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ANALYSIS OF TECHNOLOGY READINESS AT RURAL BANKS IN FACING THE INDUSTRIAL REVOLUTION 4.0 (CASE STUDY ON RURAL BANKS IN THE SPECIAL REGION OF YOGYAKARTA)

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Abstract: This study aims to determine the readiness in adapting the use of information technology at Rural Banks to improve customer service during the covid-19 pandemic. This research is quantitative research conducted at the Rural Bank in the Special Region of Yogyakarta. Samples are categorized based on the category of assets according to the book and location. This study uses 6 factors that are used to see the readiness to use information technology, namely management support, facilitating conditions, management knowledge, business environment, infrastructure development, and regional competitiveness. The results show that on average, Rural Banks in the Special Region of Yogyakarta have good readiness in facing the industrial revolution 4.0. Good readiness was demonstrated by Rural Banks that were categorized as Book 3 assets in the City of Yogyakarta and Rural Banks that were categorized as Book 2 assets in Bantul Yogyakarta.

Keywords: *information technology, rural bank readiness, management support, knowledge, business environment*

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1. Introduction

The development of the industrial revolution brought very rapid changes to various sectors in Indonesia. In this era, there was a shift in the trend of innovation toward the use of digital technology. The presence of the 4.0 industrial revolution will gradually threaten existing business lines because professions and jobs are replaced by automated systems and digital technology. In the banking and financial industry, the industrial era 4.0 requires banks to be able to innovate in providing services to customers. In addition, this era of the digital industry also poses several challenges for banks to be able to protect customer data

Innovation is needed to face competition along with the rapid growth of financial technology (*fintech*). This change will cause banking failure if it is not addressed properly. This is due to changes in consumer behavior, and the rapid evolution of technological innovation in services which has led to more competitive competition in the service industry, especially financial services. These conditions require management, especially bank management, to be able to formulate and implement appropriate business strategies that enable customers not to switch (Brown et al. 2003, Barusman and Yusuf, 2010).

In the world of banking, the use of technology is indispensable in the data processing. In addition, the existing information system at the bank is also used to facilitate customers in

making transactions, withdrawing money, checking balances, and others (Erdawati and Esha, 2018). Readiness to use information technology will determine the success of the services provided by banks. Readiness to use information technology is not only influenced by the human resources that operationalize the information technology but also involves various factors such as social factors, impact (*affect*), complexity, task suitability, long-term consequences, and conditions that facilitate them (Triandis, 1980; Thompson et al., 1991). Burns & Vaivio (2001), and Ross, Beath, and Goodhue (1996) found that there are operating/business environment factors that influence the readiness to use information technology. In addition, several studies have found the influence of information technology infrastructure development capability factors (Pearlson & Saunders, 2004), regional competitiveness (Trinugroho et al., 2018) as well as optimism, innovation, a sense of discomfort and insecurity (Parasuraman, 2000) in technology readiness.

Rural Banks are financial institutions that carry out the intermediary function to collect and distribute funds to the public, both in the form of credit and in other forms to encourage community business activities. In practice, Rural Banks activities are synonymous with serving micro, small, and medium entrepreneurs whose locations are not far from the reach of Rural Banks. Based on data up to June 2020, there were 1,529 Rural Banks with the proportion of 69% located in Java and Bali and 31% outside Java and Bali (fund market. id, 2020). So far, Rural Banks have played a very important role in terms of reducing poverty through the microcredit program. In carrying out this role, Rural Banks must compete with commercial banks that provide micro bank services, as well as savings and loan cooperatives.

To face competition in the industrial 4.0 era, Rural Banks must prepare themselves to be able to compete with the banking industry sector and other microfinance institutions in using information technology to provide services to the public. Therefore, there is a need for readiness on the part of Rural Banks to be able to know their capabilities in facing the challenges of using information technology which has become a demand. If this is not managed properly, it will have an impact on worsening bank performance, including due to a lack of ability in service, fraud (*fraud*) by bank management/owners, misuse of assets; breach of contract; unlawful bookkeeping; fraud; misstatement of financial statements, and other reasons (Ashari & Nugrahanti, 2017).

Readiness in the use of technology is strongly supported by the size of the assets. Assets are a very important resource for Rural Banks. Assets are resources controlled by the company as a result of past events and from which future economic benefits are expected to flow to the company (Ashari, 2020). With assets, Rural Banks can carry out business activities, from operational financing to investment. On the other hand, assets also have economic value because they can be sold or even exchanged for cash.

This study aims to determine the readiness of Rural Banks in the Special Region of Yogyakarta to use information technology in the era of facing industry 4.0. Rural Banks with which categories are ready to face competition in the era of industry 4.0 based on asset categories. In this study, Rural Banks will be categorized based on the size of the assets owned. Then based on these categories a Rural Banks readiness test will be carried out using several variables, namely management support factors, facilitating conditions, operating/business environment, management and employee knowledge, infrastructure development, and regional competitiveness. It is hoped that this research will be able to contribute ideas to banking, especially in increasing the readiness of Rural Banks to use information technology in the industrial era 4.0 and find out what things need to be addressed so that they can improve the performance and competitiveness of Rural Banks.

2. Research Method

The population in this study are all directors and managers of Rural Banks in the Special Region of Yogyakarta who use information technology in carrying out their main duties. The sample in this study is all members of the population. The samples obtained will be categorized based on the asset category according to the book and location (Ashari, 2020). Based on the asset category according to the books of each Rural Bank, it will be categorized into 3 categories, namely Book I < 15 billion, Book II between 15 billion and 50 billion, and Book III > 50 billion. Meanwhile, based on the location, it will be categorized based on the Regency.

The dimensions and statement indicators used in this study refer to Ashari's research (2020), which includes four dimensions, namely management knowledge, operating/business environment, information technology infrastructure development, and regional competitiveness. This study adds dimensions of management support and facilitating conditions (Triandis, 1980) in measuring the readiness of Rural Banks to face the use of information technology. These dimensions will be outlined in indicator statements which will be distributed in the form of a questionnaire related to Rural Bank readiness. Statements will be divided into 5 categories of answers, namely readiness "good", "enough", "less", "poor", and "not ready/no carrying capacity". The results of the answers collected will be analyzed regarding the readiness of Rural Banks in dealing with the use of information technology.

3. Results and Discussion

3.1. Results

Based on the results of the survey conducted, the results were obtained that based on the category of assets according to the Book, the majority of Rural Banks in the Special Region of Yogyakarta were in the Book I category (63%), while for Book II and III categories, each was 19%. While based on location, the majority of Rural Banks in the Special Region of Yogyakarta that were sampled were in Sleman Regency (45.76%), then in succession in the City of Yogyakarta (22.03%), Bantul (18.64%0, Gunungkidul (8, 47%) and Kulonprogo (5.08%).

Based on the results of the answers to the questionnaires distributed, the following results were obtained:

Table 1. Description of the Results of the Statement on Rural Banks Readiness

No	Statement	Survey Result Value			Mean	Information
		0-4	5	6-10		
	Business Operations Environment					
1	Business strategy	5,08%	5,08%	89,83%	7,101695	Enough
2	Market share	11,86%	15,25%	72,88%	6,355932	Enough
3	Work area competition	5,08%	13,56%	81,36%	6,644068	Enough
4	Customers served can use an automated/digitalized system	13,56%	15,25%	71,19%	6,220339	Enough
5	Customers served to require an automated/digitalized system.	10,17%	11,86%	77,97%	6,305085	Enough
	Infrastructure Development					
1	There has been Information Technology (IT) Investment Planning at the Rural Bank	11,86%	5,08%	83,05%	6,813559	Enough
2	There has been an allocation of funds for IT Investment in Rural Bank	18,64%	6,78%	74,58%	6,474576	Enough
3	Sufficient cash allocation for IT investment	10,17%	3,39%	86,44%	6,983051	Enough

4	IT investment does not interfere with Rural Bank operations	6,78%	6,78%	86,44%	7,118644	Enough
5	IT investment will be profitable for Rural Bank	1,69%	5,08%	93,22%	7,338983	Enough
	Development of IT management and employees					
1	The development of information technology infrastructure is carried out on an ongoing basis	5,08%	8,47%	86,44%	7,20339	Enough
2	There are Rural bank Directors who are concerned/responsible for the development of information technology	10,17%	16,95%	72,88%	6,762712	Enough
3	There are Rural bank employees who specifically handle information technology	10,17%	1,69%	88,14%	7,389831	Enough
4	There is information technology training for Rural bank employees	8,47%	6,78%	84,75%	7,067797	Enough
5	Implementation of information technology in Rural Bank operations has been carried out	5,08%	5,08%	89,83%	7,118644	Enough
	Regional Competitiveness					
1	The regional economy is conducive to the future development of the Rural Bank credit service business	1,69%	5,08%	93,22%	7,305085	Enough
2	City/district infrastructure and resources are adequate for the development of Rural bank services	1,69%	1,69%	96,61%	7,372881	Enough
3	Rural bank product services in the city/district where the Rural bank is domiciled have the potential to develop	1,69%	1,69%	96,61%	7,457627	Enough
4	City/regency government regulations are conducive to the development of Rural bank product services	1,69%	6,78%	91,53%	7,169492	Enough
5	City/regency security is conducive to the development of Rural bank product services	1,69%	0,00%	98,31%	7,491525	Enough
	Facilitating Conditions					
1	Availability of the necessary resources (such as computers, and software) to use information technology systems	1,69%	1,69%	96,61%	7,694915	Enough
2	Employees have sufficient knowledge of the use of information technology systems	3,39%	5,08%	91,53%	7,152542	Enough
3	The availability of expert assistance for officers when there are difficulties in the use of information technology systems	6,78%	3,39%	89,83%	7,338983	Enough

4	Availability of special instructors who assist in the use of information technology systems	8,47%	6,78%	84,75%	6,932203	Enough
	Management Support					
1	Management involvement in information technology system development projects	5,08%	1,69%	93,22%	7,389831	Enough
2	Management involvement in providing the manpower and equipment needed to produce good information technology system performance	3,39%	5,08%	91,53%	7,372881	Enough
3	Management needs in decision-making using information technology used	3,39%	6,78%	89,83%	7,355932	Enough
4	Management support to employees in training activities in the field of information technology	5,08%	0,00%	94,92%	7,59322	Enough
5	Management's interest in evaluating the results of using information technology for the development of better systems and improved performance	1,69%	5,08%	93,22%	7,610169	Enough
Likert scale: 0-1.99 = not ready; 2-3.99 = bad; 4-5.99 unprepared; 6-7.99 = quite ready; 8-10 = Good						

Based on asset category and location, the average value of the answers from the Rural bank readiness survey is as follows:

Table 2. Answers from the Rural Bank Readiness Survey

No	Statement	Book 1	Book 2	Book 3	Bantul	Sleman	City	Gunungkidul	Kulonprogo
1	Operating environment	6,330	6,073	7,636	6,733	6,296	6,100	6,680	6,667
2	Infrastructure development	6,622	7,000	7,982	6,950	7,030	6,433	6,640	6,733
3	Knowledge of IT management and employees	6,941	6,673	8,109	7,350	7,000	6,883	6,720	6,667
4	regional competitiveness	7,168	7,564	7,200	7,383	7,474	6,767	6,920	7,333
5	Facilitating conditions	7,149	7,045	7,955	7,646	7,194	6,813	6,800	7,250
6	Management Support	7,286	7,236	8,291	7,517	7,504	7,050	6,760	7,733
	Rate-rate	6,916	6,932	7,862	7,263	7,083	6,674	6,753	7,064

(Likert scale 0 - 10: 0-1.99 = not ready, 2-3.99 = bad 4-5.99 = not enough, 6-7.99 = enough, 8-10 = good)

Based on Table 2, it can be concluded that the readiness of Rural Banks in the Special Region of Yogyakarta in facing the industrial revolution 4.0 is maximally included in the

"enough" criteria. Sequentially, the readiness of Rural Banks based on asset category is Rural bank Book 3, Book 2, and Book 1. Meanwhile, based on the category, all Rural Banks, both located in Bantul, Sleman, Yogyakarta City, Gunungkidul, and Kulonprogo, fall into the "sufficient" criteria.

The results of the survey answers based on the category of Assets and Location concluded that Rural Banks with the best readiness are summarized in Table 3 below.

Table 3. Survey Results Based on Assets and Locations

No	Asset/Location	Operating Environment	IT Infrastructure Development	IT knowledge	Regional Competitiveness	Facilitating conditions	Management Support	Rate-rate
1	Book 3, Bantul	6,700	6,8	8	7,5	7,5	7,3	7,300
2	Book 3, Sleman	7,000	8	7	7,8	6,75	8,2	7,458
3	Book 3, The City	8,900	7,9	8,4	7,7	7,875	8,8	8,263
4	Book 3, Gunung Kidul	7,900	7,9	7,7	7,7	7,875	7,9	7,829
5	Book 3, Kulonprogo	7,000	8	7	7,8	6,75	8,2	7,458
6	Book 2, Bantul	7,600	8	8	7,8	10	10	8,567
7	Book 2, Sleman	5,925	7,05	6,475	7,425	6,656	7,425	6,826
8	Book 2, The City	5,900	6,3	6,8	8	7,125	6,8	6,821
9	Book 1, Bantul	6,644	6,867	7,133	7,311	7,417	7,289	7,110
10	Book 1, Sleman	6,173	6,587	6,88	7,347	7,117	7,44	6,924
11	Book 1, The City	6,300	6,85	7,275	6,975	7,219	7,425	7,007
12	Book 1, Gunung Kidul	6,133	5,8	6,067	6,4	6,083	6	6,081
13	Book 1, Kulonprogo	6,500	6,1	6,5	7,1	7,5	7,5	6,867

(Likert scale 0 - 10: 0-1.99 = not ready, 2-3.99 = bad 4-5.99 = not enough, 6-7.99 = enough, 8-10 = good)

From the results of the survey answers in Table 3, it appears that based on asset and location categories 2 (two) categories of Rural Banks have "Good" readiness in the use of information technology, namely, Rural bank Book 3 located in Yogyakarta City (8,263) and Rural bank Book 2 which located in Bantul (8,567). While other Rural Banks have "sufficient" readiness for the use of IT.

3.2. Discussion

On average, the readiness to use information technology at Rural Banks in the Special Region of Yogyakarta shows sufficient readiness to face the industrial revolution 4.0. Based on asset category, sequentially the readiness of the Rural Banks is Rural Bank Book 3, Book 2, and Book 1. This means that the greater the assets owned by the Rural Bank, the better the readiness of the Rural Bank to invest in technology. Rural Banks readiness based on this asset category can be seen from infrastructure development, facilitating conditions, and management support in readiness to use information technology. In terms of infrastructure development, judging from the value of each indicator, it appears that Rural Banks have fairly good infrastructure development readiness, seen from Rural Banks that have planned investments in

the use of information technology (6,814), there is an allocation of funds (6,475) and sufficient cash for development information technology (6,983) without having to disrupt ongoing routine operational activities (7,118). Readiness in this investment has been well planned with the hope that it will provide benefits for the Rural Bank itself (7,339). In addition, this sufficient readiness also appears from the value of the facilitating condition factor indicator, where Rural Banks provide the necessary resources, such as computers and software, which are very much needed in the operation of information technology (7,694), Rural Banks that have prepared employee knowledge (7,153), as well as providing expert assistance who are ready to assist in the use of information technology systems (7,339). Management support also seems to be sufficient to encourage Rural Bank readiness seen from the value of management support indicators, namely: management involvement in information technology system development projects (7,389), provision of required personnel and equipment (7,373), support in decision-making related to the use of information technology used (7,356), support for employee training activities in the field of information technology (7.5930, as well as evaluations made of the use of information technology (7.610).

By location category, all good Rural Banks located in Bantul, Sleman, Yogyakarta City, Gunungkidul, and Kulonprogo fall into the "sufficient" criteria. This readiness can be seen from the indicator values of a supportive operating environment, such as a fairly good business strategy at Rural Banks in each district (7.102), market share served (6.356), fairly healthy competition in each region (6.644), readiness customers in using existing information technology systems (6.22), as well as system readiness in serving customers (6.305). From regional competitiveness, the regional economy is quite conducive to the development of the Rural Bank credit service business (7,305). In addition, cloudy infrastructure and resources (7,373), product service development (7,458), supporting regulations (7,169), and fairly conducive security (7,492) greatly encourage regional readiness for the use of existing information technology systems.

Based on asset category and location, the readiness of Rural Bank Book 3 in the City of Yogyakarta, and Rural Bank Book 2 located in Bantul show good readiness in the use of information technology. In the City of Yogyakarta this readiness is strongly supported by the business operating environment (8.90), good knowledge of employees and management regarding information technology (8.4), as well as management support for the development of information technology used. While in Bantul, the factors of infrastructure development (8.00), knowledge of employees and management (8.00), facilitating conditions (10) and management support (10) strongly encourage readiness for the use of information technology.

4. Conclusion

This research shows that Rural Banks in Special Region of Yogyakarta, on average, have a fairly good readiness to face the industrial revolution 4.0. Good readiness is demonstrated by Rural Banks in the Book 3 asset category located in the City of Yogyakarta, and Rural Banks in the Book 2 asset category located in Bantul. Technological readiness is seen from indicators of the operating environment, infrastructure development, knowledge of information technology, regional competitiveness, facilitating conditions, and management support. Readiness in the use of information technology needs support from internal and external parties from Rural Banks, including government and community support. So that Rural Banks can be better prepared to face the industrial revolution 4.0 and can carry out comprehensive transformations in their services to the community

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