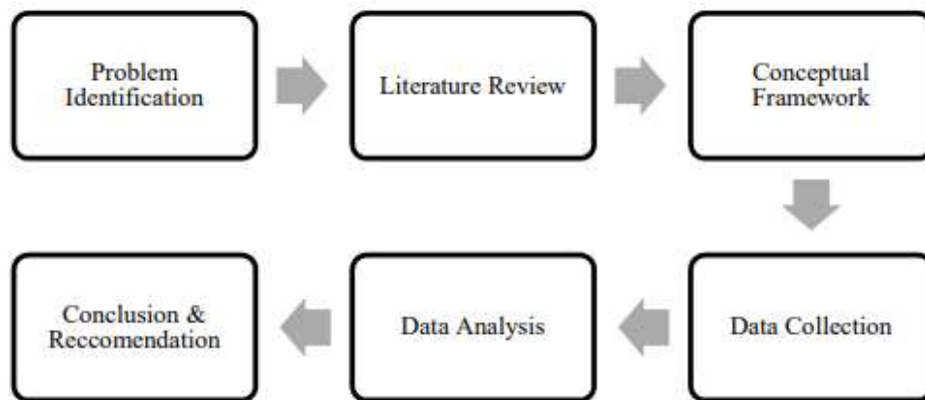


## CHAPTER III RESEARCH METHODOLOGY

### 3.1. Research Design

The research method is defined as a scientific way to obtain data with certain goals and uses (Sugiyono, 2017). The research employs quantitative methods, which can be defined as research methods based on the philosophy of positivism, used to examine specific populations or samples, data collection through the use of research instruments, and quantitative data analysis with the goal of testing predetermined hypotheses (Sugiyono, 2018). A quantitative approach is used because the data that will be used to analyze the influence between variables is expressed in numbers (Duwi Priyatno, 2010).



**Figure 3.1 Research Paradigm**

Source: Author (2021)

A good research requires a clear research framework and has a focused research basis. The basics that refer to indicators on variables will be easier to make if the

mapping of the dimensions of the research variables are done well at the beginning. The survey research is done by collection of data from a population by selecting a sample. In practice, sometimes surveys do not only use questionnaires or questionnaires, but are supplemented with interviews or observations. However, this research sample and data collection is complete done by quantitative method questionnaire distribution thru population of respondent. The questionnaire is distributed to respondent using Google Form with measurement of Likert ordinal scale. The range of measurement is 1 to 5, where 1 is most disagreeable to 5 as most agreeable measurements.

### **3.2. Research Objective**

The object of this research is to see the effect of the independent variables of Human Capital, Dynamic Capabilities, and Customer Orientation on Innovation Capabilities and Company Performance. In this research, Innovation Capabilities become the mediating variable between the relationship between the independent and dependent variables. The dependent variable of this research framework is Company Performance.

### **3.3. Population and Sample**

#### **3.3.1. Population**

Population data collection in this research will be carry out in two stages. The first stage will be a pre-test and then a test for the rest of the respondent population. The data collection technique used is through quantitative methods by distributing questionnaires to the respondents.

Population according to (Sekaran, Uma dan Bougie, 2017), namely the entire group of people, events, or things that the researcher wants to investigate. Population is not only people, but also objects and other natural objects. The population in this study are several companies engaged in finance.

### 3.3.2. Sample

The minimum sample size in a PLS-SEM analysis should be equal to the larger of the following (10 times rule): (1) 10 times the largest number of formative indicators used to measure one construct or (2) 10 times the largest number of structural paths directed at a particular construct in the structural model (Joseph F. Hair et al., 2018). Based on the guidelines proposed by (Joseph F. Hair et al., 2018), the technique used to determine the minimum sample size in this study is 10 times larger than the indicator used to measure each construct with the following calculations:x

$$\begin{aligned} \text{Sample} &= \text{Number of Indicator} \times 10 \\ &= 18 \times 10 \\ &= 180 \end{aligned}$$

From the calculation above, it can be seen that the number of samples used in this study is at least 180 respondents.

The data sampling collection is conducted using purposive sampling method. Purposive sampling is the selection of samples based on a certain characteristic in a population that has a dominant relationship so that it can be used to achieve research objectives (Nick Emmel, 2014). In addition, purposive sampling is the

selection of samples based on a certain characteristic in a population that has a dominant relationship so that it can be use to achieve research objectives. In general, the profiles of the respondents have a classification of gender, age, location, screening of types of work as professional workers or entrepreneurs. The size of the population distribution and the desired target respondent according to the validity and reliability test ratio as shown in Table 3.1.

**Table 3.1 Characteristic Requirments of Respondents**

<b>TEST RESPONDENT PROFILE</b>	
Number of Samples	180
Gender	M & F
Age	Non-factor
Location	Indonesia
Position	Supervisor +
Company Size	50 +
Target Respondent	180

Source: Author (2021)

In the age classification, the population will be divided into three parts, including the age of twenty-one to the age of thirty to represent the millennial generation who are very fluent in using technology. Next is the age classification of thirty-one to forty. This age category is representative of generations X and Y where these two generations are the beginning of the internet era that began to emerge and grow rapidly but is still at an early stage. Thirdly is the older generation that consists of the age range of forty-one to fifty years old. The last age group is ones over fifty years old.

For the purpose of data collection and respondent screening the sample's age is a non-detrimental factor. Therefore, the number of respondent age group can be off then what is expected, and still be consider a valid data collection. Other detrimental prerequisite for the data collection sample are location, position and company size of employees the sample work at. The sample respondent must reside in Indonesia. His/her position must be supervisor or higher. The company size must be minimum 50 employees. These three prerequisite must initially be met before the questionnaire to be shared and the sample data is to be collected. For benchmark purpose, the sample will be categorize further in level of education: Under graduate, Graduate, and Post-graduate. In addition, also his/her job position: Supervisor, Manager, Director, and Commissioner.

### **3.4. Operational Variables**

Definition of operational variable of research variables according to (Sugiyono, 2015) is an attribute or nature or value of objects or activities that have certain variations that have been determined by researchers to be studied and then drawn conclusions. A dimension can be considered as an indicator if it is more clearly measurable. From this definition, it can also be seen that the shorter or simpler the definition, the simpler or fewer dimensions will be. On the other hand, the longer a definition is, the more extensive the elements/dimensions will be. If these dimensions have not been measured, the task of the next researcher is to determine the appropriate indicators for these dimensions so that the measurement results are

more accurate. However, if a definition has a measurable/concrete dimension, that dimension is an indicator at the same time.

### **3.4.1. Human Capability**

Personal competency is an accumulation of related capabilities in digital banking can be separated between into two dimensions. One is technical skills on technology. The other is communication abilities in digital ecosystem. The first independent variable, Human Capital (HC), has two dimensions, including knowledge and experience. Based on the existing dimensions, the indicators of HC consist of education, stock of knowledge, stock of skills, and competence.

Personal knowledge can be described as education background, ability to acquire and gain knowledge (Sholihuddin, 2016). For example, a person's ability to use a computer will increase his ability to use applications and further increase his ability to use new technology innovation. Therefore, the research suggests that the results of a high-test score on the technical skills in personal knowledge indicator can also be interpreted or have the same meaning as a high human capital value as well.

Knowledge from users is base on user knowledge in using methods or tools. In addition to the user's knowledge of the content in each different situation, it is also necessary to have a habit of using different types of situations so that the literacy level of the user's skill-set and knowledge is very good. Human capital can be separated into intellectual competence and social competence. According to (Mukhtar, 2018), personal competence are the various devices of knowledge that

exist in the individual ability to support the performance. Social competence, which is a certain behavioral device that is the basis of self-understanding as an integral part of the social environment. Both of these perspectives is the key component in having human capabilities.

Within the framework of this research, the dimensions of critical understanding in innovation along with its indicators, namely: education, stock of knowledge, stock of skills, and competence, are very important in determining the level of company performance. Hence, it can be interpreted that a high-test score on education, stock of knowledge, stock of skills, and competence can be interpreted as a high value of human capital. Questions that can be raise to measure HC such as how education background can influence HC whether it is formal education or self-improvement education courses. Stock of knowledge can be measure to HC with questions such as how does an individual feel about having to learn new skill-set affect his/her performance at work. Further details are in the questionnaire table for HC below:

**Table 3.2 Item Scales of Human Capability**

Variable	Dimension	Indicator	Code	Questionnaires	Scale
Human Capability Adapted From (Hidayat, 2013)	Knowledge	Education	HC1	I feel my personal education has help me to solve work problems?	Interval
		Stock of knowledge	HC2	I like to attend seminar and enroll in certifications degree other	



Variable	Dimension	Indicator	Code	Questionnaires	Scale
				than academics enrollment program?	
	Experience	Stock of skills	HC3	I feel that acquiring new skills help in the work task?	
		Competence	HC4	I gained experience from trying new methods or using new tools?	
			HC5	I feel that more practice makes my skill-set perfect?	

Source: (Hidayat, 2013)

### 3.4.2. Dynamic Capability

The second independent variable, Dynamic Capability (DC), has two dimensions' integration capability and adaptive capability. Innovation capabilities focus on process flexibility and technical innovation as indicators. Purpose and specific role of DC is a learned and stable pattern of a collective activity through which the organization systematically generates and modifies its operating routines. This is called being flexible. Specific role of flexible indicator in DC variable can be broken down into:

1. Ability to sense opportunities and threats;
2. Having ability to seize opportunities that presented;
3. Able to maintain competitiveness through enhancing, combining, protecting and reconfiguring existing process.



(Teece, 2007) Specific role A dynamic capability is the firm's potential to systematically solve problems, formed by its propensity to sense opportunities and threats, to make timely and market-oriented decisions, and to change its resource base. The present study focuses on human characteristics aspect of dynamic capabilities. In human aspect of characteristic, DC will foster innovation, which lead to strategic performance in technical innovation capability that foster financial performance and strategic performance of the company can be further describe as:

1. Reconfiguration capability will foster financial and strategic performance of the company.
2. Adaptive capability will foster financial and strategic performance of the company.
3. Innovation capabilities will positively influence financial and strategic performance.

Questions that can be raise to measure DC such as how flexibility background can solve problem in different ways, ability to think out of the box, and ability to function outside the comfort zone. Technical innovation can be measure to DC with questions such as how does having multiple skills set to solve problem. Further details are in the questionnaire table for DC below:

**Table 3.3 Item Scales of Dynamic Capability**

Variable	Dimension	Indicator	Code	Questionnaires Items	Scale
Dynamic Capability Adapted	Adaptive capability	Flexibility	DC1	I can solve problem in different ways?	Interval

Variable	Dimension	Indicator	Code	Questionnaires Items	Scale
From (Vicente- Molina et al., 2013)			DC2	I can think out of the box?	
			DC3	I function well outside my comfort zone?	
	Integration capability	Technical innovation	DC4	As I accumulate more experiences, I can manage more activities?	
			DC5	I can combine multiple skills set to solve a problem?	

Source: (Vicente-Molina et al., 2013)

### 3.4.3. Consumer Orientation

The third variable is Consumer Orientation (CO). CO has two dimensions, namely behavior and response. CO indicators consist of market orientation and customer engagement. CO has indicators consisting of: market orientation and customer engagement. The consumer orientation is modern marketing philosophy that guides the practicing managers to carry out marketing efforts in a manner that result into maximum consumer satisfaction. The consumer orientation emphasizes on understanding consumers' real needs, and satisfying them better than any competitor.

CO is also can be define as business approach that puts the needs of the customer over the needs of the business. CO can influence the type of innovation a

company should make. A correct combination of innovation and the right CO, will increase the performance of the company. Therefore, the research suggests that the higher the score test of market orientation and customer engagement indicators, the higher the CO of the innovation product or services. Questions that can be raise to measure CO such as how much the company develop the market, understand the consumer need, understand the changing of business environment, exchange ideas to solve customer’s problem, and interaction with customers. Further details are in the questionnaire table for IC below:

**Table 3.4 Item Scales of Consumer Orientation**

Variable	Dimension	Indicator	Code	Questionnaires Items	Scale
Consumer Orientation Adapted From (Wahyuni & Sara, 2020)	Behavior	Market orientation	CO1	My company is effectively developing the market intelligence process?	Interval
			CO2	My company has a high interest in the rapid response to customer needs?	
			CO3	My company responds well to changes in the business environment?	
	Response	Customer engagement	CO4	Exchange ideas to solve customer problems?	

			CO5	My company builds interactions with customers?	
--	--	--	-----	--	--

Source: (Wahyuni & Sara, 2020)

#### 3.4.4. Innovation Capability

Innovation is the practical implementation of ideas that result in the introduction of new goods or services or improvement in offering goods or services. Innovation is valid if it is intended to be commercialize in the market or ideas that have already been successfully commercialized. For example, a success factor of the market dimension is financial performance, research output, organizational structure, competence knowledge, and innovation culture.

In addition to literature reviews in the indicator research field, prior research also focused on innovation indicators from specific perspectives (Cruz-Cázares et al., 2013). The concerned literature focuses on the indirect and direct indicators (Becheikh et al., 2006). Examples of indicators that indirectly and partially evaluate innovations are patents (Hagedoorn & Cloudt, 2003) and research and development (R&D) budget (Flor & Oltra, 2004). Other indicators, such as the number of new product ideas (Cooper & Kleinschmidt, 1993) and the percentage of ideas with a commercialization potential (Dewangan & Godse, 2014), directly evaluate innovations.

The company's ability to integrate, construct and reconfigure internal and external competences. These company competences follow specific roles that have the ability to manage resources specifically such as the processes of integrating, reconfiguring, gaining and releasing resources to match and even create market change.

1. Process innovation capability will have a great significance to influence strategic performance of a company.
2. Marketing innovation capability will have a positive significant effect to influence financial and strategic performance.

The mediating variable is Innovation Capability (IC). In this research framework IC function as mediating variable between the independent HC, DC, CO variables and the independent CP variable. IC has indicators consisting of: research development budget, length of time to introduce innovation, size of company, number of managers trained in methods and tools of innovation, and number of staff trained in tools of innovation. Therefore, the higher the score test of indicators, the higher the innovation capability of the individual or the company. Questions that can be raise to measure IC such as how research development budget, length of time to introduce innovation, size of company, number of managers trained in methods and tools of innovation, and number of staff trained in tools of innovation. Further details are in the questionnaire table for IC below:

**Table 3.5 Item Scales of Innovation Capability**

Variable	Dimension	Indicator	Code	Questionnaires Items	Scale
Innovation Capabilities Adapted From (Dziallas & Blind, 2019)	Financial performance	Research and development budget	IC1	My company have a research department and development budget?	Interval
	Research output	Length of time to introduce the product/service	IC2	How often my company introduce the market with new innovation?	
	Organization structure	Size of company	IC3	Percentage of middle management employee in my company to total employee?	
	Competence knowledge	Number of managers trained in methods/tools of innovation	IC4	More than 80% of managers at my company have ability in innovation?	
	Innovation culture	Percentage of employee trained in creative techniques	IC5	More than 50% of employee in my company are trained in creative innovation	

Source : (Dziallas & Blind, 2019)

### 3.4.5. Corporate Performance

The dependent variable of this research is Company Performance (CP). CP itself has parameters called Key Performance Indicators (KPIs). KPIs are measurable values that aim to determine how effective a company in reaching their

goals, and what or how it can be improve. According to (Kaplan, Robert S, Norton, 1996), KPIs will measure progress towards its goals by analyzing its mission, identifying all its stakeholders, and defining its goals. The dimension of CP is numerical and emotional. Whereas the indicator of numerical value is dollar cost and time; and emotional dimension with indicators of customer satisfaction, employee satisfaction and self-improvement.

(Bhatti et al., 2014) has identified that performance measurement of an organization is a complex interrelation criteria between the effectiveness, efficiency, quality, and productivity, quality of work life, innovation, and profitability. Questions that can be raise to measure CP can be measure by asking how much cost and time efficiency innovation can produce. Besides that, it can also be measure from feedback from consumers, satisfaction as an employee and oneself towards self-development. Below are detailed questionnaires on CP:

**Table 3.6 Item Scales of Corporate Performance**

<b>Variable</b>	<b>Dimension</b>	<b>Indicator</b>	<b>Code</b>	<b>Questionnaires Items</b>	<b>Scale</b>
Corporate Performance Adapted From (Bhatti et al., 2014)	Numerical	Cost	CP1	I spend less budget in getting new customer by introducing an innovative product?	Interval
		Time	CP2	I save more time in getting new customer by offering innovative product?	



Variable	Dimension	Indicator	Code	Questionnaires Items	Scale
	Emotional	Customer Satisfaction	CP3	My customer feel more satisfied with innovative product/service?	
		Employee Satisfaction	CP4	I feel more confidence offering better product/services compare to my competitor?	
	Self-improvement	CP5	I increase my skill by engaging with innovative product/services?		

Source: (Bhatti et al., 2014)

### 3.5. Measurement Scale

This study uses 5 interval scales. The variables to be measured are interpreted into dimensions, from dimensions to indicators and from indicators to sub-indicators that can be measured. This sub-indicator is used as a benchmark for making questionnaire questions that need to be answered by respondents.

The answer to the questionnaire given to the respondent is by clicking on the answer column available through the google form or manual questionnaire by choosing one of 5 choices of questions on the likert scale and using an interval measurement scale to measure the attitude of the respondent towards their answer.

### 3.6. Validity and Reliability of Pre Test (n=34)

In the test run using SPSS, validity and reliability tests will be carry out. Validity test is a test of the ability of indicators to measure variables. Reliability is

a test of the consistency of indicators in measuring variables. Pearson Correlation pre-test. Summing up the total of each score variable from the results of distributing the questionnaire to the pre-test respondents. After that, the data is copied and pasted transpose the results in SPSS. The test of validity by selecting analyze, correlate, bi-variate, select-move to the right, and run the SPSS.

Assessment  $r$ -count must be greater than  $r$ -table.  $r$ -count/Pearson can be found from the SPSS table that has been run according to the sub-total of each variable that has been tested. The formula for  $r$ -count is  $df = N - 2$ , with  $N = 34$ , and the value of  $df = 32$  from the  $r$ -table. The significance level used from the  $r$ -table with a table value of 0.05 is the minimum threshold limit of 0.3739. By entering each indicator into the existing score options without entering the sub total value of each variable and moving it to the right column to run the reliability test. This result of reliability test, Cronbach Alpha, with the expected value above 0.7. All of the data from the survey score results were carry out for all the variables from the SPSS raw data.

The result of the Validity test for all variables are above threshold limit  $> 0.3739$  for all indicators of tested variables, therefore all indicators of HC, DC, CO, IC and CP are valid and able to measure the variables. For Realibility test the result is above  $> 0.7$  threshold minimum limit and thus the indicators are consistent in measuring the variables. Therefore, the result for pre-test Validity and Reliability are both valid and reliable, and charted on table below in further details:

**Table 3.7 Validity and Reliability of Pre Test**

Variable	Code	Items	Pearson	r Table	Conclusion	Cronbach	Conclusion
Human Capability	HC1	I feel my personal education has help me to solve work problems?	0.915	0.373	Valid	0.938	Reliable
	HC2	I like to attend seminar and enroll in certifications degree other than academics enrollment program?	0.914	0.373	Valid		Reliable
	HC3	I feel that acquiring new skills help in the work task?	0.904	0.373	Valid		Reliable
	HC4	I gained experience from trying new methods or using new tools?	0.950	0.373	Valid		Reliable
	HC5	I feel that more practice makes my skill-set perfect?	0.810	0.373	Valid		Reliable
Dynamic Capability	DC1	I can solve problem in different ways?	0.885	0.373	Valid	0.937	Reliable
	DC2	I can think out of the box?	0.937	0.373	Valid		Reliable
	DC3	I function well outside my comfort zone?	0.891	0.373	Valid		Reliable
	DC4	As I accumulate more experiences, I can manage more activites?	0.908	0.373	Valid		Reliable
	DC5	I can combine multiple skills set to solve a problem?	0.859	0.373	Valid		Reliable
Consumer Orientation	CO1	My company is effectively developing the market	0.878	0.373	Valid	0.935	Reliable

Variable	Code	Items	Pearson	r Table	Conclusion	Cronbach	Conclusion
		intelligence process?					
	CO2	My company has a high interest in the rapid response to customer needs?	0.941	0.373	Valid		Reliable
	CO3	My company responds well to changes in the business environment?	0.963	0.373	Valid		Reliable
	CO4	Exchange ideas to solve customer problems?	0.863	0.373	Valid		Reliable
	CO5	My company builds interactions with customers?	0.814	0.373	Valid		Reliable
Innovation Capability	IC1	My company have a research department and development budget?	0.962	0.373	Valid	0.969	Reliable
	IC2	How often my company introduce the market with new innovation?	0.970	0.373	Valid		Reliable
	IC3	Percentage of middle management employee in my company to total employee?	0.919	0.373	Valid		Reliable
	IC4	More than 80% of managers at my company have ability in innovation?	0.908	0.373	Valid		Reliable
	IC5	More than 50% of employee in my company are trained in creative innovation	0.962	0.373	Valid		Reliable
Corporate Performance	CP1	I spend less budget in getting new customer by introducing an	0.981	0.373	Valid	0.980	Reliable

Variable	Code	Items	Pearson	r Table	Conclusion	Cronbach	Conclusion
		innovative product?					
	CP2	I save more time in getting new customer by offering innovative product?	0.931	0.373	Valid		Reliable
	CP3	My customer feel more satisfied with innovative product/service?	0.990	0.373	Valid		Reliable
	CP4	I feel more confidence offering better product/services compare to my competitor?	0.956	0.373	Valid		Reliable
	CP5	I increase my skill by engaging with innovative product/services?	0.959	0.373	Valid		Reliable

Source: IBM SPSS (2021)

### 3.7. Data Analysis Method

After the data have been collected from the respondent, the researcher can initiate to process the data to be analyzed for the purpose of the research.

#### 3.7.1. Data Preparation

The Data preparation will consists of 3 process which consists of the entry of data and coding, Data editing, and transformation of data (Armstrong, 2001). The entry of data and coding means that the number from 1 to 5 using the likert scale is considered as the code that is received from the respondent that will be interpreted as the answers that the researcher use for the purpose of this research. In this research the variable that the respondent have are environment, family education,

Entrepreneurial education, entrepreneurial attitude, and entrepreneurial intention (Yakubu et al., 2012). Different variables will have its own unique indicators code like HC1, HC2, HC3, HC4, HC5, DC1, DC2, DC3, DC4, DC5, CO1, CO2, CO3, CO4, CO5, IC1, IC2, IC3, IC4, IC5, CP1, CP2, CP3, CP4 and CP5.

Data editing means that the researcher want to avoid any bias by removing some questions that are not valid, not relevant, not consistence, doesn't make any sense, and when the response is not complete (Sekaran, Uma, Bougie, 2020). By doing steps like Analyze for the problems, pay attention to the response that have inconsistency, using software that help the researcher to detect any invalid response, and the last is when the researcher is faced with a blank response then the researcher could either do a plug value or ignore the data (Sekaran, Uma, Bougie, 2020). Plug value consists of three rule which are, fill the blank response with neutral response, fill the blank response randomly, and the last is fill the blank response with the best answer by using a help from a software (Muhammad & Kabir, 2016). An elimination of the questions is considered normal by the experts, but 15 percent from the total responses are the maximum elimination that can be done by the researcher (Muhammad & Kabir, 2016).

Transformation of data can be done when the data editing process is completed (Liu et al., 2019). Transformation of data refers to the data consistency that want to be created by the researcher to achieve the accurate results and avoid any misconception from the data when the software is being involve later in the further process (Sekaran, Uma, Bougie, 2020). The process of software data input entry by

the researcher. For example, an answer of “strongly disagree”, that is being chosen by the respondent does not mean that he or she is not believe that university education can triggers the idea to become an entrepreneur but it refers to the strong disagreement against the statement or question (Liu et al., 2019b).

### **3.7.2. Partial Least Square Structural Equation Modeling (PLS-SEM)**

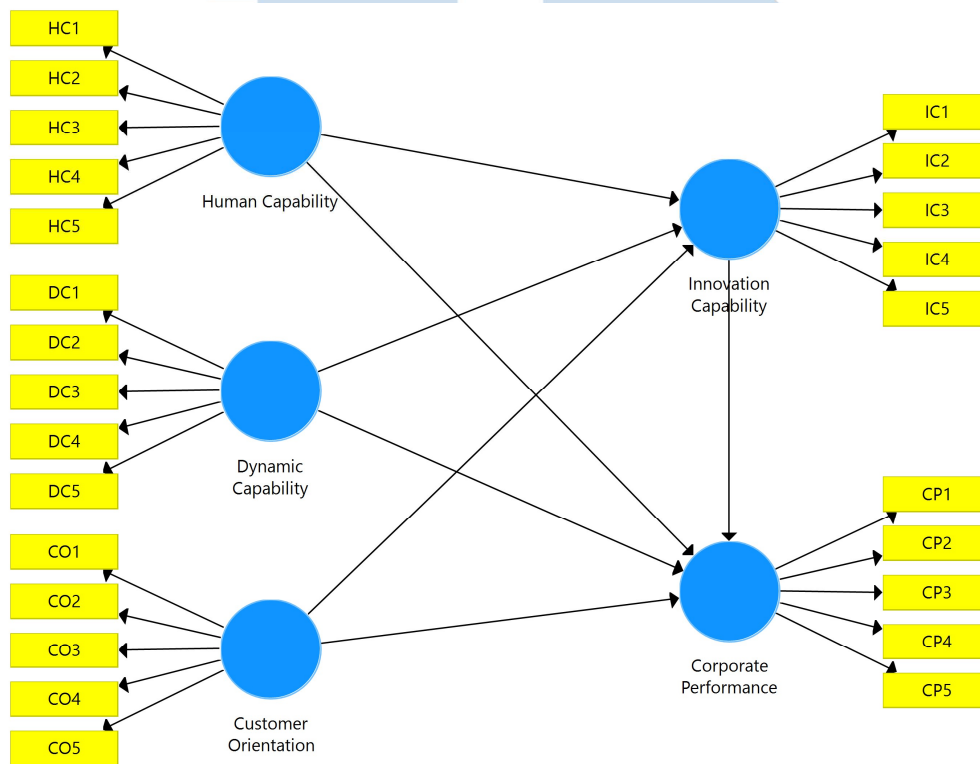
In doing research for social science that use multivariate data analysis, the method of using Partial least square structural equation Modelling or PLS-SEM is commonly used by the researcher (M. Hair et al., 2014). Outer model and inner model are two types of PLS-SEM (M. Hair et al., 2014). Correlation between Indicators that are being observed and the latent variables can be expose by using the outer model, while the correlation between dependant and independant latent variables can be expose by using the inner model (M. Hair et al., 2014).

Endogenous and Exogenous are the variables that comes from the SEM method (M. Hair et al., 2014). Arrows that are not directed by others variables and also the arrow is pointing outside can be classified as the exogenous variable, while a minimum path that led the arrow and another variable effect are being exposed can be classified as the endogenous variable (M. Hair et al., 2014).

The PLS-SEM will be used by the researcher because large numbers of indicators are being used by the researcher in this research, The efficiency in acquiring less sample size is being the consideration of using PLS-SEM (M. Hair et al., 2014). The researcher want to predict this research as the goals not to do theory testing, the researcher from the previous study also using PLS-SEM, and the



last is the value of latent variable is being involves in the following analysis (M. Hair et al., 2014).



**Figure 3.2 SEM-PLS Model**

Source: Author (2021)

The data analysis method used in this research is the Component or Variance Based Structural Equation Model where the data processing uses the Partial Least Square (Smart-PLS) version 3.2.8 PLS program. PLS (Partial Least Square) is an alternative model of covariance based SEM. PLS is a method of solving structural equation modeling (SEM) which in this case (according to the research objectives) is more precise than other SEM techniques. (Ghozali, 2014) states that PLS (Partial Least Square) is a powerful analytical method because it is not based on many

assumptions, the data must be normally distributed, and the sample does not have to be large. (Yamin, 2011) mentions that PLS can be use for confirmation purposes, such as hypothesis testing and exploration purposes. However, PLS prioritizes exploration rather than confirmation. The main purpose of PLS is to explain the relationships between constructs and emphasize the notion of the value of these relationships. In this case, the important thing that must be considered is the necessity of a theory that provides assumptions to describe the model, variable selection, analytical approach, and interpretation of the results. The testing steps to be carry out include two stages, namely evaluation of the Outer Model or measurement model and evaluation of the Inner Model or Structural model.

#### **3.7.2.a. Evaluation Measurement Model (*Outer Model*)**

*Convergent validity* is the degree to which the measurement results of a concept show a positive correlation with the results of the measurement of other concepts which theoretically must be positively correlated. Convergent Validity measures the magnitude of the correlation between the construct and the latent variable. In evaluating the Convergent Validity of individual item reliability checks, it can be seen from the standardized loading factor value. Measurement (indicator) with its construct. a loading factor value above 0.7 can be said to be ideal, meaning that the indicator is said to be valid as an indicator that measures constructs. However, the standardized loading factor values above 0.5 are acceptable, while those below 0.5 are excluded from the model.

The *discriminant validity* of the reflective model is evaluated through cross loading, then compares the AVE value with the square of the correlation value between constructs (or compares the AVE root with the correlation between constructs). The measure of cross loading is to compare the correlation of the indicator with its construct and the construct of other blocks. If an indicator with a construct is higher than the correlation with other blocks, this indicates that the construct predicts the size of their block better than the other blocks. Another measure of Discriminant Validity is the AVE root must be higher than the correlation between constructs and other constructs or the AVE value is higher than the square of the correlation between constructs.

*Composite Reliability* is done by looking at the view latent variable coefficients. From this output, the criteria are seen from two things, namely composite reliability and *Cronbach's alpha*. Cronbach' alpha measures the lower limit of the reliability value of a construct, while composite reliability measures the actual value of the reliability of a construct. A construct is suggested to be reliable if the value of Cronbach's alpha must be more than 0.60 and the composite reliability value must be more than 0.70. If a construct has met these criteria, it can be stated that the construct is reliable or has consistency in the research instrument.

### **3.7.2.b. Evaluation Model Measurement (*Inner Model*)**

The inner model test is the development of a concept and theory-based model in order to analyze the relationship between exogenous and endogenous variables that have been describe in a conceptual framework. Testing of the

structural model is done by looking at the R-square value that is a goodness-fit test of the model.

The stages of testing the structural model (hypothesis testing) are carried out with the following steps:

### 1. R-square

The second test can be seen from the results of R square for endogenous latent variables of 0.02, 0.15 and 0.35 indicating that the model has a small, medium, and large influence on the structural model.

### 2. Goodness of Fit Model

Testing the *Goodness of Fit* structural model on the inner model using the predictive-relevance (Q2) value. Q-square value greater than 0 (zero) indicates that the model has predictive relevance.

### 3. Hypothesis test result (Coefficient Path estimation)

The calculated path relationship values in the structural model should be significant. This significance can be obtained using the bootstrap procedure. Looking at the significance of the hypothesis by examining the parameter coefficient values and the statistical significance of T in the bootstrap reporting algorithm, the statistical significance of T should be greater than 1.96 at the 5% significance level.

U N I V E R S I T A S  
M U L T I M E D I A  
N U S A N T A R A