

# The Determinants of Financial Innovation

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**Abstract**— The importance of innovation in financial sector has attracted attention of scholars and practitioners. However, the scholar work of literature about determinants of financial innovation is incomplete and limited. This paper propose new angle from Resource-Based View to indicate the determinant of financial innovation which are innovation organization, skill, peer, information technology and firm size. Using sample from mutual funds companies in Indonesia and the method of partial least square to analyze data, this paper finds that innovation organization, skill and technology information are significant to financial innovation. This results indicate that premise of resource-based view also important to innovation in financial sectors. This paper contributes to the body of knowledge either in resource-based view literature and financial innovation in term of the discussion of determinants factors of innovation..

**Index Terms**— financial innovation, resource-based view, innovation organization, skill, peer, information technology, firm size, mutual funds

## 1 INTRODUCTION

The impact of financial innovation to the firm performance has been discussed a lot in manufacturing industry. Research about innovation in manufacturing typically related with R&D and technical excellence. However, paper about financial innovation is limited in empirical evidence. This paper aims on relation between financial innovation and firm performance. The reason why the research is conducted because financial industries is a highly regulated industries in every country. It is very important to conduct research where the determinants of financial innovation are proposed. Moreover, it discusses the determinants of financial innovation such as skill, peer, innovation organization, information technology and firm size as it will be different from manufacturing innovation's determinant. This paper provides contribution on determinants of financial innovation area.

## 2 LITERATURE REVIEW

For a long time, financial innovation is regarded as positively and significantly affecting investor and financial world. Financial innovation is labeled as an "engine of economic growth" [1], [2], and "general purpose of technology" [3], [4]. Output of "engine of economic growth" is a new product and service in the field of finance. Tufano (1989) shows that of all public offerings in 1987, 18 percent were securities or assets that had not existed in 1974. [5] documented 19 major types of financial innovations that occurred over the last 40 years, from Interest rate innovation until Eurobonds bond innovation.

The "general purpose of technology" view of innovation refers to new financial products that not only generate returns to innovators but potentially to all economic systems. Households will have more choices for investment products and lower cost when searching and deciding the placement.

Financial innovation has distinctive characteristics that are different from industry innovation and technological innovation. Financial innovation is an activity of creating and popularizing new financial instruments, through financial technology facilities, which have a positive impact on financial institutions and markets [2], [6]. [7] mentions that financial innovation consists of developing new products or services, new production processes, and new organizations. This new organization shall be created to harmonize the new product or process, whether to develop or distribute the new product and services [8]. [9] classify financial innovations into categories: (1) new products and services, (2) new procedures, and (3) new type of company.

The financial innovation can provide solution to face changes in regulation and taxation policy. If industry players are of the opinion that high taxes and regulations are too tight, then this can increase innovation activity [10]. Other example is a tax amnesty policy that tariffs taxes on the wealth or income of Indonesian citizens abroad will allow funds to enter the country. Financial innovation can take advantage of this tax policy by creating new low-cost and low-risk financial products or services. So financial innovation can be a real economic engine.

To cover incomplete markets, agency problems and asymmetric information, financial innovation should be developed to satisfy investors' needs. This is to complement to a less efficient markets where involved market participants cannot transfer capital or reduce risk. The financial innovation can be used as an instrument to maintain this balance [10].

The empirical evidence on the impact of innovation on profits and firm performance is mostly mixed [11]. For example, [12] discusses that difference in profitability between innovators and non-innovators could be based on factors such as firm size and industry characteristics. [13] finds that innovators in financial services in England exhibit higher profit. Although it seems that the relation between innovation and firm performance vaguely existed, these studies failed to converge the precise nature between innovation and performance.

The following is determinant factors for financial innovation proposed by this paper.

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(This information is optional; change it according to your need.)

## 2.1 Firm Size

Firm size as a factor of innovation is still debatable. [14] argued that relatively large companies would be better suited to pursue innovation for two reasons, large fixed cost of R&D projects and bigger company has better access to financing. In contrast, according to [15], small firms can innovate more quickly because of the length of bureaucracy doing research and development in large companies. [16] found that between 1990 and 2002 in the United States small companies play a role in innovation. These studies failed to show consistent relation between firm size and financial innovation.

## 2.3 Peer

[17] argue that there are three reasons why company mimic other companies. First, the interaction between financial structure and product competition in the market. Second, the rational herding model based on the decline of information. Finally, there is an attempt to increase the relative perceptions of quality managers in the labor market. This study did not include the mimicking behavior for non-innovators to innovators to produce a financial product innovation.

## 2.4 Skill of Investment Manager

The manager's skills are one of the critical success factors in the company and entrepreneur [18]. In the world of finance, skill managers, especially investment managers have a more specific definition. Investment managers are expected to have expertise that can generate a better yield or return on investment from a market or product benchmark. The question of whether the investment manager has the skills or just 'lucky' has been suspected by [19]. [20] and [21] proves that as a group, active mutual fund product investors perform below the market and cause the performance of investment products to be unpredictable. However, these studies did not relate the skill ability to produce sophisticated financial innovation product.

## 2.5 Organization Innovation

The study of organizational innovation focuses on the role of organizational structure, learning process and adaptation to technological and environmental changes [22]. The organizational structure will affect the efficiency of the innovation activity, whereby certain structures will be more appropriate to an environment. For example, greater organizational integration will improve coordination, planning, and innovation implementation strategies. However, the study did not prove an exact relation between organization innovation with financial innovation in finance service companies.

## 2.6 Information Technology

According to some researchers, financial markets are an information market [23], [24]. Technology enriches the flow of information, which is a prerequisite for the decentralization of financial markets to be more effective. For example, geographical factors are a benefit to open new opportunities to invest in securities assets that are not available in the investor's home area. High-speed Internet can help expand

this investment opportunity, because large bands can carry information quickly, and increase financial market activity such as trading and financial transactions. [25] examine ICT technology relationships with Exchange Traded Fund (ETF) in Brazil, Japan, Mexico, South Korea and the United States. ETFs are investment products that mimic the performance of selected financial assets. However, those studies are not able to explain the relation between information technology and financial innovation.

## 3 MATERIALS AND METHODS

The data are collected using questionnaire that addressed to the managers of 76 mutual funds companies in Indonesia. The unit analysis of this research is the manager. The returned questionnaires are 40 that used as a basis for analyzing the data.



Fig 1. Model of Financial Innovation

The definition of financial innovation follows of [5] and [16]. Based on the definition, the author then created instrument indicator to examine the existence of financial innovation in mutual funds companies. As shown in Table 1, there are 23 indicators related to three types financial innovation: product, marketing and process. Using five-point Likert-type scale with 1-strongly disagree, 2-disagree, 3-neutral, 4-agree, 5-strongly agree, the respondent replied the most likely statement for their company's condition in the last four years.

For innovation organization, this paper use [26] indication with modification to the context of mutual funds industry. For skill indicators the author creates from literature existed about skill in investment companies [19], [20], and [21] among others. The technology information, peer and firm size the author creates the indicators from existing literature because there is no available indicators yet concerning this variables.

Table 1. Financial Innovation types

Product	Attributes
1	New products that relate to new investment objective
2	New products that relate to new asset allocation
3	New products with new underlying asset
4	New products that relates to cash investment for retail investors

5	Provide customized product that complies with regulation
6	At least initiate one project for new product
7	Our products are registered in intellectual property rights
<b>Marketing</b>	
1	The company collaborate with other parties for products distribution
2	The company explores online channel distribution
3	The company explores new distribution model such as using Program Laku Pandai from OJK
4	The company initiates campaign or promotion in different local language
5	The company promotes the product with appropriate risk profile
6	The company uses co-branding with other companies
7	The companies collaborates with domestic mutual funds companies
8	The companies collaborates with foreign mutual funds companies
9	The companies issues investment guidelines in different local language
10	The companies aims new target market every year
11	The company has incentive program for loyal customer
12	The company repositions its existing products
<b>Process</b>	
1	The company conducts regular Focus Group Discussion with customer
2	The company conducts market research at least once a year
3	The company conducts regular training to existing and new distributors
4	The company conducts regular motivation sharing session
<b>Total</b>	23

#### 4 RESULT AND DISCUSSION

The results of the respondents' profile were shown in Table 2. Most mutual funds companies are local (75%) and foreign (25%). The majority respondents are male (87.5%) and followed by female (12.5%). Most respondents own more than five years' experience (62.5%), with the average age of 30-45 (50%). The respondents hold bachelor's degree or S1 (75%) and the remaining are master's degree (25%).

Table 2. Profiles of respondents

Characteristics	Category	Frequency (n=40)	%
Mutual funds companies	Local	30	75
	Foreign	10	25
Gender	Male	35	87.5
	Female	5	12.5
Period of experience	<5 years	15	37.5
	>=5 years	25	62.5
Age	<30	10	25
	30-45	20	50
	>45	3	7.5
Educational level	Bachelor's degree	30	75
	Master's degree	10	25

Note : (n=40)

The descriptive statistics is shown in Table 3, with mean and standard deviation of all variables. The innovation organization variable has the highest level (3.73), followed by innovation organization (3.73) and technology information (3.64). While firm size has average of 2.87 and skill 2.84. Firm size and skill indicate that manager is not quite agree with the indicator statements.

Table 3. Descriptive Statistics

Variables	Likert Scale	Mean	SD
Financial Innovation	1-5	3.41	1.00
Innovation Organization	1-5	3.73	0.79
Technology Information	1-5	3.18	1.10
Skill	1-5	3.64	1.17
Peer	1-5	2.84	0.90
Firm Size	1-5	2.87	1.32

**Note: (n=40)**

This research uses Partial Least Square (PLS) model to estimate the measurement and structural model of financial innovation and its determinants. The result from PLS regarding financial innovation study shows that PLS can indicate linear relationship among determinant factors of financial innovation regardless the sample size [27]. The measurement model evaluates the relationship between measures and constructs by assessing the reliability and validity of the constructs. Table 4 shows the result using

Cronbach's alpha that is exceed the level 0.5 suggested in Hair et al (2011), with a range from 0.687 to 1.000. The average variance extracted (AVE) is to evaluate the convergent validity. The level 0.5 shows enough convergent validity according to [28]. This model shows AVE for all constructs are above 0.5.

Table 4. Reliability Result for Financial Innovation Model

	AVE	Composite Reliability	R <sup>2</sup>	Cronbach's alpha
Financial Innovation	0.514	0.808	0.545	0.687
Innovation Organization	0.532	0.900		0.875
Technology Information	0.706	0.921		0.886
Skill	0.718	0.925		0.898
Peer	0.841	0.955		0.939
Firm Size	1.000	1.000		1.000

The result is continued with Table 5, that shows path coefficient and the R-square values for the structural model. The R-square for financial innovation is 0.545, indicates the moderate strength of relationship between independent and dependent variables. According to [29], standardized path is considering meaningful if it is at least 0.20, and ideally above 0.30. The result of this research shows that innovation organization and technology information show both path coefficient above 0.30. While skill and peer are less than 0.20. Moreover, the firm size shows negative path coefficient. The innovation organization shows significantly positive relationship with financial innovation. In addition, the technology information also shows the same result. While other variables such as skill and peer show insignificant positive relationship, and firm size shows poor significant negative relationship with financial innovation.

Table 5. Hypothesis Result

	Path Coefficient	t-stat	p-values
Relationship between innovation organization and financial innovation	0.385	3.276	0.001*
Relationship between technology information and financial innovation	0.352	2.547	0.011*
Relationship between skill and financial innovation	0.196	1.538	0.124
Relationship between peer and financial innovation	0.169	1.182	0.237

innovation			
Relationship between firm size and financial innovation	-0.081	0.595	0.552

Notes : significant at \*p<0.05 level

## 5. CONCLUSION

This paper aimed to investigate the determinant factors of financial innovation. The determinants of financial innovation are proposed as skill, peer, innovation organization, information technology and firm size. The result reveals that among the factor determinants proposed, innovation organization and technology information are significantly positively related to financial innovation. While other factors such as peer and skill are moderate positively related to financial innovation. Moreover, firm size is negatively related to financial innovation.

In relation to financial innovation and industry changes, the antecedents such as skill, peer, innovation organization, information technology and firm size can be determinants of financial innovation in mutual funds organization. The ability of the firms to manage and leverage their manager's skill, to innovate the organization, and the information technology will improve the performance of the firm. For example, the massive existence of information technology forces the regulators to accept the financial technology company and create new regulations. In terms of new product innovation, it is possible to create new financial product with inflation-based or tax-based regulation. This research contributes to the body of knowledge of financial innovation determinant factors with empirical evidence in mutual funds Indonesia.

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## REFERENCES

- [1] R.C. Merton, "Financial Innovation and Economic Performance. Continental bank ournal Merton, R.C. (1992). Financial Innovation and Economic Performance. Continental Bank Journal of Applied Corporate Finance, 4(4), 12-22. 1992
- [2] J. Lerner, & P. Tufano, "The Consequences of Financial Innovation A Conterfactual Research Agenda". NBER Book p523-575. <http://www.nber.org/chapters/c12370>, 2012
- [3] T. Bresnahan, & M. Trajtenberg, "General Purpose Technologies Engines of Growth?" Journal of Econometrics, 65, 83-108. 1995
- [4] P. Tufano, "Financial Innovation and First-Mover Advantages". Journal of Financial Economics, 25, 213-40, 1989
- [5] W. Goetzmann & G. Rouwenhorst, Eds. "The Origins of Value : The Financial Innovations that Created Modern Capital Markets", pp50-57. New York: Oxford University Press. 2005
- [6] P. Tufano, "Financial Innovation". Handbook of the

- Economics of Finance, North Holland, 2003
- [7] L.J. White, L.J. (2000). "Technological Change, Financial Innovation, and Financial Regulation in the U.S: The Challenge for Public Policy". In P. Harker and S. Zenios, eds., *Performance of Financial Institutions*, (Cambridge University Press, Cambridge, UK), 388-415, 2000
- [8] P.A., Tkac, "Mutual Fund Innovation; Past and Future". Retrieved from [http://www.nomurafoundation.or.jp/en/wordpress/wp-content/uploads/2014/09/20071018\\_Paula\\_Tkac.pdf](http://www.nomurafoundation.or.jp/en/wordpress/wp-content/uploads/2014/09/20071018_Paula_Tkac.pdf). 2007
- [9] W.S., Frame & L.J. White, "Empirical Studies of Financial Innovation: Lots of Talk, Little Action?" *Journal of Economic Literature*, 42(1), 116-144, 2004
- [10] D.T. Philippas, & C. Siriopoulos, "Is the progress of financial innovations a continuous spiral process?" *Investment Management and Financial Innovations*, 9(1), 20-31, 2011
- [11] P. Demirel, & M. Mazzucato, "Survey on the literature on innovation and Economic Performance". FINNOV Discussion Paper. Retrieved from <http://www.finnovfp7.eu>, 2009
- [12] M. Freel, "Strategy and Structure in Innovative Manufacturing SMEs: The case of an English Region". *Small Business Economics*, 15(1), 27-45, 2000.
- [13] S. Heffernan, X. Fu, and X. Fu, "Financial Innovation in the UK Faculty of Finance". Working Paper no 4. Cass Business School, City University London, 2008
- [14] J.A., Schumpeter, "The Theory of Economic Development : An Inquiry into Profits, Capital, Credit, Interest and the Business Cycle". London, UK : Oxford University Press, 1942.
- [15] F.M. Scherer, & D. Ross, "Industrial market structure and economic performance". Boston: Houghton Mifflin. 1990
- [16] J., Lerner, "The New Financial Thing : The Origins of Financial Innovations". *Journal of Financial Economics*, 79(2), 223-255, 2006
- [17] M.T, Leary, & M.R, Roberts, "Do Peer Firms Affect Corporate Financial Policy?" *Journal of Finance*, LXIX(1), 2014
- [18] P.F, Drucker, "Innovation and entrepreneurship: practice and principles". Harper & Row, 1985
- [19] M.C, Jensen, "The Performance of Mutual Funds in the Period" 1945-1965. *The Journal of Finance*, 23(2), 1968
- [20] E.F, Fama, "The Behavior of Stock Market Prices". *The Journal of Business*, 38, 34-105, 1965.
- [21] E.F, Fama, "Efficient Capital Market". *The Journal of Finance*, 25(5), 1970
- [22] A., Lam, "Organizational Innovation", BRESE. Working Paper no 1., 2004
- [23] G.J, Stigler, "The Economics of Information". *Journal of Political Economy*, 69(3), 213-225, 1961
- [24] R., Morck, W. Yu, & B.Y, Yeung, "The Information Content of Stock Markets: Why Do Emerging Markets Have Synchronous Stock Price Movements?" *Journal of Financial Economics (JFE)*, 58(1-2), 215-260, 2000
- [25] E. Lechman, & A., Marzsk, "ICT Technologies and Financial Innovations : the case of ETF in Brazil, Japan, Mexico, South Korea and the U.S". MPRA Paper no. 60654. Munich Personal RePEc Archive, online at <http://mpra.ub.uni-muenchen.de/60654/>, 2014
- [26] OECD & Eurostat. (2005). *Oslo Manual – Proposed Guidelines for Collecting and Interpreting Technological Innovation Data – 3rd Edition*. Paris: OECD
- [27] S.A, Hammad, R. Juso, & I. Ghozali, "Decentralizaion, perceived environmental uncertainty, managerial performance and management aaccounting system information in Egyptian hospitals". *International Journal of Accounting and Information Management*, 21(4), 314-330, 2013
- [28] J.F., Hair, C.M., Ringle, & M., Sarstedt, "PLS-SEM : Indeed a Silver Bullet". *Journal of Marketing Theory and Practice*, 19(2), 139-152, 2011
- [29] W.W., Chin, B.L., Marcolin, & P.R., Newsted, "A Partial Least Squares Latent Variabel modeling approach for measuring interaction effects : results from a Monte Carlo simulation study and an electronic-mail emotion/adoption study". *Information System Research*, 14(1), 189-217, 2003