The Perceived Risk Factors of Fintech in Indonesia

Erick Fernando, Ratih Kusumastuti, Derist Touriano

Abstract: *The objective of this study was to observe the factors causing the high perceived risk of using FinTech products or services in Indonesia based on four main dimensions of risk that have been developed [1]. Qualitative method is used to reveal the holistic symptoms of the main dimension of perceived risk and public accountant in 499 Public Accounting Firm in Indonesia as a research population, while sampling method using a convenience sampling method. The data analysis procedure uses the data quality test following a statistical description. The findings obtained from this study is that availability risk is a major factor underlying the high perceived risk of FinTech products or services in Indonesia.*

Keywords : *Perceived Risk, Security Risk, Availability Risk, Performance Risk, Compliance Risk, Fintech*

I. INTRODUCTION

Authority Financial Services (OJK) sees the phenomenon of shifting consumer behavior, from traditional or conventional services to information technology-based services. One way to meet the challenge of the phenomenon is to move towards digital transformation with Digital Products [2]. A key aspect of digital transport is the ability to process repetitive sequences of tasks at previously unknown speeds in trade. This digital transportation is influenced by the development of information and communication technology (ICT) which has brought good solutions for the production side (data base, decision-making tool) and for distribution (digital channel, customer knowledge, good customer experience, and customer flexibility). One of the digital Transformations, with the advent of fintech has further its reach all begins with the increasing availability of solutions that can improve across the entire value chain [2]. For digital banking products that have now been used by 40 percent of customers, which means that FinTech's chances of growth and develop are huge, especially for startups, micro businesses that are not reachable by banks, in addition to bridging access to finance to the public [3].

Revised Manuscript Received on November 15, 2019

   Erick Fernando is currently pursuing Information Systems Department, School of Information Systems, Bina Nusantara University, Jakarta, Indonesia 11480 E-mail: Erick.fernando001@binus.ac.id

   Ratih Kusumastuti is currently pursuing Accounting Departement, Business and Economics FacultyUniversity of Jambi, Kota Jambi, Jambi 36122 E-mail: ratihkusumastuti@unja.ac.id Corresponding Author

   Derist Touriano is currently pursuing Information Technology Department, Faculty of computer science and engineering, Adiwangsa Jambi University, Jambi E-mail: dtouriano@unaja.ac.id Corresponding Author

Financial services users will benefit from lower tariffs and lower cost, functionality, and quality as well as innovative financial products and services [4]. Along with the widespread implementation of FinTech, awareness of the importance of intensive evaluation of the development of new innovations IS/IT needs to be done immediately related to adverse threat impacts for developers, service providers, and users.

The main issue in this research is the difference of setting and the main dimension of perceived risk related to the company's behavior in developing the product or providing FinTech service to the end user in doing the online transaction [5]–[10]. In addition, the concerns of the community are increasingly widespread due to misuse of function and sensitive information data [6], [10] which has an impact on people's reluctance to use FinTech's products or services.

According to Tchernykh et al.[11] and Nguyen & Huyunh [8] the condition is because the public feel the potential for high risk due to unpreparedness of vendors to meet the needs of the main resources in adopting FinTech. In addition, people are reluctant to use FinTech products or services due to the low involvement of service providers when critical constraints occur to their users[12].

Based on the research gap, the purpose of this study is to observe the main dimensions of the potential high risk perceived by FinTech users in Indonesia. This study will observe four major risks that have been developed [1] which consists of security, availability, performance and compliance risk.

II. LITERATURE REVIEW

A. Financial Technology (FinTech)

The development of digital technology began in 1967 in communication and transaction processing increasingly transforming finances from analog to digital industry. In its progression from year to year experienced developments in various advanced countries in using technology to provide financial products and services. In 2008 the new phase of change began with the emergence of FinTech. New companies and established technology companies have begun delivering financial products and services directly to businesses and consumers [2].

The beginning of FinTech's birth was firmly rooted in the financial crisis conditions and the public's concerns about the banking system that thrived on the perfect financial technological innovation [13]. Wonglimpiyarat [14] explained that the banking services industry witnessed the reform of FinTech's development in improving the efficiency of financial transaction services such as checks, electronic cards and funds transfer to electronic payment systems, e-banking, mobile banking or digital banking. In addition, new competitors such as non-banks also enter the financial system and use FinTech to offer financial products or services to compete with the current banking system.

From several definitions of recent research, it is concluded that FinTech is an innovative development of applications, processes, online products, or new business models that combine business, interaction and service [15], [16] as an additional technology to the financial services industry that includes third party payments, MMF, insurance products, risk management, authentication and peer-to-peer loans [17]–[19] those are more efficient [20].

FinTech's core concept stems from the application of peer to peer (p2p) used by Napster in 1999 to share music. Later, FinTech's development first penetrated the UK in 2004 by introducing Zopa in investing or lending money in peer to peer (p2p). Then in 2008 Satoshi Nakamoto created BitCoin (in Indonesia is not allowed/illegal), then Apple Pay, Samsung Pay, and PayPall, which as a company based on FinTech as well as T-Cash, Indosat Wallet, XL Tunai, Android Pay Dompetku, and others [21].

The category and number of FinTech products or services in accordance with Bank Indonesia Regulation No.19/12/PBI/2017 is tabulated on Table 1 below:

Table 1: Categories and Number of Indonesia FinTech Products/Services

Kategori	Σ Product
Market Aggregrator Portals that gather and collect financial data to be presented to users.	12
P2P Lending & Crowfunding Information technology provides the means by which investor and borrowers can borrow online	20
Payment, Settlement, and Clearing Payment portal that aims to facilitate and accelerate the process of payment or transaction via internet or smartphone.	20
Risk and Investment Management A financial planner service in digital form by filling in the relevant data to know the appropriate financial plan as needed.	8

The impact of these technological innovations has the potential to disrupt the financial services industry [22] comprehensive and sustainable in the economic sector [23] and has implications for revenue, costs, and margins [24], type of bank, asset and wealth manager, fund and payment provider, broker, exchange, insurance company [25]. Besides, the FinTech phenomenon will bring about a very fundamental change and lead to the ongoing global revolution [26].

B. Perceived Risk

Since 1960-1980, perceived risk theory has been used to explain the behavior of users or consumers [27]–[29]. At the beginning of the 20th century is more conical, [30] defines perceived risk as a possible disadvantage of subjective feelings when pursuing desired results from a product or service. Littler & Melanthiou [31] perceived risk is defined as the consumer's perception of the uncertainty and possible unintended consequences of purchasing a product or service.

IT risk encompasses an unlimited range of risks and can result in disasters on internal and external IT operations. Based on the evaluation report related to information technology risk factually, Symantec [1] classifies into four main dimensions, namely security, availability, performance, and compiliance risk. Each of the perceived risk dimensions is described as follows:

Security risk is financial loss potential caused by cheating or utilization of IS/IT security hole [31], [32]. Security risk encompasses aspects of privacy, integrity, authentication, access control and non-repudiation.

Availability risk is a condition of unavailability of the system or the failure of hardware components so incapable of recovering services on time [11]. Availability risk encompasses inadequate capacity management, ICT system failures, inadequate IT continuity and disaster recovery planning, disruptive and destructive cyber-attacks, institution factors and controls [33].

Performance risk is a condition that does not work in serving its users as promised to reduce the level of productivity and business value [30]. Performance risk encompasses fail to meet promised service levels, bottlenecks in back-office systems, old technology, unscalable, and errors in implementation.

Compliance risk is a potential failure due to handling or not in accordance with established requirements, regulations, or business policies [34]. Compliance risk consists of environmental risk, workplace health & safety, corrupt practices, social responsibility, quality risk, and process risk.

III. RESEARCH METHOD AND MATERIAL

This research used qualitative method to express symptom holistically-main dimension of perceived risk product or service of FinTech in Indonesia, and research data were obtained directly from first-party (primary) using survey technique by spreading questionnaires sent by official and active e-mail. The population of the study is a public accountant working on 499 Public Accounting Firm throughout Indonesia [35] while the sampling method is using the convenience sampling method because the number of public accountants working in Public Accounting Firm throughout Indonesia is not known with certainty.

This research instrument uses closed question types. The research instrument using the previous research questionnaire that is divided into four dimensions, namely: a) Security Risk [31], [32], [36], b) Availability Risk [11], c) Performance Risk [30] and d) Compliance Risk [34].

While the measurement of all indicators is using the Likert scale of seven-point format from Strongly Disagree (1) to Strongly Agree (7). A large score of these variables indicates the high degree of the perceived risk of respondents on FinTech products or services. The measurement of scale 1-7 was used in this study is expected to produce an unbiased value of the value of an indicator.

The phase in the data processing used is the test of data quality and statistical description. observed, manipulated, controlled is the perceived risk that was divided into four main dimensions of security, availability, performance, and compliance risk, the following control variables (island, *Table 2*.

position, firm scale, work the experience, professional title, gender).

IV. RESULTS AND ANALYSIS

This research is conducted on the perceived risk against four main dimensions. This test is done to see the awareness and validity of the dimensions to be used in this study. This test is done with SPSS version 23 software. The result of data quality test of the dimension of perceived risk in research is presented in

Table 2: Reliability and Validity Test Result

Code	Validity		Reliability			Code	Validity		Reliability	
	Cor. r	Result	α	Result			Cor. r	Result	α	Result
SCR1	,905**	Very High				PFR1	,756**	High		
SCR2	,822**	Very High				PFR2	,733**	High		
SCR3	,445**	Normal	0,782	High		PFR3	,760**	High	0,816	High
SCR4	,504**	Normal				PFR4	,763**	High		
SCR5	,905**	Very High				PFR5	,811**	Very High		
AVR1	,712**	High				COR1	,753**	High		
AVR2	,716**	High				COR2	,806**	Very High		
AVR3	,717**	High	0,780	High		COR3	,806**	Very High	0,874	High
AVR4	,615**	High				COR4	,787**	High		
AVR5	,713**	High				COR5	,824**	Very High		
AVR6	,679**	High				COR6	,765**	High		

Source: Results test decision with SPSS 23 base on Ghozali (2016)

All indicator test results are valid above normal, as well as Cronbach α above 70%. It shows that the respondents in this study answered the question in the questionnaire consistently with high reliability. In Table 3, the characteristics of 416 respondents are sorted and grouped. Based on the islands where Public Accounting Firm is located, the respondents are predominantly from Java Island with a percentage of 68.8%, Sumatera and Riau Islands by 20%, and other islands with a percentage of 11%, while the average score range answers

between 4.72-6,08. Based on respondents position in Public Accounting Firm is dominated by an answer from a junior accountant with a percentage equal to 38,22%, senior/supervisor 25,96%, manager 18,75% and partner equal to 17,07%, average score range answer between 5,25-5, 83. Based on the firm scale, the answer is dominated by national-scale Public Accounting Firm with a percentage of 73.32% while affiliate/international firm scale is 26.68%, average score range answers between 5.23-5.82.

Table 3: Respondent Characteristic

Sort By		F	%	SCR	AVR	PFR	COR	$\overline{x}$
Island	Sumatra & Riau Islands	83	20	5,41	5,91	5,37	5,33	5,51
	Java	286	68,8	5,61	5,91	5,52	5,32	5,59
	Bali & Southeast Islands	9	2,2	4,77	5,89	5,00	4,72	5,10
	Kalimantan	13	3,1	5,46	6,08	5,08	5,33	5,49
	Sulawesi & Papua	25	6	5,56	6,04	5,56	5,5	5,67
Position	Junior	159	38,22	5,48	5,83	5,40	5,37	5,52
	Senior/Supervisor	108	25,96	5,52	5,79	5,34	5,25	5,48
	Manager	78	18,75	5,52	5,83	5,38	5,29	5,51
	Partner	71	17,07	5,52	5,82	5,31	5,39	5,51
Firm Scale	International	111	26,68	5,49	5,82	5,34	5,23	5,23
	National	305	73,32	5,51	5,81	5,37	5,36	5,36

		N	%	SCR	AVR	PFR	COR	Total	
Experience	2 – 5 years	98	23,56	5,45	5,89		5,26	5,40	5,40
	6 – 10 years	176	42,31	5,56	5,82	5,44	5,28	5,28	
	16 – 20 years	126	30,29	5,50	5,74	5,39	5,34	5,34	
	> 21 years	16	3,85	5,29	6,03	5,10	5,20	5,20	
Professional Title	BKP	49	11,78	5,63	6,00	5,62	5,14	5,60	
	CA	170	40,87	5,40	6,17	5,60	5,33	5,63	
	CPA	159	38,22	5,56	5,73	5,41	5,37	5,52	
	CMA, PMA, CRMA, CSRA, CSRS	31	7,45	5,20	5,76	5,02	5,49	5,37	
Gender	Male	335	80,53	5,52	5,83	5,39	5,31	5,51	
	Female	81	19,47	5,44	5,75	5,26	5,40	5,46	

SCR=security, AVR=availability, PFR=performance, and COR=complience

Based on work experience, answers are dominated by accountants who have experience in Public Accounting Firm for 6-10 years with a percentage of 42.31%, long experience of 16-20 years of 30.29%, 2-5 years experience of 23.56% and the rest of 3.85%, the average score range of answers between 5.10-6.03. Based on the professional title, the answer is dominated by an accountant who has tittle Chartered Accountant/CA with the percentage of 40,87%, Certified Public Accountant/CPA equal to 38,22% and other professional titles equal to 19,23%, average score range answer between 5,02-6.17. Respondents answers by gender were dominated by male respondents 80.53% and female 19.47% with an average score range between 5.26-5.83. From the respondents's average, the rate that availability risk (AVR) as the main factor of perceived risk.

In Table 4 shows the descriptive statistics of the perceived risk dimension using the total, mean and standard deviation of respondents's answers, including the tendency of respondents's answers to questions submitted in the questionnaire in the form of risk rating.

Table 4: Dimension and Indicator Statistic Description

Dimensions		Indicator	Impact	Rank	Σ	$\bar{x}$	Standard Deviation	Σ	$\bar{x}$		
Security Risk	SCR1	Privacy/Confidentiality	Sr	15	2253	5,42	1,251	11451	5,51	1,133	Fair
	SCR2	Integrity	Sr	16	2251	5,41	1,144				
	SCR3	Authentication	Cr	5	2389	5,74	0,866				
	SCR4	Access Control	Cr	10	2305	5,54	1,155				
	SCR5	Non-repudiation	Sr	14	2253	5,42	1,251				
Availability Risk	AVR1	Inadequate capacity management	Cr	1	2464	5,92	0,944	14520	5,82	1,022	High
	AVR2	ICT system failures	Cr	4	2423	5,82	0,997				
	AVR3	Inadequate IT continuity and disaster recovery planning	Cr	5	2375	5,71	1,048				
	AVR4	Disruptive and destructive cyber attacks	Sr	8	2344	5,63	0,972				
	AVR5	Institution Factors	Cr	3	2452	5,89	0,832				
	AVR6	Controls	Cr	2	2462	5,92	0,858				
Performance Risk	PFR1	Fail to meet promised service levels	Cr	7	2363	5,68	1,154	11159	5,36	1,233	Fair
	PFR2	Bottlenecks in back-office	Sr	9	2322	5,58	1,169				
	PFR3	Old Technology	Sr	11	2302	5,53	1,043				
	PFR4	Unscalable	Mi	22	1986	4,77	1,529				
	PFR5	Errors in implementing	Mo	20	2186	5,25	1,268				
Compliance Risk	COR1	Environmental Risk	Mi	21	2091	5,03	1,366	13295	5,33	1,142	Fair
	COR2	Workplace Health & Safety	Sr	18	2233	5,37	1,187				
	COR3	Corrupt Practices	Sr	13	2254	5,42	1,125				
	COR4	Social Responsibility	Mo	19	2189	5,26	1,04				
	COR5	Quality Risk	Sr	12	2279	5,48	0,984				
	COR6	Process Risk	Sr	17	2249	5,41	1,147				

Mi=minor, Mo=moderate, Sr= Serious and Cr=Critical impact

Retrieval Number: D8550118419/2019©BEIESP
DOI:10.35940/ijrte.D8550.118419

12334

Published By:
Blue Eyes Intelligence Engineering
& Sciences Publication

V. CONCLUSION

Availability risk is the main cause (critical issue) of high perceived risk products or services FinTech in Indonesia that needs to be handled properly. Conditions that occur in service at FinTech service providers occur system failure or failure of hardware components used. Thus startup companies are aware of the risks that occur when ignoring the aspect of management capacity and institution factor in order to be able to minimize ICT system failures and disaster risk that harming the user and also the survival of startup company in Indonesia in particular.

REFERENCES

1. "IT Risk Management Report 2: Myths and Realities," Symantec, 2008.
2. B. Nicoletti, The Future of FinTech. 2017.
3. D. Audriene and C. N. Nababan, "OJK Waspadai Empat Risiko Bisnis Fintech," Berita Keuangan, CNN Indonesia, Jakarta, 2016.
4. I. Romānova, S. Grima, J. Spiteri, and M. Kudinska, "The Payment Services Directive 2 and Competitiveness: The Perspective of European Fintech Companies," Eur. Res. Stud. J., vol. 21, no. 2, pp. 5–24, 2018.
5. Á. H. Crespo, I. R. del Bosque, and M. M. G. de los Salmones Sánchez, "The influence of perceived risk on Internet shopping behavior: a multidimensional perspective," J. Risk Res., vol. 12, no. 2, pp. 259–277, 2009.
6. M. S. Featherman, A. D. Miyazaki, and D. E. Sprott, "Reducing online privacy risk to facilitate e-service adoption: the influence of perceived ease of use and corporate credibility," J. Serv. Mark., vol. 24, no. 3, pp. 219–229, 2010.
7. S. S. Kesharwani, Ankit & Bisht, "The impact of trust and perceived risk on internet banking adoption in India An extension of technology acceptance model," Int. J. Bank Mark., vol. 30, no. 04, pp. 303–322, 2012.
8. T. D. Nguyen and P. A. Huynh, "The Roles of Perceived Risk and Trust on E–Payment Adoption. In International Econometric Conference of Vietnam (pp.). , Cham.," in International Econometric Conference of Vietnam, 2018, pp. 926–940.
9. M. Samadi and Y. Nejadi, "A survey of the effect of consumers' perceived risk on purchase intention in E-Shopping," Bus. Intell. J., vol. 2, no. 2, pp. 261–275, 2009.
10. Y. Yang, Y. Liu, H. Li, and B. Yu, "Understanding perceived risks in mobile payment acceptance," Ind. Manag. Data Syst., vol. 115, no. 2, pp. 253–269, Mar. 2015.
11. A. Tchernykh, U. Schwiegelsohn, E. Talbi, and M. Babenko, "Towards understanding uncertainty in cloud computing with risks of confidentiality, integrity, and availability," J. Comput. Sci., Nov. 2016.
12. A. Kesharwani and S. Singh Bisht, "The impact of trust and perceived risk on internet banking adoption in India: An extension of technology acceptance model," Int. J. Bank Mark., vol. 30, no. 4, pp. 303–322, 2012.
13. S. Chishti and J. Barberis, The FinTech Book, vol. 31, no. 3. New Jersey: John Wiley & Sons, 2016.
14. J. Wonglimpiyarat, "FinTech banking industry: a systemic approach," Foresight, vol. 19, no. 6, 2017.
15. I. Micu and A. Micu, "Financial Technology (FINTECH) and Its Implementation On the Romanian Non-Banking Capital Market," SEA - Pract. Appl. Sci., vol. XVIII, no. 1, pp. 47–54, 2016.
16. J. Jun and E. Yeo, "Entry of FinTech Firms and Competition in the Retail Payments Market," Asia-Pacific J. Financ. Stud., vol. 45, no. 2, pp. 159–184, 2016.
17. R. Alt and T. Puschmann, "The rise of customer-oriented banking - Electronic markets are paving the way for change in the financial industry," Electron. Mark., vol. 22, no. 4, pp. 203–215, Dec. 2012.
18. Y. Shim and D. H. Shin, "Analyzing China's Fintech Industry from the Perspective of Actor-Network Theory," Telecomm. Policy, vol. 40, no. 2–3, pp. 168–181, 2016.
19. P. Xie, C. Zou, and H. Liu, "The fundamentals of internet finance and its policy implications in China," China Econ. J., vol. 9, no. 3, pp. 240–252, 2016.
20. R. Cizinska, T. Krabec, and P. Venegas, "FieldsRank: the network value of the firm," Int. Adv. Econ. Res., vol. 22, no. 4, p. 461, 2016.
21. A. Teja, "Indonesian Fintech Business: New Innovations or Foster and Collaborate in Business Ecosystems?," Asian J. Technol. Manag., vol. 10, no. 1, pp. 10–18, 2017.
22. J. José, P. Ferreira, A. Mention, and M. Torkkeli, "Illumination in times of Uncertainty : Fifty Shades of Innovation for Societal Impact," J. Innov. Manag., vol. 1, no. 1, pp. 1–4, 2015.
23. P. mname Schueffel, "Taming the Beast: A Scientific Definition of Fintech," SSRN Electron. J., vol. 4, no. 4, pp. 32–54, 2016.
24. Deloitte, "Disaggregating fintech - Brighter shades of disruption," pp. 1–30, 2016.
25. J. Cheok, "PWC Singapore launches Venture Hub to connect entrepreneurs, investors," Technology, The Business Time, Singapore, 2016.
26. R. J. Kauffman and D. Ma, "Special issue: Contemporary research on payments and cards in the global fin tech revolution.," Electron. Commer. Res. Appl., vol. 14, no. 5, pp. 261–264, 2015.
27. R. A. Bauer, "Consumer behavior as risk taking," in 43rd Conference of the American Marketing Association, 1960, pp. 389–398.
28. S. M. Cunningham, The Major Dimensions of Perceived Risk, Risk Taking and Information Handling in Consumer Behavior. Boston: Harvard University Press, 1967.
29. J. P. Peter and M. J. Ryan, "An investigation of perceived risk at the brand level," J. Mark. Res., vol. 13, no. 2, pp. 184–188, 1976.
30. M. S. Featherman and P. A. Pavlou, "Predicting e-services adoption: a perceived risk facets perspective," Int. J. Hum. Comput. Stud., vol. 59, no. 4, pp. 451–474, 2003.
31. D. Littler and D. Melanthiou, "Consumer perceptions of risk and uncertainty and the implications for behaviour towards innovative retail services: the case of internet banking," J. Retail. Consum. Serv., vol. 13, no. 6, pp. 431–443, 2006.
32. M. C. Lee, "Factors influencing the adoption of internet banking: An integration of TAM and TPB with perceived risk and perceived benefit," Electron. Commer. Res. Appl., vol. 8, no. 3, pp. 130–141, 2009.
33. EBA, "Final Report Guidelines on ICT Risk Assessment under the Supervisory Review and Evaluation process (SREP)," European Banking Authority, London, 2017.
34. W. Waemustafa and S. Sukri, "International Journal of Economics and Financial Issues Systematic and Unsystematic Risk Determinants of Liquidity Risk Between Islamic and Conventional Banks," Int. J. Econ. Financ. Issues, vol. 6, no. 4, pp. 1321–1327, 2016.
35. IAPI, Direktori 2017. 2017.
36. P. A. Pavlou, "Consumer acceptance of electronic commerce: Integrating trust and risk with the technology acceptance model," Int. J. Electron. Commer., vol. 7, no. 3, pp. 101–134, 2003.
37. I. Ghazali, Buku Aplikasi Analisis Multivariate IBM SPSS 23, 8th ed. Semarang: UNDIP PRESS, 2016.
38. M. R. Gupta, "A Measure Theory Tutorial (Measure Theory for Dummies)," 2006.