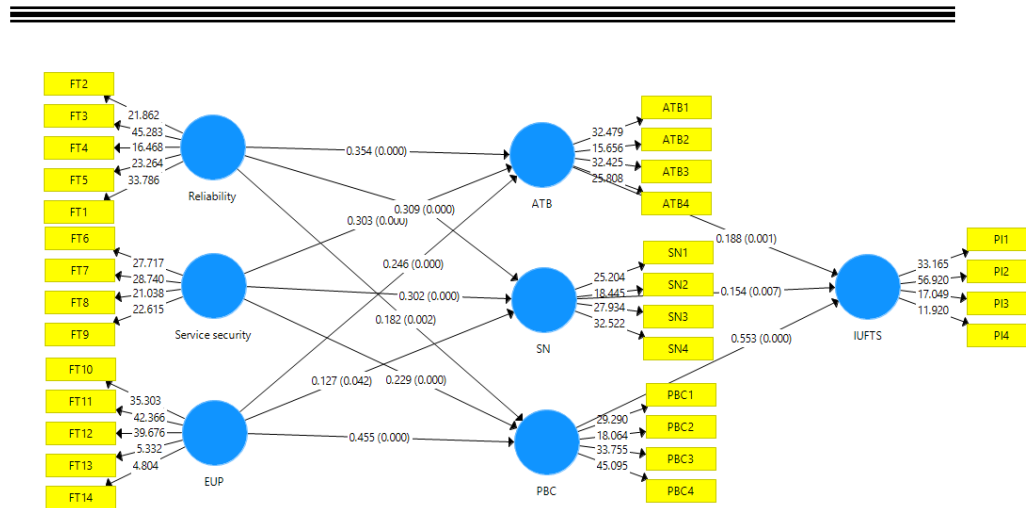


Figure 4: Path coefficients including the effect of Fin-tech dimensions.

Table 7: Hypothesis testing

Path	B	t-statistic	P-value	95% CI		Remark
				LL	UL	
<b>Direct Effect</b>						
<b>H1:</b> Reliability -> ATB	0.354	5.61	.000***	0.228	0.477	Accepted
<b>H2:</b> Reliability -> SN	0.309	4.304	.000***	0.167	0.448	Accepted
<b>H3:</b> Reliability -> PBC	0.182	3.034	0.002**	0.071	0.299	Accepted
<b>H4:</b> Service security -> ATB	0.303	4.235	.000***	0.166	0.454	Accepted
<b>H5:</b> Service security -> SN	0.302	4.185	.000***	0.154	0.443	Accepted
<b>H6:</b> Service security -> PBC	0.229	3.835	.000***	0.114	0.346	Accepted
<b>H7:</b> EU -> ATB	0.246	4.746	.000***	0.14	0.344	Accepted
<b>H8:</b> EU -> SN	0.127	2.036	0.042*	0.01	0.253	Accepted

<b>H9:</b> EU -> PBC	0.455	9	.000***	0.35	0.55	Accepted
<b>H10:</b> ATB -> IUFTS	0.188	3.313	0.001***	0.072	0.294	Accepted
<b>H11:</b> SN -> IUFTS	0.154	2.705	0.007**	0.045	0.267	Accepted
<b>H12:</b> PBC -> IUFTS	0.553	9.333	.000***	0.428	0.664	Accepted
<b>H13:</b> FIN_tech -> IUFTS	0.199	3.015	0.003**	0.071	0.33	Accepted
<b>Indirect Effect (Mediation Role)</b>						
<b>H14:</b> Reliability -> ATB -> IUFTS	0.067	2.771	0.006**	0.022	0.117	Accepted
<b>H15:</b> Reliability -> SN -> IUFTS	0.048	2.431	0.015*	0.013	0.089	Accepted
<b>H16:</b> Reliability -> PBC -> IUFTS	0.101	2.922	0.004**	0.038	0.172	Accepted
<b>H17:</b> Service security -> ATB -> IUFTS	0.057	2.709	0.007**	0.021	0.103	Accepted
<b>H18:</b> Service security -> SN -> IUFTS	0.047	2.148	0.032*	0.011	0.096	Accepted
<b>H19:</b> Service security -> PBC -> IUFTS	0.127	3.405	0.001***	0.06	0.203	Accepted
<b>H20:</b> EU -> ATB -> IUFTS	0.046	2.53	0.011*	0.016	0.086	Accepted
<b>H21:</b> EU -> SN -> IUFTS	0.02	1.45	0.147	0	0.053	Rejected
<b>H22:</b> EU -> PBC -> IUFTS	0.251	6.148	.000***	0.173	0.332	Accepted

\*P < 0.05, \*\*P < 0.01, \*\*\*P < 0.001.

The mediation analysis generated a significant positive indirect association between *Reliability* and *IUFTS* through *Attitude toward behavior* since ( $\beta_{Indirect} = 0.067, P < 0.01$ ). This relationship is also mediated by *Subjective Norms* ( $\beta_{Indirect} = 0.048, P < 0.05$ ), and *Perceived behavior control* ( $\beta_{Indirect} = 0.101, P < 0.01$ ). The mediation analysis also revealed a significant positive indirect relationship between *Service Security* and *IUFTS* through *Attitude toward behavior* since ( $\beta_{Indirect} =$

0.057,  $P < 0.01$ ). This relationship is also mediated by *Subjective Norms* ( $\beta_{Indirect} = 0.047, P < 0.05$ ), and *Perceived behavior control* ( $\beta_{Indirect} = 0.127, P < 0.001$ ). Finally, the mediation analysis indicated a significant positive indirect association between *Ease of use* and *IUFTS* through *Attitude toward behavior* since ( $\beta_{Indirect} = 0.046, P < 0.05$ ). This relationship is also mediated by *Perceived behavior control* ( $\beta_{Indirect} = 0.251, P < 0.001$ ).

Table 8: Structural model assessment

	ATB		SN		PBC		IUFTS	
	Effect Size	VIF	Effect Size	VIF	Effect Size	VIF	Effect Size	VIF
Reliability	0.163	2.005	0.083	2.005	0.039	2.005		
Service security	0.1	2.415	0.066	2.415	0.051	2.415		
EU	0.091	1.745	0.02	1.745	0.278	1.745		
(Fin-tech)	1.583	1	0.71	1	1.193	1	0.037	3.268
ATB							0.048	2.203
SN							0.03	2.379
PBC							0.4	2.286
<b><i>R Square</i></b>	0.617		0.425		0.574		0.665	
<b><i>R Square Adjusted</i></b>	0.614		0.42		0.57		0.662	
<b><i>Q Square</i></b>	0.373		0.238		0.345		0.377	
<b><i>GoF</i></b>	0.575							



---

---

As indicated in the table (7), around 62% of the *ATB* variation is described by the difference in the independent variables with the Cohen's effect size for each as follows; moderate for *reliability* ( $f^2 = 0.163$ ), small for *service security* ( $f^2 = 0.1$ ), small for *EU* ( $f^2 = 0.091$ ), and large for *Fin-tech* ( $f^2 = 1.583$ ). Moreover, there are about 43% of the variation in *SN* is clarified by the difference in the independent variables with the Cohen's effect size for each as follows; small for *reliability* ( $f^2 = 0.083$ ), small for *service security* ( $f^2 = 0.066$ ), small for *EU* ( $f^2 = 0.02$ ), and large for *Fin-tech* ( $f^2 = 0.71$ ). Furthermore, there are about 57% of the variation in *PBC* is clarified by the difference in the independent variables with the Cohen's effect size for each as follows; small for *reliability* ( $f^2 = 0.039$ ), small for *service security* ( $f^2 = 0.051$ ), moderate for *EU* ( $f^2 = 0.278$ ), and large for *Fin-tech* ( $f^2 = 1.193$ ). Finally, there are about 67% of the variation in *IUFTS* is clarified by the difference in all other variables with the Cohen's effect size for each as follows; small for *Fin-tech* ( $f^2 = 0.037$ ), small for *ATB* ( $f^2 = 0.048$ ), small for *SN* ( $f^2 = 0.03$ ), and large for *PBC* ( $f^2 = 0.4$ ). All variance inflation factor (VIF) values were less than 5, showing the collinearity problem absence. Predictive relevance was evaluated by calculating Stone-Geisser's  $Q^2$ . For covert variables, blindfolding, a sample reuse technique can be applied to calculate  $Q^2$  values. After executing the blindfolding process, the calculated  $Q^2$  values were ( $Q^2 = 0.373$ ) for *ATB*, ( $Q^2 = 0.238$ ) for *SN*, ( $Q^2 = 0.345$ ) for *PBC*, and ( $Q^2 = 0.377$ ) for *IUFTS*. Predictive relevance was indicated for endogenous covert variables in the PLS path model, as all values were more than zero (Hair et al., 2017). The Goodness of Fit (GoF) was suggested as a global fit indicator by Tenenhaus et al. (2005). The GoF criteria for determining if GoF values are unacceptable, small, moderate, or elevated are regarded as a universally suitable PLS model. The GoF value (0.575) is more than 0.36, showing

---

---

a high fit, hence, the GoF model could be concluded to be big enough to be considered as an adequate valid universal PLS model.

#### **5- Conclusion and Discussion:**

In conclusion, the results obtained from this study shed light on the way the quality of financial technology services could affect consumers' behavioral intent to use Fin-tech services during the COVID-19 pandemic by the mediating role of TPB. Additionally, the current study's descriptive results show that most respondents are using the National Bank of Egypt (NBE) with a percentage of 53.7%. Moreover, the results of the study confirmed that customers who use Fin-tech services come from the Cairo governorate, followed by Giza and Alexandria governorates, respectively. Also, the study found that the most used Fin-tech services are, in order, credit card services, point-of-sale services, and finally e-wallet services.

The current study descriptive results show that Egyptian customers do not use Fin-tech because they prefer using conventional financial services providers (48%), do not entrust them (22%), have used Fin-tech in the past but do not want to repeat the experience (18%), was not aware they existed (12%). However, most respondents say that they want to use Fin-tech because it is easy to create an account (43.2%), better online experience and functionality (11.2%), higher attractive rates/fees (15.4%), access to various services and products (12.4%), better service quality (10.3%), more advanced products compared to those offered by traditional banks (5.5%), and greater trusting level than the conventional services (1.8%). Also (66.2%) of the study respondents say that they will use financial technology services if they have reliability, in addition to (63.4%)

---

---

requiring ease of use to encourage them to deal with financial technology services, as well as (71%) stressing the need for security standards in the use of financial technology services, so the research team chose these three elements to study Its impact on the intention of use by customers of the Egyptian banking sector.

These research study findings have disclosed that all independent variables of the research model presented in Fin-tech service quality variables (Reliability, Service security, Ease of Use) have a direct and indirect positive impact on customer's intention to use Fin-tech services (dependent variable), except for the ease of use that does not have an indirect positive impact under social distancing through the mediating effect of subjective norms (SN), (all hypotheses were accepted except H21). These results were consistent with (Deni Wardani et al., 2021; Eke Vincent and H.B. Singhry, 2020; Meryl Astin, 2020; Yusuf Opeyemi and Adam Konto, 2020; Li-Min Chuang et al., 2015).

The procedures offered for advancing and training current financial sector employees as well as the succeeding information security expertise generation would be a supplementary measure to secure a route for limiting recurring fears about the threats imposed by electronic banking transactions while adopting the evolving Fin-tech business. Furthermore, Fin-tech legitimacy and ethical concerns will remain important at the administrative, managerial, and individuals' levels. It is worth noting that information security advancing, and training would be ineffective if it did not mitigate deception risks linked to human morals and integrity (Brooks and Dunn, 2015, p. 496). Such ethical conduct is even more important for Fin-tech experts working on the overall model and progression of the Fin-tech infrastructure, as customers need to trust Fin-tech

---

---

by the extent they believe in conventional banks to be able to contend with other financial institutions.

Because of the technology abundance of, the world has become increasingly interconnected, and among those innovations, (Fin-tech) seems to have the most inspirational technology. As a result, banks must bridge the gap between current and desired infrastructural technologies infrastructures to implement Fin-tech solutions, achieved by concentrating on information security and improving capabilities improvements related to banking advanced technologies, since Egypt is strongly willing to accept such Fin-tech apps, as the market evolves, with the demand and supply forces playing a key role. As Egypt is undergoing a rapid economic comprehensive revolution, the spread of such Fin-tech apps is an advantageous aspect. Additionally, banks must supply their clients with necessary guidelines and instructional manuals for Fin-tech services, and senior executives need to effectively review the performance of their employees in dealing with users. Both technical and operating staff must receive sufficient customer services training to obtain the required level of service quality. Also, explicit policies for using Fin-tech apps and services are essential, as these apps users are typically not technically capable of dealing with security issues. Thus, a framework for policy recommendations could be a viable alternative for Fin-tech consumers.

Customers, who employ Fin-tech services, claim that one of their most appealing aspects is how simple they are to use. The ease of use was identified by 63.4% of Fin-tech consumers as the primary reason for using these services, followed by dependability and service security. Moreover, bank executives must strengthen their systems' security measures to reassure their clients about the safety of e-banking services. Putting a greater

---

---

emphasis on strong safety elements could help to change negative user's opinions. As a result, institutions should deliver a clear message to the users that the present security is more than acceptable, allowing them to feel safe when utilizing Fin-tech services. Also, bank executives should gather data on clients' preferences and feedback through online surveys and/or discussion forums, to improve their implementation of shared value. Such behaviors may increase the desire to adopt Fin-tech services.

**6- Limitations and future research:**

Because fin-tech is an advanced technology, there is still a lot of effort to be done to enhance current options. Fin-tech confidentiality and protection need to be trusted and accepted amongst the users of these technologies. Future research may provide a coherent approach to guarantee Fin-tech safety and confidentiality, based on this study's findings.

Since this work does not address all the characteristics that influence the intent to utilize Fin-tech services, more studies could be conducted to further study other characteristics, such as financial managers, reputation/ quality provided of the online services. Furthermore, looking into various hypotheses would be extremely beneficial to Egyptian decision-makers as well as scholars. Also, empirical research regarding other nations with comparable situations would greatly deepen and improve current understanding.

---

---

Additionally, more investigation should be conducted to evaluate the impact of other elements, as situational factors, on the interaction between user's attitude and behavioral intent. To put it another way, future research on the interaction between Fin-tech service quality and the intent to use it should consider other aspects that could be used as an alternative or additional determinants to behavior.

Finally, the suggested framework was validated in the intention to utilize Fin-tech service and addressed only three elements of Fin-tech services' quality, which are reliability, service security, and ease of usage, while to be generalized, this model should be tested in a variety of contexts. In other words, to further understand if there is an association between the habit of utilizing Fin-tech services and other variables related to Fin-tech, other variables connected to Fin-tech can be included. Also, extensive studies of electronic payments adoption before, during, and after the COVID-19 pandemic should be included in future research.

### **7- Managerial implications:**

The Egyptian Central Bank has introduced its integrative strategy of Fin-tech and innovation in March 2019, intending to promote Egypt's Fin-tech ecosystem and position Egypt as a regionally renowned Fin-tech hub. As well, Egyptian customers are embracing Fin-tech apps, particularly in Cairo, the Nile delta, Giza, and Alexandria; however, Upper Egypt tends to use such Fin-tech apps less frequently, while Lower Egypt and the canal tend to employ those apps only in tough moments, relying on one app from a variety of others, such as cash transfer. This study assists both public and private conventional Egyptian banks in understanding how to incorporate the design features that render Fin-

---

---

tech services so appealing and simple to use. While not immediately repeatable, there is a lot to be learned from how Fin-tech services shape consumer offers and apply technology to provide engaging services.

Egyptian financial institutions and organizations have been watching with eager anticipation as a growing number of Fin-tech services have introduced important advances to the industry. Through collaborations, incubating programs, and explicit acquisitions, several traditional banks have started to deal with Fin-tech services. They're attempting to figure out how serious the threat is and to acquire some basic answers. Thus, this study examines the number of customers using Fin-tech services and products, the user base's demographic profile, and the reason that motivates them to use Fin-tech, in summary, the study investigates the degree of traction that Fin-tech services have.

#### **8- Theoretical implications:**

Fin-tech represents a major topic in academia. Hopefully, the present study may assist in gaining a better knowledge of the Fin-tech essentials, the likelihood of its easy integration into current systems, and, most importantly, the gaps that limit collecting its potential advantages. Using a research framework to explore a single concept throughout time has enormously empirical and theoretical ramifications.

In this study, the aspects related to increasing the Fin-tech usage intention in the Egyptian financial sector are described using the TPB paradigm to give a deeper comprehensive understanding and thus providing major methodological contribution from a statistical standpoint.

---

---

The study, also, could aid bank executives in addressing the existing low Fin-tech services' penetration rate and devising approaches to boost the Fin-tech services' use and acceptance by Egyptian customers, in a country where Fin-tech services are still regarded as novel approaches.

### **References**

- A. Parasuraman, (2004), "Assessing and improving service performance for maximum impact: Insights from a two-decade-long research journey," *Performance Measurement and Metrics*.
- A. Parasuraman, V. Zeithaml, and A. Malhotra (2005), "E-S-Qual: A multiple-item scale for assessing electronic service quality," *Journal of Service Research*, vol. 7, no. 3.
- Acharya, V. V., P. Schnabl, and G. Suarez, 2013. Securitization without risk transfer. *Journal of Financial Economics* 107, 515-536.
- Aduda J, Kingoo N. The relationship between electronic banking and financial performance among commercial banks in Kenya. *Journal of Finance and Investment Analysis*. 2012;1(3):99-118.
- Allen and Overy (2016), "Fintech", available at: [www.allenoverly.com/SiteCollectionDocuments/Fintech.PDF](http://www.allenoverly.com/SiteCollectionDocuments/Fintech.PDF)
- Avergun, J. and Kukowski, C. (2016), "Complying with AML Laws: challenges for the Fintech Industry", available at: [www.crowdfundinsider.com/2016/04/83845-complying-with-aml-lawschallenges-for-the-Fintech-industry/](http://www.crowdfundinsider.com/2016/04/83845-complying-with-aml-lawschallenges-for-the-Fintech-industry/)
- Belás, J.; Korauš, M.; Kombo, F.; Korauš. A., (2016), " Electronic banking security and customer satisfaction and in commercial banks", *Journal of Security and Sustainability Issues* 5(3).



- 
- 
- Bhimani, A. (1996). Securing the commercial Internet. *Communications of the ACM*, 39, 29–35.
- Bottomline Technologies (2016), “Five Best Practices for Managing Global Payments in a Changing World”, available at [http://archive.bottomline.com/collateral/payments/BT%20Five%20Best%20Practices%20for%20Managing%20Global%20Payments\\_WP\\_Web.pdf](http://archive.bottomline.com/collateral/payments/BT%20Five%20Best%20Practices%20for%20Managing%20Global%20Payments_WP_Web.pdf)
- Brooks, L.J. and Dunn, P. (2015), *Business and Professional Ethics*, Cengage Learning.
- Cressey, D.R. (1973), *Other People’s Money*, Patterson Smith, Montclair, N
- Calisir, F. and Gumussoy, C. (2008), “Internet banking versus other banking channels: young consumers’ view”, *International Journal of Information Management*, Vol. 28 No. 3, pp. 215-221.
- Chechen Liao , Jain-Liang Chen , David C. Yen (2007), Theory of planning behavior (TPB) and customer satisfaction in the continued use of e-service: An integrated model, *Computers in Human Behavior* 23 (2007) 2804–2822
- Christina Whidya Utami (2017), “Attitude, Subjective Norms, Perceived Behavior, Entrepreneurship Education and Self-efficacy toward Entrepreneurial Intention University Student in Indonesia”, *European Research Studies Journal* Volume XX, Issue 2A.
- Cyrus Osinde, Jamiah Mayanja, and Anthony Tibaingana, (2020), “Technology Service Quality and Customer Satisfaction in the Uganda’s Banking Sector”, *International Journal of Trade, Economics and Finance*, Vol. 11, No. 5.
- Dapp, T., & Slomka, L., (2015), “Fintech reloaded–Traditional banks as digital ecosystems”, Publication of the German original.
- David W., Raj Gnanarajah, Marc Labonte and Andrew P. Scott,(2020), “COVID-19 and the Banking Industry: Risks and Policy Responses”, Congressional Research Service, R46422.

- 
- 
- Deniz Kucukusta and Rob Law et al., (2015), “Re-examining perceived usefulness and ease of use in online booking”, *International Journal of Contemporary Hospitality Management*. Vol. 27 No. 2.
- Ding Lili, Yang Ying , Hu Qiuhui and Liu Mengxi (2021), “ Residents’ acceptance of using desalinated water in China based on the theory of planned behaviour (TPB)”, *Marine Policy* 123, 104293.
- Ernst and Young Global Ltd (2015), “Fintech: are banks responding appropriately?”, available at: [www.ey.com/Publication/vwLUAssets/EY-Fintech-are-banks-responding-appropriately/\\$FILE/EY-Fintechare-appropriately.pdf](http://www.ey.com/Publication/vwLUAssets/EY-Fintech-are-banks-responding-appropriately/$FILE/EY-Fintechare-appropriately.pdf)
- Feng Li, Hui Lu, Meiqian Hou, Kangle Cui and Mehdi Darbandi, (2021), “Customer satisfaction with bank services: The role of cloud services, security, e-learning and service quality”, *Technology in Society* 64 (2021) 101487
- Fishbein, M., and Ajzen, I., (1975), “ Belief, attitude, intention, and behavior: An introduction to theory and research”, MA: Addison-Wesley.
- Fortes, N., & Rita, P. (2016). “Privacy concerns and online purchasing behaviour: Towards an integrated model”, *European Research on Management and Business Economics*, 22(3), 167–176.
- Fred D. Davis, (1989), “Perceived Usefulness, Perceived Ease of Use, and User Acceptance of Information Technology”, *MIS Quarterly*; Sep 1989; 13, 3; ABI/INFORM Globalpg. 319.
- Gomber, P., Koch, J. A., & Siering, M., (2017), “Digital Finance and FinTech: current research and future research directions”, *Journal of Business Economics*, 87(5).
- Gravetter, F., & Wallnau, L. (2014). *Essentials of statistics for the behavioral sciences* (8<sup>th</sup> ed.). Belmont, CA: Wadsworth.

- 
- 
- Guo, Y. and Liang, C. (2016), “Blockchain application and outlook in the banking industry”, *Financial Innovation*, Vol. 2 No. 1, p. 24.
- H. Ibrahimi et al., (2016), “Customer Satisfaction on Reliability and Responsiveness of Self Service Technology for Retail Banking Services”, *Procedia Economics and Finance* 37.
- H.S. parameshwar et al., (2019), “ fintech and disruptions: an impact assessment”, *Journal of Critical Reviews*, Vol 6, Issue 6
- Hair, J. F., Hult, G. T., Ringle, C. M., & Sarstedt, M. (2017). *A Primer on Partial Least Squares Structural Equation Modeling (PLS-SEM)* (2<sup>nd</sup> Ed.). Los Angeles, CA: SAGE.
- Henseler, J., Ringle, C. M., & Sarstedt, M. (2015). A New Criterion for Assessing Discriminant Validity in Variance-Based Structural Equation Modeling. *Journal of the Academy of Marketing Science*, 43(1), 115-135.
- Ji-Hee Jung and Jae-Ik Shin, (2019), “The Effect of Choice Attributes of Internet Specialized Banks on Integrated Loyalty: The Moderating Effect of Gender”, *Sustainability* 2019, 11, 7063.
- Jui-Che Tu and Chun Yang (2019), “ Key Factors Influencing Consumers’ Purchase of Electric Vehicles”, *Sustainability* 2019, 11, 3863
- K. Gai, M. Qiu, X. Sun, and H. Zhao, “Security and privacy issues: A survey on FinTech,” in *Proc. Int. Conf. Smart Comput. Commun.*, 2016, pp. 236247.
- Kiriakidis, S. (2017),” Perceived behavioural control in the theory of planned behaviour: Variability of conceptualization and operationalization and implications for measurement”. In *Strategic Innovative Marketing*; Springer: Cham, Switzerland, pp. 197–202.

- 
- 
- Kock, N. (2015). Common method bias in PLS-SEM: A full collinearity assessment approach. *International Journal of E-Collaboration*, 11(4), 1–10. <https://doi.org/10.4018/ijec.2015100101>.
- Korbkul Jantarakolica and Tatre Jantarakolica, (2018), “Acceptance of Financial Technology in Thailand: Case Study of Algorithm Trading”, *International Symposia in Economic Theory and Econometrics*, Vol. 25.
- Kwok, B.K.B. (2016), *Business Terms and Phrases for Surveyors, Engineers and Facilities Managers in Hong Kong*, Knowledge Conservation, Hong Kong.
- Lee, I., & Shin, Y. J., (2018), “Fintech: Ecosystem, business models, investment decisions, and challenges”, *Business Horizons*, 61(1).
- Liébana-Cabanillas, F., Marinković, V. and Kalinic, Z. (2017), “A SEM-neural network approach for predicting antecedents of m-commerce acceptance”, *International Journal of Information Management*, Vol. 37 No. 2, pp. 14-24.
- Li-Min Chuang et al., (2016), “The Adoption of Fintech Service: TAM perspective” *International Journal of Management and Administrative Sciences(IJMAS)*(ISSN: 2225-7225)Vol. 3,No. 07
- Li-Min Chuang, Chun-Chu Liu & Hsiao-Kuang Kao (2015), “The Adoption of Fintech Service: TAM perspective”, *International Journal of Management and Administrative Sciences*, Vol. 3,No. 07.
- Little, R. J., & Rubin, D. B. (2019). *Statistical analysis with missing data* (Vol. 793). John Wiley & Sons.
- Lutz Sommer et al. (2011). *The Theory Of Planned Behaviour And The Impact Of Past Behaviour*. *International Business & Economics Research Journal* Volume 10, Number 1
- Marcu, M. R. (2021), “The Impact of the COVID-19 Pandemic on the Banking Sector”, *Management Dynamics in the Knowledge Economy*, vol.9, No. 2, pp. 205-223.

- 
- 
- M. Oteng-Peprah, N. de Vries and M.A. Acheampong (2020), “Households’ willingness to adopt greywater treatment technologies in a developing country – Exploring a modified theory of planned behaviour (TPB) model including personal norm”, *Journal of Environmental Management* 254 ,109807.
- Meryl Astin Nangin, Irma Rasita Gloria Barus , Soegeng Wahyoedi (2020), “The Effects of Perceived Ease of Use, Security, and Promotion on Trust and Its Implications on Fintech Adoption”, *Journal of Consumer Sciences*, 2020, Vol. 05, No. 02.
- Montazemi, A. and Qahri-Saremi, H. (2015), “Factors affecting adoption of online banking: a meta-analytic structural equation modeling study”, *Information & Management*, Vol. 52, No. 2, pp. 210-226.
- Noni Setyorini and Ika Indriasari (2020), “Does millennials have an investment interest? theory of planned behaviour perspective”, *Diponegoro International Journal of Business*, Vol. 3, No. 1, pp. 28-35.
- Nurpur J. E-Banking and customers’ satisfaction in Bangladesh: An analysis. *International Review of Business Research Papers*. 2010;6:145-156.
- Nurul Syafiqah Tanwir and Muhammad Iskandar Hamzah (2020),” Predicting Purchase Intention of Hybrid Electric Vehicles: Evidence from an Emerging Economy”, *World Electric Vehicle Journal* 2020, 11, 35.
- Oanh Thi NGUYEN (2020), “Factors Affecting the Intention to Use Digital Banking in Vietnam”, *Journal of Asian Finance, Economics and Business* Vol 7 No 3 (2020) 303-310.
- Prabanga ,Janet Lee and Rebecca Tan, Aldónio Ferreira (2013), Sustainability reporting and the theory of planned behavior, *Accounting, Auditing & Accountability Journal* Vol. 28 No. 7, 2015 pp. 1099-1137
- Prabanga Thoradeniya et al., (2015), “Sustainability reporting and the theory of planned behavior”, *Accounting, Auditing & Accountability Journal* Vol. 28 No. 7.

- 
- 
- PwC (2016), “Customers in the spotlight, How Fintech is reshaping banking”, available at: [www.accenture.com/\\_acnmedia/Accenture/Conversion-Assets/DotCom/Documents/Global/PDF/Dualpub\\_11/Accenture-Future-Fintech-Banking.pdf](http://www.accenture.com/_acnmedia/Accenture/Conversion-Assets/DotCom/Documents/Global/PDF/Dualpub_11/Accenture-Future-Fintech-Banking.pdf) (accessed 21 November 2016).
- Rajdeep Kumar Raut, Niladri Das and Rohit Kumar (2018), “Extending the Theory of Planned Behaviour: Impact of Past Behavioural Biases on the Investment Decision of Indian Investors”, *Asian Journal of Business and Accounting* 11(1).
- S. Mehrban et al., (2020), “Towards Secure FinTech: A Survey, Taxonomy, and Open Research Challenges”. Digital Object Identifier 10.1109/ACCESS.2020.297043
- Shumaila Y. Yousafzai , Gordon R. Foxall, and John G. Pallister (2010), “Explaining Internet Banking Behavior: Theory of Reasoned Action, Theory of Planned Behavior, or Technology Acceptance Model?”, *Journal of Applied Social Psychology*, 40, 5, pp. 1172–1202.
- Suman Prosad Saha, (2016), “An Analysis of Internet Banking Service Quality Affecting Customer Satisfaction with a focus on United Commercial Bank Limited in Bangladesh”, *Journal of Marketing and Consumer Research* , Vol.20.
- Syed Ali Raza et al., (2020), “Internet banking service quality, e-customer satisfaction and loyalty: the modified e-SERVQUAL model”, *The TQM Journal* Vol. 32 No. 6.
- Tarhini, A., El-Masri, M., Ali, M. and Serrano, A. (2016), “Extending the UTAUT model to understand the customers’ acceptance and use of internet banking in Lebanon: a structural equation modeling approach”, *Information Technology & People*, Vol. 29 No. 4, pp. 830-849.
- Taylor Wessing (2016), “Fraud in Fintech: issues, solutions and aspirations”, available at: <https://unitedkingdom.taylorwessing.com/en/insights/corporate-crime-matters/fraud-in-Fintech-issues-solutionsand- aspirations>

- 
- 
- Tenenhaus, M., Esposito Vinzi, V., Chatelinc, Y.-M. & Lauro, C. (2005) PLS Path Modelling, *Computational Statistics & Data Analysis*, 48 (1), 159-205.
- Thornton, J. and White, L. (2001), “Customer orientations and usage of financial distribution channels”, *Journal of Services Marketing*, Vol. 15 No. 3, pp. 168-185.
- Trochim, W. M., & Donnelly, J. P. (2006). *The research methods knowledge base* (3<sup>rd</sup> ed.). Cincinnati, OH:Atomic Dog.
- Vernell Deslonde, Michael Becerra (2018), “The Technology Acceptance Model (TAM): Exploring School Counselors’ Acceptance and Use of Naviance”, *The Professional Counselor* | Volume 8, Issue 4.
- Xihui Chen, Xuyuan You , Victor Chang, (2021), “FinTech and commercial banks’ performance in China: A leap forward or survival of the fittest?”, *Journal of Technological Forecasting & Social Change* 166,120645.
- Youngcheoul Kang, Nakbum Choi, and Seoyong Kim (2021), “Searching for New Model of Digital Informatics for Human–Computer Interaction: Testing the Institution-Based Technology Acceptance Model (ITAM)”, *International journal of Environmental research and public health*, 18, 5593.
- Yusuf Opeyemi Akinwale & Adam Konto Kyari (2020), “ Factors influencing attitudes and intention to adopt financial technology services among the end-users in Lagos State, Nigeria”, *African Journal of Science, Technology, Innovation and Development*.
- Zhu, H. and Zhou, Z.Z. (2016), “Analysis and outlook of applications of blockchain technology to equity crowdfunding in China”, *Financial Innovation*, Vol. 2 No. 1, p. 29.

توقع نية العملاء المصريين لاستخدام خدمات التكنولوجيا المالية في القطاع المصرفي المصري خلال فترة  
جائحة كورونا: اختبار الدور الوسيط لنموذج السلوك المخطط (TPB)

د. أروي محمد السيد

مدرس إدارة الاعمال، أكاديمية السادات للعلوم الادارية  
[arwa.ali7707@gmail.com](mailto:arwa.ali7707@gmail.com)

د. شريف طاهر محمد فريد

مدرس إدارة الاعمال، أكاديمية السادات للعلوم الادارية  
[Sherif-taher@hotmail.com](mailto:Sherif-taher@hotmail.com)

**الملخص:**

تسلط الدراسة الضوء على أهمية نظرية السلوك المخطط (TPB) للتنبؤ بما إذا كان عملاء القطاع المصرفي المصري سيقبلون استخدام خدمات التكنولوجيا المالية ، كما أن الغرض من هذا البحث هو دراسة تأثير أبعاد جودة خدمات التكنولوجيا المالية (الموثوقية ، وأمن الخدمة ، وسهولة الاستخدام) علي النوايا السلوكية لعملاء القطاع المصرفي المصري تجاه استخدام خدمات التكنولوجيا المالية، بالإضافة الي تناول التأثيرات غير المباشرة بين جودة الخدمة والنوايا السلوكية لاستخدام خدمات التكنولوجيا المالية باستخدام متغيرات نظرية السلوك المخطط (TPB) كمتغيرات وسيطة.

وقد تم جمع البيانات من ٣٢٣ مفردة من عملاء القطاع المصرفي المصري من خلال الاستبيان. حيث تم اختيار المشاركين بناءً على تجاربهم في استخدام خدمات التكنولوجيا المالية ، وقد كشفت النتائج الإحصائية أن هناك العديد من العوامل الرئيسية مثل الموثوقية وأمن الخدمة لها تأثير إيجابي كبير مباشر وغير مباشر على النية السلوكية لاستخدام خدمات التكنولوجيا المالية من جانب العملاء ، في حين أن سهولة الاستخدام لها تأثير مباشر من خلال بعض عناصر نموذج السلوك المخطط (TPB) وعلى الجانب الاخر ليس لها تأثير غير مباشر على النية السلوكية لاستخدام خدمات التكنولوجيا المالية من خلال الدور الوسيط للمعايير الشخصية للعملاء كعنصر من عناصر السلوك المخطط (TPB). تؤسس هذه الورقة إطارًا نظريًا يعتمد على نظرية السلوك المخطط (TPB) التي تعزز العلاقة بين المتغيرات التابعة والمستقلة. بالإضافة إلى ذلك التوصل الي أهم العوامل الرئيسية التي تؤثر على نية العملاء السلوكية لاستخدام خدمات التكنولوجيا المالية.

**الكلمات الدالة المفتاحية:**

خدمات التكنولوجيا المالية (Fin-tech)، نظرية السلوك المخطط (TPB) ، جودة الخدمات المالية الالكترونية،  
النوايا السلوكية ، القطاع المصرفي المصري، جائحة كورونا