

The Role of Digital Innovation in Improving Performance Study on Islamic Banking in Indonesia

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Abstract. In the digital era, where changes occur very quickly, innovation is the spearhead for companies to maintain their performance. Likewise in the Islamic banking industry in Indonesia, digital innovation is expected to meet the needs of its customers so that it will have an impact on improving bank performance. In this regard, it is necessary to know what factors influence the creation of digital technology-based innovations. One factor that is considered important is the existence of agile leadership. Research on agile leadership in the banking industry, especially the Islamic banking industry in Indonesia, has never been conducted. In order to close this gap, research was conducted by distributing questionnaires to 143 Islamic banking employees in 2022. The analysis using the structural equation model shows that there is a positive and significant relationship between agile leadership and digital innovation. Moreover, it was also found that digital innovation mediates the relationship between agile leadership and bank performance. This research makes an important contribution to the existing literature by empirically examining the relationship between agile leadership, digital innovation and bank performance.

Keywords: agile leadership, digital innovation, bank performance, Islamic bank

1. Introduction

In the digital era, companies operate in a business environment characterized by rapid technological changes, constantly changing customer tastes, and intense competition (Droge, Calantone, & Harmancioglu, 2008). Digitalization is happening in all industries with the emergence of the phenomenon of using the internet of things, big data analytics, artificial intelligence and cloud computing (Fitzgerald, Kruschwitz, Bonnet, & Welch, 2013). Companies that do not undertake digital transformation to update their business models, streamline operation or achieve customer satisfaction will face difficulties and fall behind their competitors. To answer these challenges, innovation is seen as a way to adapt to a very fast-changing environment to maintain a company's long-term performance (Shivers-Blackwell, 2006). Companies that innovate become more flexible and respond quickly to changes in order to capture emerging business opportunities (Drucker, 1998). Several studies related to innovation show the important role of innovation on company performance and competitiveness (Changiz Valmohammadi, 2017; Khin & Ho 2018; Caputo, Cillo, Candelò, Liu, & Caputo, 2019; Park, Misra, Reddy, & Jaber, 2019).

Given the important role of innovation in a company, several researchers tried to determine what factors support innovation. One of the factors that are considered to have a big role in the creation of innovation in a company is the leadership factor (Borowska, 2019; Şahin & Alp, 2020; Liefeyth, Kiely, Collins, & Richards, 2018; Akkaya & Tabak, 2020). In this digital era, the definition of leadership has been adjusted so that the term agile leadership appears (Li, Liu, Belitski, Ghobadian, & O'Regan, 2016; Akkaya & Tabak, 2020).

To find out the effect of digital innovation on bank performance and what factors influence the development of innovation in a company, a study is needed. This research was conducted in the Islamic banking industry sector, where the Indonesian government is currently supporting the growth of the halal industry with the aim of making Indonesia the world's leading Islamic economic center by strengthening the Islamic financial sector (Kementrian PPN/Bappenas, 2016). This is in line with the condition of the national banking system in Indonesia where the role of Islamic banking is still very small when compared to conventional banking, so that government support is needed to increase the role of Islamic banking.

This research is expected to have a contribution to the development of science and to the implications of banking operational practices. First, this study will examine the relationship between agile leadership and bank performance mediated by digital innovation. Research on agile leadership is still very rare (Şahin & Alp, 2020). Second, this study will examine the effect of digital innovation on bank performance, considering that there are still inconsistencies in research results among researchers.

2. Literature Review

2.1. Agile Leadership

The digital era is an era in which society and the economy are strongly influenced by the digital revolution and the existence of a new form of market or better known as the marketplace (Borowska, 2019). Rapid change and society's dependence on technology requires an evolution in leadership practices. This has become a big challenge for today's business leaders, so agile leadership is needed to deal with the rapid development of technology.

In the era of technology and innovation, companies that want to succeed in facing challenges in a dynamic environment must have new concepts such as creating added value and making changes (Akkaya & Tabak, 2020). Therefore, these companies need a leader who can make changes to adapt to environmental conditions. Leaders who continue to develop themselves and make changes. Related to this, the concept of agile leadership is getting a lot of attention today. However, research on agility and on agile leadership is still very limited (Şahin & Alp, 2020).

Leadership in the digital era is called e-leadership (Li, Liu, Belitski, Ghobadian, & O'Regan, 2016) and one form of e-leadership is agile leadership. Agile in this case is defined as a leader's quick response to the opportunities and challenges of doing business using technology. This agility will increase efficiency and create new products/services, making it easier for managers to build relationships with customers and suppliers.

Agile leadership, which is a development of leadership that is currently widely applied, is a leadership competency needed to survive in volatile economic condition (Joiner & Josephs, 2007). Meanwhile, according to (Li et al., 2016) in this digital era, so-called agile leaders are leaders who are able to lead in dynamic conditions and situations of uncertainty with very fast technological changes. The success of a leader is largely determined by his ability to develop capabilities in the field of technology to create new products or services. A leader who has agility is not only able to adjust the company's strategy with the conditions of business changes that occur, but also able to predict changes that will occur in the future.

The agility of leadership is the ability of a leader to dynamically sense and respond to changes in the business environment with focused, fast and flexible actions. Agility as a concept is currently not only limited to the scope of information technology but has expanded to include management and business concepts (Attar & Abdul-Kareem, 2020). Agility refers to an organization or company that is lean, innovative, customer-oriented, flexible, adaptable and quick to respond to changes.

Agility describes the utilization of productive and profitable opportunities in dynamic market conditions by utilizing market knowledge (Mason-Jones, B., & D.R, 2010). Meanwhile, according to Hoek, Harrison, & Christopher (2016) agility focuses on quick response to customer demands, deep understanding and mastery of volatile markets and has special abilities such as lean thinking.

2.2. Digital innovation

Researchers agree that a company's success and its ability to survive are the result of innovation (Zawislak, Alves, Tello-Gamarra, Barbieux, & Reichert, 2013). Rapid technological changes, global competition and changing consumer tastes are the business environment facing companies (Droge et al., 2008). One of the factors that is seen as very important to achieve and maintain competitive advantage is innovation (Damanpour & Gopalakrishnan, 2001). Meanwhile, according to Zhou & Wu (2010) in facing dynamic environmental conditions, innovation is very important for a company to achieve competitive advantage.

Innovation is seen as the key for a company to survive in the midst of intense competition and also has an impact on long-term economic growth (Hogan & Coote, 2013). Innovation is not only seen as a way to achieve good performance for the company but also as a way to adapt to the ever-changing business environment (Shivers-Blackwell, 2006).

The use of digital technology in a number of companies, such as the internet of things, big data analysis, artificial intelligence, augmented and virtual reality and cloud computing is a phenomenon that appears in various industries today (Urbinati, Chiaroni, Chiesa, & Frattini, 2018). These companies are transforming through the use of digital technology to improve their performance on company performance, such as creating new business models, making production process efficiency and increasing engagement with their customers (Fitzgerald et al., 2013). By digitizing, companies must be able to use digital technology to identify consumer tastes which will help companies adjust the products or services offered to their consumers.

In their research, Yoo, Jr, Lyytinen, & Majchrzak (2012) proposed the definition of digital innovation as innovation triggered by digital technology. Nambisan (2017) defines digital innovation as the use of digital technology to create new market offerings, business processes and new models, including innovations such as new products or services and platforms. Meanwhile, according to Khin & Ho (2018) digital innovation is the use of technology to develop new products and services as well as business processes. From the several definitions of digital innovation mentioned above, it shows that digital technology facilitates innovation.

3. Hypothesis Development

The constructs used in the model are already reviewed in the previous section. This section discusses the relationship between each construct in the suggested model (see figure 1).

3.1. Agile leadership and digital innovation

Attar & Abdul-Kareem (2020) stated that the agility of the leader will bring the company into a lean organization, full of innovation, customer-oriented, flexible and responsive to changes. Agile leadership will generate innovation (Şahin & Alp,

2020). Meanwhile, according to Liefeyth, Kiely, Collins, & Richards (2018), agile leaders inspire followers to act creatively and generate innovation. Agile leaders, both directly and indirectly, will encourage the creation of a climate of openness and give birth to innovations (Akkaya & Tabak, 2020). In addition, the knowledge and skills of followers are also developed to support creativity in creating new things (Akkaya, Kocyigit, & Tabak, 2018). Based on the things that have been described above, the following hypotheses are developed:

Hypothesis 1: Agile leadership has a positive and significant impact on digital innovation

3.2. Agile leadership and bank performance

According to Borowska (2019), in the digital era, the most important element in achieving and maintaining a company's competitive advantage is leadership, and leadership is the most important determinant in creating innovation. Meanwhile, Erande & Verma (2008) state that is the ability to effectively react quickly to dynamic and radical environmental changes in order to maintain profitability. Agility is the company's ability to compete in providing products and services according to customer desires in a dynamic environment, where the strength of competition is indicated by flexibility, quality, proactive innovation, profitability and speed (Yusuf et al., 2014; Li et al., 2016). Based on the foregoing, the following hypotheses are formulated:

Hypothesis 2: Agile Leadership has a positive and significant effect on Bank Performance.

3.3. Digital innovation and bank performance

Shivers-Blackwell (2006) stated that innovation does not only affect company performance, but also a way for companies to adapt to their business environment. Meanwhile, according to Zhou & Wu (2010) in facing dynamic environmental conditions, innovation is very important for a company to achieve competitive advantage. In this context, several studies have proven that innovation has a positive and significant effect on company performance (Aydin, 2019; Khin & Ho, 2018; Shih, 2018; Wang, 2019; Jiménez-Jiménez & Sanz-Valle, 2011). The innovation strategy in technology also has a positive relationship with bank performance. Innovation in the field of technology is seen as a strategy for a company to improve its competitiveness and performance (Wang, 2019).

Research conducted by Changiz Valmohammadi (2017) on manufacturing companies in Iran states that innovation has a positive and significant influence on company performance. While the results of research on companies in Korea conducted by Choi, Moon, & Ko (2013) show that innovation mediates positively the relationship between the ethical climate in a company and company performance. While the research conducted by Caputo et al. (2019) on technology companies in European countries shows that digital innovation has a positive and

significant impact on business performance. Park et al. (2019) in research conducted in family companies located in the US, it is stated that innovation using technology has a positive and significant impact on company performance. Based on the discussion above, the following hypotheses are formulated:

Hypothesis 3: Digital Innovation has a positive and significant effect on Bank Performance.

4. Research Methodology

This study is a quantitative research on the Islamic banking sector in Indonesia and aims to examine the relationship between agile leadership, digital innovation, and bank performance. The type of probability sampling used was random sampling. Data were collected by distributing questionnaires to employees of Islamic banking branches in Indonesia. The total number of respondents who filled out the questionnaire and was valid for statistical analysis was 143 people.

From the table 1 (Profile of the respondents), 65% of the respondents in this study (65%) were male, while the female respondents were 35%. The dominance of the respondent's education level is bachelor (64.34%), while those who have education under bachelor are only 2 people or 1.40%. The remaining 43 people (30.07%) have postgraduate and doctoral degrees. Regarding positions, 77.62% have supervisory positions, 18.88% head/deputy of branch and 3.5% staff. Meanwhile for work experience, 48.96% have 10-20 years of work experience, 13.99% have 5-10 years of work experience and 13.29% have 1-5 years of work experience.

Table 1: Profile of Respondents

No	Profile	Characteristic	N	%
1	Gender	Male	93	65
		Female	50	35
2	Education	< Bachelor	2	1
		Bachelor	93	64
		Postgraduate	42	34
		Doctoral	1	1
3	Position	Staff	5	19
		Supervisor	111	78
		Head/Deputy of Branch	27	3
4	Branch location	Java - Jabodetabek	106	74
		Java – outside Jabodetabek	23	16
		Outside Java island	14	10
5	Work experience	Up to 5 yrs	19	14
		> 5 – 10 yrs	34	24

		> 10 – 15 yrs	35	24
		> 15 – 20 yrs	35	24
		> 20 yrs	20	14

The survey has been conducted in the first trimester of 2022. The questionnaire was distributed to participants online using a gform that uses a Likert scale of 6. The questionnaire uses a range of (1) Strongly Disagree to (6) Strongly Agree. The target respondents are employees who work in Islamic banks. The answers from the questionnaires distributed were used as primary data in this study.

5. Result and Discussion

To ensure the internal consistency of the items, factor loading was calculated for each variable. All items were retained as their factor loading was higher then 0.7 as presented in figure 1.

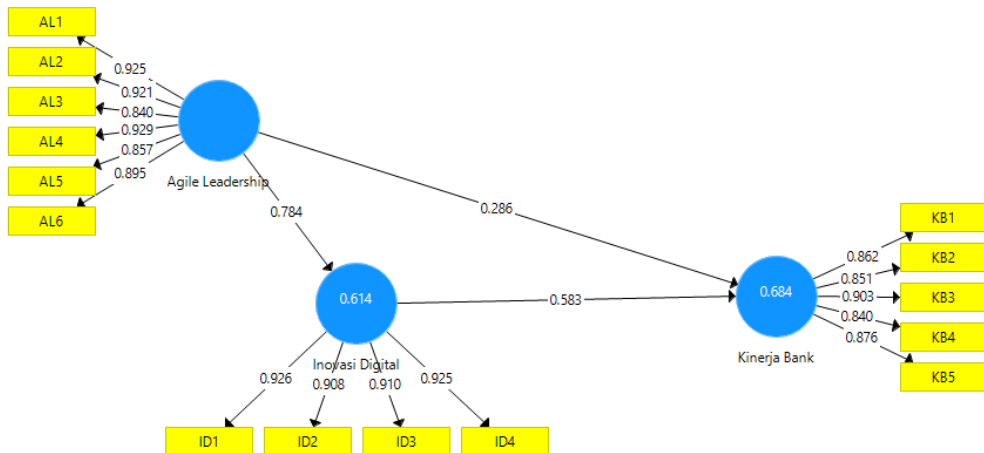


Figure .1: Measurement model analysis.

From the results of the validity test, it shows that the variables used in this study already have a loading factor according above 0.7. Meanwhile, the average variance extracted (AVE) value shows results above 0.5 which means the model is considered valid.

Table 2: AVE

	Average Variance Extracted (AVE)
Agile Leadership	0.802
Digital Inovation	0.841
Bank Performance	0.751

Meanwhile for discriminant validity, two approaches were utilized. First, the Hetero-monotrait method (HTMT) was used. As suggested by Henseler, Ringle, &

Sarstedt (2015) that HTMT values are lower than the value of 0.90. The second method was the Fornell and Larcker technique by estimating the square root of the AVE and comparing it with the correlations between latent variables (Fornell & Larcker, 1981).

From the test of the two methods, the results showed that they were in accordance with the established criteria.

Table 3: Hetero-monotrait (HTMT)

	Agile Leadership	Digital Innovation	Bank Performance
Agile Leadership			
Digital Innovation	0.828		
Bank Performance	0.777	0.842	

Table 4: Fornell & Larcker criterion

	Agile Leadership	Digital innovation	Bank performance
Agile Leadership	0.895		
Digital innovation	0.784	0.917	
Bank performance	0.743	0.807	0.867

While for the reliability test using two methods, namely Composite Reliability and Cronbach's Alpha. The table below shows that the test results of the two methods show results above 0.7 so it can be concluded that the questionnaire used has met the reliability test.

Table 5: CR and Cronbach's Alpha

	Composite Reliability (CR)	Cronbach's Alpha
Agile Leadership	0.960	0.950
Digital Innovation	0.955	0.937
Bank Performance	0.938	0.919

The R square value for digital innovation and bank performance as shown in the table below is included in the accepted category as suggested by Chin (1998). The R square value for digital innovation is 0.614 and for bank performance is 0.684.

Table 6: R squared

	R square	R square adjusted
Digital innovation	0.614	0.612
Bank Performance	0.684	0.679

Meanwhile, the compatibility test using SRMR and NFI showed that the model used was quite good with an SRMR score of 0.080 and an NFI of 0.822.

Table 7: Goodness of Fit

GOFI	Calculated Value	Standard Value	Conclusion
SRMR	0.080	< 0.100	Good fit
NFI	0.822	Closer to 1 the better	Good fit

From the hypothesis test as shown in the table below, it shows that agile leadership has a positive and significant influence on digital innovation ($\beta=0.784$, $\rho=0.000$). Agile leadership also has a positive and significant impact on bank performance ($\beta=0.286$, $\rho=0.008$). Meanwhile, digital innovation has a positive and significant impact on bank performance ($\beta=0.583$, $\rho=0.000$). While related to the mediating variable, the indirect influence of agile leadership has been tested on bank performance through digital innovation. The results of the test show that innovation mediates the relationship between agile leadership and bank performance in a positive and significant way ($\beta=0.457$, $\rho=0.000$).

Table 8: Hypothesis results

	Path coefficient	T-statistic	P-values	Notes
Agile leadership -> digital innovation	0.784	13.511	0.000	supported
Agile leadership -> bank performance	0.286	2.646	0.008	supported
Digital innovation -> bank performance	0.583	5.984	0.000	supported
Agile leadership -> digital innovation -> bank performance	0.457	5.010	0.000	supported

This study aims to examine the role of digital innovation on the relationship between agile leadership and bank performance in the Islamic banking industry in Indonesia. The results of this study support hypothesis 1 that agile leadership has a positive and significant influence on digital innovation. These results are in line with previous research which showed a positive relationship between agile leadership and digital innovation (Şahin & Alp, 2020; Liefeyth et al., 2018; Akkaya & Tabak, 2020; Akkaya et al., 2018). The results of this study have the implication that Islamic banking leaders who have agile characteristics have a positive contribution to increasing innovation using digital technology.

Meanwhile for the influence of agile leadership on bank performance (hypothesis 2), the results of this study indicate that agile leadership has a positive and significant direct influence on bank performance. The results of this study are in accordance with previous studies (Borowska, 2019; Li et al., 2016; Erande & Verma, 2008; Yusuf et al., 2014). While for the indirect effect, the results of this study indicate that digital innovation functions as a mediating variable between agile leadership and bank performance. The results of this study are in accordance

with previous studies (Caputo et al., 2019; Park et al., 2019; Changiz Valmohammadi, 2017).

While related to hypothesis 3, the results of this study indicate that digital innovation has a positive and significant influence on bank performance. The results of this study are in line with previous research (Aydin, 2019; Khin & Ho, 2018; Shih, 2018; Wang, 2019; Jiménez-Jiménez & Sanz-Valle, 2011).

6. Conclusion

This study examines the effect of agile leadership on bank performance and digital innovation as a mediating variable between agile leadership and bank performance. The results of this study indicate that there is a positive and significant influence of agile leadership on bank performance. Meanwhile, digital innovation has also been shown to have a positive and significant influence as a mediating variable between agile leadership and bank performance.

The results of this study have contributed to the development of management theory and practice. Theoretically, this research is one of the few studies that discusses agile leadership, especially in Islamic banking. There are still very few studies in Indonesia on the topics mentioned above, so this research is expected to close the gap.

Meanwhile, for practical benefits, this research is useful for management in managing banks, especially in the digital era where environmental conditions are very dynamic. The presence of a leader who has an agile character in a company will have a positive impact on the innovations by utilizing the development of digital technology. Agile leaders with characteristics of having an agile mindset, vision of change, preparing IT infrastructure and its resources and being able to detect changes are fundamental to the creation of innovations that ultimately have an impact on improving performance in very challenging business competition conditions.

Innovations made by companies by utilizing digital technology have an important role for a company in maintaining its competitive advantage. The existence of an agile leader, a leader who has a quick response to the opportunities and challenges in doing business, is needed to produce innovations that ultimately improve bank performance.

As in other studies, this study has limitations. First, the data is only obtained from the Islamic banking sector in Indonesia, so it cannot be generalized. Thus, in the future, similar research can be carried out on conventional banking and Islamic banking outside Indonesia which have similar conditions, such as in Malaysia. Second, there is an opportunity to examine other types of leadership to see their impact on digital innovation and bank performance. Third, in this study the method used is quantitative method so that there are opportunities to use qualitative

methods in future research.

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