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SLEEP ON MONEY? A TAM-BASED STUDY ON THE ADOPTION INTENTION OF OPEN BANKING IN TAIWAN

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Abstract

Although Taiwan has promoted Open Banking policies and technologies, the penetration of these services remains relatively low. Understanding the factors that influence adoption intention is crucial to developing more user-oriented services. While prior research on Open Banking has primarily focused on technical feasibility and regulatory frameworks, studies from the consumer perspective are still limited. This study applies the Technology Acceptance Model (TAM) and incorporates perceived risk as an external factor to examine what drives or inhibits Open Banking adoption among Taiwanese consumers. A total of 290 valid responses were collected via an online survey. Path analysis was conducted using partial least squares structural equation modeling (PLS-SEM). The results indicate that most of the core TAM constructs exhibit significantly positive

correlations, supporting the model's explanatory power. Among six dimensions of perceived risk, only Psychological Risk exhibits significant negative influence, suggesting that lack of confidence or not align with user habit may reduce adoption intention. The findings provide practical implications for both supervisors and financial institutions. Enhancing consumer education and improving user experience (UX) design will help alleviate concerns and build trust, thereby advancing wider adoption of Open Banking services.

Keywords:

Open Banking, PLS-SEM, Technology Acceptance Model (TAM), Perceived Risk, Adoption Intention

1. Introduction

What is Open Banking? Financial expert Brett King once stated in his book "Bank 4.0": "Banking Everywhere, Never at a Bank." This statement implies that users can enjoy banking products and services, complete transactions or wealth management activities without physically visiting a bank. With the development of FinTech, countries worldwide have successively promoted Open Banking policies to foster innovation and competition in the financial market. Open Banking, by utilizing Open API (Application Programming Interface), allows banks to share financial information with qualified Third-party Service Providers (TSPs) under customer authorization, enabling consumers to access more personalized and convenient financial services (BCBS, 2019). In Taiwan, the Financial Supervisory Commission (FSC) has promoted Open Banking in three phases since 2019. It has currently entered the "Transaction Authorization" phase, which means that with the consumer's consent and authorization, transactions and payments can be made through the TSP's service platform or Apps (Kao, 2019).

This study employs Davis (1989), the Technology Acceptance Model (TAM), to explore the key factors influencing the Adoption Intention on Open Banking. Although Perceived Usefulness and Perceived Ease of Use have consistently been important variables explaining user adoption of emerging technologies, in the context of FinTech, consumers are also concerned about issues such as information security, privacy leakage, and fraud risks. That is, even though the technical aspect is feasible, consumers' subjective perception of potential risks is still a significant factor influencing their adoption decision. While Open Banking emphasizes data sharing and platform collaboration, if the government can establish a comprehensive risk communication mechanism and implement regulatory measures, it would help decrease user concerns and promote the implementation of Open Banking policies. Therefore, perceived risk provides a proper perspective to further explore its role in Open Banking adoption intention.

Although Open Banking has become a global financial development trend, this study specifically focuses on the context of Taiwan. Unlike countries such as Australia and Singapore, where policies have claimed financial institutions to upgrade infrastructure and promote non-cash transactions, most banks in the Asia-Pacific region still rely on legacy systems that have been operating for decades, leading to relatively slow innovation (DTTL, 2025). Furthermore, Taiwan has a high number of banks and high branch density, and the overall market competition still tends to offer similar types of products and services (Lee, 2013). With the promotion of Open Banking,

there is a possibility of breaking the current situation, which will contribute to financial service innovation and enhance the overall competitiveness of the financial market.

Through a questionnaire survey, this study investigates how TAM and the dimensions of perceived risk (Featherman & Pavlou, 2003) influence the adoption intention of Taiwanese consumers in the Open Banking context. This research is provided with timeliness and academic value: Firstly, it is one of the few quantitative analysis studies focusing on the current phase of Open Banking in Taiwan. Secondly, it extends the application scope of TAM in the FinTech field. Finally, it has theoretical and practical implications for promoting financial innovation policies and predicting consumer behavior.

2. Literature Review

Based on the TAM, this study explores the key factors of people's attitude and intention to adopt Open Banking, and introduces perceived risk as a key variable that may influence their intention to adopt open banking. This chapter will review the relevant literature on Open Banking, TAM and perceived risk in order to lay the theoretical foundation for this study and introduce the core issues of this study.

2.1 Open Banking

This section reviews the introduction of Open Banking and the application scenarios of the three phases of Open Banking implementation in Taiwan.

2.1.1 Introduction to Open Banking

The concept of Open Banking aims to use secure and reliable technology to allow banks to share customer information with Third-party Service Providers (TSPs) through Application Programming Interface (API) under the guidance and consent of customers, to create personalized applications and services and improve consumers' financial service experience (BCBS, 2019). Traditionally, the transaction history of consumer accounts is usually regarded as the bank's assets. In contrast, Open Banking advocates a higher level of system openness, giving consumers the right to decide whether to allow other banks or non-bank Third-party Payment Providers (TPPs) to access relevant information (Mansfield-Devine, 2016).

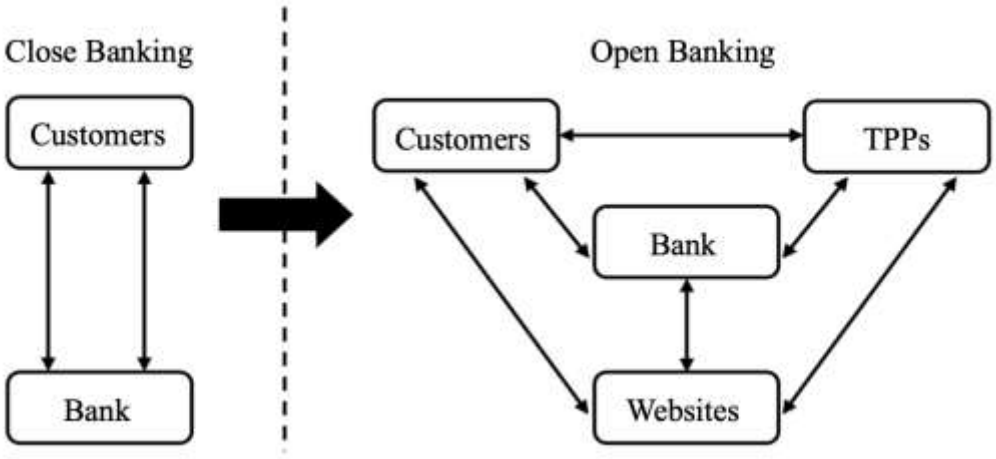

Figure 1: *Customer transaction information under Open Banking*

Taking the UK as an example, if consumers want to switch banks, switching costs will become one of the main reasons for their "switching inertia" (Borgogno & Colangelo, 2020). Financial service providers can only evaluate based on consumers' voluntary sharing of historical financial information, and this information is often only fragments of transaction records, making it difficult to accurately grasp the profile of consumers (Zetzsche et al, 2020; Chan et al, 2022). With the rise of Open Banking services, third-party players such as financial technology companies, large technology companies, and other software providers have been able to access customer data in payment service provider systems through APIs, weakening traditional banks' competitive advantages (Deloitte, 2023).

However, as financial institutions share customer information more frequently, fraud and data leakage have also increased (AlBenJasim et al., 2023). Therefore, valid user identity verification, combined with multiple verification factors and information sources (such as linking to bank accounts), can help correctly identify account users and operators in digital commerce (BIS, 2021). Within the framework of Open Banking, having a robust platform architecture and rigorous identity verification mechanism helps reduce risks such as data leakage and fraud, thereby ensuring the security and trust of both consumers and bankers (Frei, 2023).

Open Banking is expected to facilitate a more complete and diverse financial ecosystem, and its service scope will also expand beyond traditional banking business. This trend has prompted financial institutions, fintech companies and TSPs to establish partnerships to provide consumers personalized service experiences (Sha, 2024). In addition, creating an inclusive ecosystem is also

a challenge. In response to this problem, many TPP starters are actively developing innovative services and proposing attractive value propositions for merchants to promote the development of the overall Open Banking ecosystem (BIS, 2021).

2.1.2 Overview of Taiwan's Open Banking Initiative

The promotion of Open Banking involves consumer data autonomy and data sharing between banks and TSPs. Taiwan's current policy is based on Open API technology and the principle of bank self-discipline, with banks voluntarily conducting data interfaces with TSPs (Lin, 2022). According to the plan of the Taiwan Financial Supervisory Commission (FSC), the Open Banking process will be carried out in three phases: products, customers and transactions (**Table 1**):

Table 1: *Three Phases of Open Banking and TSP Application Services*

Open API Phases	**TSP Related Service Applications**
Phase I: Public Product Information	It mainly provides non-trading financial product information and helps consumers obtain information such as interest rates, exchange rates and various financial products through TSP.
Phase II: Account Information Integration	After obtaining the consumer's consent or authorization, their personal information, consumption records and other information can be accessed.
Phase III: Transaction Authorization	With the consumer's consent or authorization, transactions and payments can be made through the TSP's service platform or Apps.

The first phase of Taiwan's Open Banking, "Public Product Information" and the second phase, "Account Information Integration" were officially launched in September 2019 and December 2020 respectively. In just half a year after the second phase went online, 8 banks and 2 TSPs have obtained approval from the FSC to provide related services (FISC, 2021). As the market size gradually accumulates in the first two phases, the FSC has officially approved the third phase's self-regulatory norms, technology and information security standards in January 2024. The third phase of opening projects includes deposits, credit cards, loans, payments and mobile phone

number transfers (FSC, 2024). The core application scenarios of Taiwan's Open Banking at each phase are summarized as follows (**Table 2**):

Table 2: *Core application scenarios of Open Banking*

Open API Phases	**Core Application Scenarios**
Phase I	Track spending and price comparison, without consumer personal information.
Phase II	Consumer credit evaluation data, identity verification, account integration, and features for product recommendations and money management.
Phase III	Business application, payment integration, and transfer payments, as well as integrate securities and insurance accounts.

Reference: *Lee, 2022*

Although Taiwan has a high number of banks and high branch density, market competition is still mainly based on providing similar services or launching products of the same nature. This phenomenon may indicate that the market structure still lacks diversity, resulting in limited innovation and development (Lee, 2013). With the implementation of Open Banking, it will not only improve the competitive landscape of traditional banks and promote financial service innovation, but also provide consumers with more diverse choices, thereby enhancing the competitiveness of the financial market (Rivero et al., 2023).

2.2 Technology Acceptance Model (TAM)

Past research has shown that the TAM has been extensively applied in FinTech, including AI Robo-Advisor, mobile payments, e-insurance, and P2P lending, among others. It is regarded as an effective framework for explaining individuals' acceptance of new technologies (Sabir, 2023; Kelly, 2023; Toukabri, 2021; Putri, 2023). Since Open Banking is also a component of information technology applications, this study employs the TAM as a theoretical foundation to investigate the key factors influencing people's intention to adopt Open Banking and their attitudes. This section will sequentially discuss the evolution of the Technology Acceptance Model, define its various dimensions, and review related research to establish a solid theoretical basis.

2.2.1 Evolution of the TAM

The TAM, was proposed by Davis (1989) and has been extensively applied in the field of information technology. This theory concludes that perceived usefulness and perceived ease of use are critical factors influencing users' intentions to adopt technology. The model serves as an extension of the Theory of Reasoned Action (TRA), developed by Ajzen & Fishbein (1975) (**Figure 2**).

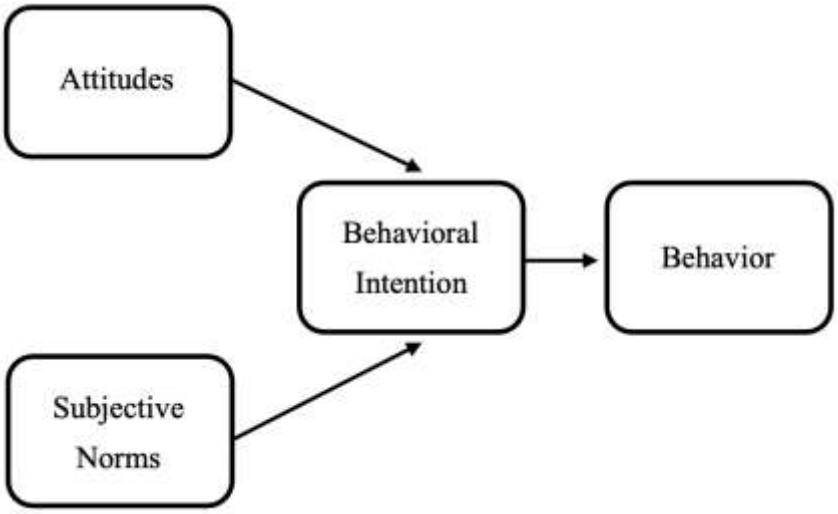

Figure 2: *Theory of Reasoned Action (TRA) Model*

In the TRA, an individual's "attitude toward behavioral" and "subjective norms" simultaneously influence their behavioral intention (BI), which in turn determines actual behavior. However, Davis (1989) expanded the TAM based on the TRA framework to specifically predict and explain users' adoption behavior regarding information technology (IT) (**Figure 3**).

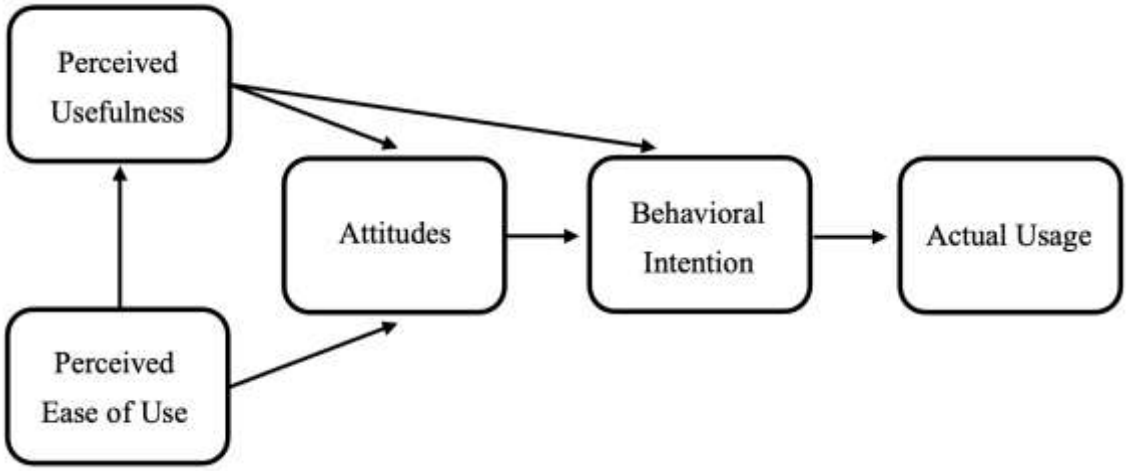

Figure 3: *Technology Acceptance Model (TAM)*

Compared to the Theory of Reasoned Action (TRA), TAM introduces two core variables: "Perceived Usefulness" and "Perceived Ease of Use", while retaining "Attitude Toward Adoption" and "Adoption Intention" from the TRA framework. Each dimension will be explained in the following section.

2.2.2 Dimension of the TAM

- Perceived Usefulness (PU)

Davis (1989) defines perceived usefulness as the subjective belief that users hold regarding the benefits of using information technology. When users perceive that the technology enhances their work efficiency, they're more likely to accept it. Wixom & Todd (2005) also noted that consumers typically assess their anticipated benefits prior to adopting a system, which subsequently influences their attitudes and intentions toward adoption. This study defines perceived usefulness (PU) as the overall assessment of how consumers perceive the system as beneficial when utilizing Open Banking services.

- Perceived Ease of Use (PEOU)

Davis (1989) defined perceived ease of use as the user's subjective belief that a particular information technology can be operated easily and flexibly, effectively reducing the time required for learning and understanding. If users perceive the technology as easy to operate, they're more

likely to adopt it; conversely, if the operation is overly complex or increases the burden of use, their willingness to adopt may diminish.

Fatmawati (2015) also noted that perceived ease of use can explain why users adopt new systems and influence their acceptance. Consequently, this study defines perceived ease of use (PEOU) as consumers' overall assessment of how easy it is to understand and operate open banking services. Furthermore, Davis, Bagozzi & Warshaw (1989) confirmed in their research that the perceived ease of use of information technology positively influences perceived usefulness. Therefore, this study proposes the following hypothesis:

H1: *Perceived ease of use positively influences perceived usefulness*

- Attitude Toward Adoption

Fishbein & Ajzen (1975) proposed the TRA, which concludes that attitude is a preference or aversion toward a specific object, shaped by experiences and learning. This attitude represents an overall evaluation of the object. Davis (1989) further defined attitude towards adoption as the positive or negative feelings users experience when adopting new technologies. He argued that this attitude is influenced by "perceived usefulness (PU)" and "perceived ease of use (PEOU)". That is, when users believe that open banking services are beneficial or easy to use, their attitudes toward adoption are likely to be positive. Pavlou (2003) also confirmed that both PU and PEOU positively influence attitudes toward adoption. Therefore, this study proposes the following hypotheses:

H2: *Perceived usefulness positively influences attitudes toward adoption*
H3: *Perceived ease of use positively influences attitudes toward adoption*

- Adoption Intention

Taylor and Todd (1995) defined adoption intention as an individual's subjective willingness to adopt a specific technology in the future, which reflects the individual's anticipated likelihood of embracing the technology or innovation system. Davis (1989) further emphasized that a potential user's ultimate decision to adopt a new technology is depends on their adoption intention. Additionally, Folkes (1988) determined that intention is the primary motivator of

behavior; therefore, by assessing intention, one can often make accurate inferences about an individual's actual behavior.

Subsequent studies have demonstrated that the intention to adopt determines whether users embrace new technologies, with "attitude toward adoption" playing a key role in shaping this intention (Venkatesh et al., 2000). In view of this, the present study proposes the following hypothesis:

H4: *Attitude toward adoption positively influences adoption intention*

In the study of Davis (1989), it was noted that "perceived ease of use" and "perceived usefulness" mutually influence one another. If users perceive new technology as easy to use and believe it doesn't require additional time and effort, they're more likely to adopt the technology, thereby enhancing its "perceived usefulness." Furthermore, "perceived usefulness" not only fosters a positive attitude toward the adoption of new technology, but also strengthens users' intention to adopt it. Venkatesh et al. (2008) further confirmed that "perceived usefulness" positively influences "adoption intention". Accordingly, this study proposes the following research hypothesis:

H5: *Perceived usefulness positively influences adoption intention*

2.2.3 Related Research on TAM

Since Davis (1989) proposed the TAM, it has been extensively utilized to investigate the adoption behavior of various FinTech. Silva (2007) further noted that TAM has evolved into a foundational theoretical framework of "Normal Science". Many related studies have been adapted and expanded upon based on TAM to explain user behavior in diverse application contexts.

As the scope of financial technology applications continues to expand, TAM has also been applied to various sectors, including Neobank (Nagy et al., 2024; Yadav et al., 2024), BNPL services (Hidayat et al., 2022; Jagadhita et al., 2023), Crypto (Nuryyev et al., 2018; Lopez et al., 2021), E-Payment systems (Satriaji et al., 2023; Yang et al., 2024). The findings consistently indicate that TAM positively influences the relationships among these variables.

In addition, Hong, Liang, & Chang (2005) employed a meta-analysis method to examine 58 empirical studies. The results indicated that among the 10 groups of variable relationships in

the TAM, more than half of the studies identified significant positive correlations. This further proves the predictive and explanatory power of the theory across various application contexts.

In summary, the TAM not only establishes a theoretical foundation in the field of IT, but is also extensively utilized in various FinTech studies. Consequently, this study employs TAM as the theoretical framework to investigate consumers' adoption of Open Banking services, while also incorporating additional external variables to assess its applicability in diverse contexts.

2.3 Perceived Risk

This study applies the concept of "perceived risk" to consumers' intention to adopt Open Banking services and explores how various dimensions of risk influence their decision-making behaviors. To gain a deeper understanding of the influence of perceived risk, the following sections will review the definition and measurement variables associated with perceived risk, as well as the application of related research.

2.3.1 Definition of Perceived Risk

Bauer (1960) was the first to propose the concept of "perceived risk" in psychological research, highlighting that uncertainty arises when consumers are unsure whether a purchase decision will bring in the expected results. Furthermore, if the outcome of the decision doesn't match the original expectations, it may evoke negative emotions; therefore, the study suggests that consumer behavior inherently involves a certain degree of risk-taking, which also forms the basis of the perceived risk theory. Cox (1967) further identified the causes of perceived risk, which can be primarily categorized into two groups:

- Consumers are aware, prior to making a purchase, that the product or service may not meet their expectations.
- If the actual results don't align with expectations, consumers will suffer varying degrees of losses.

Therefore, Taylor (1974) introduced the concept of "loss", believing that when consumers recognize the possibility of incurring greater losses, their perception of risk will also be reinforced. Dowling & Staelin (1994) believe that perceived risk is a psychological sense of uncertainty derived from consumers' assessment of potential risks and adverse consequences during purchasing decisions.

2.3.2 Aspects of Perceived Risk Measurement

In consumer behavior research, scholars typically categorize and divide perceived risk into six dimensions: financial risk, performance risk, time risk, social risk, physical risk, and psychological risk (Brooker, 1984; Jacoby & Kaplan, 1972; Schiffman & Kanuk, 1994). Featherman & Pavlou (2003) examined the influence of these six risk dimensions on the intention to adopt e-Services using Structural Equation Modeling (SEM). The identified dimensions include financial risk, performance risk, privacy risk, psychological risk, social risk, and time risk. The description is as follows (**Table 3**):

Table 3: *Perceived risk dimensions and descriptions*

Dimensions	**Descriptions**
Financial Risk	Potential financial losses associated with purchasing decisions may include payment errors, refund issues, and the risk of financial information being compromised.
Performance Risk	The risk that the purchased product may not deliver the anticipated results or may not be used properly.
Privacy Risk	There may be risks of personal privacy leakage during the purchasing process, including information leaks or data abuse.
Psychological Risk	The anxiety and stress associated with purchasing decisions may stem from product choices that conflict with an individual's personal values.
Social Risk	The risk that a purchase decision may go unrecognized can result in negative evaluations to one's social image.
Time Risk	Purchasing decisions involve time costs, which include gathering information, learning how to utilize it, and waiting.

Reference: Featherman & Pavlou (2003)

2.3.3 Research on Perceived Risk

As a digital financial model that relies heavily on data sharing and third-party services, open banking may present a barrier to adoption due to concerns regarding personal information leakage, property loss, and fraud. For instance, Johnson (2018) noted that consumers often worry about security risks associated with mobile payments, which negatively influences their intentions

to adopt such technologies. Research conducted by Hirnissa et al. (2019) found that consumers' perceptions of subjective risk, including financial, performance, privacy, social, psychological, and time factors, significantly influence their intention to adopt Online Banking. This aligns with the conclusions of several previous studies (Marafon et al., 2018; Nguyen & Nguyen, 2020; Savas-Hall et al., 2021), indicating that these risks influence consumer adoption intentions.

In addition, Yang, Liu, Li, & Yu (2015) highlighted that consumers are highly concerned that TSPs may collect, disclose, disseminate, or sell personal information without consent or knowledge. Consequently, they worry that unscrupulous individuals may exploit this information to engage in illegal activities. Perceived risk is identified as a critical factor influencing the adoption of Fintech, given public concerns about technology security (Xia et al., 2023). Therefore, this study concludes that perceived risk will be a key factor influencing adoption intention in Open Banking. Accordingly, the following hypotheses are proposed:

H6: *Perceived risk negatively influences adoption intention*

3. Research Methods

This section will integrate the hypothesis construction of this study with the overall research structure. It will then introduce the design of the questionnaire and the measurement methods for various variables. Finally, the data collection and research methods of this study will be explained.

3.1 Research framework and Hypotheses

Based on the literature review presented, this study employs the TAM as its theoretical framework to explain the influence of perceived usefulness and perceived ease of use on consumers' attitudes and intentions regarding adoption. Furthermore, to expand the TAM, this study incorporates perceived risk as a latent variable, which encompasses six dimensions: financial, performance, privacy, psychological, social, and time risks.

This study aims to explore how perceived usefulness and perceived ease of use influence the adoption attitudes and intentions of Taiwanese individuals when using Open Banking services. Within the framework of Partial Least Squares Structural Equation Modeling (PLS-SEM), the six dimensions of perceived risk are defined as exogenous variables to investigate its influence on adoption intention. The overall research framework is as follows (**Figure 4**):

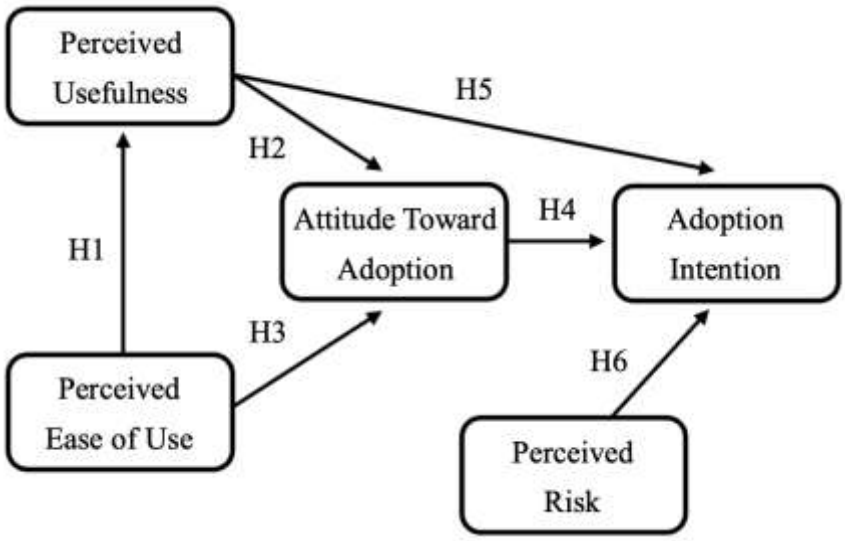

Figure 4: *Research framework and Hypotheses*

3.2 Questionnaire Design

This study employs a quantitative research method, targeting Taiwanese individuals aged 20 and older who meet the criteria for opening a bank account. To assess the general public's intention to adopt Open Banking and risk awareness, the questionnaire wasn't restricted to individuals who have previously utilized open banking services. It included inquiries regarding the cognization of using Open Banking services, as well as basic demographic information. A 5-point Likert scale was utilized to measure various dimensions of TAM and perceived risk.

- The TAM scale includes four constructs: perceived ease of use, perceived usefulness, adoption attitude, and adoption intention, totaling 15 questions. The items included in the TAM scale are as follows (**Table 4**):

Table 4: *TAM scale*

Constructs	**Questionnaires**	**References**
Perceived Ease of Use	1. I think using Open Banking is easy.	Davis, 1989; Taylor & Todd, 1995; Venkatesh & Davis, 2000;
	2. I believe using Open Banking is quick and simple.	
	3. Even without a technical background, I can use Open Banking easily.	

Perceived Usefulness	1. I think using Open Banking allows for faster financial transactions.	Venkatesh & Bala, 2008
	2. I believe using Open Banking makes financial transactions more convenient.	
	3. I think there are many diverse service scenarios in Open Banking.	
	4. I believe Open Banking can provide me with more diversified financial services.	
	5. Overall, I think Open Banking is helpful to me.	
Attitude Toward Adoption	1. I believe using Open Banking is a good thing.	Ajzen & Fishbein, 1975; Taylor & Todd, 1995
	2. I believe using Open Banking is a wise choice.	
	3. I believe Open Banking represents a financial advancement.	
	4. Overall, I have a high level of acceptance of Open Banking.	
Adoption Intention	1. I'm willing to continue using Open Banking in the future.	
	2. Even if it requires a little learning, I'm still willing to use Open Banking.	
	3. When Open Banking becomes more widespread, I'll actively use it.	

- The perceived risk scale includes six dimensions: financial risk, performance risk, privacy risk, psychological risk, social risk, and time risk, with a total of 18 questions. The items included in the perceived risk scale are as follows (**Table 5**):

Table 5: Perceived Risk scale

Dimensions	**Questionnaires**	**References**
Financial risk	1. Using Open Banking may lead to the leakage of my financial information.	Jacoby & Kaplan, 1972; Brooker, 1984; Featherman & Pavlou, 2003; Yang et al., 2015
	2. Using Open Banking may incur additional fees for me.	
	3. Using Open Banking may result in money loss for me.	
	4. Using Open Banking may expose me to potential financial fraud.	
Performance risk	1. If Open Banking does not function properly, it may influence my credit.	
	2. If Open Banking does not function properly, it may cause delays in transaction processing.	
	3. The built-in security systems of Open Banking may not be strong enough.	
Privacy risk	1. Using Open Banking may leak personal privacy.	
	2. Using Open Banking may allow my personal data to be used without my knowledge.	
	3. Using Open Banking may increase the risk of being exploited by hackers.	
Psychological risk	1. Using Open Banking does not align with my existing habits.	
	2. The security issues associated with Open Banking make me feel anxious.	
	3. Using Open Banking makes me feel insecure.	
Social risk	1. Using Open Banking may lead others to have a negative opinion of me.	

	2. My friends and family may not understand my use of Open Banking.	
Time risk	1. Using Open Banking may require a lot of time to learn.	
	2. Verifying identity with Open Banking may take additional time.	
	3. Using Open Banking may increase waiting time due to connection issues.	

3.3 Data Collection and Research Methods

This study employs an online questionnaire survey method to obtain data from Taiwanese individuals eligible to open an account. The questionnaires were distributed and collected using the SurveyCake platform. To ensure the content of the questionnaire has strong reliability and validity, a small-scale pre-test was conducted prior to the formal survey, resulting in the collection of 50 valid responses. The pre-test results showed that the Cronbach's α reliability value of the "Financial Risk" dimension was .635, slightly below the generally accepted standard. After review, the second question related to financial risk was removed, and the questionnaire was officially distributed.

This study utilized SmartPLS 4.0 statistical software for data analysis. The quantitative methods employed included descriptive statistical analysis, Cronbach's α reliability analysis, validity analysis, correlation analysis, and PLS-SEM. Through these analytical methods, the reliability and validity of each research variable, the correlations among them, as well as the overall fit and path relationships within the research framework were examined to verify the hypotheses proposed in this study.

4. Data Analysis

4.1 Sample Description

In this study, a total of 290 valid questionnaires were collected. In terms of gender, females constituted the majority, with 159 individuals (54.83%), while males numbered 131 (45.17%). Regarding age distribution, the largest group comprised individuals aged 31 to 40, totaling 91 individuals (31.38%), followed by those aged 41 to 50, with 81 individuals (27.93%),

and those aged 20 to 30, totaling 77 individuals (26.55%). In terms of educational attainment, the largest group held a university degree, totaling 172 individuals (59.31%), followed by those with a master's degree or higher, totaling 49 individuals (16.90%). To present the basic information about the sample more clearly, the details are as follows (**Table 6**):

Table 6: *Sample Description*

Term	**Group**	**Amount**	**Percentage (%)**
Gender	Female	159	54.83%
	Male	131	45.17%
Aged	20 to 30	77	26.55%
	31 to 40	91	31.38%
	41 to 50	81	27.93%
	51 to 60	33	11.38%
	Above 60	8	2.76%
Education	High School and below	25	8.62%
	Second Degree	44	15.17%
	College	172	59.31%
	Master or above	49	16.90%

4.2 Reliability and Validity Analysis

To ensure that the measurement scale of this study possesses high measurement quality, a reliability and validity analysis was conducted for each dimension, which included tests for both reliability and validity.

4.2.1 Convergent Validity

This study employed SmartPLS 4.0 for PLS-SEM analysis. Following the suggestions of Hair, Black, Babin, Anderson & Tatham (2006), the assessment of convergent validity primarily involves three indicators: Outer Loadings, Composite Reliability (CR), and Average Variance Extracted (AVE). The details are as follows (**Table 7**):

Table 7: *The measurement scale of Reliability and Validity*

Dimensions	**Questionnaires**	**Outer Loading**	**α**	**CR**	**AVE**
Perceived Ease of Use	PEOU1	.880	.862	.862	.783

	PEOU2	.901			
	PEOU3	.875			
Perceived Usefulness	PU	.858	.883	.884	.682
	PU2	.838			
	PU3	.794			
	PU4	.839			
	PU5	.797			
Attitude Toward Adoption	ATT1	.892	.887	.890	.747
	ATT2	.793			
	ATT3	.888			
	ATT4	.881			
Adoption Intention	INT1	.903	.882	.882	.809
	INT2	.899			
	INT3	.896			
Financial Risk	FR1	.689	.854	.874	.702
	FR3	.964			
	FR4	.837			
Performance Risk	PER1	.810	.820	.809	.600
	PER2	.941			
	PER3	.508			
Privacy Risk	PRR1	.807	.900	.904	.721
	PRR2	.990			
	PRR3	.808			
Psychological Risk	PSR1	.872	.851	.910	.770
	PSR2	.877			
	PSR3	.884			
Social Risk	SR1	.944	.861	.935	.877
	SR2	.929			
Time Risk	TR1	.884	.821	.890	.730
	TR2	.867			

	TR3	.811			

First, most of the items exhibit outer loadings greater than 0.7, indicating that the observed variables effectively represent their latent variables. Only a few items fall slightly below but remain within the acceptable range of 0.6 to 0.7. The composite reliability for each dimension is above 0.7, indicating good internal consistency. Additionally, the AVE values surpass 0.5, indicating that the latent variables account for more than 50% of the variance in the observed indicators. Overall, these findings suggest strong convergent validity.

4.2.2 Discriminant Validity

To assess whether the constructs in this study have strong discriminant validity, the Fornell-Larcker criterion was employed for analysis. According to Fornell & Larcker (1981), if the square root of the AVE for each variable exceeds its correlation coefficients with other variables, it indicates that the constructs possess good discriminant validity.

The results of this analysis indicate that the square root of the AVE values for each construct on the main diagonal, exceeds any correlation coefficient in the corresponding row and column (**Figure 5**). This finding demonstrates that the measurement scales employed in this study exhibit strong discriminant validity, with no significant overlap.

	INT	ATT	FR	PEOU	PU	PER	PRR	PSR	SR	TR
INT	**0.899**									
ATT	0.838	**0.865**								
FR	-0.084	-0.107	**0.838**							
PEOU	0.617	0.679	-0.06	**0.885**						
PU	0.674	0.76	0.003	0.8	**0.826**					
PER	0.202	0.199	0.582	0.139	0.206	**0.774**				
PRR	-0.052	-0.069	0.703	-0.014	0.036	0.583	**0.872**			
PSR	-0.381	-0.411	0.423	-0.302	-0.26	0.24	0.44	**0.878**		
SR	-0.239	-0.266	0.293	-0.292	-0.284	0.161	0.215	0.704	**0.937**	
TR	-0.166	-0.239	0.348	-0.29	-0.231	0.253	0.406	0.666	0.646	**0.854**

Figure 5: *The square root of the AVE for each variable*

4.3 PLS-SEM Path Analysis

This study employs PLS-SEM to test the research hypotheses and utilizes SmartPLS software to conduct bootstrapping with 5,000 resamples. This process brings about the standardized coefficients (β), t-values, and significance levels (p-values) for each hypothesized path, in order to assess the path correlation between the dimensions (**Table 8**).

Table 8: *PLS-SEM Path Analysis*

Hypothesis	Path Correlations	β	t-value	p-value	Supported?
H1	PEOU -> PU	.800	28.519	**.000(***)**	**Supported**
H2	PU -> ATT	.602	9.902	**.000(***)**	**Supported**
H3	PEOU -> ATT	.197	3.222	**.001(**)**	**Supported**
H4	ATT -> INT	.704	13.722	**.000(***)**	**Supported**
H5	PU -> INT	.119	1.724	.085	Not Supported
H6	FR -> INT	-.013	.266	.790	**Partially Supported**
	PER -> INT	.059	.920	.357	
	PRR -> INT	-.019	.344	.731	
	PSR -> INT	-.143	2.059	**.040(*)**	
	SR -> INT	.003	.047	.963	
	TR -> INT	.120	1.835	.047	

(Note. *p < .05; **p < .01; ***p < .001)

The analysis results indicate that most hypotheses are supported within the core framework of the TAM. Especially, perceived ease of use has a strong positive influence on perceived usefulness, thereby supporting H1. Perceived usefulness positively influences attitudes toward adoption, while perceived ease of use also has a significant positive relationship with attitudes toward adoption, supporting H2 and H3.

Additionally, attitudes toward adoption have a significant and strong positive influence on adoption intention, thereby validating H4. However, the direct influence of perceived usefulness on adoption intention doesn't achieve a significant level, indicating that H5 is not supported. Among the six dimensions of perceived risk, only "psychological risk" demonstrated a significant negative influence on adoption intention, leading to partial support for H6.

4.4 Model Explanatory Power Analysis

To evaluate the explanatory and predictive power of the research model, this study analyzed several key metrics, including the coefficient of determination (R^2), predictive relevance (Q^2), effect sizes (f^2), and standardized root mean square residual (SRMR).

The R^2 values indicated that Perceived Usefulness was explained moderately to highly by its predictors (R^2 = .640), while Attitude toward Adoption showed an R^2 of .591. Notably, Adoption Intention demonstrated strong explanatory power with an R^2 of .718. Meanwhile, the Q^2 values all exceeded the recommended threshold of 0, confirming the model's predictive relevance (Geisser, 1974). The details are as follows (**Table 9**).

Table 9: *Model Explanatory Power Analysis*

Dependent Variables	**R^2**	**Q^2**
Perceived Usefulness (PU)	.640	.638
Attitude toward Adoption (ATT)	.591	.455
Adoption Intention (INT)	.718	.418

The SRMR value was .098, a value less than .10 or of .08 is considered a good fit (Hu & Bentler, 1998). Effect sizes (f^2) were calculated to assess the individual contributions of each exogenous construct. According to Cohen's (1988) guidelines, values of 0.20, 0.50, and 0.80 are interpreted as small, medium, and large effects, respectively. The results indicated that the path from PEOU to PU had a very large effect (f^2 = 1.778), while the path from ATT to INT also showed a medium effect (f^2 = .584). Other paths related to the TAM exhibited small to medium effects, whereas most dimensions of perceived risk showed insignificant to small effects. Only psychological risk and time risk made minor contributions to Adoption Intention.

These results indicated that the core constructs of the TAM are strong predictors of adoption behavior, whereas the influence of perceived risk is limited to specific dimensions.

5. Discussion

This study utilizes the TAM as a theoretical framework to explore the adoption intentions of Taiwanese individuals regarding Open Banking. It incorporates perceived risk as an external variable to examine its influence on each dimension of adoption intention. The research findings not only deepen the understanding of TAM but also offer empirical insights into perceived risk within FinTech, providing valuable contributions to both theory and practice.

5.1 The Influence of TAM on Adoption Intentions

The results of this study confirm the applicability of TAM in the context of Open Banking. The findings show that the relationships between the various constructs of TAM are mostly significantly positive, aligning with the conclusions of previous TAM meta-analysis (Hong et al., 2005). Notably, the positive influence of perceived usefulness on attitudes toward adoption suggests that if consumers believe that Open Banking can provide practical benefits, they're likely to develop a favorable attitude, this is consistent with the results of previous TAM-related studies in the FinTech sector (Nagy et al., 2024; Satriaji et al., 2023).

Interestingly, although perceived usefulness is regarded as one of the key variables influencing adoption intention, its effect is not significant. This phenomenon may indicate that people have not yet experienced the benefits of Open Banking, which is insufficient to influence their attitudes toward adoption.

5.2 The Influence of Perceived Risk on Adoption Intentions

Overall, the research findings indicate that the majority of perceived risk dimensions do not have a significant influence, with only Psychological Risk demonstrating a significant negative influence on adoption intention. This suggests that when consumers are faced with Open Banking services, they may be concerned about inconsistencies with their original habits, experience anxiety related to security issues, or feel a lack of security, all of which can inhibit their intention to adopt.

The direction of the path coefficients for other risk dimensions, such as finance and performance, was consistent with the original expectations; however, they did not achieve a significant level. This phenomenon may be attributed to respondents being less sensitive to potential risks or having not personally utilized related services, leading them to underestimate the possibility of information security and financial fraud.

5.3 Implications

This study presents important managerial implications for the promotion of Open Banking services. While prior research has primarily focused on technical feasibility and regulatory frameworks, studies from the consumer perspective are still limited. Timeliness is also one of the key points, as this study was conducted shortly after the official implementation of Phase III Open Banking and holds significant reference value for policy promotion.

Given the positive influence of perceived usefulness and perceived ease of use on attitudes and adoption intentions, financial institutions and TSPs should prioritize resources to enhance the operational convenience of systems and APIs, reduce barriers to usage, and effectively communicate the benefits of Open Banking, such as offering diverse services and improving the efficiency of financial transactions. Furthermore, this study indicates that perceived usefulness does not significantly influence adoption intention. Therefore, it is necessary to foster a positive attitude among consumers towards Open Banking to influence their adoption intentions.

Most surprisingly, psychological risk was the only factor that significantly negatively influenced adoption intention. Financial institutions, TSPs and policymakers must enhance data sharing transparency, conduct extensive initiatives, and promote trustworthy brand images to alleviate consumers' anxiety and uncertainty. In practice, some respondents had utilized open banking services but were unfamiliar with the term. This phenomenon further highlights that policy promotion doesn't enhance public awareness simultaneously.

5.4 Limitation and Future Research

Although this study has come into several significant findings, it isn't without its limitations. PLS-SEM has a low requirement for sample size and can be effectively analyzed with small samples, it remains uncertain whether this affects the generalizability of the research results. Second, the data collection for this study is limited to cross-sectional, which only reflects the adoption intention at a specific moment in time. This limitation makes it difficult to track long-term dynamic changes or establish causal relationships. Furthermore, the characteristics of the sample collected may not fully represent all potential users, particularly those who exhibit low acceptance of technology in real life or are unfamiliar with the concept of Open Banking.

Based on the above limitations, longitudinal research should be conducted in the future to explore the dynamic impact of Open Banking on consumer adoption intentions across different phases. Additionally, future studies could incorporate external variables such as involvement (Zaichkowsky, 1985) and trust (Hosmer, 1995) to investigate whether consumers' understanding and trust in Open Banking further influence their adoption intentions. Finally, it is recommended that subsequent research conduct cross-comparisons across various demographic variables or apply the findings to other national markets to verify their universality and enhance the depth of the research.

In summary, given the relatively slow progress of Open Banking promotion in Taiwan (DTTL, 2025) and the current state of the single competition model among traditional banks (Lee, 2013), the insights provided by this study can assist financial institutions in optimizing their risk communication and user education strategies. In turn, this can reduce subjective risks and enhance people's acceptance of Open Banking.

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