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**PERCEIVED SECURITY AND CONSUMER TRUST IN**  
**ADOPTION OF FINTECH SERVICE**

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***Abstract***

Financial Technology (FinTech) is the new technology and innovation in the delivery of financial services. The emergence of FinTech provides different benefits financial consumers and financial companies. For a consumer, FinTech carry weight in a way of global and online transaction, speedier transaction processing, among others. However, studies has shown that consumer trust is still low. Hence, this paper aims to investigate the impact of five variables, namely confidentiality, authentication, authorization, non-repudiation and privacy on consumer trust in the adoption of FinTech in online banking service. The research was an empirical investigation based on surveys completed by 200 students from higher educations in Muadzam Shah, Pahang. Using regression analysis, the paper found that confidentiality, authentication and privacy were found to be positively and significantly related to consumer trust. On the other hand, authorization was found to be negatively and significantly related to the consumer trust. Non-repudiation was found to have positive and insignificant relation to consumer trust. Hence, from this study its shows the importance of security mechanisms in building users perception of security. The study provides a deeper understanding into the impact of perceived security on consumer trust in the adoption of Fintech in online banking service.

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**Keywords:** Trust, confidentiality, authentication, authorization, non-repudiation, privacy.



## 1. Introduction

Financial Technology (FinTech) is the new technology and innovation in the delivery of financial services. Malaysian banking sector has greater internationalisation of the financial system as well as technological advancements. The objective of FinTech with a wider range of banking transactions is to deliver financial services saw a significant take-up. It was conducted increasingly through digital channels and self-service terminals for instance online banking, mobile banking and applications. By using smartphones for investing services and mobile banking, general public were more accessible to the financial services.

Furthermore, banking institutions also increasingly used artificial intelligence to support customer relationships as well as improve access to financial products. Communication technology continued to gain traction in the payments space and contactless payments. On the other hand, the compliance risks for banking institutions will be lower, and was remain challenging in efficiency gains. Mobile Automated Teller Machines (ATMs) and virtual teller machines would be key initiatives for rural communities for greater access to banking services.

According to a report presented by PricewaterhouseCoopers (2016), the acceptance of FinTech is increasing whereby 60% of financial companies' clients will use mobile application within the next five years. Due to the high acceptance possibilities, six commercial banks in Malaysia, namely Maybank, RHB Bank, CIMB Bank, Ambank, Hong Leong Bank and Public Bank have been engage in joint partnership with FinTech companies.



Source: Bank Negara Malaysia

**Figure 01.** Use of self-service terminals and digital channels in 2016

Figure 01 shows the use of self-service terminals and digital channels in 2016. It shows that mobile banking transactions increased up to 98.1%. Internet banking transactions and ATMs transactions were increased by 29.7% and 3.8% respectively. Next, the number of internet banking and mobile banking subscribers also increased with 15.2% and 22.9% respectively in year 2016. Even though FinTech continue rapidly new innovations, FinTech was face challenges on financial consumer trust and lack of familiarity in penetrating the market. Thus, this study will examine the impact of perceived security on consumer trust in the adoption of FinTech in online banking service.

### **1.1. Trust**

Trust is the establishment of trade by crossing over any barrier between the client's instabilities with respect to the administrations and their genuine cooperation in the exercises (Suh and Han, 2003). It assumes a pivotal part in the improvement of human related exercises crosswise over most enterprises including the managing an account industry (Grabner-Krautera and Kaluscha, 2003; Yousafzai *et. al.*, 2005). Yu Hui Chen and Stuart Barner (2007), claims that online buyers build up their underlying trust and buy aims. It is discovered that apparent helpfulness, saw security, protection, great notoriety, and readiness to modify the imperative forerunners on consumer trust in online.

### **1.2. Confidentiality**

Confidentiality is one of the innovation trust instruments to the insurance exchanges by mean of web administrations against unapproved perusing, duplicating or exposure utilizing encryption components (Ratnasingam, 2002). Henceforth confidentiality ought to be emphatically effect to saw security. This guarantees the correspondence between the client and the specialist organization closed to different gatherings (Suh and Han, 2003). Unapproved access of data ought to be avoided (Knorr and Röhrig, 2000). It's should incorporate confidentiality of data that is disregarded the system within correspondence (Maijala, 2004).

### **1.3. Authentication**

Authentication component give an exchange nature of being legitimate, substantial, genuine, real and deserving of acknowledgment or conviction by reason of adjustment to the way that the truth is available in web administrations (Ratnasingam, 2002). Consequently authentication must be decided effect to saw security. Claessens *et al.* (2002), express that confirmation must cover both elements, validation and information verification. They clarify that elements confirmation or individual engaged with an exchange. Information confirmation is a guarantee that information is legitimate at a specific point in time.

### **1.4. Authorization**

Authorization instrument is to ensure that customers are getting the privilege data as well as control the data (Maijala, 2004). This likewise incorporate assuring that customers of online banking application having the authorization to ask for the framework. Thus, authorization should be decided one of the factors affecting the security in online banking service.

### **1.5. Non-repudiation**

Non-repudiation system secure suppliers, requesters and agents in web administration by mean of affirmation methodology. Henceforth, non-repudiation have to be emphatically effect to saw security. The purpose is to guarantee the gathering engaged with an exchange, sending data or getting data that cannot deny it in specific time period (Maijala, 2004).

## 1.6. Privacy

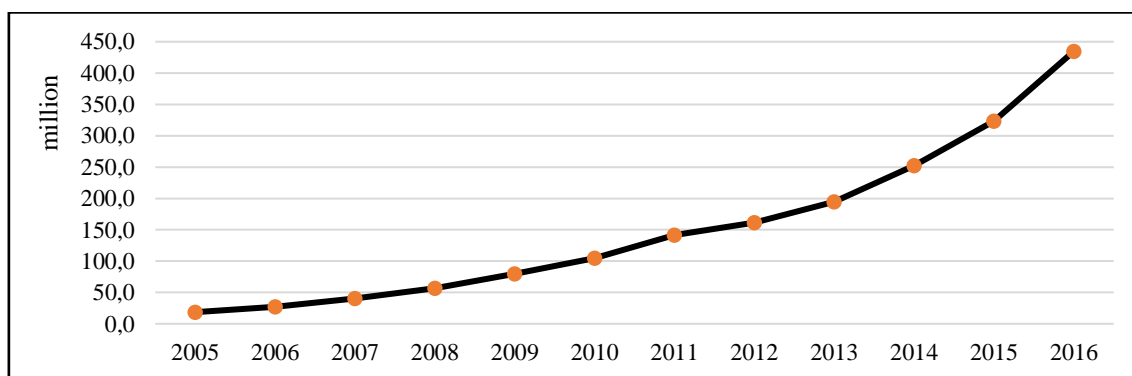
Privacy has been incorporated by many components of the security goals (Mukherjee and Nath, 2003; Nilsson *et al.*, 2005; Patton, 2004). From a customers' point of view, security and protection may not be detached ideas as a rule (Suh and Han, 2003). Protection is characterized as the need to ensure that the customers' data is not available to unapproved customers and is not abused. Thus, privacy should be the factor that give an impact towards consumer trust to saw security.

## 2. Problem Statement

FinTech allows consumers to access the banking services without physical direct recourse to the bank premise. For instance, ATMs are widely used in rural and semi-urban areas. FinTech practise has been described as virtual banking. Thus, many banks were realized that more consumers like to do banking electronically. On the other hand, banks have implemented several important online banking applications that were benefited to consumers such as to pay bills, money transfer, check account history and download statement information.

Furthermore, perceived security is the key concerns on consumer trust in the adoption of online banking. However, consumer trust is extremely vital due to the lack of physical manifestation. Some of them are not feel comfortable to disclose personal information such as giving their bank account number; or doing transactions electronically such as to pay an invoice. It is because, consumers felt that transactions conducted through online banking were open to hackers and viruses, which are beyond their control. Other than that, consumers are lack of connectivity to the Internet due to financial constraints and lack of knowledge to use online banking.

Hence, consumer trust is recognized as the critical factor for the continued growth in the adoption of online banking. For the banks point of view, they need to understand the factors that influencing online consumers' trust in online banking. This study will examine is there any impact of perceived security on consumer trust in the adoption of FinTech in online banking service.

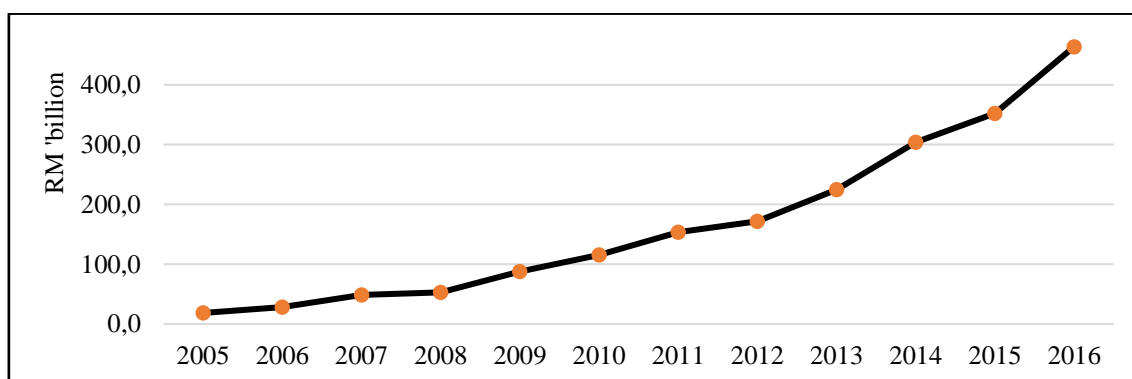


Source: Bank Negara Malaysia

**Figure 02.** Number of transactions using online banking from year 2005 until 2016

Figure 02 shows the number of transactions using online banking were increased every year from 2005 until 2016. The number of transactions were increased from 18.6 million in year 2005 to 434.7 million transactions in 2016. In year 2006 until 2015, the number of transactions were 27.2 million, 40.3 million,

57.0 million, 79.7 million, 104.7 million, 141.3 million, 161.7 million, 194.8 million, 252.2 million and 323.1 million, respectively.



Source: Bank Negara Malaysia

**Figure 03.** Value of transactions from using online banking year 2005 until 2016

Figure 03 shows the value of transactions using online banking were increased every year from 2005 until 2016. The value of transactions were increased from RM18.6 billion in year 2005 to RM463.7 billion transactions in 2016. In year 2006 until 2015, the value of transactions were RM28.5 billion, RM48.5 billion, RM53.0 billion, RM87.7 billion, RM115.6 billion, RM153.6 billion, RM171.8 billion, RM224.9 billion, RM304.2 billion and RM352.1 billion, respectively.

### 3. Research Questions

Is there any impact of perceived security on consumer trust in the adoption of FinTech in online banking service?

### 4. Purpose of the Study

To examine the impact of perceived security on consumer trust in the adoption of FinTech in online banking service.

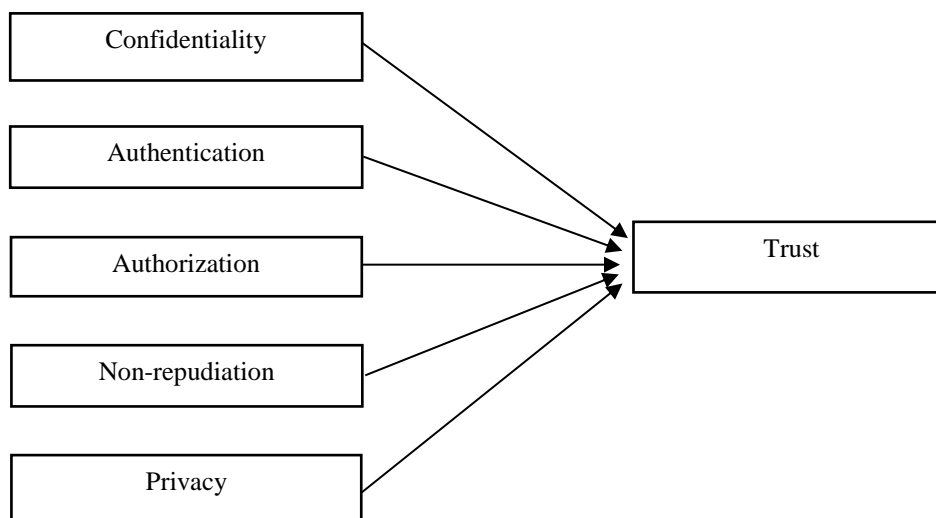
### 5. Research Methods

A survey questionnaire was designed to measure the conceptual framework. Each of the variables (e.g. confidentiality, authentication, authorization, non-repudiation and privacy on consumer trust in the adoption of FinTech in online banking service) was measured using multiple items. The samples were the student from two higher educations in Muadzam Shah, Pahang, Malaysia, namely Universiti Tenaga Nasional (UNITEN) and Politeknik Muadzam Shah. The samples were appropriate due to the facts that they are generation Y, that it is the most technically literate and technologically savvy generation. The convenience sampling method is used in this study. The researcher handed out the questionnaire if the student agreed to participate in the study. Originally, 300 questionnaires were distributed. However, only 200 returned questionnaires were used for the analysis for this study, providing a response rate of 66.67 percent.

### 5.1. Measure and questionnaire development

A survey questionnaire was designed to measure the conceptual framework. The questionnaire consists of 2 sections. Questions for Section A belongs to demographic profile such as gender, age, number of years of internet experience and number of years of online banking experience. On the other hand, section B consists of five point likert scale measurement questions ranging from strongly disagree (1) to strongly agree (5) to measure the impact of perceived security on consumer trust in the adoption of FinTech in online banking service. The construct of perceived security and consumer trust was measured with scales from Kritika Law (2007).

### 5.2. Conceptual framework of the study



**Figure 01.** Conceptual framework of the study

### 5.3. Regression model

This study used multiple regression analysis to test the impacts of confidentiality, authentication, authorization, non-repudiation and privacy on consumer trust in the adoption of FinTech in online banking service. The regression models used in this study are as the following:

$$CT = \alpha_0 + \beta_1(CON) + \beta_2(AUT) + \beta_3(AUZ) + \beta_4(NP) + \beta_5(PRI) + \epsilon$$

Where:

CT = consumer trust;  $\alpha$  = constant value;  $\beta$  = regression coefficient; CON = confidentiality; AUT = authentication; AUZ = authorization; NP = non-repudiation; PRI = privacy; and  $\epsilon$  = residual term

Based on the preceding discussion, five hypotheses are developed:

H<sub>1</sub>: There is a positive and significant impact of confidentiality on consumer trust in the adoption of FinTech in online banking service

H<sub>2</sub>: There is a positive and significant impact of authentication on consumer trust in the adoption of FinTech in online banking service

H<sub>3</sub>: There is a positive and significant impact of authorization on consumer trust in the adoption of FinTech in online banking service

H<sub>4</sub>: There is a positive and significant impact of non-repudiation on consumer trust in the adoption of FinTech in online banking service

H<sub>5</sub>: There is a positive and significant impact of privacy on consumer trust in the adoption of FinTech in online banking service

## 6. Findings

### 6.1. Characteristics of the sample

Female made up 72% of the sample. For the entire sample, 83% of the respondents were age between 21 to 25 years old, while the remaining 17% age below 20 years old. About 40% having internet experience between 6 to 10 years, 33.5% having internet experience more than 10 years, 23.5% having internet experience between 1 to 5 years, while the remaining 3% having internet experience less than 1 year. For the entire sample, 51.5% having online banking experience between 1 to 3 years, 22% having online banking experience between 4 to 6 years, 21% having online banking experience between 4 to 6 years, while the remaining 5.5% having online banking experience more than 10 years. The descriptive statistics of the respondents are summarized in Table 01.

**Table 01.** Profile of respondents

Variable	Frequency	Percentage (%)
<b>Gender</b>		
Male	56	28.0
Female	144	72.0
<b>Age</b>		
Below 20	34	17.0
21 to 25	166	83.0
Above 25	0	0.0
<b>Number of years of internet experience</b>		
Less than 1 year	6	3.0
1 to 5 years	47	23.5
6 to 10 years	80	40.0
More than 10 years	67	33.5
<b>Number of years of online banking experience</b>		
Less than 1 year	42	21.0
1-3 years	103	51.5
4-6 years	44	22.0
More than 10 years	11	5.5

### 6.2. Reliability analysis

Table 02 shows the results of the reliability analysis. Further, the research items were tested for reliability using Cronbach's coefficient (Cronbach, 1951). As reported in Table 02, reliabilities are satisfactory as Cronbach's alphas exceed 0.70 (Nunnally, 1978).

**Table 02.** Cronbach's alpha results

Variables	Number of Items	Cronbach $\alpha$
Confidentiality	3	0.743
Authentication	2	0.799
Authorization	2	0.776
Non-repudiation	3	0.789
Privacy	3	0.820

### 6.3. Regression analysis

Table 03 presents the multiple regression analysis, in which to examine the impact of confidentiality, authentication, authorization, non-repudiation and privacy on consumer trust in the adoption of FinTech in online banking service. Based on the table 03, confidentiality (p-value = 0.000, t = 5.583), authentication (p-value = 0.000, t = 4.423) and privacy (p-value = 0.000, t = 4.214) were found to be positively and significantly related to consumer trust. On the other hand, authorization (p-value = 0.000, t = -5.782) was found to be negatively and significantly related to the consumer trust. These results are consistent with the claimed by Kritika Law (2007); Sarrafiaghdam (2008); Chellappa and Pavlou (2002) and Al-Sharafi, *et. al.* (2016). Non-repudiation (p-value = 0.489, t = 0.692) was found to have positive and insignificant relation to consumer trust. This result is consistent with the assertion by Kritika Law (2007).

Adjusted R<sup>2</sup> value for consumer trust is 0.941 indicating that 94.1 percent of the variation of determinants affecting consumer trust in the adoption of FinTech in online banking service from higher educations in Muadzam Shah, Pahang, could be explained by the five independent variables.

**Table 03.** Regression results

Variables	$\beta$	t-value	p-value
Confidentiality	0.652	5.583	0.000
Authentication	0.802	4.423	0.000
Authorization	-0.564	-5.782	0.000
Non-repudiation	0.069	0.692	0.489
Privacy	0.640	4.214	0.000
R <sup>2</sup>	0.942		
Adjusted R <sup>2</sup>	0.941		
Sig. F	0.00		

## 7. Conclusion

This research investigates the impacts of perceived security on consumer trust in the adoption of Fintech in online banking service. A total of 200 students from two higher educations in Muadzam Shah, Pahang, namely UNITEN and Politeknik Muadzam Shah, were used for the analysis for this study. Based on the findings, confidentiality, authentication and privacy were found to be positively and significantly related to consumer trust. On the other hand, authorization was found to be negatively and significantly related to the consumer trust. These results are consistent with the claimed by Law (2007); Sarrafiaghdam



(2008); Chellappa and Pavlou (2002) and Al-Sharafi, *et. al.* (2016). Non-repudiation was found to have positive and insignificant relation to consumer trust. This result is consistent with the assertion by Law (2007).

Hence, from this study it shows the importance of security mechanisms in building users perception of security. The study provides evidence into the impact of perceived security on consumer trust in the adoption of Fintech in online banking service.

### 7.1. Limitations and future research

This study has several limitations. First, it focuses only on students from two higher educations in Muadzam Shah, Pahang; the results, therefore, cannot be generalised to the other states or citizens in Malaysia. Thus, there is a need to commence further studies in other states and will be used random sampling. Second, most of the respondents in the present study are youngsters, aged below 25. The study can be replicated in other age groups, particularly the middle-age users. In future, will be tested the other factors that may also influence of perceived security on consumer trust in the adoption of Fintech.

**Table 04.** Summary of Findings

Hypothesis	t-value	p-value	Remark	Result
H <sub>1</sub>	5.583	0.000	Accept	Supported
H <sub>2</sub>	4.423	0.000	Accept	Supported
H <sub>3</sub>	-5.782	0.000	Reject	Supported
H <sub>4</sub>	0.692	0.489	Reject	Supported
H <sub>5</sub>	4.214	0.000	Accept	Supported

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