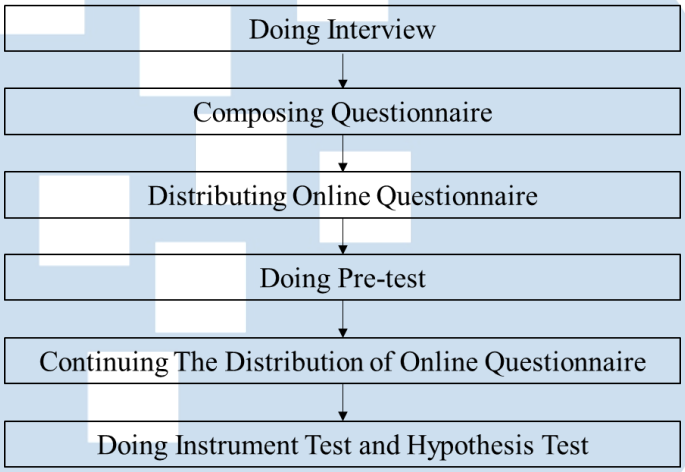
CHAPTER III

RESEARCH METHOD

In this study, several stages were carried out as illustrated in the following diagram.



This research was preceded by conducting interviews with several respondents according to the research criteria. The results of these interviews are then used as evidence data in this study. After obtaining evidence data, compiling the theory of previous research, and compiling research hypotheses, then proceed with compiling a questionnaire.

This questionnaire is then distributed online. After obtaining 30 respondents who met the criteria, a pre-test was carried out. The purpose of this pre-test is to find out whether the items in the questionnaire are valid. After the pre-test data were processed using SPSS and were valid, the questionnaire was distributed and continued. After the number of respondents was collected, several tests were carried out, namely instrument testing, descriptive analysis, and hypothesis testing. Furthermore, the details of the test will be explained in more detail in this chapter.

3.1 Research Paradigm

The research paradigm is a way of looking at the process, format, and results of the research. The positivist paradigm was chosen as the research paradigm in this investigation. The positivist paradigm is a perspective based on standard laws and procedures, which are universal and involve several variables (Muslim, 2016). This paradigm produces a quantitative approach. In the quantitative approach, theorizing

conclusions are confirmed through hypothesis testing. A quantitative approach is also used in this study with the variables of knowledge creation, knowledge sharing, product innovation, and product development.

3.2 Research Object

The object of research in this study is knowledge creation and knowledge sharing in the research and development department of the food industry. Meanwhile, the subject of this research is the research and development executives of the food industry. This research was conducted by distributing online questionnaires to respondents.

3.3 Population and Sample

This study's subjects are Indonesian food industry research and development executives in Jakarta. Meanwhile, the sample for this study consisted of 50 food industry research and development executives in Jakarta. The non-probability sampling technique was used in conjunction with a judgmental sampling technique. This technique is used because there are certain criteria for selecting samples from the population. The sample criteria in this study are respondents who are part of the research and development department in food industry companies in Indonesia.

3.4 Variable Operationalization

The variables studied in this study are knowledge creation, knowledge sharing, product innovation, and product development. This sub-chapter will define each variable with conceptual and operational definitions. And also, the indicators for each variable will be described.

3.4.1 Knowledge Creation

The knowledge creation's conceptual definition is the process of creating a condition that can generate creative ideas from individuals by the organization (Indriartiningtias et al., 2017). Furthermore, the variable indicators are described in the following table.

Table 3. Operational Definition of Knowledge Creation

Variable	Operational Definition	Indicators	Scale
Knowledge creation	Knowledge creation is a dynamic process to transform tacit knowledge from outside and within the organization into explicit knowledge (Nonaka et al., 2014).	Process: measures the stages of an activity to acquire new knowledge or ideas (Indriartiningtias et al., 2017)	Likert Scale (1-5)
		Output: The result of the knowledge creation process (representation of ideas in the form of spoken ideas, new product images, and alternative methods)(Indriartiningtias et al., 2017)	
		Outcome: The form of realization of new ideas that can be demonstrated in the form of prototypes and publications (Indriartiningtias et al., 2017)	
		The collaboration cross-department.	
		The organization facilitates space for creating knowledge.	

3.4.2 Knowledge Sharing

Knowledge sharing can be described as a culture of social interaction involving the exchange of employee knowledge, experiences,

and skills across the entire department or organization (Lin, 2007). Furthermore, the indicators of knowledge management are described in the following table.

Table 4. Operational Definition of Knowledge Sharing

Variable	Operational Definition	Indicators	Scale
Knowledge Sharing	Knowledge sharing is an interaction between individuals to seek and develop knowledge, so it can help create a new framework for creative solutions. (Muizu et al., 2018)	The ability of a leader to motivate his subordinates to share information and knowledge (Muizu et al., 2018)	Likert Scale (1-5)
		Ability to solve problems with creative solutions (Muizu et al., 2018)	
		Ability to absorb information and knowledge (Muizu et al., 2018)	
		Ability to convey knowledge gained from internal and external companies (Muizu et al., 2018)	
		Ability to socialize and communicate with others.	

3.4.3 Product Innovation

The conceptual definition of product innovation is the process of bringing a new product or service to market, which includes ideation, product design, product engineering, market research, marketing analysis, etc (Bigliardi et al., 2011). Innovation is about implementing ideas (Mardani et al., 2018). A product or product concept that consumers view as novel is also known as a product innovation (Steffen, 2017). Furthermore, the indicators of the product innovation variable are described in the following table.

Table 5. Operational Definition of Product Innovation

Variable	Operational Definition	Indicators	Scale
Product Innovation	Process of implementing ideas to be new products into a new market or existing market (modified from product innovation definition by Bigliardi et al., 2011, Mardani et al., 2018, and Steffen, 2017)	Uniqueness (Kusumawati, 2010) Quality (Kusumawati, 2010) Multifunction (Kusumawati, 2010) Novelty Research	Likert Scale (1-5)

3.4.4 Product Development

The conceptual definition of product development is that new products are developed from the identification of the need to launch into the

market, as a tangible product (Phillips et al., 1999). Product development can also be defined as systematic, commercially driven research aimed at developing items and processes that meet a known or suspected consumer need (Winger & Wall, 2006). Meanwhile, (Halagarda, 2008) said that Research activities related to product development include quality assurance, packaging, technical aspects of production, nutritional value labeling, raw materials, necessary technology, and marketing. Furthermore, indicators of product development variables are described in the following table.

Table 6. Operational Definition of Product Development

Variable	Operational Definition	Indicators	Scale
Product Development	Product development is new products that are developed from the identification of consumer needs and as a continuously expanding list of research actions.	Effectiveness (Dombrowski et al., 2013)	Likert Scale (1-5)
		Efficiency (Dombrowski et al., 2013)	
		Market-oriented, acceptable	
		Product improvement	

3.5 Data Analysis Technique

Validity and reliability tests were the first data analysis techniques employed in this study to measure variables and indicators. After that, the hypothesis will be tested using Structural Equation Modeling (SEM).

3.5.1 Reliability Test

The reliability test is used as a measuring device to evaluate the consistency of respondents' responses to research questionnaire questions. The term "reliability" refers to the degree to which a measuring device may

be trusted or depended upon (Janna, 2020). If the Cronbach Alfa reliability coefficient is between 0.70-0.90, the measurement device is regarded to be reliable (Malhotra et al., 2007). This test can be done with SMART-PLS.

3.5.2 Validity Test

A validity test determines if a measurement device is valid or not (Janna, 2020). The validity test consists of convergent validity and discriminant validity. Convergent validity is indicated by the value of the loading factor. For discriminant validity, it is indicated by the cross loading value, the AVE (Average Variance Extracted) value, and the Fornel-Larcker criterion.

The indicator is considered valid if its loading factor value is greater than 0.70. (Sulistiyowati, 2021). For the cross-loading value, the indicator is valid if the loading indicator value for the same variable is greater than the loading indicator values for the other variables. If the AVE value is >0.5, it indicates that the variable is valid (Sulistiyowati, 2021). Alternatively, the variable is deemed valid according to the Fornel-Larcker criterion if the value of each variable is greater than its relationship with other variables. If the indicator is said to be valid, then the indicator measures the same aspect, but if the indicator is not valid, then there is a conflict between the indicators in measuring the same variable. The measuring instrument in question is a statement on the questionnaire. A validity test was carried out using SMART-PLS.

3.5.3 Hypothesis Test

SEM is a method of statistical modeling used in behavioral sciences. It signifies a structure for the covariances between the observed variables, hence the alternative name covariance structure modeling (Hasman, 2015). The relationship between the independent and dependent variables, as well as the measurement model, can be measured using SEM, allowing for measurement error assessment, factor analysis, and hypothesis testing. The hypothesis is accepted if the two-tailed t-statistic is greater than 1.65 and the p-value is less than 0.10 (using a 10% significance level). This research

model uses Partial Least Square (PLS) which is implemented in SMART-PLS software.