Fintech adoption: Its determinants and organizational benefits in Indonesia

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ABSTRACT

Financial Technology (Fintech) has become an essential issue in the past few years, especially for the companies that offer the products/services that require payment. This research explores the factors which drive companies to adopt fintech - risk perception, cost perception, organizational readiness, top management support, knowledge of information technology, customer pressure, and competitive pressure - and the benefits of its adoption. This research distributed questionnaires using purposive sampling method to the employees working in the companies adopting Fintech. There were 195 questionnaires analyzed using SEM-PLS. This research indicates that customer pressure, competitive pressure, organizational readiness, top management support, and knowledge of information technology have significant influences on Fintech adoption. However, risk perception and cost perception do not significantly affect Fintech adoption. Fintech adoption has a significant effect on organizational benefits. Companies can use this research to find the opportunities and risks when they adopt fintech in order to improve on innovating and maximize customers and partners’ satisfactions.

Introduction

Development of technology currently leads to fierce business competition. In order to survive in business environment, companies must adapt to the changes through innovation and tactful strategies. Several sectors have utilized Information Technology (IT) to develop their businesses, including health, education, trade, telecommunication, transportation, and finance. The need for using Information Technology cannot be separated from the internet facilities which make conducting business transactions more manageable, especially in the financial world (Safitri, 2020).

One of the innovations in IT development is Financial Technology (Fintech) which encourages companies to adopt it as both users and service providers, expecting more benefits. Fintech, as a technological innovation in financial services, can produce business models, applications, processes, or products with material effects related to providing financial services (Financial Stability Board, 2017). In order to meet the growing market demand, many companies decide to adopt IT to run fintech. The adoption of fintech development will always demand perfection to get effective and efficient results. Companies can use fintech to find out the potential opportunities and risks when adopting fintech to improve on innovating and maximize customers and partners’ satisfactions.

To help companies make decisions, there are several important and relevant factors which influence the adoption of fintech, such as the context of technology, organization, and environment referred to as the Technology-Organization-Environment Theory (TOE) (Tornatzky & Fleischer, 1990). This theory has been widely used for research related to information technology, as those carried out by Awa et al. (2017), Chandra and Kumar (2018), and Qalati et al. (2020). In the context of technology, the study conducted by Ramayah et al. (2016) which investigates four factors (relative advantage, compatibility, cost, and security) finds that technological context of relative advantage and cost have significant effects, but compatibility and security have no significant effects on the intention of Small and Medium Enterprises (SMEs) to continuously use the website. Meanwhile, the study conducted by Chandra and Kumar (2018) scrutinizes two factors – relative advantage and technological competence – and shows that relative advantage and technological competence have positive effects on Augmented Reality Adoption in E-commerce companies.

In the organizational context, the study carried out by Hiran and Henten (2019) examining two factors, namely organizational readiness and top management support, proves the significant influence of both factors on cloud computing adoption. In addition, Chandra and Kumar (2018) find that top management support has a positive
effect on the AR adoption by E-commerce companies, while the decision maker’s knowledge does not have any effect on it. In reference to the environmental context, the study carried out by Maduku et al. (2016) researchs three factors, namely competitive pressure, consumer pressure, and vendor support. The results show that customer pressure has a significant effect, but, conversely, vendor support and competitive pressure have insignificant effects on Mobile Marketing adoption. Additionally, the environmental factors used in the study carried out by AlSharji et al. (2018) are competitive intensity, bandwagon pressure, and competitive pressure. This study indicates that all of these environmental factors have significant influences on the adoption of social media in the SMEs in the United Arab Emirates.

Information System Success Model (ISSM) is widely used to analyze the factors that influence the successful implementation of information technology (DeLone & McLean, 2003). This model is used in the study done by Marselia et al. (2018) regarding E-Learning Management System and by Pramanita and Rasmini (2020) on e-Filling system. ISSM indicates that the use of IT affects net benefit, as argued in the study carried out by Anggreni et al. (2020) which shows that the use of Village Information System in Bali has a significant effect on net benefit. Similarly, the study conducted by Chen et al. (2015) reveals that the usefulness and user satisfaction in filling online taxes in the Philippines significantly affect net benefit. Meanwhile, Pramanita and Rasmini (2020) find the effect of using e-Filling on net benefit, in the form of tax compliance.

The difference between this research and the previous research is that this research combines the theories of TOE and IS Success, especially related to fintech service industry environment, by examining the factors of cost perception, risk perception, organizational readiness, top management support, knowledge of information technology, customer pressure, and competitive pressure which were limitedly discussed in the previous research. Fintech services enable a company to develop its business and attract more customers. On the other hand, risk and cost factors will be detrimental to a company if the company does not take those factors into account based on a proper analysis. It is interesting for the researchers to conduct research on the factors that influence companies to adopt fintech and its benefits. The results of this research are expected to provide recommendations to the stakeholders for decision-making.

The structure of this research includes the first part which presents the research background, followed by the theoretical framework and hypothesis development. Subsequently, the research model which was tested through a quantitative field study and the hypotheses are presented. The research samples and data analysis based on PLS are presented in the research method section. Next, the research results are discussed, and this research is finally ended with a conclusion of the results.

Theoretical Framework and Hypothesis Development

Technology, Organization, Environment (TOE) Model

The Technology-Organization-Environment (TOE) framework proposed by Tornatzky and Fleischer (1990) describes the organizational components that influence the adoption of decision in a company. The TOE framework widely used to analyze technology adoption in companies uses three contexts: technology, organization, and environment. Technological context represents the technology available internally and externally for a company, including the sets of technology within the companies and those available in the market (Zhu et al., 2003). Organizational context is related to company resources and characteristics, such as managerial structure, communication processes, company size, and company weaknesses. Factors in the organizational context are essential variables of organizational adoption (Oliveira & Martins, 2009). In addition, environmental context consists of the characteristics of the environment in which an organization conducts its business, such as industrial structure, level of competition, technology used, and regulations (Pudjianto et al., 2011).

Information System Success Model (ISSM)

ISSM is a model that DeLone and McLean first developed in 1992. This model is used to measure the success of IT implementation through constructs, such as system quality, information quality, service quality, intention to use, usage, user satisfaction, and net benefit (DeLone & McLean, 2003). ISSM explains that the higher the system quality, information quality, and service quality obtained by users, the higher the intention to use and user satisfaction with the information technology. Similarly, high user satisfaction and usage can increase net benefit of information technology, and high user satisfaction can also encourage the intention to use information technology (DeLone & McLean, 2003). This research adopts some of the relevant ISSM constructs to explain the influence of fintech adoption on its net benefit. The constructs used in developing this research model are the use of fintech and net benefit.

Financial Technology Development in Indonesia

The need for information technology cannot be separated from the use of the internet which makes all business transactions more manageable, especially in the financial world (Safitri, 2020). Currently, almost all financial service
providers render the services using electronic media for the customers to do the financial transactions. Indonesia has experienced a relatively high increase in electronic financial transactions over the past five years. Year 2016 recorded the transactions using electronic money around Rp 7.06 trillion, while in 2020 it reached Rp 204 trillion (Bank of Indonesia, 2021). Changes in lifestyle and affordable technology are the primary keys to the rapid development of Fintech in Indonesia (Safitri, 2020). The regulation issued by Bank of Indonesia No. 19/12/PBI/2017 concerning the Implementation of Financial Technology in CHAPTER II cl 3 stipulates that the implementation of Financial Technology is categorized into: a. Payment system; b. Market support; c. Investment management and risk management; d. Loans, financing, and provision of capital; e. Other financial services. This research focuses on fintech based on the category of payment system launched and utilized by the companies to help raise business processes that will increase the awareness of users and partners. Fintech financial services that are growing and developing in Indonesia include Go-Pay, OVO, LinkAja, Shopeepay, Uang Teman, TCash, Modalku, TaniFund, Kredivo, and Dana.

Research Model and Hypotheses
This research will explore TOE theory viewed from the technological context (risk and cost perceptions), organizational context (organizational readiness, top management support, and knowledge of information technology), and environmental context (customer pressure and competitive pressure). In addition, ISSM theory will also be examined through the variables used including the use or adoption of fintech and net benefit of using fintech. The research model can be seen in Figure 1.

![Figure 1. Research Model of Determinants and Benefits of Fintech Adoption](image)

**Risk perception** becomes a fundamental consideration in a decision to adopt technology in a company. This is related to technological context which indicates that the company must have appropriate methods to reduce the accepted risks and uncertainties. No matter how tightly the company secures the information, there is still the risks of negligence and data theft. Company data that will be processed and transferred via the internet containing customers’ personal and financial information which can be stolen and damaged leading to asset loss (Xu et al., 2009). Therefore, companies must protect their data as much as possible for their customers’ trust. In the previous study, Xu et al. (2009) showed that risk perception had a significantly negative effect on e-banking adoption in China. The study conducted by Noch and Pattiasina (2017) also shows that risk perception affects the use of e-Filling at KPP Pratama Jayapura. Thus, the first hypothesis (H1) is as follows.

\[ H_1: \text{Risk perception has a negative effect on Fintech adoption.} \]

**Cost perception** has an essential role in the decision-making for adoption in order to create an effective and efficient decision. In TOE Model, cost perception is grouped into technological context which refers to the availability that a company must have to develop and understand the process of technological innovation. The costs associated with
new technology have a significant influence on the decision whether or not an organization chooses to adopt it (Brown & Russell, 2007). The costs spent on adopting technological innovations are another essential factor influencing the intention to use and adopt the technological innovations, especially in SME sector (Maduku et al., 2016). This situation forces the SMEs to be careful in spending capital, especially when making decisions on IT innovation because they consider cost of technology as a barrier (Ghobakhloo et al., 2012). In this research, the costs cover those expenditures used to adopt financial technology, including making applications, development costs, and sustainable maintenance costs (Ramayah et al., 2016). The costs have no significant effect on the intention of mobile marketing adoption (Maduku et al., 2016). However, the costs significantly affect the intention to maintain website continuity (Ramayah et al., 2016). Thus, the second hypothesis (H2) is as follows. H2: Cost perception has a negative effect on Fintech adoption.

**Organizational readiness** shows how an organization prepares all kinds of matters related to the company internals to support a decision that will be made. Organizational readiness is associated with TOE theory in the organizational context, which is formal. Informal linking structures illustrate that companies must have a structure that has a role as an essential information source which encourages the necessary conducts for change, find the resources needed, and make a decision for innovation, both formally and informally (Tornatzky & Fleischer, 1990). Organizational readiness positively influences the adoption of applications used by SMEs using the TOE model (Ramdani et al., 2013). This is in line with the study carried out by Hiran and Henten (2019) which shows a significant effect of cloud computing on the integrated TOE – DoI framework in higher education sector. Thus, companies should be aware of the importance of organizational readiness to face various challenges in the future by strengthening the internal strengths and external relations to deal with all situations. Thus, the third hypothesis (H3) is as follows. H3: Organizational readiness has a positive effect on Fintech adoption.

**Top management support** has a role in adopting targeted technology to provide maximum benefits for a company. This is related to the communication process which must be optimized by the top management, including describing the role of innovation in the organization's overall strategy and building a skillful executive team as well as providing a strong vision for the company's future. Top management has the power to influence the employee behavior in an organization and provides motivation for them to participate in adopting e-government (Pudjianto et al., 2011). The study conducted by Alshamaila et al. (2013) finds the influence of top management support on the adoption of cloud computing by SMEs. Moreover, Priyanto et al. (2020) find the influence of top management support on e-Marketing adoption in the SMEs in culinary cluster in Bogor City. Thus, the fourth hypothesis (H4) is as follows. H4: Top management support has a positive effect on Fintech adoption.

**Knowledge of Information Technology (IT)** can reduce the uncertainty in IT adoption, resulting in low-risk IT adoption (Ramayah et al., 2016). Human resources in a company represented by employees and experts must have the ability and competence at carrying out the related works and services regarding the technological criteria, i.e. size. The minimum size of a company to be used or developed will vary greatly. Thus, the attention to the organization cannot be separated from the attention to the individuals and groups that create it. The existence of knowledge about information technology can increase the adoption of Fintech. Alshamaila et al. (2013) find that knowledge of information technology has significant results in adopting cloud computing by SMEs in Northeast England. However, the knowledge of information technology does not have a significant role in the factors that influence the intention of SME websites continuity in Malaysia (Ramayah et al., 2016). Thus, the fifth hypothesis (H1) is as follows. H1: Knowledge of information technology has a positive effect on Fintech adoption.

**Customer pressure** shows how a company pays attention to the customers' wants and needs to be considered in the company's decision in order to provide better service. This is related to the industry characteristics and market structure in which market forces influence the market decisions and structure (Tornatzky & Fleischer, 1990). Customer pressure is expected to show that the adoption of Fintech is beneficial for the activities and performance of the company. One of the main reasons for a company's success lies in its ability to please its customers. To do so, the company looks for the new ways to perform its operations, including the use of modern innovations. The perception of customer pressure has a positive impact on the intention of SMEs to adopt mobile marketing (Maduku et al., 2016). Meanwhile, the study carried out by Awa et al. (2017) finds customer pressure's positive influence on normative pressure, such as individual customers, legal institutions, government, and trading partners, which can accelerate the adoption of information technology. Thus, the sixth hypothesis (H6) is as follows. H6: Customer pressure has a positive effect on Fintech adoption.
Competitive pressure indicates that a company must be sensitive and respond to what its competitors have done. In this case, the company must carefully make decisions related to the industry characteristics and market structure in which the company must focus its full attention on the existing market forces. With the existence of competitive pressure represented by market competition, organizations increasingly look for approaches, solutions, and resources to improve customer services or reduce costs to achieve competitive advantages (Melville & Carroll, 2016). Competitive pressure significantly impacts cloud computing adoption (Alshamaila et al., 2013). However, competitive pressure does not have a significant effect on the intention to adopt mobile marketing (Maduku et al., 2016). Thus, the seventh hypothesis (H7) is as follows.

\[ H_7: \text{Competitive pressure has a positive effect on Fintech adoption,} \]

Fintech adoption is the acquisition of an innovation and development of online transaction system which is simultaneously driven by the management decision and the belief that the adoption will promote the organizational performance. Company profits are the impact of information systems that have developed and are measured by the success in balancing the positive and negative impacts of the aspects encompassing customers, suppliers, employees, organizations, markets, economic industry, and scope of society (DeLone & McLean, 2003). The profits obtained are defined as the extent of information system contribution to the success of individuals, groups, organization, industry, and country (Petter et al., 2013), with the expectation that the adoption of Fintech will be perceived to bring positive things by the customers (Ryu, 2018). Thus, the use or adoption of Fintech can increase the net benefit of an organization as stated by Anggreni et al. (2020) that the use of village information system positively affects net benefit. Thus, the eighth hypothesis (H8) is as follows.

\[ H_8: \text{Fintech adoption has a positive effect on organizational benefits.} \]

Research Method

This research uses a quantitative approach in which the data were collected through a survey by distributing the questionnaires. The population of this research is the companies that adopt Fintech. According to Hair et al. (2014), if the population size is not known, the sample size can be estimated from the number of indicators multiplied by a scale of 5-10. In this research, the number of indicators was 39 multiplied by 5 to get the results of 195 respondents from the employees working in Fintech-adopting companies. In this research, the samples were collected using purposive sampling technique. The distribution of the questionnaires was conducted online through Google Form. The researchers used LinkedIn direct messages, Twitter, and personal messages to contact the respondents. After the data were obtained, the data were tabulated for later processing using SmartPLS software.

Hypothesis testing in this research used PLS analysis to analyze the relationship model and the significance of the influence among independent variables, namely technological pressure (risk perception, cost perception), organizational context (organizational readiness, top management support, knowledge of information technology), and environmental context (customer pressure, competitive pressure) that affect the adoption of financial technology in the companies and the benefits given. The analysis was initiated by evaluating the outer model and inner model. The next stage tested the significance of the relationships and influences among variables (hypothesis testing) based on the structural model through bootstrapping process.

Operational Definitions and Measurement of Variables

The operational definition of each research variable is explained in Table 1 where the number of measurement indicators is also presented.

| Variable                   | Operational Definition                                                                 | Number of Indicators | Source of Study     |
|----------------------------|----------------------------------------------------------------------------------------|----------------------|---------------------|
| Risk Perception (RP)       | Individual perception that Fintech adoption is unsafe, prone to fraud, and risky       | 3                    | Xu et al. (2009)    |
| Cost Perception (CosP)     | Individual perception of how beneficial fintech adoption is compared to the costs incurred for fintech adoption | 4                    | Premkumar (1998)    |
| Organizational Readiness (OR) | Organizational readiness is described as a manager's perception and evaluation on the extent he believes that the organization has awareness, resources, commitment, and governance to adopt IT systems. | 4                    | Xu et al. (2009)    |
|                            |                                                                                        |                      | Tsai et al. (2010)  |
|                            |                                                                                        |                      | Paré et al. (2011)  |
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| Variable                                      | Operational Definition                                                                                                                                                                                                 | Number of Indicators | Source of Study                      |
|------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|--------------------------------------|
| **Top Management Support (TMS)**              | Top management support is defined as managerial confidence and support for initiative and participation in IT adoption and diffusion in an organization.                                                          | 5 Indicators         | Al-Sharji et al. (2018)              |
|                                                |                                                                                                                                                                                                                        |                      | Soliman & Janz, (2004)               |
|                                                |                                                                                                                                                                                                                        |                      | Maduku et al. (2016)                 |
| **Knowledge of Information Technology (KIT)**  | Knowledge of information technology refers to the combination of physical components, such as computers and network hardware, facilities, and various software and network components required for the existence, operation, and management of information technology environment.                              | 4 Indicators         | Tripopsakul (2018)                   |
|                                                |                                                                                                                                                                                                                        |                      | Thong (1995)                         |
| **Customer Pressure (CusP)**                  | Customer pressure is used to fulfill the diverse needs and expectations of customers through the use of electronic services that facilitate better interactive communication with the customers as a driving force of IT innovation adoption.                                         | 4 Indicators         | Wu & Lee (2005)                     |
|                                                |                                                                                                                                                                                                                        |                      | Maduku et al. (2016)                 |
| **Competitive Pressure (ComP)**               | Competitive pressure refers to the level of pressure a company feels from its competitors in the industry.                                                                                                           | 4 Indicators         | Maduku et al. (2016)                 |
|                                                |                                                                                                                                                                                                                        |                      | Al-Sharji et al. (2018)              |
|                                                |                                                                                                                                                                                                                        |                      | Lin (2014)                           |
| **Financial Technology Adoption (FTA)**       | Fintech adoption is described as the adoption of a new innovation of technological generation, development, and implementation driven by management decisions with the belief that it will lead to the improved organizational performance.            | 4 Indicators         | Alsaad et al. (2017)                 |
|                                                |                                                                                                                                                                                                                        |                      | Chana & Chong (2013)                 |
| **Organizational Benefits (OB)**              | Organizational benefits are defined as the extent to which the technology is considered giving benefits to the organization, supporting logistics processes, and increasing potential benefits.                                    | 5 Indicators         | Picoto et al. (2014)                 |
|                                                |                                                                                                                                                                                                                        |                      | Rui (2007)                           |

**Results**

The data analysis in this research includes the characteristics of respondents as well as validity and reliability tests using PLS, namely the outer model. Meanwhile, the structural model is to test the r-square, t-statistics, and path coefficients.

**Characteristics of Respondents**

In this research, there were 195 respondents consisting of 145 staff (73.8%), 22 assistant managers (11.3%), 18 managers (9.2%), 1 assistant director (0.5%), and others (5.1%). The distribution of the respondents by gender was 47% male and 53% female. The majority of the respondents aged between 20-30 years accounting for 50.3%. From the questionnaires distributed, it was found that most of the companies had adopted financial technology for 3 to 6 years with the percentage of 30.8%.

**Validity Test**

The reliability of each item was assessed from loading, with the criteria that the value was greater than 0.70 (Hair et al., 2014). A validity test can use convergent validity (Wong, 2013). Convergent validity test criteria are met if the rule of thumbs of the AVE is greater than 0.50 (Bagozzi & Yi, 1988). Table 2 shows the results of convergent validity test.

Table 2 shows that the loading value of each indicator is greater than 0.70. The value of Average Variance Extracted (AVE) obtained from each variable is also greater than 0.50, so both values have met the recommended values. Thus, the indicators used in this research can be considered valid and meet the convergent validity. In addition, the validity test can be done using discriminant validity (Wong, 2013). If the square root of AVE is greater than the correlation between latent constructs, the validity is thus fulfilled (Fornell & Larcker, 1981). Table 3 shows that the square root of AVE value for each variable is more than the largest correlation value between one variable and the other variables. Thus, the indicators in this research passed the discriminant validity test.
### Table 2. Convergent Validity Test

| Variable                     | Item | Loading | AVE |
|------------------------------|------|---------|-----|
| Risk Perception (RP)         | RP1  | 0.903   |     |
|                              | RP2  | 0.921   | 0.836|
|                              | RP3  | 0.918   |     |
|                              | CosP1| 0.752   |     |
|                              | CosP2| 0.915   |     |
|                              | CosP3| 0.933   | 0.778|
|                              | CosP4| 0.915   |     |
| Cost Perception (CosP)       | OR1  | 0.841   |     |
|                              | OR2  | 0.913   |     |
| Organizational Readiness (OR)| OR3  | 0.904   | 0.776|
|                              | OR4  | 0.864   |     |
|                              | TMS1 | 0.886   |     |
|                              | TMS2 | 0.908   |     |
| Top Management Support (TMS)| TMS3 | 0.874   | 0.804|
|                              | TMS4 | 0.902   |     |
|                              | TMS5 | 0.912   |     |
| Knowledge of Information Technology (KIT) | KIT1 | 0.78   | |
|                              | KIT2 | 0.902   |     |
|                              | KIT3 | 0.874   | 0.732|
|                              | KIT4 | 0.861   |     |
| Customer Pressure (CusP)     | CusP1| 0.869   |     |
|                              | CusP2| 0.883   |     |
|                              | CusP3| 0.758   | 0.699|
|                              | CusP4| 0.829   |     |
| Competitive Pressure (ComP)  | ComP1| 0.87    |     |
|                              | ComP2| 0.736   | 0.680|
|                              | ComP3| 0.828   |     |
|                              | ComP4| 0.858   |     |
| Financial Technology Adoption (FTA) | FTA1 | 0.889 |     |
|                              | FTA2 | 0.878   |     |
|                              | FTA3 | 0.934   | 0.816|
|                              | FTA4 | 0.913   |     |
| Organizational Benefits (OB) | OB1  | 0.936   |     |
|                              | OB2  | 0.888   |     |
|                              | OB3  | 0.904   | 0.833|
|                              | OB4  | 0.909   |     |
|                              | OB5  | 0.925   |     |

### Table 3. Discriminant Validity, Cronbach’s Alpha (CA), Composite Reliability (CR), R-Square

|           | FTA  | TMS  | OR   | OB   | CosP | RP   | KIT  | ComP | CusP | CA   | CR   | R-Square |
|-----------|------|------|------|------|------|------|------|------|------|------|------|----------|
| FTA       | 0.904|      |      |      |      |      |      |      |      |      |      | 0.793    |
| TMS       | 0.835| 0.897|      |      |      |      |      |      |      |      |      | 0.758    |
| OR        | 0.837| 0.886| 0.881|      |      |      |      |      |      |      |      |          |
| OB        | 0.871| 0.782| 0.770| 0.913|      |      |      |      |      |      |      |          |
| CosP      | -0.110| -0.098| -0.072| -0.097| 0.882|      |      |      |      |      |      |          |
| RP        | 0.355| 0.404| 0.428| 0.308| -0.073| 0.914|      |      |      |      |      |          |
| KIT       | 0.804| 0.806| 0.785| 0.738| -0.129| 0.317| 0.855|      |      |      |      |          |
| ComP      | 0.747| 0.725| 0.720| 0.725| -0.107| 0.317| 0.708| 0.825|      |      |      |          |
| CusP      | 0.729| 0.679| 0.738| 0.729| -0.152| 0.358| 0.662| 0.694| 0.836|      |      |          |
| CA        | 0.925| 0.939| 0.904| 0.950| 0.909| 0.909| 0.877| 0.844| 0.856|      |      |          |
| CR        | 0.947| 0.953| 0.933| 0.961| 0.933| 0.939| 0.916| 0.895| 0.903|      |      |          |
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Reliability Test
The reliability test on the existing constructs can be seen through the value of composite reliability and Cronbach’s alpha. If a construct has a composite reliability value above 0.70 and Cronbach’s alpha above 0.60, the construct can be considered reliable (Ghazali, 2011). As can be seen in Table 3, composite reliability value is above 0.70, and Cronbach’s alpha value is above 0.60. It can be concluded that all the variables used in this research passed the reliability test. In other words, the indicators in this research are reliable.

R-Squared ($R^2$)
The coefficient of determination (R-Squared) aims to determine the proportion or percentage of the total variation of dependent variable which can be explained by independent variables. The R-Squared value indicates the ability of the research model to explain the dependent variable. The criteria for $R^2$ values are 0.0196, 0.1304, and 0.2592 which refer to the categories of small, medium, and large respectively (Cohen, 1992). Table 3 shows that the R-Squared value of Fintech adoption variable is 0.793 (79.3%), and that of net benefit variable is 0.758 (75.8%). Thus, this research has the R-Squared values falling into the category of large, greater than 0.2592.

Goodness-of-Fit (GoF) Test
The criteria for GoF values are 0.10, 0.25 and 0.36 indicating small, medium, and large categories respectively (Cohen, 1988). According to Henseler and Sarstedt (2013), GoF values can be calculated with the following formula:

$$\text{GoF} = \sqrt{\text{Communalit} \times \sqrt{R \text{- Square}}}$$

GoF value in this research can be calculated as follows:

\[
\text{GoF} = \sqrt{(0.8215 \times 0.7755)}
\]
\[
= \sqrt{0.6371}
\]
\[
= 0.7982
\]

Based on the calculation, the GoF value is 0.7982 which is included in the large category or having value greater than 0.36. Therefore, it can be concluded that this research has a robust research model.

Hypothesis Test Results
The hypotheses were tested using bootstrapping by finding the value of t-statistic compared to t-table. There are three significant levels of using t-statistic with the condition that $t$-statistic > $t$-table (>$1.65$ (alpha 10%); >$1.96$ (alpha 5%); >$2.58$ (alpha 1%)) (Fornell & Larcker, 1981). The results of the hypothesis test are presented in Table 4.

Table 4 also shows that H3, H4, H5, H6, H7 and H8 have positive path coefficient values and t-statistic values greater than 1.96 (alpha 5%), which indicate that the hypotheses are supported. However, H1 and H2 show negative path coefficient values and t-statistic values smaller than 1.65 (alpha 10%), which indicate that the hypotheses are not supported.

| Hypothesis | Relation | Path Coefficients | T Statistics | Results |
|------------|----------|-------------------|--------------|---------|
| H1 RP → FTA | -0.015   | 0.396             | Not supported|
| H2 CosP → FTA | -0.004   | 0.097             | Not supported|
| H3 OR → FTA | 0.241    | 2.477*            | Supported    |
| H4 TMS → FTA | 0.248    | 2.612**           | Supported    |
| H5 KIT → FTA | 0.228    | 3.269**           | Supported    |
| H6 CusP → FTA | 0.14     | 2.447*            | Supported    |
| H7 ComP → FTA | 0.139    | 2.411*            | Supported    |
| H8 FTA → OB | 0.871    | 35.872**          | Supported    |

Significance levels of 0.05* and 0.01**

Discussion
Technological Context and Fintech Adoption
The research results show that risk perception (H1) has insignificantly negative effect on the adoption of fintech in the companies. Thus, risk perception is not a barrier for the companies to adopt fintech because its benefits outweigh the risks it carries. The companies also make serious efforts to avoid or minimize the customer and
company personal data leaks. The results of this research support the research conducted by Ryu (2018) which states that perceived benefits are more influential than perceived risks in Fintech adoption. The implication of financial technology adoption regarding risk perception is that the risks that the companies face do not affect the adoption of fintech because the companies have taken high risk and high return into consideration with careful analysis. If companies dare to decide to adopt it, the benefits and advantages will be equivalent to the risks it brings. However, in practice, companies should have good strategic management to reduce the risks and uncertainties of data security. Companies can also cooperate with the cybersecurity providers to assist in securing the companies and customers’ data.

Furthermore, cost perception (H2) also has insignificantly negative effect on the adoption of fintech in the companies. This illustrates that cost perception is not a barrier for the companies to adopt fintech to provide services for their users. This research corroborates the study conducted by Maduku et al. (2016), which shows a negative relationship between the costs spent for adopting the technology and the benefits received. The implication of financial technology adoption regarding cost perception is that the costs incurred by the companies will not be a problem compared with the benefits and advantages received. The higher the costs incurred, the better the system or services provided to customers. Therefore, companies can allocate the costs incurred to improve services and maximize customer promotions.

Organizational Context and Fintech Adoption

Organizational readiness (H3) has significantly positive effect on the adoption of fintech in the companies. This illustrates that a company must have organizational readiness to face the competition with other companies and various challenges. This organizational readiness includes finance, technology, company culture, internal ties, and relationships with partners. The result confirms the study conducted by Ramdani et al. (2013) and Hiran and Henten (2019) which state that companies must prepare various aspects needed for the present and future time in dealing with the situations and technological developments. The implications of financial technology adoption regarding organizational readiness is that companies must realize the importance of a strategy of organizational readiness to face various aspects in the future. Thus, companies have to make an effort to increase internal strength and external relationships to deal with all situations.

Top management support (H4) has significantly positive effects on Fintech adoption in the companies which shows that top management support has an essential role in the company success. Top management can support the vision/mission, motivation, movement direction of a company, and other supporting facilities. Top management is also authorized to make the right decisions and contribute ideas for the success of Fintech adoption in the companies. The result is in line with the research carried out by Ramdani et al. (2013) and Priyanto et al. (2020) which shows that top management support affects a system adoption. The implication of this finding is that company leaders or top management has an essential role in providing support and facilities needed to adopt fintech. They must dare to have and contribute ideas to the companies. Therefore, top management must provide funding support and human resources through trainings to develop knowledge, necessary technological resources, and rewards in the form of incentives.

Knowledge of information technology (H5) has significant and positive effect on Fintech adoption in the companies. This suggests that employees are required to have knowledge and skills in fintech. In addition, employees must also have great curiosity and desire to learn both technical and non-technical knowledge in order to be able to give ideas and make innovations to develop the existing company applications. This research agrees with the study of Hussein et al. (2007) which argues that employees must have IT skills to maximize the company performance and recognize the potential of IT to reach the company business goals. The study conducted by Alshamaila et al. (2013) also discovered that an experience in information technology had significant result in cloud computing adoption. The implications of this finding is that companies must have the employees who have the knowledge to operate and run fintech technology. Employees must also have high competitiveness and innovation to participate to develop the company services for the customers. Companies must provide facilities and time for capacity building to improve the knowledge and skills of their human resources by sending the employees to seminars, trainings, and workshops according to what information technology is currently needed.

Environmental Context and Fintech Adoption

Customer pressure (H6) has significantly positive effects on the adoption of fintech in the companies which shows a unidirectional influence between customer pressure and the adoption of fintech. Therefore, companies must continue showing their existence by adopting the latest technology. In addition, companies must pay attention to customers’ wants and needs in conducting transactions to gain the customers’ trust and loyalty, as well as to put more added value to the companies. The results of this research are supported by the findings of Maduku et al. (2016) and Triopropsakul (2018) which state that customer pressure is a factor that influences companies to adopt fintech. The implication of financial technology adoption regarding customer pressure is that companies must keep
Fintech Adoption: Its Determinants and Organizational Benefits

up with the updated technological developments. With the pressure from the customers, a company must be ready and responsive to the wants and needs of its customers. One of the needs is that the company must provide space for the customers to communicate with the company through call center services so that the customers can give criticism/suggestions and evaluation on the services provided by the company. Thus, it will be easier for the customers to transact, and the company will get more values and trust from them.

Competitive pressure (H7) has significantly positive effect on the adoption of fintech in the companies, so the companies must give active responses to the innovations made by the competitors. This pressure also requires the companies to retain the customers who have used their services so as not to switch to other companies by performance optimization and continuous innovations. The study supporting this finding is conducted by Alshamaila et al. (2013) showing that competitive pressure supports the adoption of cloud computing which provides more space for customers to sell their goods than other platforms. The implication of financial technology adoption regarding competitive pressure is that companies must have strong sense of response to what is happening in the market, especially innovative actions taken by the competitors. Companies must study and research what actions which the competitors take. If the actions taken are successful, the companies can follow these steps with better innovation and strategy. If the competitors do not succeed in using the adopted strategy, the companies must do better and take it as a lesson.

Fintech Adoption and Organizational Benefits

Finally, the adoption of Fintech (H8) has significant and positive effect on the organizational benefits for the companies. The companies will benefit if they decide to adopt fintech because they will gain more trust from the customers. It is expected to accelerate the companies’ financial growth and prosper the employees in the future. The result of this research is in line with the research carried out by Tan et al. (2009) which shows that the adoption of information technology will provide benefits for the companies. Similarly, Pramanita and Rasmini (2020) also reveal that there is an effect of e-filling adoption on net benefit, namely improved tax compliance. The implication of financial technology adoption regarding organizational benefits is that companies will benefit from adopting fintech not only in the form of financial and business organization growth, but also in terms of over cost, good cooperation with partner companies, and fast communication between the companies and buyers or traders.

Conclusion

The statistical tests that were carried out show that organizational readiness, top management support, knowledge of information technology, customer pressure, and competitive pressure have positive effects on the adoption of fintech in companies. It means that the higher the levels of organizational readiness, top management support, knowledge of information technology, and customer pressure, the more interested the companies are in adopting fintech. In addition, the analysis also shows that risk perception and cost perception do not affect companies to adopt fintech which indicates that the risks and costs arising from adopting fintech have no effect on the companies. Furthermore, the adoption of fintech has a positive effect on organizational benefits.

Research Contributions

This research indicates some interesting findings which give theoretical contributions and practical implications. From the theoretical point of view, the results of this study contribute to the existing literature as a reference for further studies related to information system/technology applications. Secondly, this research can contribute to the theory of information system/technology application because the previous studies are still limited in integrating TOE with ISSM. Thirdly, this research model can contribute to the collection of models for applying information system/technology because this model is considered as robust. Fourthly, this research enriches the results of the previous studies since the findings of the previous studies related to the variables used in this research are still inconsistent.

Practically, these findings are expected to provide inputs for companies in making improvements and developments on the adopted technology. A company must carefully consider the conformity between technological, organizational, and environmental aspects to synergize to achieve the company goals and make decisions with ease. Because the adoption of Fintech services is carried out for the convenience of service to customers, the company must be sensitive to the movement of the customers’ needs and the movements made by the competitors so as not to be left behind. The top management making the company decisions must carefully analyze what resources will be improved and costs should be incurred. Companies must provide facilities for the employees to have the skills and abilities needed by the companies.

Limitations of Research and Further Research

Although this research shows significant results, it has some limitations. The first limitation is the sample. Although the sample size is quite large compared to other related studies, it only involves a few companies and does not
represent the entire existing companies. Secondly, most of the respondents in this research are staff which indicates a lack of clear objectivity because staff does not make decisions on adopting financial technology in their companies. The variables in this research are limited to Customer Pressure, Competitive Pressure, Risk Perception, Cost Perception, Organizational Readiness, Top Management Support, Knowledge of Information Technology, Fintech Adoption, and Organizational Benefits. However, this research will be beneficial if used in future research with some improvements. Therefore, to improve the model’s validity, further research can examine other different contexts in the companies and further explore other variables that are not used in this research.

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### Appendix

| Variable                        | Indicators (Code)                                                                 | Source of Study         |
|---------------------------------|----------------------------------------------------------------------------------|-------------------------|
| Risk Perception (RP)            | Customer and company information becomes insecure when companies adopt Fintech. (RP1)  
|                                 | Payment fraud will occur when companies adopt Fintech. (RP2)                      | Xu et al. (2009)        |
|                                 | Our company thinks that Fintech technology has risks. (RP3)                       |                         |
| Cost Perception (CosP)          | The costs of Fintech adoption outweigh its benefits. (CosP1)                      | Premkumar (1998)        |
|                                 | The cost for the provision of Fintech support system is high. (CosP2)             |                         |
|                                 | Fintech maintenance cost is high. (COSP3)                                        |                         |
|                                 | The cost of training for employees to adopt Fintech is relatively high. (CosP4)   |                         |
| Organizational Readiness (OR)   | Our company has financial resources to adopt Fintech. (OR1)                       | Xu et al. (2009)        |
|                                 | Our company has technological resources to adopt Fintech. (OR2)                   | Tsai et al. (2010)      |
|                                 | Our company has relevant company culture to adopt Fintech. (OR3)                  | Paré at al. (2011)      |
|                                 | Our company is ready to adopt Fintech. (OR4)                                      |                         |
| Top Management Support (TMS)    | The leaders in my company are interested in adopting Fintech. (TMS1)              | Al-Sharji et al. (2018) |
|                                 | The leaders in my company have shown support for Fintech adoption. (TMS2)         |                         |
|                                 | Our leaders are willing to take the risks for adopting Fintech. (TMS3)            | Soliman & Janz (2004)   |
|                                 | The leaders will provide the necessary resources for Fintech adoption. (TMS4)     | Maduku et al. (2016)    |
|                                 | The leaders will provide the necessary support for Fintech adoption. (TMS5)       |                         |
| Knowledge of Information Technology (KIT) | I have extensive technical knowledge of technologies similar to FinTech (KIT1) | Tripopsakul (2018)     |
|                                 | For me, FinTech is the type of technology that is commonly used. (KIT2)           |                         |
|                                 | I can learn and apply new information technologies quickly. (KIT3)                | Thong (1995)            |
|                                 | I have experience with FinTech. (KIT4)                                            |                         |
| Customer Pressure (CusP)        | Our customers expect companies to adopt Fintech. (CusP1)                          | Wu & Lee (2005)         |
|                                 | Our customers are the driving force for the company to interact through Fintech. (CusP2) |                         |
|                                 | Our customers find it difficult to interact/transact if a company does not adopt Fintech (CusP3) | Maduku et al. (2016) |
|                                 | Our customers assume that a company follows technological developments if it adopts Fintech (CusP4) |                         |
| Competitive Pressure (CompP)    | Competition in the financial services industry is a driving force for our company to adopt Fintech. (CompP1) | Maduku et al. (2016)    |
|                                 | Fintech adoption is as a response to what competitors do. (CompP2)                | Al-Sharji et al. (2018) |
|                                 | Our company will miss the opportunity if Fintech is not adopted. (CompP3)         | Lin (2014)              |
|                                 | Competition in the financial industry is a pressure for our company to adopt Fintech. (CompP4) |                         |
| Financial Technology Adoption (FTA) | Adopting Fintech makes many business partners join to take advantage of our Fintech services. (FTA1) | Alsaaad et al. (2017)  |
|                                 | Our company adopts Fintech for business activities. (FTA2)                       | Chana & Chong, (2013)  |
|                                 | Our company has invested resources to adopt Fintech. (FTA3)                      |                         |
|                                 | Our company has discovered and allocated financial and technological resources for Fintech adoption. (FTA4) |                         |
| Organizational Benefits (OB)    | Fintech adoption brings success to the organization's business (OB1)              | Picoto et al. (2014)    |
|                                 | Fintech adoption really improves the overall business performance of our organization (OB2) |                         |
|                                 | Fintech adoption has a significant and positive effect on our organization. (OB3) |                         |
|                                 | Fintech adoption can help our company save resources invested in both national and international marketing practices. (OB4) | Rui (2007)              |
|                                 | Fintech adoption can effectively help our company to develop national and international market. (OB5) |                         |