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THE INFLUENCE OF IT INVESTMENT, IT INNOVATION, FINANCIAL INNOVATION ON SUSTAINABLE COMPETITIVE ADVANTAGE THROUGH BUSINESS TRANSFORMATION MODERATED BY IT IMPLEMENTATION
(AN EMPIRICAL STUDY ON RURAL BANKING)

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ABSTRACT

This study has several research objectives, especially to analyze several variables including the influence of the IT Investment variable on the IT Innovation variable, the influence of the IT Innovation variable on the Financial Innovation variable, the influence of the Financial Innovation variable on the Business Transformation variable, the influence of the IT Innovation variable on the Business Transformation variable, the effect of the IT Investment variable on the Business Transformation variable, the influence of the IT Investment variable on the Business Transformation variable is strengthened by IT Implementation and the influence of the Business Transformation variable on the Sustainable Competitive Advantage variable. The quantitative research approach used is supported by analytical techniques using the SEM-AMOS method. In research-based on multivariate analysis, the number of samples specified is at least 10 times the number of variables or 60 samples of RB with capital above IDR 10 billion. Data collection was carried out by means of a survey by sending an online questionnaire in the period May 2020 to July 2020. This study found that most of the variables were proven to have a significant effect, including the IT Investment variable which had a significant effect on IT Innovation, the IT Innovation variable had a significant effect on the financial variable. Innovation, the Financial Innovation variable has a significant effect on Business Transformation, the IT Innovation variable has a significant effect on Business Transformation with a negative value, the IT Investment variable has a significant effect with a negative value on the Business Transformation variable, the IT Implementation variable has a significant effect on Business Transformation, and the Business Transformation variable has an effect significant to the Sustainable Competitive Advantage. This study has limitations on the number of samples used. In addition, this research also contributes theoretically and practically, especially to understanding the phenomenon of information technology in the rural banking business.

Keywords: *IT Investment, IT Innovation, Financial Innovation, Sustainable Competitive Advantage, Business Transformation, IT Implementation, Rural Bank*

1. INTRODUCTION

Information technology innovation and the implementation of information technology at Rural Banks (RB/BPR) can be done by collaborating with technology providers. Because not all RBs have the same ability, and there are also RBs with large capital, and there are also RBs with small capital. The relatively large RB has the ability to absorb technology. But for small RBs, which are still 86% of the total BPR, the capital is still below IDR 15 billion, so it is necessary to cooperate with technology providers [1].

Efforts to encourage RB progress by using or implementing information technology are

contained in OJK regulation number 75/POJK.03/2016 concerning Standards for Information Technology Implementation for Rural Banks. The regulation explains that the role of information technology for the banking industry, including RB, is very important and cannot be separated from banking operations in serving the public using banking services.

Further regulations and provisions must be fulfilled by RB by investing in information technology (IT Investment). The problem that arises is that each RB has a different level of ability in information technology investment (IT Investment). In the implementation of information technology, IT Investment will affect innovation in information technology (IT). If supported by good IT Investment, it will affect innovation (IT Innovation) and will affect financial innovation (Financial Innovation) that can be carried out and developed by BPR. IT Investment, IT Innovation, and Financial Innovation can lead to Business Transformation, in which RB will change the business model. With the change in business model, there will be changes in internal processes/activities and services to customers.

Apart from being driven by these regulations, the current Covid-19 pandemic situation [2];[3] has implications for RB's business activities, especially in direct customer service. To overcome the impact of these events, medium-sized companies such as RB can take advantage of information technology or digital technology [4]. In order to adapt to new conditions both during the pandemic or post-pandemic, RB needs to transform the business into a digital-based business. To carry out the business transformation, RB must invest in information technology, information technology innovation, and financial innovation, especially to achieve sustainable competitive advantage.

In order to achieve sustainable competitive advantage, it is necessary to analyze by making modeling using several variables, especially IT Investment, IT Innovation, Financial Innovation, Business Transformation, IT Implementation, and Sustainable Competitive Advantage. So that it can be analyzed and proven whether the policies of the Financial Services Authority in encouraging and increasing sustainable competitive advantage in RB with the right application of information technology.

Based on the identification of the problems described above, the formulation of the problem is based on the assumption that sustainable competitive advantage in this case Rural Banks is the result of investment in information technology, information technology innovation, financial innovation, information technology implementation, and business transformation. Identification of this problem statement is in conflict with several studies which state that empirically testing IT investment and company profitability does not always explicitly consider the impact of industry competition, but so far have provided mixed findings with some suggestions of no or negative relationship between IT investment and profits. companies [5]. In addition, the implementation of information technology results in uncertain or unpredictable [6].

Based on this background, this study formulates several research objectives, especially to analyze several variables including the influence of the IT Investment variable on the IT Innovation variable, the influence of the IT Innovation variable on the Financial Innovation variable, the influence of the Financial Innovation variable on the Business Transformation variable, the influence of the IT Innovation variable on the variable Business Transformation, the influence of the IT Investment variable on the Business Transformation variable, the influence of the IT Investment on the Business Transformation variable is strengthened by IT Implementation and the influence of the Business Transformation variable on the Sustainable Competitive Advantage variable.

2. MATERIALS

2.1 IT Investment and IT Innovation

IT Investment refers to information technology resources to determine the achievement of the mission and support from management or the company. IT investment is a decision taken by an organization to increase resources from the actual costs of IT in the hope that the benefits from these expenditures will achieve the expected value [7]. Meanwhile, Swanson's definition and define information technology-based innovation in terms of disruptive IT innovation as architectural innovation derived from what they call "information technology-based" [8],[9],[10],[11]. They distinguish between the three types of IT innovation and their interactions in what they call "the three sets of information technology innovation models".

H1: IT Investment has a significant effect on IT Innovation.

2.2 IT Innovation andFinancial Innovation

The effects of disruptive IT innovation to include new services and new types of development processes. Telecommunications network package in the 1990s was a basic IT innovation that drove the next innovation in system development and services. While financial innovation is not a new phenomenon, because financial innovation has existed since the start of technological innovation [12]. Financial innovation in the sense of technical progress consists of the development of new products (services) or changes in processes, institutions, and market systems that increase efficiency this is indicated by the cost-reducing effect of innovative financial services [13]. Financial innovation is also defined as an act of creating and then popularizing a new financial instrument, as well as new financial technology, institutions, and markets consisting of product or process innovation, with product innovation [14].

H2: IT Innovation has a significant effect on Financial Innovation.

2.3 Financial Innovation and Business Transformation

Financial innovation can be defined as technical progress consisting of the development of new products (services) or changes in processes, institutions, and systems that will increase efficiency [15]. At the macro, micro, and institutional levels of the financial intermediation process, financial innovation can be categorized as innovation of financial systems, financial institutions, processes, and products. While the operational excellence of an organization can be seen in the internal business operations that occur, which can be divided into innovation, operations, and after-sales service.

H3: Financial Innovation has a significant effect on Business Transformation.

2.4 IT Innovation and Business Transformation

The definition of information technology innovation put forward that Information technology innovation refers to the initiative to introduce new information technology into the organization [16]. Innovation is an idea, practice, or object that is considered new by members of a social system [17]. Further, that innovation is a technology or practice that an organization uses for the first time, regardless of whether other organizations have previously used the technology or practice [18]. Innovation is a broad conceptualization starting from new innovative ideas, technologies, systems, products, processes, policies, or services with new innovations [19]. There are three main factors that become success factors in carrying out a business transformation, namely intensity, focus, and consistency.

H4: IT Innovation has a significant effect on Business Transformation.

2.5 IT Investment and Business Transformation

Information technology investment is the total cycle cost of all or part of a project involving IT, including operational costs after the project of the system that has been implemented [19]. Meanwhile, information technology investment is an investment decision in allocating all types of management information systems including people and money [21]. While business transformation can be said as a change in the process including all organizational functions and behavior using innovation strategies as changes in business processes, organizational learning, quality management, management changes, dynamic responses to changes in the business environment for the achievement of strategies, tactics, and alignment between operations. with business and information technology (Al-Hashem & Yaseen, 2015).

H5: IT Investment has a significant effect on Business Transformation.

2.6 IT Investment, Business Transformation, and IT Implementation

The benefits of information technology investment including reducing costs (cost displacement), avoiding costs (cost avoidance), improving the quality taken (decision analysis), and producing positive impacts obtained company (impact analysis) [23]. While business transformation is a concept adopted by the company in order to improve business performance improvisation. Business transformation can be implemented using several strategies: business process reengineering, organizational learning/development, quality management, and the use or application of information technology [24].

Five main contextual categories of factors that impact the implementation of information technology, namely, user community, organization, technology, task, and organizational environment [25].

H6: IT Investment has a significant effect on Business Transformation moderated by IT Implementation.

2.7 Business Transformation and Sustainable Competitive Advantage

Business transformation is the entire process of change required by a corporation to better position itself in responding to and responding to new business challenges, rapidly changing business environment, and new desires that arise from within the company. Changes are carried out comprehensively and continuously on the mindset, perspective, and pattern of corporate actions, business strategies, corporate culture as well as organizational behavior and capabilities [26]. Meanwhile, the company's ability to do business by intelligently using its resources in a meaningful way, which maximizes its value creation and cannot be replicated by rivals, is known as a competitive advantage [27]. A sustainable competitive advantage in an organization is created by the unique combination of organizational resources and skills [28]. Sustainable competitive advantage is influenced by three factors, including the size of the target market, good access to resources and consumers, and limitations on competitors' strengths.

H7: Business Transformation has a significant effect on Sustainable Competitive Advantage.

3. METHODS

This research design adopts a quantitative approach that includes nine processes, first, the process of studying research theories obtained from previous research journals or from textbooks related to this research. The second and third processes are formulating hypotheses and research designs. While the fourth, the selection of respondents with the number of samples taken as many as 126 BPR. The fifth and sixth are data collection using a cross-sectional survey design technique [29] and quantitative data analysis using the SEM-AMOS method with the AMOS application program version 22 [30]. Next is the confirmation of the hypothesis and the last is the ninth process, namely making conclusions from the research conducted.

4. VARIABLE OPERATION

Table 1: Variable Operations

Variable	Dimensions	Indicator	Size
IT Investment	Aggressiveness	It's important to invest Must make investment It is important to maintain Understanding of IT that is applied today Understanding IT developments IT is seen as strategic	Ordinal
	Analysis	Analysis of IT developments in general Analysis of IT implementation on competitors IT investment capability analysis Anticipatory analysis of IT developments	Ordinal
	Defensiveness	Have an investment strategy Have investment regulations Have an IT framework/model	Ordinal
IT Innovation	Process Innovation)	Fast business process Slow business process Simplification & automation of processes	Ordinal
	Product Innovation	Keeping up with innovation Innovate products/services Implement product/service innovation Product/service innovation collaboration	Ordinal
Financial Innovation	Product	Keeping up with the development of financial product innovation Carry out financial innovation in financial products Carry out financial innovations in savings products	Ordinal

		Carry out financial innovations on loan products	
	Service	Keeping up with financial service innovations Carry out financial innovation in financial services Making financial innovations in deposit services Making financial innovations in loan services	Ordinal
	Process	Keeping up with financial process innovation Carry out financial innovation in the financial process Carry out financial innovation in the deposit process Carry out financial innovation in the loan process	Ordinal
IT Implementation	Managerial patience	IT implementation involves all levels There is socialization There is an opportunity to provide input There is regular updating of information	Ordinal
	Learning orientation	Training needs analysis Training curriculum Training Execution	Ordinal
	Top management support	Decision makers have IT insight Decision makers support IT implementation Decision makers support IT development	Ordinal
Business Transformation	Business process reengineering	IT causes change IT simplifies processes IT simplifies service	Ordinal
	Organization development/learning	Development for the better There is a change in organizational culture Consistency of organizational culture change	Ordinal
	Total quality management	Improvement of product/service quality standards Increased customer satisfaction Employee capability improvement	Ordinal
	Use information technology	IT step by step IT as a whole IT creates new products/services	Ordinal
Sustainable Competitive Advantage	Resource,	HR Support Capital support Resource support to keep growing	Ordinal
	Capabilities	HR ability to develop Ability to manage strategic assets IT implementation capability Ability to develop IT	Ordinal
	Competencies	Competence to utilize strategic assets Competence in managing strategic assets Competence to develop IT	Ordinal
	Core competence	Having the uniqueness to utilize resources Has a uniqueness for strategic assets Unique for IT application Having the uniqueness to develop IT	Ordinal

4.1 Sample

The data collection technique used in this research is proposive sampling. Based on data from the Financial Services Authority (OJK) as of November 2016 there were 1,286 RBs with capital above IDR 10 billion out of a total of 1,632 BPRs. From 1,286 RBs with capital above IDR 10 billion, based on the table for determining the number of samples, Isaac & Michael RB obtained a total sample of 224. In research that carried out

multivariate analysis, the number of samples was at least 10 times the number of variables (Sugiyono, S., 2010: 131), based on the number of variables, the minimum sample in this study is 60 samples.

4.2 Data collection

Data collection by means of a survey was carried out by sending questionnaires online or directly to Rural Banks (RB/BPR) in the period May 2020 to July 2020 when activity restrictions began to occur due to the Covid-19 pandemic, thus affecting the number of samples and the range of questionnaires distributed.

5. RESULT

5.1 Profile of the Respondents

The results of the study (table 2) show that as many as 6.35% of respondents are Rural Bank Executives, while Directors, Deputy Directors and others are 13.49%, 15.87% and 64.29%. From the number or percentage of the number of other categories that are large and more than half the number of respondents, it will clearly affect the content of the answers to the questionnaire. Other categories in positions can be parties who do not play a role in making strategic decisions, because these decisions will affect RB's business activities in the long term.

Table 2: Cross Tabulation between Position, Last Education and Scientific Background

			Position				Total
			Director	Chief Executive	Others	Deputy Director	
Non Information & Technology	Education Background	Diploma	0	1	3	5	9
		Master	1	0	5	0	6
		Bachelor	15	3	58	15	91
		High school/Senior high school	0	0	3	0	3
Information & Technology		Diploma	0	0	3	0	3
		Master	1	0	0	0	1
		Bachelor	0	4	9	0	13
Total		Diploma	0	1	6	5	12
		Master	2	0	5	0	7
		Bachelor	15	7	67	15	104
		High school/Senior high school	0	0	3	0	3
	Total		17	8	81	20	126

Source: Author's own research, 2021

Based on the category of educational background, there are 13.49% of respondents with information technology background and 86.51% of respondents with non-information technology background. Ideally, it would be better to answer the questionnaire if the respondent has an information technology background so that the insight into information technology is wider. Meanwhile, the characteristics of the respondents were also mapped with years of service divided into 1-5 years, there were 28.57% respondents, 6-10 years there were 22.22% respondents and 10 years of service there were 49.21% respondents. The longer the working period, the respondents will be more experienced and understand the performance of BPR, so they can analyze problems and solve problems, have future insight about RB business competition and what steps must be made in anticipation of a higher level of competition.

5.2 Measurement Model Results

The initial analysis is carried out by conducting a measurement model, which functions to measure the structures of the dimensions that make up a variable/construct. In this study, a

comprehensive/simultaneous measurement model will be carried out as shown in Figure 1.

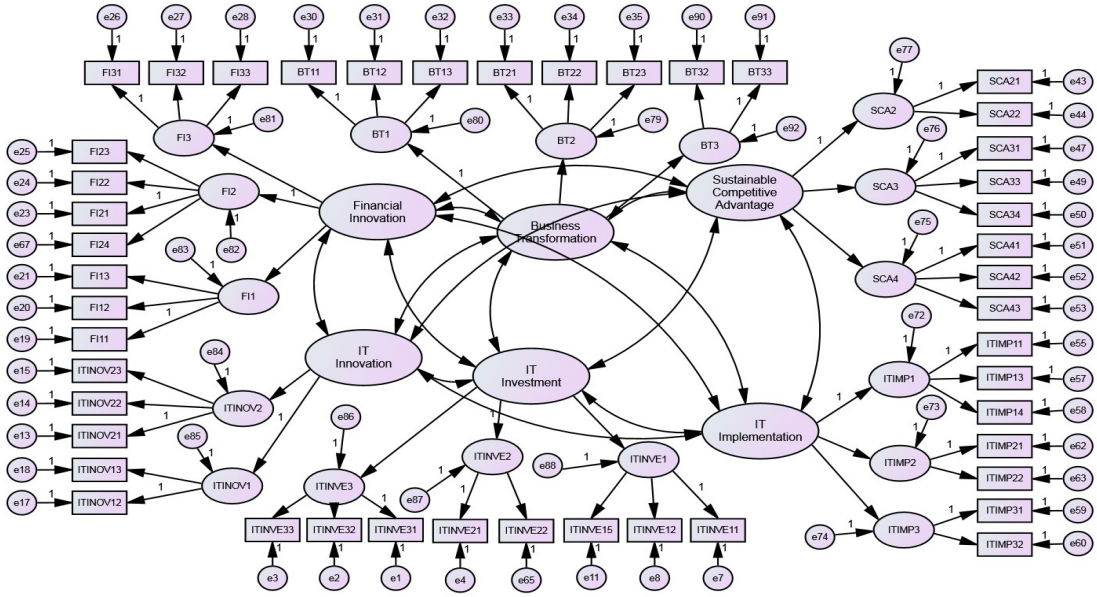

Figure 1: Overall Measurement Model

5.3 Goodness of Fit – Model

Table 3: Goodness of Fit – Model

Goodness of Fit Measure	Cut Off Value	Index Value	Description
χ^2 (Chi Square)	≤ 553,80	434,644	Good Fit
Cmin/DF	≤ 2.00	1,869	Good Fit
Significance probability (p)	≥ 0.05	,000	Good Fit
Adjusted Goodness of Fit (AGFI)	≥ 0.90	,86	Marginal Fit
Goodness of Fit Index (GFI)	≥ 0.90	,918	Good Fit
Comparative Fit Index (CFI)	≥ 0.90	,921	Good Fit
Tucker Lewis Index (TLI)	≥ 0.90	,907	Good Fit
Root Mean Square Error of Approximation (RMSEA)	≤ 0.08	,068	Good Fit

Source: Author's own research, 2021

Table 3 shows that the index value for Cmin/DF obtained is 1.869 with a cut off value of ≤ 2.00, therefore the Goodness of Fit Measure for Cmin/DF is good fit. The index value for χ2 (ChiSquare) is 434.644, this causes the Goodness of Fit Measure for χ2 (ChiSquare) is also good fit because the cut off value for χ2 (ChiSquare) is ≤ 553,80. Adjusted Goodness of Fit (AGFI) marginal fit because the index value is 0.86 from the cut off value of ≥ 0.90. For the Goodness of Fit Index (GFI) of 0.918 from the cut off value of ≥ 0.90, therefore a good fit is obtained for the Goodness of Fit Index. The Model Suitability Index for the Comparative Fit Index (CFI) is 0.921, while the cut off value that must be met is ≥ 0.90, with this value, the Comparative Fit Index (CFI) is a good fit. Model suitability for the Tucker Lewis Index (TLI) is also good fit because the model suitability index value is 0.907 from the cut off value that must be met is 0.90. In addition, the index value for the Root Mean Square Error of Approximation (RMSEA) is 0.068, this means that the Root Mean Square Error of Approximation (RMSEA) is good fit because the cut off value is ≥ 0.08. The index value for Significance probability (p) is 0.000, this means that the Significance probability (p) is Good Fit.

Table 4: Results of CFA Measurement Models for All Main and Sub-Constructs

Constructs & Dimensions	Dimensions & Indicators	Factor Loading			CR	AVE
IT Investment	ITINVE1	0.973	0.946729	0.053271	**0.90764**	**0.768938**
	ITINVE2	0.919	0.844561	0.155439		
	ITINVE3	0.718	0.515524	0.484476		
		2.61	2.306814	0.693186		
		6.8121				
IT Innovation	ITINOV1	1.022	1.044484	-0.04448	**0.927874**	**0.866692**
	ITINOV2	0.83	0.6889	0.3111		
		1.852	1.733384	0.266616		
		3.429904				
Financial Innovation	FI1	0.941	0.885481	0.114519	**0.969135**	**0.912802**
	FI2	0.97	0.9409	0.0591		
	FI3	0.955	0.912025	0.087975		
		2.866	2.738406	0.261594		
		8.213956				
Business Transformation	BT1	0.801	0.641601	0.358399	**0.869589**	**0.690807**
	BT2	0.774	0.599076	0.400924		
	BT3	0.912	0.831744	0.168256		
		2.487	2.072421	0.927579		
		6.185169				
Sustainable Competitive Advantage	SCA2	0.946	0.894916	0.105084	**0.930631**	**0.81833**
	SCA3	0.793	0.628849	0.371151		
	SCA4	0.965	0.931225	0.068775		
		2.704	2.45499	0.54501		
		7.311616				
IT Implementation	ITIMP1	0.82	0.6724	0.3276	**0.798618**	**0.581257**
	ITIMP2	0.513	0.263169	0.736831		
	ITIMP3	0.899	0.808201	0.191799		
		2.232	1.74377	1.25623		
		4.981824				

Source: Author's own research, 2021

Table 4. is the result of the CFA measurement model for all main and sub constructs. The calculation results show that the IT Investment variable has a construct reliability value of 0.907, IT Innovation is 0.927, Financial Innovation is 0.969, Business Transformation is 0.895, Sustainable Competitive Advantage is 0.930. The construct reliability value of the five variables is greater than the cut off value of 0.7, so it can be stated that the indicators have good internal consistency.

Then for the Average Variance Extracted value, the IT Investment variable has 0.768, IT Innovation is 0.866, Financial Innovation is 0.969, Business Transformation is 0.690, Sustainable Competitive Advantage is 0.818. The Average Variance Extracted value will be smaller than the Construct Reliability value. Because the five variables obtained an Average Variance Extracted value > 0.50, the variance extracted from the indicators was greater for the formation of the latent variable.

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The next test of construct reliability is evaluating discriminant validity which includes cross loading and comparing the AVE root value with the correlation between constructs.

Table 5: Table of Cross Loading Average Variance Extracted (AVE)

Construct	IT Investment	IT Innovation	Financial Innovation	IT Implementation	Business Transformation	Sustainable Competitive Advantage
IT Investment	***0.877***					
IT Innovation	1.083	***0.931***				
Financial Innovation		1.395	***0.955***			
IT Implementation				***0.762***		
Business Transformation	-2.755	-0.394	0.146	3.277	***0.831***	
Sustainable Competitive Advantage					1.236	***0.905***

Source: Author's own research, 2021

5.4 Structural Equation Modelling (SEM) Analysis

The results of data processing for the full analysis of the SEM model are shown in Figure 2

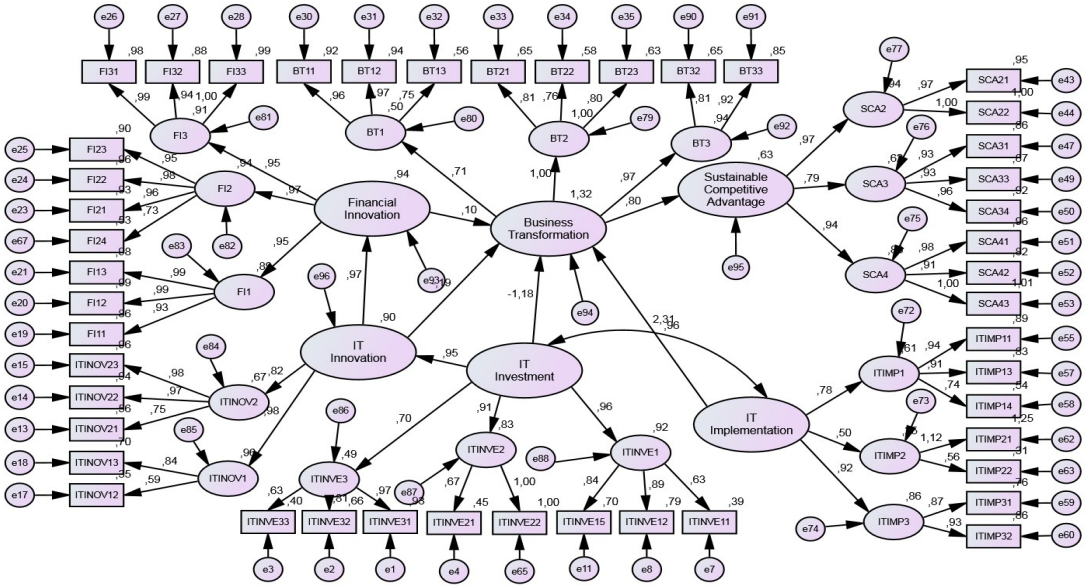

Figure 2: Full Model (Structural Model)

From the results of data processing with the AMOS application program, the Indicator Significance Test is obtained which is presented in table 6 below.

Table 6: Indicator Significance Test

Path Significance Test	Estimate	S.E.	C.R.	P-Value	Description
IT Investment → IT Innovation	1,08	0,20	5,51	***	Significant
IT Innovation → Financial Innovation	1,40	0,19	7,24	***	Significant
Financial Innovation → Business Transformation	0,15	0,31	0,48	0,635	Not Significant
IT Innovation → Business Transformation	-0,39	0,70	-0,56	0,575	Not Significant
IT Investment → Business Transformation	-2,76	2,68	-1,03	0,305	Not Significant
IT Implementation → Business Transformation	3,28	1,71	1,91	0,056	Not Significant
Business Transformation → Sustainable Competitive Advantage	1,24	0,16	7,87	***	Significant
IT Investment → ITINVE1	0,78	0,13	5,85	***	Significant
IT Innovation → ITINOV2	0,99	0,16	6,02	***	Significant
Financial Innovation → FI1	0,94	0,06	16,40	***	Significant
Financial Innovation → FI3	0,98	0,05	20,74	***	Significant
Financial Innovation → FI2	1,00				Significant
Business Transformation → BT2	0,58	0,07	8,43	***	Significant
Business Transformation → BT1	1,00				Significant
SustainableCompetitiveAdvantage → SCA2	1,00				Significant
SustainableCompetitiveAdvantage → SCA3	0,72	0,06	11,12	***	Significant
SustainableCompetitiveAdvantage → SCA4	0,91	0,05	18,43	***	Significant
IT Implementation → ITIMP1	1,00				Significant
IT Investment → ITINVE3	2,24	0,38	5,95	***	Significant
IT Innovation → ITINOV1	1,00				Significant
IT Implementation → ITIMP3	1,65	0,17	9,64	***	Significant
IT Implementation → ITIMP2	0,84	0,13	6,26	***	Significant
IT Investment → ITINVE2	1,00				Significant
Business Transformation → BT3	0,98	0,12	8,40	***	Significant

Source: Author's own research, 2021

From the results of the calculation of the significance test, most of the indicators show significance. However, there are 4 indicators that show insignificant results because the CR value is <1.96. Financial Innovation → Business Transformation is not significant because the CR value is 0.48 and the P-Value is 0.635, this means that Financial Innovation has no effect on Business Transformation. IT Innovation → Business Transformation is also not significant because the CR value is -0.56, which means the value is below 1.96 and the P-Value is 0.575. This means that IT Innovation has no effect on Business Transformation. In addition, IT Investment → Business Transformation also has a value below 1.96, namely -1.03, this value means that IT Investment → Business Transformation is not significant and means that IT Investment has no effect on Business Transformation. Furthermore, IT Implementation → Business Transformation also not significant with a value of 1.91 which means the value is below 1.96. This shows that IT Implementation has no effect on Business Transformation.

The next step is to find out how much influence the independent variable has on the

dependent variable, a termination test is carried out. The results are shown in table 7.

Table 7: R-Square (Coefficient of Determination)

Variable	R-Square (Coefficient of Determination)	KD Value
IT Innovation	0.752	75.2 %
Financial Innovation	0.971	97.1 %
Business Transformation	0.857	85.7 %
Sustainable Competitive Advantage	0.872	87.2 %

Source: Author's own research, 2021

R-Square is also referred to as the coefficient of determination which explains how far the dependent data can be explained by independent data. R square has a value between 0 – 1 with the provision that the closer to the number one, the better. From table 7. R-Square (Termination Coefficient) it can be seen that several variables that have a direct influence on other variables have a Termination Coefficient value between 0 – 1. The value of R-Square IT Innovation is 0.752. This value explains that the percentage of IT Innovation can be explained by IT Investment of 75.2%. For the R-Square Financial Innovation value of 0.971. This value explains that the percentage of Financial Innovation that can be explained by IT Investment and IT Innovation is 97.1%. While the R-Square value for Business Transformation is 0.857, this value explains that the percentage of Business Transformation can be explained by IT Investment, IT Innovation, Financial Innovation and moderated by IT Implementation of 85.7%. Furthermore, the value of R-Square Sustainable Competitive Advantage is 0.872, this value explains that the percentage of Sustainable Competitive Advantage can be explained by IT Investment, IT Innovation, Financial Innovation and Business Transformation of 87.2%.

Then to find out the results of the R-Square Predictive Relevance calculation, it can be done by using the formulation Q2 = 1 – (1 – R2 IT Innovation) * (1 – R2 Financial Innovation) * (1 – R2 Business Transformation) * (1 – R2 Sustainable Competitive Advantage). The results obtained for the calculation of R-Square Predictive Relevance are 0.998 or 99.8%, this value means that this research model has a good Predictive Relevance.

In this study, a path diagram analysis (Path Coefficient) was carried out, Table 8. shows the path coefficients to find out how big the relationship or influence of each construct of each research variable.

Table 8: Path Coefficient Value

Construct& ResearchDimension	IT Investment	IT Innovation	Financial Innovation	Business Transformation	IT Implementation	Sustainable Competitive Advantage
IT Investment						
ITINVE1	**0,784**					
ITINVE2	**1,000**					
ITINVE3	**2,236**					
IT Innovation	**1,083**					
ITINOV1		**1,000**				
ITINOV2		**0,986**				
Financial Innovation		**1,395**				
FI1			**0,943**			
FI2			**1,000**			
FI3			**0,977**			
Business Transformation	**-2,755**	**-0,394**	**0,146**		**3,277**	
BT1				**1,000**		
BT2				**0,577**		
BT3				**0,982**		
IT Implementation						
ITIMP1					**1,000**	
ITIMP2					**0,838**	

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Construct& ResearchDimension	IT Investment	IT Innovation	Financial Innovation	Business Transformation	IT Implementation	Sustainable Competitive Advantage
ITIMP3					**1,649**	
Sustainable Competitive Advantage				**1,236**		
SCA2						**1,000**
SCA3						**0,716**
SCA4						**0,906**

Source: Author's own research, 2021

Table 8. shows that each construct has a coefficient value in each of its dimensions. From the IT Investment coefficient path, the highest coefficient value is found in the IT Investment → ITINVE3 or IT Investment → Defensive path of 2.236. The IT Innovation coefficient path has the highest coefficient value found in the IT Innovation → ITINOV1 or IT Innovation → Process path of 1.00. While the Financial Innovation coefficient path, the highest coefficient value is found in the Financial Innovation → FI2 or Financial Innovation → Service path of 1.00. For the Business Transformation coefficient path, the highest coefficient value is found in the Business Transformation → BT1 or Business Transformation Business → Process Reengineering path with a value of 1.00. For the IT Implementation coefficient path, the highest coefficient value is found in the IT Implementation → ITIMP1 path or the IT Implementation → Management Concern path with a value of 1.00. And the last is the Sustainable Competitive Advantage coefficient path, the highest coefficient value is in the Sustainable Competitive Advantage → SCA2 or Sustainable Competitive Advantage → Capabilities path with a value of 1.00.

In addition, the direct and indirect effects on the path coefficients are also calculated, the calculation of the direct and indirect effects of the path coefficients is shown in table 9 below.

Table 9: Direct and Indirect Effects of Path Coefficient

Path (Jalur)	Effects		Total Effects
	Direct	Indirect	
IT Investment → IT Innovation	1,083	None	1,083
IT Innovation → Financial Innovation	1,395	None	1,395
Financial Innovation → Business Transformation	0,146	None	0,146
IT Innovation → Business Transformation	-0,394	0,474	0,08
IT Investment → Business Transformation	-2,755	0,537	-2,218
IT Implementation → Business Transformation	3,277	None	3,277
Business Transformation → Sustainable Competitive Advantage	1,236	None	1,236

Source: Author's own research, 2021

Table 9 shows that there are constructs that have a direct relationship and an indirect relationship. IT Investment IT → Innovation only has a direct relationship of 1,083. IT Innovation → Financial Innovation has a direct relationship of 1,395. Financial Innovation → Business Transformation has a direct relationship of 0.146. Business Transformation → Sustainable Competitive Advantage has a direct relationship of 1,236. IT Implementation → Business Transformation has a direct relationship of 3,277.

For constructs that have an indirect relationship, IT Innovation → Business Transformation is 0.474. The total value of the relationship between IT Innovation → Business Transformation is 0.080. In addition, IT Investment Business Transformation is 0.537 and the total relationship between IT Investment → Business Transformation is -2.218.

6. HYPOTHESIS TESTING AND DISCUSSION

6.1 Effect of IT Investment on IT Innovation

Analysis of the research path diagram shows that the construct of IT Investment has a significant influence on IT Innovation. The significant effect is the path coefficient value of 1.083. This value can be interpreted that every success in IT Investment will increase IT Innovation in Rural Banks (RB/BPR) directly. This condition is reflected in the path coefficient values for the Defensive, Analytical and Aggressive dimensions with values of 2.236, 1,000 and 0.784, respectively.

The IT Investment construct for IT Innovation has a P-Value which is symbolized by *** this means that the influence of the IT Investment variable on IT Innovation is significant, which means that any changes that occur in IT Investments will affect IT Innovation.

The results of the path diagram analysis illustrate that IT Investment has also become a variable that needs to be improved by referring to the path coefficient value of each of its dimensions. For the IT Investment dimension which has the highest value is Defensive at 2.236 and for the Analysis dimension with a value of 1,000, and the having the lowest value is the aggressiveness dimension with a value of 0.784. However, when viewed from each indicator has a different loading factor, the lowest is the Defensive dimension of 0.718, then the Analysis dimension of 0.919 and the dimension with the highest loading factor is Aggressiveness of 0.973.

Based on the value of the loading factor indicator, it is necessary to focus on the Defensive dimension, which is a defensive attitude in anticipating the development of information technology by creating an information technology framework/model. And also need to make regulations or policies and establish investment strategies to anticipate the development of information technology in the future.

From the analysis of the research path diagram and the calculation of loading factor indicators, it indirectly shows the condition of information technology investment in Rural Banks (RB/BPR). From the Aggressivity dimension, RB feels it is important to invest in information technology, besides from the RB analysis dimension, it is also necessary to analyze the investment capability in information technology. In addition, from the Defensive dimension, RB needs to have an investment strategy to anticipate the development of information technology in the future.

Because IT Investment has a significant influence on IT Innovation, RBs need to align information technology investments with information technology innovations that will be implemented with the availability and investment capabilities of each RB and the business needs of each BPR.

6.2 The Influence of IT Innovation on Financial Innovation

Analysis of the research path diagram shows that the construct of IT Innovation has a significant influence on Financial Innovation. The direct effect is the path coefficient value of 1.395. This value can be interpreted that every success in IT Innovation will increase or will increase Financial Innovation in Rural Banks (RB/BPR) directly. This condition is reflected in the path coefficient values for the Process and Product/Service dimensions with values of 1,000 and 0.986, respectively.

The construct of IT Innovation on Financial Innovation has a P-Value which is symbolized by ***, this means that the influence of the IT Innovation variable on Financial Innovation is significant.

The results of the path diagram analysis illustrate that IT Innovation has also become a new need that needs to be improved by referring to the path coefficient value of each dimensionand the one with the lowest value is the Product/Service dimension. However, when viewed from each indicator has a different loading factor, the lowest is the Product/Service dimension of 0.830, and the dimension with the highest loading factor is Process of 1.022.

Based on the value of the loading factor indicator, it is necessary to focus on the Product/Service dimension, which is something that can be seen as a functional progress of the product/service that can bring the product/service one step further than competitors' products/services. In this case, RB states that IT Innovation causes process simplification and automation of activities that occur in BPR.

Based on the analysis of the research path diagram, the calculation of loading factor indicators, and based on a description of the policies and regulations stipulated by the Financial Services Authority (OJK) that the implementation, policies and procedures for the implementation of information technology at Rural Banks have been clearly regulated. However, its application in implementation and development is still something that is expensive, especially at the time of initial implementation because it requires no small investment (Sau, 2017). According to data from the Financial Services Authority as much as 94% of RBs already use computerization. But overall, only 75% of RBs have used computerization in an integrated manner (Putra, 2018).

6.3 Effect of Financial Innovation on Business Transformation.

Analysis of the research path diagram shows that the Financial Innovation construct has a significant effect on Business Transformation. The direct effect is the path coefficient value of 0.146. This value can be interpreted that every success in Financial Innovation will increase or will increase Business Transformation in Rural Banks (RB/BPR) directly. This condition is reflected in the path coefficient values for the Product, Service and Process dimensions with values of 1000, 0.577 and 0.982, respectively.

The Financial Innovation construct on Business Transformation has a P-Value with a value of 0.635, this means that the effect of the Financial Innovation variable on Business Transformation is not significant. Thus, it can be stated that although the Financial Innovation construct has a positive direct effect on Business Transformation, it does not significantly affect the Financial Innovation variable will affect Business Transformation or business transformation.

The results of the path diagram analysis show that the Financial Innovation dimension that has the highest value is Service of 1,000, then the Process dimension with a value of 0.977 and the dimension with the lowest value is Product of 0.943.

Based on the analysis value of the path diagram, it can be seen that RB focuses on the service dimension, namely changes to existing services and wider/new changes with the implementation of information technology.

From the results of the calculation of the loading factor indicator indirectly shows the condition of Financial Innovation in Rural Banks (RB/BPR) which is no different. Service dimensions and indicators have the highest loading factor value of 0.970, followed by Process dimensions and indicators of 0.955 and the lowest is Product dimensions and indicators of 0.941.

Based on the results of the analysis of the research path diagram and the calculation of loading factor indicators, it indirectly shows the condition of Financial Innovation in Rural Banks (RB/BPR) which focuses on Services, Processes and Products related to financial services, processes on finance and financial products contained in BPR.

In providing services, carrying out financial processes and products, RB has implemented information technology through and using Banking Core Applications, Data Centers and equipped with Disaster Recovery Centers. Meanwhile, to support services, processes and financial products, there are 12 RBs that have completed their services with Automated Teller Machines (ATMs). The issuance or application of ATMs at Rural Banks is in accordance with Bank Indonesia circular letter number 8/31/DPBPR of 2006 which states that RB can act as ATM issuer or ATM co-branding. However, since the issuance of the Financial Services Authority Regulation number 20/POJK.03/2014, RB must be ready as an ATM card issuer if you want to provide ATM facilities. The Financial Services Authority Regulation number 20/POJK.03/2014 raises pros and cons because some RBs consider co-branding easier and does not require large investment funds (Maskur, 2016). This can be proven by referring to data released by Bank Indonesia that only 12 RBs have been given permission to issue ATM cards (Maskur, 2016). If we look at the total number of RBs issued by the Financial Services Authority in April 2017 as many as 1,632 units, it can be concluded that only 0.68% of RBs have been granted permission to issue ATM cards and that means that only a small proportion of RBs invest in issuing ATMs. With the application of ATM on services, processes and products, it can be concluded that RB has implemented financial innovation and carried out business transformation.

6.4 The Influence of IT Innovation on Business Transformation

The analysis of the research path diagram shows that the IT Innovation construct has a significant negative effect on Business Transformation, with a significant negative effect with a path coefficient value of -0.394. This value can be interpreted that every success in IT Innovation has an effect on increasing or will increase Business Transformation in Rural Banks (RB/BPR) but not too big. Although the path coefficient value of the IT Innovation construct towards Business Transformation is negative, the path coefficient value for the Process and Product/Service dimensions is positive with values of 1,000 and 0.986, respectively.

The IT Innovation construct for Business Transformation has a p-Value with a value of 0.575, this means that the effect of the IT Innovation variable on Business Transformation is not significant. This further confirms the value of the path diagram of the IT Innovation construct towards Business Transformation which is negative with a value of -0.394 which also means that the IT Innovation variable does not have a large influence on Business Transformation. This also means that no matter how much information technology investment is made, it will not affect the business transformation. Therefore, to carry out business transformation in RB, information technology innovation and financial innovation are also needed.

The results of the path diagram analysis illustrate that IT Innovation has also become a new need that needs to be improved by referring to the path coefficient value of each of its dimensions. For the IT Innovation dimension which has the highest value is Process of 1,000 and for the Product/Service dimension with a value of 0.986, and the one with the lowest value is the Product/Service dimension. However, when viewed from each indicator has a different loading factor, the lowest is the Product/Service dimension of 0.830, and the dimension with the highest loading factor is Process of 1.022.

In order for the IT Innovation construct to have a significant positive influence on Business Transformation, based on the loading factor value, the IT Innovation construct indicator needs to focus on the Product/Service dimension, which is something that can be seen as a product/service functional progress that can take the product/service one step further than the product/Competitor services. In this case, RB states that IT Innovation causes process simplification and automation of activities that occur in BPR.

From the analysis of the research path diagram and the calculation of loading factor indicators, it indirectly shows the condition of information technology innovation at Rural Banks (RB/BPR). From the Product/Service dimension, RB feels the need to innovate information technology-based products/services and RB needs to implement information technology-based RB product/service innovations so that there is a positive relationship between the IT Innovation variable and Business Transformation. In addition, from the Process dimension, there is a simplification of processes and automation of activities at BPR, in addition to business processes at RB changing rapidly following the development of information technology and RB business, so it is hoped that there will be a positive relationship between the IT Innovation variable and Business Transformation.

In addition, the analysis of the research path diagram and the calculation of loading factor indicators indirectly shows that the condition of information technology innovation at Rural Banks (RB/BPR) is in fact only a small part of RBs that carry out information technology innovations both in processes, services and products. So far, RB has only complied with the basic provisions of the policies set by the Financial Services Authority (OJK), namely Banking Core Applications without being accompanied by more innovative information technology innovations.

6.5 The Effect of IT Investment on Business Transformation Moderated by IT Implementation

Analysis of the research path diagram shows that the IT Investment construct has a significant and negative effect on Business Transformation. It has a significant negative effect with a path coefficient value of -2.755. This value can be interpreted that every success in IT Investment has an effect on increasing or will increase Business Transformation in Rural Banks (RB/BPR) but not large. Although the path coefficient value of the IT Investment construct towards Business Transformation is negative, the path coefficient values for the Defensive, Analysis and Aggressive dimensions are 2.236, 1,000 and 0.784, respectively.

The construct of IT Investment on Business Transformation has a P-Value with a value of 0.305, this means that the effect of the IT Investment variable on Business Transformation is not significant. This further emphasizes the negative value of the IT Innovation path diagram for Business Transformation which also means that the IT Investment variable has a not too large influence on Business Transformation.

The results of the path diagram analysis illustrate that the IT Investment dimension which has the highest value is Defensive at 2.236 and for the Analysis dimension with a value of 1,000, and the one with the lowest value is the Aggressive dimension with a value of 0.784. However, when viewed from each indicator has a different loading factor, the lowest is the Defensive dimension of 0.718, then the Analysis dimension of 0.919 and the dimension with the highest loading factor is Aggressiveness of 0.973.

Based on the value of the loading factor indicator, it is necessary to focus on the Defensive dimension, which is a defensive attitude in anticipating the development of information technology by creating an information technology framework/model. And also need to make regulations and establish investment strategies to anticipate the development of information technology in the future. From the analysis of the research path diagram and the calculation of loading factor indicators, it indirectly shows the condition of information technology investment in Rural Banks (RB/BPR). From the aggressivity dimension, RB feels it is important to invest in information technology, besides from the RB analysis dimension, it is also necessary to analyze the investment capability in information technology. In addition, from the Defensive dimension, RB needs to have an investment strategy to anticipate the development of information technology in the future.

Furthermore, the analysis of the path diagram of the influence of IT Investment on Business Transformation with IT Implementation moderation has a value of 3,277, this value can be interpreted that every success in IT Implementation will have an effect on increasing or increasing Business Transformation in Rural Banks (RB/BPR). But this is contrary to the P-Value value for the IT Implementation construct for Business Transformation of 0.056 which can be interpreted as insignificant. From the path diagram analysis value and the P-Value value between IT Investment and Business Transformation, it can be concluded that every success in IT Implementation will not absolutely have an effect on increasing or increasing Business Transformation in Rural Banks (RB/BPR), this is because the value of P-Value is included in the insignificant category.

From this description, it means that RB needs to pay attention to and analyze the development of information technology as a whole in order to be able to apply information technology that is developing in accordance with business needs and the ability to invest in information technology in BPR. This needs to be done because each RB has different information technology needs and different information technology investment capabilities.

6.6 The Effect of Business Transformation on Sustainable Competitive Advantage

Analysis of the research path diagram shows that the Business Transformation construct has a significant influence on the Sustainable Competitive Advantage. The significant effect is the path coefficient value of 1.236. This value can be interpreted that every success in implementing Business Transformation will increase or will increase the Sustainable Competitive Advantage in Rural Banks (RB/BPR) directly. This condition is also reflected in the path coefficient values for the dimensions of Business Process Reengineering, Organizational Development/Learning and the Use of Information Technology with values of 1,000, 0.577 and 0.982, respectively.

The Business Transformation construct for Sustainable Competitive Advantage has a P-Value which is symbolized by ***, this means that the influence of the Business Transformation variable on the Sustainable Competitive Advantage is significant.

Referring to the path coefficient values of each dimension for the Business Transformation dimension which has the highest value is Business Process Reengineering of 1,000, then the Information Technology Usage dimension with a value of 0.982 and which has the lowest value is for the Organizational Development/Learning dimension with a value of 0.577. However, when viewed from each indicator has a different loading factor, the lowest is in the Organizational Development/Learning dimension with a value of

0.599, then the Business Process Re-engineering dimension is 0.642 and the dimension with the highest loading factor is the Use of Information Technology of 0.832.

Based on the loading factor indicator value, it is necessary to focus on the dimensions of Organizational Development/Learning, namely fundamental rethinking, and redesign of business processes. And also, a long-term effort to improve the organization's problem-solving ability and ability to cope with changes in the external environment.

From the analysis of the research path diagram and the calculation of loading factor indicators indirectly show the condition of Business Transformation in Rural Banks (RB/BPR). From the dimension of Organizational Development/Learning, RB feels it is important to change culture and change business processes, besides from the Business Process Engineering dimension, RB needs to apply information technology to change business processes at BPR. In addition, from the dimension of Information Technology Use, RB needs to gradually implement information technology and create new services.

Rural Bank (RB/BPR) was formed as a provider of banking services for the middle to lower class or people of the economically weak group and small businesses located in both rural and urban areas, this causes RB to have unique characteristics according to where the RB operates or carries out activities. his business. In order for RB to gain a sustainable competitive advantage, RB needs to carry out business process engineering that is adapted to the culture of RB and the development of information technology, this needs to be done so that RB still has a uniqueness that can increase competitive advantage for BPR. This uniqueness can be in the form of more personalized services for customers, both depositors and creditor customers, by using or implementing information technology. This service is a form of business transformation by engineering business processes. Business process engineering can be in the form of process changes from banking products and services provided to customers. RB that does business process engineering using information technology means that it has implemented financial innovation and information technology innovation.

6.7 Strategy to Build Information Technology Investment, Information Technology Innovation, Financial Innovation, Business Transformation, Information Technology Implementation and Sustainable Competitive Advantage.

Based on the results of the identification and interpretation of the results of quantitative analysis in the relationship of influence between research constructs, it shows that to achieve Sustainable Competitive Advantage in People's Credit Banks (BPR) requires a strategy to improve each research construct. The following are a number of strategies for each construct that need to be carried out to achieve Sustainable Competitive Advantage in Rural Banks.

7. THEORETICAL IMPLICATIONS

The results of this study provide theoretical implications by showing that the alignment of IT Investment, IT Innovation, Financial Innovation, Business Transformation, and IT Implementation is very important to achieve Sustainable Competitive Advantage.

This research will also strengthen the theoretical relationship between IT Investment and IT Innovation. Information Technology (IT) has a strategic role in business processes which can be seen from the alignment between business strategy and information technology [31]. Information technology investment is the organization's ability to identify and quantify the increase in profits or positive impacts received by the company with the implementation of information technology in the company's business operations [32]. Changes in the organizational environment have an impact on IT Investment, changes in the organizational environment can also create pressure on IT Investment which can lead to increased investment [33]. The findings in this study strengthen the theory that information technology changes or innovations and organizational policies affect information technology investment (IT Investment) [34].

The findings in this study also explain that the relationship between IT Innovation and Financial Innovators has a close relationship because financial innovation can occur because of the support of IT Innovation, in addition it is stated that information technology innovation is a driver of the adoption of financial innovations which since the beginning of information technology innovation has accompanied financial innovation.

In addition, this research also contributes to new findings, that IT Investment alone is not enough to support Business Transformation but must also be supported by IT Innovation or also need to be moderated by IT Implementation. Likewise, IT Innovation is not enough to support Business Transformation, because Business Transformation in RB must also be supported by Financial Innovation. From the influence between the existing variables, in the end the Sustainable Competitive Advantage will be fulfilled.

From the findings of this study, it can be concluded that the capital owned by RB which is expected to significantly support information technology investment will not have an effect without being supported by information technology innovation, financial innovation and business transformation.

8. MANAGERIAL IMPLICATIONS

This research also contributes managerially, among others, by finding that RB has taken several strategic steps in aspects of financial innovation, IT innovation, IT investment, and IT implementation. Especially in terms of product innovation, service simplification and automation, and digitization of financial processes. This strategy has proven to have transformed the BPR business, especially improving the standards and quality of products and services. This transformation also has an impact on sustainable competitive advantage, especially because RB is able to exploit its advantages and uniqueness compared to its competitors.

9. CONCLUSION, LIMITATIONS, AND FUTURE STUDIES

This study concludes that most of the variables proved to have a significant effect, including the IT Investment variable having a significant effect on IT Innovation, the IT Innovation variable having a significant effect on the Financial Innovation variable, the Financial Innovation variable having a significant effect on Business Transformation, the IT Innovation variable having a significant effect on Business Transformation with a negative value, the IT Investment variable has a significant effect with a negative value on the Business Transformation variable, the IT Implementation variable has a significant effect on Business Transformation, and the Business Transformation variable has a significant effect on the Sustainable Competitive Advantage. The IT Investment variable has a significant effect on IT Innovation.

In addition, this study also found several important facts, including the level of competition in the financial services sector, especially RB is getting higher, this is due to the penetration of commercial banks to the smallest area and the emergence of Fintech as well as the existence of other financial institutions such as Savings and Loan Cooperatives, Credit Unions and Microfinance Institutions. In addition, information technology innovations carried out by RB must be supported by information technology investments, especially in changing processes, services and products related to deposits and loans at BPRs. Financial innovations carried out by RB also need to be supported by information technology innovation, because as a business in the financial services sector, RB must carry out financial innovations to increase efficiency and effectiveness. Meanwhile, to carry out business transformation, RB must pay attention to the implementation of information technology rather than investment in information technology only.

To achieve sustainable competitive advantage, synergies are needed between information technology investment, information technology innovation, financial innovation and information technology implementation so as to realize a business transformation in RB so that in the end it will realize a sustainable competitive advantage. Based on the significant influence between variables in the research model, it can be concluded that IT investment alone will not realize a Sustainable Competitive Advantage, because regardless of the amount of information technology investment that is spent, it will not create a sustainable competitive advantage without being supported by information technology innovations that affect financial innovation. Information technology investment, information technology innovation and financial innovation moderated by information technology implementation will realize business transformation.

The results of this study still have limitations, including the limited number of samples in 126 respondents, from 25 provinces and 34 provinces in Indonesia. In addition, the distribution of questionnaires was carried out in the period May 2020 to June 2020, namely when the Covid-19 pandemic occurred, which affected the distribution of respondents and the number of respondents. This condition greatly affects respondents' answers from constructs related to

information technology investment, this is because at that time there were restrictions on activities so that the sluggishness in the economic sector would affect RB's ability to invest in information technology.

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