Determinant Indonesian Islamic Rural Bank's Characteristics on Implementing Financial Technology for Their Business

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Abstract. *Indonesian Islamic rural bank or usually called Bank Pembiayaan Rakyat Syariah (BPRS) conducts business in Indonesia in activities based on sharia principles and providing banking services. The challenging business of BPRS right now is facing the Financial Technology (Fintech) business that grows very fast. Current market conditions request transactions simpler and easier, and the financial industry must be changed to accommodate this condition. To be able to compete with Fintech company, BPRS must be changed to adapt to the customer's needs by implemented Fintech in their business. The study aims to determinant the issues on implementing Fintech for BPRS. This study applies by using the Delphi method combined with the Likert scale. Data was obtained by an in-depth interview with three groups of experts as respondents including BPRS practitioners, Fintech practitioners, and experts. The result of this study shows Fintech is needed by BPRS to simplify the registration process, assess the quality of financing, expand their market share, and adopt ecosystem processes. This study has resulted in BPRS should develop Fintech by their resource, then collaborate with Fintech company on the Fintech area that can't be developed by BPRS.*

Keywords: *BPRS, Collaboration, Delphi, Ecosystem, Fintech.*

Abstrak. *Bank Pembiayaan Rakyat Syariah (BPRS) melakukan kegiatan usaha di Indonesia dengan kegiatannya berdasarkan prinsip syariah, dan menyediakan jasa layanan perbankan. Tantangan bisnis BPRS saat ini adalah menghadapi bisnis Teknologi Finansial (Tekfin) yang berkembang sangat pesat. Kondisi pasar saat ini meminta transaksi yang lebih sederhana dan mudah, mengakibatkan industri keuangan harus berubah untuk mengakomodasi kondisi tersebut. Untuk dapat bersaing dengan perusahaan Tekfin, BPRS harus bisa mengubah strategi bisnisnya dengan menerapkan Tekfin dalam mengadopsi kebutuhan nasabah. Penelitian ini bertujuan untuk mengetahui permasalahan terkait penerapan Tekfin bagi BPRS. Penelitian ini menggunakan metode Delphi yang dikombinasikan dengan skala Likert. Data diperoleh melalui wawancara mendalam dengan tiga kelompok ahli sebagai responden yaitu praktisi BPRS, praktisi tekfin, dan tenaga ahli. Hasil penelitian ini menunjukkan bahwa Tekfin dibutuhkan BPRS untuk bisa mempermudah proses registrasi, menilai kualitas pembiayaan, memperluas pangsa pasar, dan mengadopsi proses ekosistem. Penelitian ini juga menyimpulkan bahwa BPRS akan mengembangkan Tekfin menggunakan sumber dayanya sendiri, baru setelah itu berkolaborasi dengan perusahaan Tekfin untuk area Tekfin yang tidak dapat dikembangkan oleh BPRS.*

Kata kunci: *BPRS, Kolaborasi, Delphi, Ekosistem, Tekfin.*

Introduction

Based on the Islamic banking information system of the Financial Services Authority (OJK, 2021), the total of BPRS in Indonesia in 2020 was 164 entities.

The statistical data shows the growth between third party funds (DPK), financing, and total assets are continued in December 2020 although not as good as growth in December 2019.
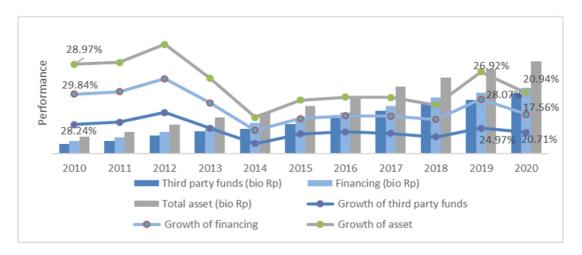

Figure 1.
Performance BPRS between December 2010 – December 2020
Source: OJK Islamic Bankig Information System

Performance growth BPRS decrease compare between 2020 to 2020 as shown in Figure 1. Growth of third-party funds decreases from 24.97% to 20.71%, financing decrease from 28.07% to 17.56% and asset decrease from 26.92% to 20.94%. On another side, the phenomenon of the Fintech industry growth is quite significant.

Based on the OJK Fintech statistics report, it is found that the growth of Islamic Fintech in Indonesia from December 2019 to December 2020 is quite significant. This is indicated by the growth of Sharia Fintech assets year on year reaching 52.05%. Meanwhile, the increase in financing for the Fintech industry reached 21.34% as shown in Figure 2 below.
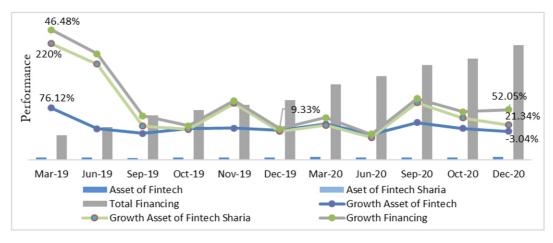

Figure 2.
Performance Fintech Industry between May 2019 – December 2020
Source: OJK Fintech Statistics Report.

Sholihin, Zaki, & Maulana (2018) found that BPRS developed market share networks using a traditional approach like religious emotions, approaches to community leaders, social relationships with the client, and closeness with the community. The issue of efficiency BPRS also attracts the researcher to studies more details especially on the efficiency aspect of BPRS (Mongid, 2015). With this current condition, BPRS must have the strategy to compete with the Fintech industry which has a lot of innovation and services to customers (Harjanti, Mudiarti, & Hedy, 2021; Harjanto, 2019).

Differentiation process in BPRS both in building the traditional market and channeling to the small and medium business community is urgently needed (Kohardinata, Suhardianto, & Tjahjadi, 2020; Hosen & Warninda, 2014; Yeow, Lee, Tan, & Chia, 2018). Drasch, Schweizer, & Urbach" (2018) argued that the financial industry including banking faces many challenges especially those related to information technology management and innovation. Kohardinata et al., '(2020) argued that financing by Fintech company could become a competitor to rural bank business in Indonesia. On the other side studies regarding the impact of growth, Fintech will disturb the rural bank business still very limited (Firmansyah & Anwar, 2019; Anggreini & Singapurwoko, 2019).

Limitation of operational system and credit distribution in the rural bank are key points to be used by Fintech company to grab rural bank's segment market (Singapurwoko, 2019; Suryono, Budi, & Purwandari, 2021). Following that, the studies regarding how the characteristics that should provide BPRS in facing the growth of the Fintech industry will become the gap of this study. In addition, Baidhowi (2018) already studied the relatively same target market will result in financing by the Fintech company will erode the market share owned by Islamic rural banks.

Study to determine the characteristics of BPRS on implementing the Fintech is urgently needed, so BPRS can continue to grow and still compete with Fintech company with development in information technology as their advantage. Rural banks concentrate in a rural area with mostly based on agriculture area with a challenge to service populations are not bankable (Devaney & Weber, 1995). The rural bank also has a similar function with micro-finance institutions which includes financial sustainability as the provision of microfinance services with additional margins (Huda, 2012), outreach where the reach of financial services is aimed at the poor, and impact where microfinance can be felt by the poor who cannot be served by formal financial institution services such as banking (Meyer, 2002).

Islamic microfinance institutions including BPRS should be able to synergize commercial functions in terms of services and financing with social functions, to support poverty alleviation in society (Wulandari, Kassim, Adhi, & Iwani, 2016). Trinugroho, Risfandy, & Ariefianto (2018) studied the existence of BPRS in Indonesia is very strong in supporting the development of industrial markets, especially small and medium industries. BPRS has a high-income margin when it provides financing for the small and micro-segment industries (Trinugroho et al., 2018).

The banking industry currently has few innovations and strategic plans related to the development of information technology "(Harjanto, 2019; Rusydiana, 2018). Harjanto (2019) also found that one of the problems currently faced by BPRS is the lack of innovation in improving digital-based products and services. Huda (2012) also argues that one characteristic of Islamic financing schemes, one of which is BPRS, is a focus on short-term financing and a more focus on financing micro, small and medium industries. Jagtiani & Lemieux (2018) state that the development of the Fintech industry is very rapid and had begun to cut the market share of the financial and banking industry with its convenience and technological innovation.

The Fintech industry should not only be seen as a disruptor to banking businesses but must be seen as an opportunity to collaborate and as a tool for innovation (Anggreini & Singapurwoko, 2019; Kohardinata et al. 2020). The studies related to the characteristics, opportunities, and challenges of the rural banking services on facing the information and financial technology industry are still partial and not widely carried out in Indonesia '(Rusydiana, 2018; Vong, Mandal, & Song, 2016). In addition, research related to BPRS's strategy in facing the growing of Fintech industry that still fragile and not comprehensive will be the focus of this research.

Meanwhile, Financial Technology or Fintech was one of the important innovations in the financial services industry, which prioritized process speed supported by the sharing of economic principles, structured rules, and information technology (Saunders & Cornett, 2008). Arner, Barberis, & Buckley (2015) stated Fintech is a technology that provides financial solutions with its evolution as a financial product or delivery service. Fintech was considered as a technology development application that could speed up existing processes at the retail and wholesale levels with refers to innovation in financial services that are delivered through new technology (Lee & Teo, 2015). Leong (2018) also seen that technology innovation can create business value in the Fintech industry. Fintech is a combination of various disciplines services including finance, technology management, and service innovation (Lee & Shin, 2018).

Hilal (2015) in his research also found that information technology has a positive influence on company performance. The Fintech industry is currently still in the development stage because Fintech still requires studies related to social, regulatory, technology and management aspects as stated by Lee & Shin (2018). Several business architecture models that can be developed by Fintech companies are payment, wealth management, crowdfunding, financing, capital, and insurance (Lee & Shin, 2018).

Research related to the characteristics of the Islamic banking industry such as BPRS on implementing Fintech is still needed. This is due to the lack of research related to Islamic financing institutions including BPRS especially related strategies in facing the development of Fintech. There is limited research regarding BPRS business amid the development of Islamic Fintech in Indonesia. In addition, research related to the BPRS strategy in dealing with Fintech company which is still fragmentary and not comprehensive is one of the reasons conducting this research.

Research Methodology

Due to previous research related to the characteristics and strategies of BPRS in facing the Fintech industry was still limited, qualitative methods were used to determine the characteristics of BPRS. Data collection in this study was conducted by literature study and in-depth interviews with experts. Hsu & Sandford (2007) stated if the lots of data under study are new, there is a process to make the lots of data more scientific, and one method that can be used to scientific lots of data research is using the Delphi method. The Delphi method was developed by Norman Dalkey and Olaf Helmer in 1950.

This Delphi method is acceptable for collecting data from respondents who have expertise in their respective fields. The approach to get the data from respondents based on the survey and questioner method can take two or more stages. Some steps to be needed to collect data from respondents using the Delphi method which consist of determination of respondents who are experts in the field, formulation of questions or questionnaires, submission of questionnaires and feedback, and analysis of results (Steurer, 2011).

In this research, the data to be used is primary data obtained from in-depth interviews with regulators, academics, BPRS practitioners, and Islamic Fintech industry practitioners. This research also uses Delphi combined with the Likert scale method, where the Delphi method will be used to rank the priority answers for each question, while Likert will be used to get the agreement or disagreement from respondents regarding the respective question. To determine the characteristics of the model, study literature is used and followed by an analysis of strengths and weaknesses of each industry, both BPRS and Fintech is carried out.

Budiman, Tarigan, Mardhatillah, Sembiring, & Teddy (2018) argue that the strengths, weaknesses, opportunities, and threats matrix is used to conduct studies in determining the research characteristics including strategy implementation Fintech in BPRS. In addition, to understand the characteristics of the implementation of Fintech in BPRS, in-depth interviews with respondents will be needed also.

Linstone & Turoff (2002) explained the steps in the Delphi method with the data collection process through several stages, starting with the first stage by giving open questions to all respondents. In the second stage, respondents will be given closed and structured questionnaires including scoring value. A structured questionnaire will be added with a Likert scale consisting of very disagree (1), disagree (2), neutral (3&4), agree (5), and very agree (6) and would be grouped into disagreeing (D), neutral (N) and agree (A). Next step stage, respondents will be asked to review and re-analyze the results of the questionnaire answers based on the respondent's thoughts. Finally, the step will be closed by the final stage where respondents are asked to reconfirm their opinion including scoring values and agreement's scale for each of the questions especially for the question that have been concluded differently with most of the respondent's opinions. A summary of the Delphi process could be shown in Figure 3.
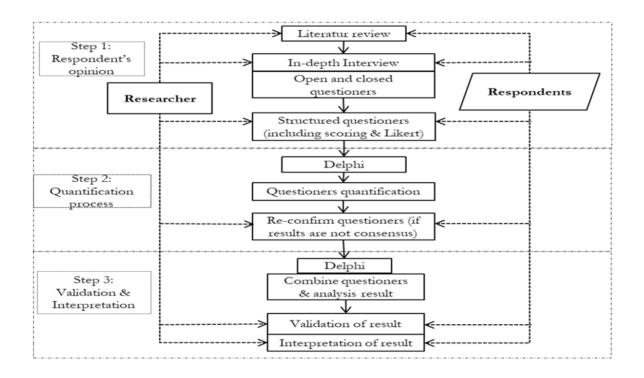

Figure 3.
Delphi Method Process.
Source: (Linstone & Turoff, 2002)

The goal of the Delphi method is to get a consensus from the respondents, and based on Ulschak (1983) calculate the consensus of expert opinion is most appropriate if already reached 80% agree of all opinions. Green, Jones, Hughes, & Williams (1999) stated that the consensus accepted for the Delphi method is 90% opinions of the respondents. Measuring the Delphi method used the geometric means for the calculation of the scoring average. While measuring the level of agreement respondents this research uses the Rater Agreement measurement, namely Kendall's W or Kendall's suitability coefficient. Rater Agreement is a measure that indicates the level of suitability or approval of respondents (R_1, R_2, ..., R_n) to a problem or characteristic in a group.

Kendall's W coefficient is a non-parameterized statistic that measures and assesses the level of agreement among respondents. Kendall's W suitability is the statistical normalization of the Friedman test, which ranges from a value 0 (disagree) to value 1 (fully agree). So, the Kendall suitability coefficient is determinant as W with the value $0 < W \leq 1$. The value of W is one of the tools to measure the Rater Agreement. While the probability value (P-value) can be interpreted as the amount of opportunity or probability observed from the test statistics. The P-value was obtained from the results of statistical calculations. Bain & Engelhardt (1991) stated research with a P-value maximum of 10% is allowed, especially for qualitative data which have an uncertain opinion in nature.

According to that, this research uses a P-value of 0.1 as a maximum level of disagreement from the respondents regarding the problems. The formula for calculating Kendall's suitability coefficient W is as follows:

$$S = \sum_{i=1}^{n}(R_i - R)^2$$

$$W = \frac{12S}{m^2(n^3 - n)}$$

Where: S: standard deviation; R_i: scoring value given by each respondent; R: average value; m: number of respondents; n: number of problems or characteristics.

Therefore, in this research, the opinion will be used as the result of the character is considered to have converged when it has reached 80% of the total number of opinions formulations produced.

In this research, the data to be used is primary data obtained from in-depth interviews with experts including regulators and academics, BPRS practitioners, and Islamic Fintech practitioners which a summary of respondents can see in Table 1. Respondents of Delphi-Likert are smaller than in-depth interview because only selected respondents that agreed to be included in Delphi-Likert process.

Table 1.
Summary of the Respondents

No.	Method	Experts	BPRS	Fintech
1	In-depth Interview	6	7	9
2	Delphi-Likert	6	6	8

Results and Discussion

Based on literature studies and in-depth interviews with respondents as part of the Delphi method round 1, there is an open questionnaire submission process to gather information related to the characteristics of BPRS in implementing Fintech. By the Delphi method round 1, there are 10 (ten) main characteristics obtained.

The outline of the characteristics results is obtained as a state in Table 2.

The next process after obtaining the main characteristics of the BPRS in developing Fintech is to obtain the sub-criteria of these characteristics. The characteristics and sub-characteristics obtained based on in-depth-interview with respondents are shown in Table 3.

Table 2.
Outline of the characteristics BPRS on implementing Fintech

No.	Characteristics Obtained
1	Fintech model services should be adopted by BPRS (Harjanti et al., 2021).
2	Timing for BPRS to adopt Fintech (Trinugroho et al., 2018).
3	Action to be taken by BPRS in dealing with Fintech (Kohardinata et al., 2020).
4	The function needed by BPRS to adopt Fintech (Lee & Shin, 2018).
5	Supervisory to BPRS in implementing the Fintech (Rusydiana, 2018).
6	The ecosystem of Fintech that suitable for BPRS (Ascarya & Sakti, 2020).
7	Data sharing model between BPRS and Fintech (Dapp, 2015).
8	Commercial functions when BPRS adopts Fintech (Panjwani & Shili, 2020).
9	Rules and regulations related to BPRS-Fintech (Baber, 2019).
10	Target business when implementing Fintech (Lee & Teo, 2015).

Table 3.
Characteristics and Sub Characteristics BPRS on Implementing Fintech

No	Characteristics
1	**Fintech model services should be adopted by BPRS**
1.1	P2P for financing services
1.2	Crowdfunding for fundraising services
1.3	Financing performance monitoring
1.4	E-commerce as a tool for selling products
1.5	Monthly performance monitoring
1.6	Integrated system and services
2	**Timing for BPRS to adopt Fintech**
2.1	Now
2.2	Short term (under 1 year)
2.3	Medium-term (1 to 3 years)
2.4	Long term (over 3 years)
2.5	Gradually as needed
3	**Action to be taken by BPRS in dealing with Fintech**
3.1	Build and manage own Fintech
3.2	Build and manage Fintech with others BPRS
3.3	Collaboration with Fintech Companies
3.4	Acquisition of Fintech Companies
3.5	Build and manage Fintech with Associations
3.6	Build and manage Fintech with authorities or government

Table 3. (Continued)
Characteristics and Sub Characteristics BPRS on Implementing Fintech

No	Characteristics
4	**The function needed by BPRS to adopt Fintech**
4.1	Customer registration
4.2	Financing services
4.3	Fundraising
4.4	Performance monitoring and billing
4.5	Tailored as needed
4.6	Assessment of the quality business to be financed
4.7	Assessment of the quality of customers
5	**Supervisory to BPRS in implementing the Fintech**
5.1	Under Indonesian Financial Services Authority (OJK)
5.2	Fintech under OJK, while online payments are under the Bank Indonesia (BI)
5.3	Under local government
5.4	Fintech supervisory under OJK while the rules are under the association
5.5	Fintech supervisory under OJK while the rules are under local government
6	**The ecosystem of Fintech that suitable for BPRS**
6.1	Private closed ecosystem
6.2	Public closed ecosystem
6.3	Limited open ecosystem
6.4	Combined ecosystem
6.5	No need to develop the ecosystem
7	**Data sharing model between BPRS and Fintech**
7.1	Using own database (no data sharing)
7.2	Sharing database with Fintech companies and limited for cooperation
7.3	BPRS can access Fintech company's database and is limited only to cooperation
7.4	Fintech company can access BPRS's database and is limited only for cooperation
7.5	BPRS access database system through the association
7.6	BPRS only access database on zakat payer owned by social Fintech companies
8	**Commercial functions when BPRS adopts Fintech**
8.1	To make it easier and closer with community customers
8.2	To expand the coverage area of the services
8.3	To obtain millennial generation as target market
8.4	Cost savings for financing and monitoring process
8.5	Improve quality and efficiency of human resources
8.6	Market analysis
9	**Rules and regulations related to BPRS-Fintech**
9.1	Remain in the OJK, except for Fintech payments at Bank Indonesia
9.2	Relaxation of regulations needed due to different capacities of the BPRS
9.3	Responsibility to be shared between OJK and the association
9.4	Rules and regulations under local government
9.5	Regulations under the association, supervisory of implementation under authority
10	**Target business when implementing Fintech**
10.1	Commercial oriented
10.2	Social oriented
10.3	Both commercial and social with no separate function
10.4	Both commercial and social with a separate function
10.5	Cooperation with Fintech for commercial, and social Fintech for social function

Furthermore, from characteristics and sub-characteristics that are already obtained, a structured questionnaire accompanied with Likert is made and assists respondents. In the Delphi method round 2, an in-depth interview was conducted again with the respondents related to the characteristics and sub-characteristics that were already obtained, and the respondents were asked to fill out a structured questionnaire by providing a ranking order and Likert agreement score of the characteristics along with the sub-characteristics in the indicators. By Delphi method analysis, the Kendall suitability coefficient W and the P-value of each characteristic are obtained as shown in Table 4.

Table 4.
Rater Agreement of the Characteristics BPRS on Implementing Fintech

	Rater Agreement						
	Respondents	**Experts**		**BPRS**		**Fintech**	
No	**Characteristics**	W	P-value	W	P-value	W	P-value
1	Fintech model services should be adopted by BPRS	0.311*	0.097	0.102	0.693	0.141	0.343
2	Timing for BPRS to adopt Fintech	0.406**	0.045	0.361*	0.070	0.281*	0.061
3	Action to be taken by BPRS in dealing with Fintech	0.318*	0.090	0.495**	0.011	0.352**	0.015
4	The function needed by BPRS to adopt Fintech	0.464**	0.011	0.318*	0.076	0.409***	0.003
5	Supervisory to BPRS in implementing the Fintech	0.939***	0.000	0.844***	0.000	0.828***	0.000
6	Ecosystem of Fintech that suitable for BPRS	0.856***	0.000	0.783***	0.001	0.697***	0.000
7	Data sharing model between BPRS and Fintech	0.349*	0.063	0.533***	0.007	0.305**	0.032
8	Commercial functions when BPRS adopts Fintech	0.587***	0.004	0.705***	0.001	0.489***	0.002
9	Rules and regulations related to BPRS-Fintech	0.844***	0.000	0.694***	0.002	0.803***	0.000
10	Target business when implementing Fintech	0.522**	0.014	0.372*	0.063	0.331**	0.031

***significant at 0.01 level; **significant at 0.05 level; *significant at 0.10 level

Based on Delphi's analysis by using a P-value of 0.1 as a maximum level of disagreement from the respondents regarding the characteristics, it was found that all respondents agreed on most of the characteristics that had been obtained through the in-depth interview before. Nine characteristics were agreed upon by all respondents. The only characteristic regarding Fintech model services that should be adopted by BPRS was not agreed by all respondents. BPRS and Fintech practitioners had a different view from the Experts. For characteristics regarding the Fintech model service, it turns out that BPRS practitioners and Fintech practitioners have not reached a consensus regarding the model service which is the most priority for BPRS to implement the Fintech.

Since the convergence of characteristics results already reached 80% of the total number of characteristics obtained, so this research can be concluded that all respondents were agreed with the characteristics BPRS on implementing the Fintech. The next step is to calculate the ranking value by using the geomeans calculation to determine the rank of the sub-characteristics that are chosen by the respondents and to calculate the Likert score to determine the respondents' agreement with each sub-characteristic. Respondents gave an assessment based on the level of importance and priority of the existing characteristics so that the characteristics and sub-characteristics could be determined by the BPRS in dealing with the development of the fintech industry in Indonesia. A structured questionnaire has included the priority ranking (R) consisting of 1st priority (1), 2nd priority (2), 3rd priority (3), etc. The Likert scale would be grouped based on the number of correspondents into disagreeing (D), neutral (N), and agree (A). The results of the calculation of the ranking value and also the score of agreement from respondents are shown in table 5.

Table 5.
Result Delphi-Likert of the Characteristics BPRS on Implementing Fintech

No	Characteristics	Experts				BPRS				Fintech			
1	Fintech model services should be adopted by BPRS	R	D	N	A	R	D	N	A	R	D	N	A
1.1	P2P for financing services	4	0	4	2	3	1	2	3	2	1	1	6
1.2	Crowdfunding for fundraising services	6	2	3	1	5	1	2	3	3	1	2	5
1.3	Financing performance monitoring	1	0	1	5	1	0	1	5	4	0	4	4
1.4	E-commerce as a tool for selling products	3	1	2	3	6	1	1	4	5	0	3	5
1.5	Monthly performance monitoring	5	1	2	3	4	1	0	5	6	1	2	5
1.6	Integrated system and services	2	1	0	5	2	0	0	6	1	1	1	6
2	Timing for BPRS to adopt Fintech	R	D	N	A	R	D	N	A	R	D	N	A
2.1	Now	2	2	0	4	1	0	1	5	1	1	1	6
2.2	Short term (under 1 year)	3	0	3	3	5	2	1	3	3	1	2	5
2.3	Medium-term (1 to 3 years)	4	1	5	0	3	3	0	3	4	1	2	5
2.4	Long term (over 3 years)	5	3	2	1	4	2	0	4	5	1	3	4
2.5	Gradually as needed	1	0	1	5	2	1	0	5	2	0	2	6
3	Action to be taken by BPRS in dealing with Fintech	R	D	N	A	R	D	N	A	R	D	N	A
3.1	Build and manage own Fintech	6	5	1	0	6	5	1	0	2	2	2	4
3.2	Build and manage Fintech with others BPRS	2	1	1	4	3	0	1	5	3	1	2	5
3.3	Collaboration with Fintech Companies	1	1	1	4	1	0	1	5	1	0	2	6

Table 5. (Continued)
Result Delphi-Likert of the Characteristics BPRS on Implementing Fintech

No	Characteristics	Experts				BPRS				Fintech			
3.4	Acquisition of Fintech Companies	3	1	0	5	4	0	1	5	4	2	2	4
3.5	Build and manage Fintech with Associations	4	1	3	2	2	1	0	5	5	2	1	5
3.6	Build and manage Fintech with authorities or government	5	3	1	2	5	2	1	3	6	2	1	5
4	The function needed by BPRS to adopt Fintech	R	D	N	A	R	D	N	A	R	D	N	A
4.1	Customer registration	2	1	0	5	1	0	0	6	1	0	1	7
4.2	Financing services	4	2	3	1	4	1	1	4	3	0	0	8
4.3	Fundraising	6	3	2	1	7	2	0	4	4	1	2	5
4.4	Performance monitoring and billing	5	1	3	2	2	1	0	5	5	0	2	6
4.5	Tailored as needed	1	1	0	5	3	2	0	4	2	1	1	6
4.6	Assessment of the quality business to be financed	3	0	2	4	5	1	0	5	6	1	1	6
4.7	Assessment of the quality of customers	7	3	2	1	6	1	0	5	7	3	1	4
5	Supervisory to BPRS in implementing the Fintech	R	D	N	A	R	D	N	A	R	D	N	A
5.1	Under Indonesian Financial Services Authority (OJK)	2	0	0	6	2	0	0	6	1	0	0	8
5.2	Fintech under OJK, while online payments are under the Bank Indonesia (BI)	1	0	0	6	1	0	0	6	2	0	1	7
5.3	Under local government	5	5	1	0	5	6	0	0	4	2	5	1
5.4	Fintech supervisory under OJK while the rules are under the association	3	2	4	0	3	4	1	1	3	1	2	5
5.5	Fintech supervisory under OJK while the rules are under local government	4	4	2	0	4	6	0	0	5	3	3	2
6	The ecosystem of Fintech that suitable for BPRS	R	D	N	A	R	D	N	A	R	D	N	A
6.1	Private closed ecosystem	3	2	4	0	4	2	1	3	4	3	2	3
6.2	Public closed ecosystem	2	0	2	4	1	1	0	5	3	0	4	4
6.3	Limited open ecosystem	4	4	1	1	3	3	2	1	2	0	1	7
6.4	Combined ecosystem	1	0	1	5	2	0	1	5	1	0	0	8
6.5	No need to develop the ecosystem	5	6	0	0	5	5	1	0	5	6	1	1

Table 5. (Continued)
Result Delphi-Likert of the Characteristics BPRS on Implementing Fintech

No	Characteristics	Experts				BPRS				Fintech			
7	Data sharing model between BPRS and Fintech	R	D	N	A	R	D	N	A	R	D	N	A
7.1	Using own database (no data sharing)	1	2	1	3	2	1	1	4	1	1	2	5
7.2	Sharing database with Fintech companies and limited for cooperation	2	0	4	2	3	1	0	5	2	0	4	4
7.3	BPRS can access Fintech company's database and is limited only to cooperation	3	1	2	3	1	0	0	6	4	0	5	3
7.4	Fintech company can access BPRS's database and is limited only for cooperation	6	2	4	0	6	4	1	1	5	1	4	3
7.5	BPRS access database system through the association	4	2	1	3	4	3	0	3	6	3	2	3
7.6	BPRS only access database on zakat payer owned by social Fintech companies	5	2	1	3	5	0	0	6	3	2	2	4
8	Commercial functions when BPRS adopts Fintech	R	D	N	A	R	D	N	A	R	D	N	A
8.1	To make it easier and closer with community customers	1	0	0	6	1	0	0	6	1	1	1	6
8.2	To expand the coverage area of the services	2	2	1	3	4	0	1	5	2	0	0	8
8.3	To obtain millennial generation as target market	5	1	3	2	5	0	2	4	3	0	1	7
8.4	Cost savings for financing and monitoring process	4	1	3	2	2	0	1	5	5	0	1	7
8.5	Improve quality and efficiency of human resources	3	1	1	4	3	0	0	6	4	0	1	7
8.6	Market analysis	6	2	4	0	6	0	0	6	6	0	1	7
9	Rules and regulations related to BPRS-Fintech	R	D	N	A	R	D	N	A	R	D	N	A
9.1	Remain in the OJK, except for Fintech payments at Bank Indonesia	1	0	1	5	2	0	1	5	1	0	1	7
9.2	Relaxation of regulations needed due to different capacities of the BPRS	2	2	2	2	1	0	0	6	2	1	2	5
9.3	Responsibility to be shared between OJK and the association	3	2	3	1	3	3	1	2	3	2	4	2

Table 5. (Continued)

Result Delphi-Likert of the Characteristics BPRS on Implementing Fintech

No	Characteristics	Experts				BPRS				Fintech			
9.4	Rules and regulations under local government	4	5	1	0	5	5	1	0	4	4	3	1
9.5	Regulations under the association, supervisory of implementation under authority	5	6	0	0	4	2	2	2	5	4	3	1
10	Target business when implementing Fintech	R	D	N	A	R	D	N	A	R	D	N	A
10.1	Commercial oriented	2	1	0	5	1	0	1	5	2	0	3	5
10.2	Social oriented	5	2	3	1	5	3	2	1	5	2	4	2
10.3	Both commercial and social with no separate function	1	1	0	5	2	1	1	4	1	0	4	4
10.4	Both commercial and social with a separate function	4	1	3	2	3	1	1	4	3	0	3	5
10.5	Cooperation with Fintech for commercial, and social Fintech for social function	3	1	3	2	4	2	0	4	4	1	3	4

Note: R= Ranking of priority; D= Disagree; N= Neutral; A= Agree

For the characteristic Fintech model services should be adopted by BPRS, all respondents agreed integrated Fintech with system and services owned by BPRS must become the priority. Expert respondents and BPRS practitioners agreed to use Fintech as a performance monitoring tool especially for financing performance monitoring for BPRS. On the other side, Fintech practitioners agreed to use Fintech for financing services and fundraising services to be implemented in BPRS. Fintech practitioners prefer peer-to-peer (P2P) and crowdfunding models to be implemented in BPRS, in line with the research being carried out by Lee & Shin (2018). Fintech must be able to make banking services more modern and digital (Drasch et al., 2018). Fintech has also become one of the efficient solutions for operational BPRS which are still not optimal (Trimulato, 2019).

In terms of appropriate time for BPRS to adopt Fintech, both experts, BPRS practitioners, and Fintech practitioners agree that BPRS needs to implement Fintech gradually. Experts and Fintech practitioners agree the implementation must be realized in the short term, but BPRS practitioners argue that implementation of Fintech can be done in the medium term, and does not need to be realized in the short term. This result is in line with Jagtiani & Lemieux (2018) who state financial industries like banking must use technology especially Fintech to follow market needs.

Regarding the action to be taken by BPRS in dealing with Fintech, all respondents agreed that collaboration between BPRS and Fintech companies is needed. Fintech should not only treat as a competitor but must be treated as complimentary for the rural bank '(Kohardinata et al., 2020). Both experts, BPRS and Fintech practitioners also agreed if BPRS build and manage Fintech with another BPRS, or take advantage of the associations (Vong et al., 2016). Different from other respondents, Fintech practitioners agreed that BPRS should build and manage their Fintech, so BPRS can calculate the cost of building the Fintech (Rusydiana, 2018). For the characteristic Fintech model services should be adopted by BPRS, all respondents agreed integrated Fintech with system and services owned by BPRS must become the priority.

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In terms of the function Fintech needed by the BPRS, all respondents agreed to prioritize the function of Fintech for speed of registration with tailor function was needed. Apart from that, all respondents also agreed that the implementation of Fintech in BPRS must also be adjusted according to the needs. Practitioners of BPRS agree to prioritize Fintech as a performance monitoring tool. The function of Fintech must be able to capture market opportunities that are still open, especially for the micro, small and medium enterprises (Said, Hamid, & Machmuddin, 2020; Wulandari et al., 2016), and also millennial segment as also researched by Ichwan & Kasri (2019). On the other side, Fintech practitioners agree to develop Fintech in BPRS for the P2P financing services.

For supervision function to BPRS in implementing the Fintech, all respondents agreed that supervision on implementation Fintech by BPRS was under the Financial Services Authority (OJK), with Fintech related to payments at Bank Indonesia (BI). Fintech practitioners also agree to implement Fintech needs to involve associations, so the issue that is not regulated by the OJK can be regulated by the association (Rusydiana, 2018). Following that, Lee & Teo (2015) state that implement Fintech for the business must have full control, especially for compliance or regulation.

Refer to the ecosystem model of Fintech that is suitable for BPRS, all respondents agree that the most appropriate was the combination ecosystem model which BPRS will collaborate with a Fintech company for the Fintech area which it could not develop. Limited open ecosystem which the BPRS will cooperate with Fintech companies and there is an exchange of data held although it is only limited for cooperation also agreed by BPRS and Fintech respondents to be prioritized. This collaboration model was in line with the research of Lee & Shin (2018) which state banks need to create partnerships with Fintech companies for their development strategy. In addition, BPRS and Fintech respondents agreed with the public closed ecosystem

model, where Fintech is built and owned by financial authorities like Financial Services Authority (OJK) or Bank Indonesia (BI). This ecosystem model is in line with the research already done by Ascarya & Sakti (2020) for the microfinance Fintech model. Experts respondents more prefer the private closed ecosystem where BPRS builds Fintech by itself but there is no data exchange with others like Fintech company.

Regarding data-sharing model, most respondents agree that BPRS must use their owned database due to Islamic rural bank has a strong customer database that specific to the community, so it very reluctant to share this database with others especially Fintech company (Harjanti et al., 2021). Most respondents also agree that the collaboration between the BPRS and Fintech is needed to expand the opportunities, but data sharing between BPRS and Fintech company is limited only to cooperation (Wiranatakusuma & Hawwa, 2019). Fintech practitioner respondents argue that collaboration between BPRS and fintech companies, especially Fintech companies engaged in the social sector. By collaboration on zakat payer data, it also can be used as an alternative approach to reduce poverty (Ismail, 2013).

For commercial functions, respondents agree that the application of Fintech in BPRS must have commercially beneficial to make it easier and closer with community customers (Harjanti et al., 2021). Fintech should utilize to expand the coverage area and also to improve the quality and efficiency of human resources, especially for millennial segment targets (Ichwan & Kasri, 2019; Wulandari et al., 2016). Fintech should be used for maintaining monitoring cost savings and also financing process (Trimulato, 2019).

In terms of rules and regulations, all respondents agree that regulations remain with the Financial Services Authority (OJK), and agreed on the relaxation in regulations that are tailored to the capabilities and capacities of each BPRS (Harjanto, 2019).

Most of the respondents agreed that regulations could be left to the association so that the authorities could focus more on carrying out their supervision (Lee & Shin, 2018; Yeow et al., 2018).

Regarding target business, most of the respondents agreed that the orientation of the BPRS was still on a commercial function. Most of the respondents also agreed that BPRS is going to carry out a social function, then that social orientation needs to be carried out together with a commercial orientation either this function will be carried out jointly or separately. Said et al., (2020) also state that BPRS is not merely a business agent for the sake of the economy but also carries out public education, and social function.

By the result of the Delphi-Likert method, it can be seen that Fintech can be used by BPRS as a tool to improve service quality, expand business networks, and also facilitate transactions. This is in line with the principles of financial institutions that continue to strive to improve services for their customers, as stated by Hamidi, Worthington, West, & Ismal (2019) and Drasch et al., (2018). Jagtiani & Lemieux (2018) and Harjanto (2019) stated that the usability of Fintech is expected to improve operational systems that are not optimal, increase product and service innovation amid limited capital or funds so that they can optimize costs and prices charged to customers. In terms of appropriate time for BPRS to adopt Fintech, BPRS needs to implement Fintech as part of their strategy gradually.

Regarding the model ecosystem that should be implemented in BPRS, the collaboration between BPRS and Fintech companies will only occur if there is an exchange of data between BPRS and Fintech companies only for cooperation.

In term of the ecosystem model, three Fintech ecosystems that can be applied to BPRS, namely:

1. Combined ecosystem, which BPRS will collaborate with a Fintech company for the Fintech area which it could not develop. This model has implications for BPRS, where BPRS will develop Fintech following the capabilities and also fulfilled the needs of each BPRS. BPRS can take the advantage of Fintech but BPRS can calculate the investment cost before BPRS builds the Fintech for their purpose. An illustration of the combined ecosystem showed in Figure 4

Figure 4.
Combined Ecosystem Model

2. A Public closed ecosystem, where Fintech is built and owned by Financial authorities and the exchange of data is limited to cooperation only. BPRS will use Fintech built and developed by the authority (BI/OJK). In general, with limited capital owned by BPRS, the Fintech developed by the authority will assist the BPRS in developing business targets and also the quality of its services. The development of Fintech by the authority will certainly save costs, and make implement Fintech for BPRS will be standard according to the needs of BPRS. The illustration of the public closed showed in Figure 5.
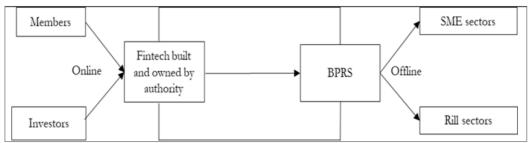
Figure 5.
Public Closed Ecosystem Model

3. Limited open ecosystem, in which the BPRS will cooperate with Fintech companies and there is an exchange of data held although it is only limited for Fintech companies and BPRS which cooperate on this model. With this ecosystem model, BPRS will collaborate with Fintech companies related to the use of Fintech which data sharing only for the cooperation purpose.

With this model, the cost of Fintech will be borne by the Fintech company, and BPRS must absorb this investment cost. The illustration of the limited open ecosystem showed in Figure 6.
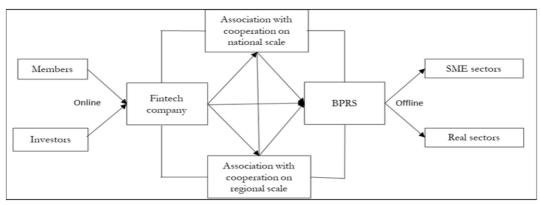
Figure 6.
Limited Open Ecosystem Model

Conclusion

There are ten characteristics of Indonesian sharia rural bank (BPRS) on implementing Fintech that obtained by Delphi Likert method, namely: Fintech model services should be adopted, the timing for BPRS to adopt Fintech, action to be taken by BPRS in dealing with Fintech, function that needed by BPRS to adopt Fintech, supervisory to BPRS in implementing the Fintech, the ecosystem of Fintech that suitable for BPRS, data sharing model between BPRS and Fintech, commercial functions when BPRS adopts Fintech, rules, and regulations related to BPRS-Fintech, and target business when implementing Fintech.

BPRS can use Fintech as one of the tools to improve service quality, develop business networks, and also facilitate transactions owned by BPRS. Fintech can also be used to broaden its business targets and also facilitate the efficient management of its business. Improving service quality is one of the services that must be a priority for BPRS, to follow the changes in people's behavior especially in access to digital technology.

Implementation Fintech can be done through collaboration between BPRS first, and then follow to collaborate with Fintech company. Collaboration between the BPRS and the Fintech company will be effective if there is an exchange of data between the BPRS and the Fintech company, provided that the data exchange is limited to the cooperation that already agreed.

For model ecosystem, combined ecosystem model which BPRS build its Fintech first and then collaborate with a Fintech company for the Fintech area which BPRS cannot develop itself is the most appropriated model.

Analyze regarding the factors of limited capital and also resources owned by BPRS need to be prioritized before collaborating with fintech companies. The other ecosystem model that also needs to be prioritized is the public closed ecosystem where Fintech is developed by the financial authority. The development of Fintech by the authority will certainly save costs, and make the implementation of Fintech for BPRS will be standardized. On the other hand, most Fintech practitioners agree regarding the limited open ecosystem in which BPRS collaborates with Fintech companies. By this collaboration, there is cooperation and data exchange between BPRS and Fintech companies. The advantage of using this model is BPRS can use the services of Fintech company, while Fintech company can access customers' databases that are owned by BPRS.

The limitation in this research, this research was more focused on the characteristics of the implementation of Fintech in BPRS and does not detail the formulation of technical factors, implementation, and also appropriate services in the development of Fintech of a BPRS, especially the collaboration and combination models with Fintech companies. This further research makes it very challenging to make decisions concerning the investment cost and strategy in Fintech projects (Lee & Shin, 2018).

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