CHAPTER II

LITERATURE REVIEW

This chapter will explain about literature review, the literature review will be divided into inductive and deductive. The method that will be used in this chapter is Systematic Literature Review (SLR). This chapter contains three phases such as previous study, basic theory and conceptual model.

2.1 Previous Study

Previous study is a study derived from the early researches that have been done by the other researchers and has the same focus with this research. The references of literature review that already collected by the articles on the indexed journal that have been done for the last five year (2014-2019). Previous study aims to collect newest literature review and avoid plagiarism. By using the method of SLR, all of the statements, variables and indicators that will be needed in this chapter will have clear references. SLR is used to identify theoritical gaps between each research, summarize past developments of the research and future research directions (Senivongse, Bennet, & Mariano, 2017).

This part also will explain about the findings of the latest research studies (novelty) which will strengthen the research that will be conducted. The arrangement of article that will be used in this research using publisher website and shown on the table 2.1 below.

Table 2.1 SLR Sources

No.	Publisher	Indexed Paper	Percentage
1	Emerald Insight	4	7.5%
2	Science Direct	15	28%
3	Taylor & Francis	11	21%
4	Others	18	33.5%
5	Book	5	10%
	Total	53	100%

Based on the literature review that has been obtained, it can be compiled a CK-Chart. Ck chart is a *Research Planning Tools* that found by Prof. Khasani Abdullah (UPM Malaysia), this called as K-Chart. CK-chart contains about five layers such as General topic, System, Sub-issues, Methodology and Parameter or result that will be filled in this research. Then, K-Chart has been developed by Prof. Chairul Saleh (UII Indonesia) to become CK chart. The development of CK-Chart as the palnning tools with the additional references information that used for the five layers of CK-Chart. All of the references will connect on each resource that can be saved on the presonal references folder, google drive or directly connected to the Mendeley system. It will be easier for the authors to provide evidence of citation of the source used so as to avoid plaglarism. The CK-Chart can bee seen in the Figure 2.1 below.

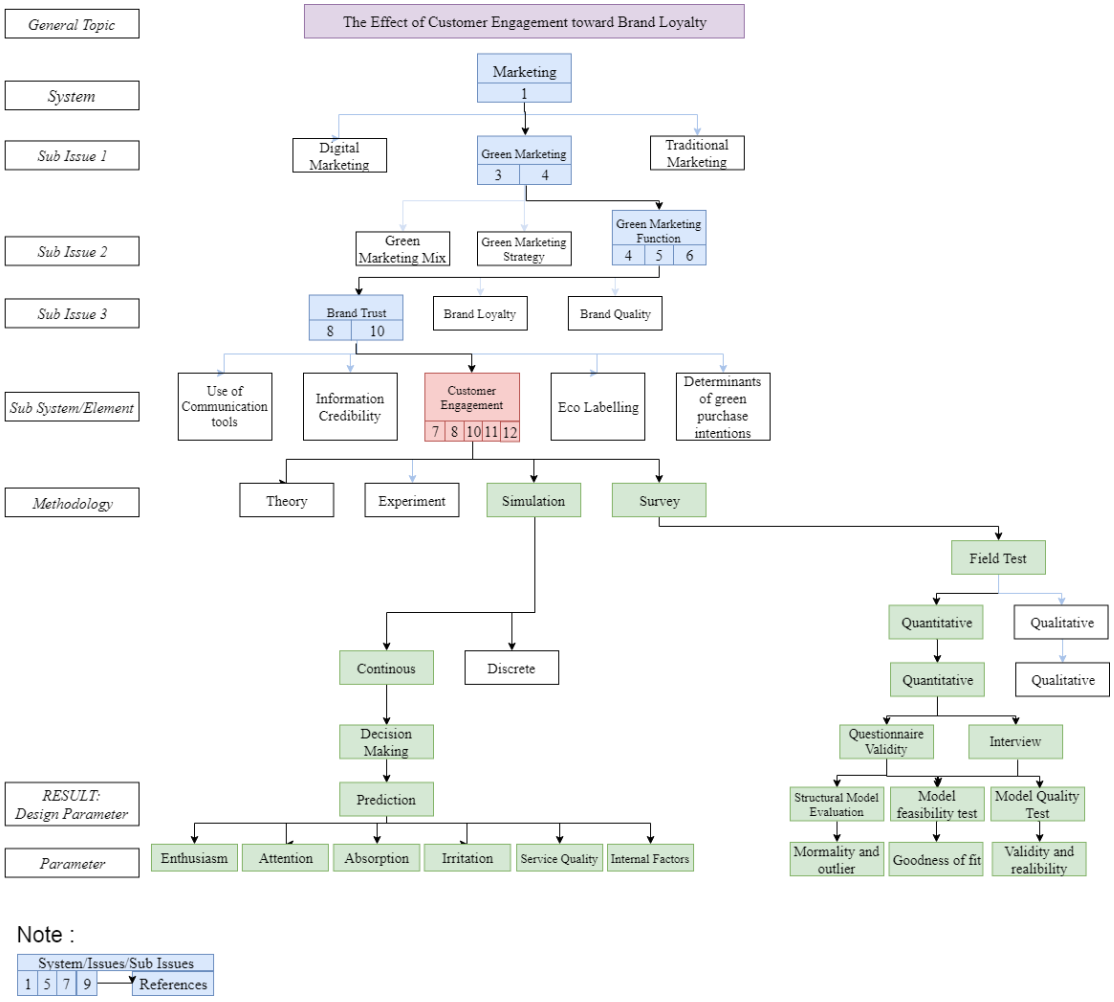

Figure 2. 1 CK-Chart of the Research

The figure 2.1 above shows the CK chart for this research. there are several numbers in the sub issue that related to the research. the explanation of the number will be explained in the table below.

Table 2. 2 CK-Chart Resources

Number of Jurnal	Sub Issue and Sub System	Resource(s)
1	Marketing	Kannan and Li(2017)
2,3	Green Marketing	Groening et al (2018)Turnet et al (2014)
4,5,6	Green Marketing Function	Kumar (2016) Jang et al (2015) Kwon et al (2015)
8,10	Brand Trust	Song et al (2019) Habibi et al (2014)
7,9,11,12	Customer Engagement	Lin et al (2017) Romero (2017) So et al (2014) Harrigan et al (2017)

There are several previous researches that related to the topics contained in the CK-Chart which are green marketing. and customer engagement. The following research discusses about marketing approaches. There are so many types of marketing including digital marketing. Kannan and Li (2017) was conducted a research about the framework, review and research agenda of digital marketing. This research aims to build a deep understading of digital marketing. Therefore, digital marketing can be applied well. The research is about the theoritical research. The researchers observe directly and compare to the previous study. In conclusion, the researchers integrate the related question of digital marketing and set a research agenda for future research related to the digital marketing from the firms' perspective.

Green marketing customer-level theory review was conducted by Groening et al (2018). This research aims to identify and detemine the individual-level consumer behaviour theories in green marketing. The first thing that already done by the researchers in this research is to define the terms of green marketing. then, the

researchers minimize 20 consumer-level theories into six categories. Each theory has its definition, marketing application and future suggestions. Most of the theories show that few of the customers will pay more for the green product. However, a behavior of one environmental context will not be appropriate for the other contexts. Another thing that found out by the researchers in this research is disconnected of consumer green purchasing intention and actual green purchasing behavior. For this finding, the researchers provide two theories that have been implemented before. Those theories are behavior intentions and instantiaters. This study also allows manager to develop the tools to reach the market.

Song-Turner et al (2014) conducted the research about green marketing in the Chinese way from a medium-sized high-tech daily chemical firm. In that time, the researchers said that China still in the underdeveloped of the green marketing research. The objectives of this research are to find out the perception, motivation, and marketing practices of a "daily chemical" firm in the China. This study uses the conceptual framework that is structured on the epistemological stance of pragmatism. Then, the researchers were conducted semistructured interviews with the general manager (GM) of each firm within the same questions. The interview questions contain the questions that will be identify influental stakeholder, motivations and perception based on the company's marketing strategies interm of green contexts. As the result, this study proves that green marketing is not immediately conductive to green sustainable principle.

Davari and Strutton(2014) conducted the research about green marketing with the title of "Marketing Mix Strategies for Closing the Gap Between Green

Consumers' Pro-environmental Beliefs and Behaviors". This research aims to develop a managerial insight that needed by the marketer to improve their green strategies and investigates the possible influence on the green marketing strategies. This research involved 286 respondents with 42.5% male and 57.1% female. The model applied a snowballing sample of customer and five interBrand. The research concluded that seven discrete green marketing implication are revealed.

A study that conducted by Jang et al (2015) coffee shop customers' emotional attachment and loyalty to green store. This research has been done to predict the customers' loyalty toward green stores and green products. The objective of this study is to determine the characteristic of the customers' whose support the green positively on the green practices. The researchers collected the data by using online survey ot the U.S. coffee shop customers, the survey was fulfilled by the 312 respondents. This study used the structural equation modelling (SEM) with LISREL 8.5 as the tool to test the hypothesized relationships. Based on the result, this research concluded that there is a relationship between the green practices and the customers' interest. Futhermore, the customers' attachment to green store has an influence on the store loyalty where store loyalty directly influences the product loyalty. This research found out that the customers with high awereness on the green environmental will have stronger respond to the green store and green products.

Kwon, Englis& Mann (2015) conducted a research about green-brown rating given by third-party based on the role of prior brand loyalty and environmental concern. This study was aimed to identify two characteristics such as environmental concern and prior brand loyalty towards the relationship to customer perceptions of

the validity of third-party green-brown rating information and the greeness of the brand itself. There are about five hypothesis that were used in this research. The method that used in this research was an internet-based quasi-experiment. However, to avoid the bias data, the researchers also conducted a pretest with convenience sample from a Southeastern University with 212 respondents involved. The researchers used multivariate analysis of variance (MANOVA) and univariate analysis of variance (ANOVA) for the hypothesis testing. The findings of this study stated that the relationship between thirt-party green-brown rating, customers' perceived about the rating and the brand greeness perceptions will not always appear.

Next research was performed by Lin, Lobo & Leckie (2017), this research aimed to investigate the customers' perceptions on the brand's green benefits and green transparency on their green perceived value (GPV), especially to test the role of GPV and self-brand connection toward its relationship between green benefits, green tranparency and brand loyalty. This study collected the data of 826 Chinese respondents. The measurement scale for this study was adopted by the previous studies by using 1 until 7 as the scale parameters where 1 represented strongly disagree and 7 was strongly agree. Also, the researchers entered the demographic information while collecting the data. The data was tested by using structural equation modelling. The subject in this research was seven popular green brands related to the products and service available in China. This research approved that most of the hypothesis were accepted. Yet, products and services will have different strategies to make them more effective.

Image, satisfaction, trust, love, and respect on loyalty information have effect for a name-brand. Song, Wang & Han (2019) conducted a research, the purpose of this research was to identify the structural associations among image, satisfaction, trust, lovemarks and brand loyalty for the name brand coffee shops. The researchers distributed the questionnaire to 410 respondents. The data were analyzed by using the SPSS and AMOS statistical packages. Based on this research, it was found customers' brand love and respect will be affecting the relationship between trust and brand loyalty. brand image will have big impact to the rating of customers' satsfaction and trust. Satisfaction will affect the trust, trust will be positively related to the brand loyalty.

At that time, the research about customers' engagement on a hospitality was rare. In the year of (2017), Romero conducted a research about the customers' engagement behavior in hospitality. Since most of the previous studies were about the things beside the customers engagement, it became the limitation for this research because the lack of references. The purpose of this research was to fulfill the gap between previous researches by studying the influence of two customers engagement behavious such as word-of-mouth and co-creation. This study was done by using partial least squares (PLS) structural equation modeling to estimate the model. The data was collected on July 2012 by a market research firm using web-based survey. The result of this research showed that there are two types of driven motivate customer engagement such as common antecedents and behavior-specific antecedents, it can be set as the theoritical base on the future research. For the practitioners, this study provides the management of customer engagement behaviour by signifying

which antecedents that will work and observing the importance of segmentation programs implementation when managing customer engagement behaviour.

Industry 4.0 drives the world to the digital era. Therefore, any kind of social media can be the tools to build brand communities. The research was aimed to develop the model, in which this model will describe the relation of customers' relationship with the elements of brand community based on the social media influence on brand's trust. This research conducted with structual equation modeling (SEM) by using EQS. Then, the model will be assessed by using chi-square, the root-mean square error of approximation (RMSEA), the standardized root mean square residual (SRMR) and the comparative fit index (CFI). Three out of the four initial hypothesis are accepted. However, customer-other customers' relationships have negative impact to the brand trust, which is counter intuitive and interesting (Habibi, Laroche, & Richard, 2014).

The researchers conducted the research about the role of customer engagement in building customer loyalty to tourism brands (So K. K., King, Sparks, & Wang, 2014). This research aimed to investigate the relationship of customer engagement with traditional antecedents of brand loyalty. This research was done by using structural equation modeling. The data collected from the 496 hotel and airline customers suggested that customer engagement enhance customers' service brand evaluation, brand trust and brand loyalty. Based on the result, it is shown that service brand loyalty has strong impact not only through the service consumption experience but also through customer engagement beyond the service encounter. The findings of this research also shown that there are five strongly variables that influence the

customer engagement such as identification, enthusiasm, attention, absorption and intercation, also there are three additional variables which are service quality, perceived value and customer satisfaction.

Before this research, there are so many researches about the customer engagement but there is no research interm of tourism context. Harrigan and three researchers (2017) conducted a research about customer engagement with tourism social media brands. The purpose of this research is to investigate the nature of customer engagement with tourism social media brands. the data were collected by Amazon Mechanical Turk (Mturk) marketplace during half of 2015 using online survey. As the result, 11 out of 25-items can be taken both for tourism and non-tourism context. Although, branding should be managed carefully when it works with the social media, especially for how the contents (picture, video and soon) when they should be shared to the public. Oktarizma conducted the research about the effect of customer engagement towards brand trust in green marketing. The case study of this research taken place in Starbucks Coffee in Yogyakarta. This research focused the observation to the green promotion. The purpose of the research is to make a design models of the customer engagement and to find out the relationship among variables. The data were collected by using online questionnaire with google form. The researcher was used structural equation modeling (SEM) method. Data processing was performed by using SPSS and AMOS 22 software. There are three variables that used in this research such as attention, interactionand customer satisfaction. As the result, two out of three variables have influence on the brand trust value.

PooyanSedarati, Sérgio Santosand Pedro Pintassilgo(2018) conducted the research about “System Dynamics in Tourism Planning and Development”. The research aimed to asses the application of the system dynamics method on the tourism industry’s planning and development. The researchers also used SLR method interm of finding out the data that will be needed. Based on the SLR method, the researchers collected the data from 27 papers. The paper analysis shows that the SD application reduced many different problems. At the end of the research, it is concluded that the application of SD can be the tools for the tourism to provide decision-making and regulation to the tourism industry aspect. The system of dynamics application also provided the tools for the strategy and operational policy. The recommendation for this research is to extend the used of SD modelling to promote the understanding and complex issues faced by industry.

Based on the previous research above, the researcher will conduct a study about the customer’s engagement value. This research will be conducted to identify the effect of the exogenous variables and its indicators to customer engagement value. This research will specifically focus to the customer engagement in a property industry named as Real Estate Indonesia in the Yogyakarta chapter. The relationship of the exogenous variables and its indicator to the endogenous variables will be done by using structural equation modeling (SEM) with AMOS software. This research concluded eight exogenous variables such as Enthusiasm, Attention, Absoption, Intention, Identification, Irritation, Customer Satisfaction and Service Quality. Wheres, the endogenous variables will be the customer engagement. The data will be collected by using survey method with questionnaire and interview. The result that generated by the AMOS software will be simulated in the powersim application.

Expert judgement will be applied to complete the data. The aim of the powersim application is to identify the factor that affected customer's engagement value in the REI Yogyakarta to increase their customer engagement value.

2.2 Basic Theory

2.2.1 Marketing

There are so many things that can be described by the meaning of marketing. In general, marketing can be said as the ways of market players to make a relationship and building credibility. Marketing contains of many activities such as transaction, advertising, distributing and selling a product or service. Marketing is a process of sharing information and bulding relationships interm of compiling the strategic goals, capabilities and resources, with the goal of increasing organizational relevance and influence to maintain awareness of broader policies and beliefs that set organizational directions through strategic initiatives and funding (Yi, 2018). Marketing can be used for any kinds of organizations inclusing profit organization and non-profit organization (Garoufallou, Siatri, Zafeiriou, & Balampanidou, 2013). There are two types that will be offered during the marketing section such as a product or a service. Those two things have different ways of how it should be treated. If it is in the service company, employees who get lower paid, then he or she will make more contacts to the customer. Whereas, in the product company, only a few of top employees will have contacts with the customer (Fryar, 1991).

One of the important things in the marketing is bulding the relationshiop and credibility to the customer. A simple model of marketing process was developed

by Kotler and Armstrong (2014). This process includes five steps : 1) understand the marketplace and customer needs and wants, (2) design a customer-driven marketing strategy, (3) construct an integrated marketing program that delivers superior value, (4) build profitable relationships and create customer delight, and (5) capture value from customers to create profits and customer equity. This process can support the marketing process to be preferable.

During the marketing process, the company has to make a evaluation so that the marketing process can be more effective. There are three steps that can be applied in the company to evaluate the marketing process (Etzel, Walker, & Stanton, 2000). First, find out what happen, the company has to recognise about the recent situation in their company, trying to find the problem. Second, to find out why it happens, after the company has identified what happen in the company, it has to determine the causes of problem. Last but not the least, decide what to do about it, the company has to design a solution to solve the problem.

2.2.2 Green Marketing

The issues about green marketing appears approximately in late 1980s and early 1990s. First workshop named as “ecological marketing” was held in 1975 (Essays, 2018). The awareness of future environmental circumstances, many of the researchers have began the research about green marketing, either for the green design, green product or another green program. This issue was created so many backlashes. Crane developed the strategic responses to the green marketing backlash. There are four strategies include passive greening, muted greening, niche greening and collaborative

greening (Crane, 2000). Those responses can be applied in the different term of the firm.

The implementation of green marketing is not about to build a relationship among the individuals, but it also concerns to the many sides. Kilbourne (1998) categorized three dimensional frameworks which will be referred to as the socio-economic domain of the dominant social paradigm (DSP). Those three dimensions include economic, technological and political. Hence, in the green marketing, environmental side has to be consideredas well. In term of economic dimension, the firm has to ensure the customer satisfaction toward its green program. For the technological dimension, it needs to have a mediation of nature and mediation of culture (individuals and society). Political dimension of this case will be about the policy of the environmental itself.

In the process of green marketing, the company has to observe about customers' environmental attitudes that affect their purchasing behavior. Therefore, the company was advised to modify the strategic aims, product design, overall visible activities, marketing and marketing communication tactics (Singh, Vrontis, & Thrassou, 2011). In addition, the customers who are more educated and have higher income will be more incline to purchase green products or green services (Ahmed, Kamalanabhan, & Chih, 2001). Nowaday, the issues of green marketing is getting stronger. The market for the green products and green services is developing very fast. It makes the green marketing has its limitations such as in the business sector, green consumerism and government (Wymer & Polonsky, 2015). These limitations indirectly connected to the three dimensions such as economical, technological and

political (Kilbourne, 1998). The benefits of green marketing strategy such as profitability, competitive advantage, increased market share, better products, personal rewards, better physical environment and sustainable development (Ottman, 1997). However, there are also the weaknesses of green marketing (Ottman, 1997) :

1. Most of the green products have higher cost and quite difficult to be implemented in the short run.
2. The environmental benefit is not really felt by the customer.
3. It is difficult to measure the environmental benefit because it is not a quantitative data.
4. Some of the strategies are probably manipulated by the company.
5. The success of the green marketing strategy depends on several stakeholders who must work as a team.
6. The costs saved through recycling are doubtable.

2.2.3 Green marketing Funtion

Green marketing has several parts such as eco-orientation, green marketing strategy, green marketing strategy, green marketing consequences and green marketing function. The green marketing function includes products, promotion, retailing and distribution and others issues like branding, positioning and international marketing (Kumar, 2016).

1. Product

   Green product means that all of the products that come from the company processed through the environmentally friendly process. Enviromentally

friendly has many phases of life cycle which are before usage, during usage and after usage (Dangelico & Pontrandolfo, 2010). Most of the things that can be applied in the green product include recycling, reuse the product, reducing packaging, durabled product, repairable, compostable, healthy and safer in shipment. Green marketing product needs to consider about some components such as design, technology, usefulness, value, convenience, quality and packaging (Bhalerao, 2015).

2. Promotion

   The goals of the green promotion are to change the society perception about green product. Most of the customers still assume that the promotion from the green product is only to promote the environmental benefit (Kinoti, 2011). Based on the (Bhalerao, 2015), there are three ways that can make the green promotion work optimally; 1) selection of promotion partners, selection of promotion material and selection of advertising message.

3. Retailing and distribution

   On the green marketing concept, the sustainability is needed as the consideration. Sustainability practices in retailing include fair trade, ethical sourcing and reduced resource consumption.

4. Other issues

This includes the branding, positioning and international marketing. The branding is also divided into brand trust, brand loyalty and brand quality.

2.2.4 Brand Trust

Trust is built because there is an expectation that other parties will act according to the needs and desires of consumers. Human trust is not only can be showed to others, but also for invesible objects like a brand. Lau and Lee (1999) was defined brand trust as customer's willingness to rely on the brand in term of facing the risk which caused by the expectation that the brand will cause positive outcomes.

Brand trust is not appeared instantly, it obviously needs a suite of the process. There are five trust building processes (Doney & Cannon, 1997) that will be explained below:

1. Calculative

   This process said that trustor have cost and/or rewards of target acting in untrustworthy manner.

2. Prediction

   In this case, trustor will develop confidence that the target's behavior can be predicted.

3. Capability

   Trustor will assess on how the target's ability on fullfiling its promise.

4. Intentionally

   Intentionally means the trustor evaluation one the target's motivations.

5. Transference

   Trustor sticks to the sources from which trust is transferred to the target.

Brand trust can be grown within some activities such as achieving result, acting with integrity and demonstrate corcern (Erna, 2008). Achieving result is the

promise to customer that has to be fulfilled if a company wants to get a trust on its brand. Activity with integrity is the consistency between speech and action in each situation, the existence of integrity is a key factor for one party to believe it sincerely. Demonstrating concern is the company's ability to show its attention to consumers in the form of showing an understanding to consumers when they face problems with products, It will foster the trust on brand. Brand trust has five variables such as customer engagement (So K. K., King, Sparks, & Wang, 2014), information credibility (Lee, Kim, & Chan-Olmsted, 2014), Eco labelling (Atkinson & Rosenthal, 2014), Purchase Intentions (Zhao, Huang, & Su, 2019) and Communication tools (Sadek, Redding, & Tantawi, 2015).

2.2.5 Customer Engagement

Customer engagement is a psycological state of mind that leads to frequent interaction with the brand, customer engagement is a long term relationship that arises from utilitarian motivations (Thakur, 2018). So et al (2012) defined the customer engagement as the marketing activity which oriented to the action and customers' psychology. This is reflected on the customers' interaction with other customers or the company on a forum to get product information or anticipate the risks that will be accepted if he/she consumes the products (Brodie, Hollebeek, Juric, & Ilic, 2011). Brodie et al also said that engagement can be divided into three concept variables including:

1. Cognitive Attachment. This is referred to customer cognitive stage, for instance sharing the information and other customer experiences. This variable connects to how customers accept, perceive, learn, reason, remember, and think about a brand infomation.

2. Attitudinal Attachment. This becomes a parameter of customer engagement because it includes the positive afection stage which is opened with new experiences and social involvement or interpersonally connected to consumer attitudes that can enhance personal growth.
3. Behavioural Attachment. This is referred to the action or customer participation on the effort of company's engagement that able to bring behavior changes and motivate other customer's behaviors.

Digital era has carried out the marketing into the modern ways. Nowaday, the company easily can promote their products or services into social media platform. One of the marketing purposes is to build the customer engagement to the company, also to add the value on brand loyalty. Besides the promotion of the product, there is an online review website that usually used by the customer or someone who ever bought the product to make an opinion towards the products or services. Thakur (Thakur, 2018) divided some dimensions that affect the customer engagement value depends on the online review; monetary evaluation, utilitarian, time filler, intrinsic enjoyment, self-connect, social-facilitation. In addition, Kesgin and Murthy (2018) said that the dimensions that affect customer engagement value towards the online review is divided into kind of conversation, information, advocacy, affiliation, utility, identity, satisfaction, recommendation and revisit.

Customer engagement behavior can be obtained through word-of-mouth, customer helping company and also customer helping customer. Customer engagement is also about the satisfaction level that customers feel belong to a brand. The dimensions that can affect the customer engagement behaviour include perceived

quality, service convenience and perceived fairness (Roy, Shekhar, Lassar, & Chen, 2018). However, Kunz et al (2017) thought that customer engagement will increase if the managers excute the engagement activities in one line with the customer expectation.

Building the customer engagement rarely can be succeeded in the very first time of intercation between the brand and the customer. Sashi (Sashi, 2012) said that there is a cycle of customer engagement such as connection, interaction, satisfaction, reterention, commitment, advocancy and engagement. Figure below will show the customer engagement cycle.

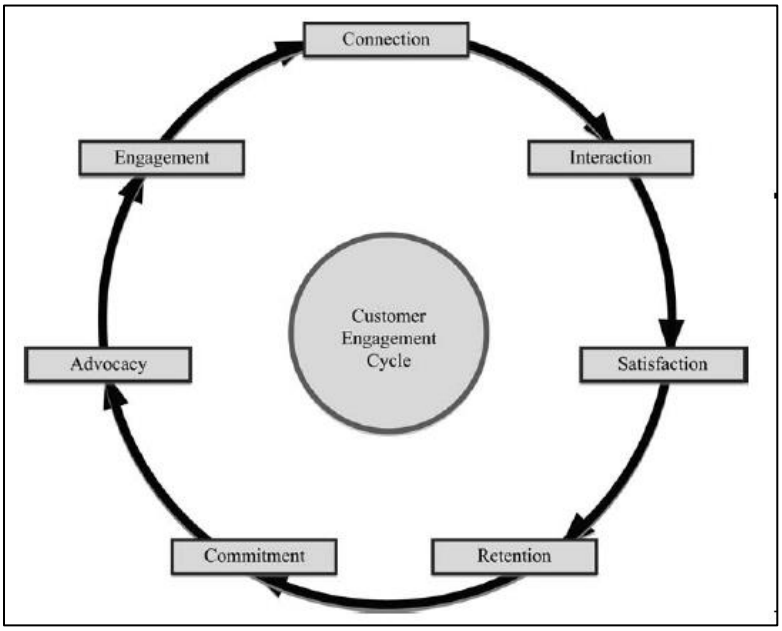

Figure 2. 2 Customer Engagement Cycle

2.2.6 Survey

Survey research is the collection of individual sample by using the question and then sum it up based on the its answer (Check & Schutt, 2011). Survey has its own purpose and can be done by using any kinds of methodologies and the objectives to be achieved. The survey involves distributing the question to the respondents. Nowaday, there are so many ways that can be used by the researchers to spread the questionnaire both online and offline. The conventional way of the questionnaire distribution is by asking the individual directly and gives a piece of paper within the questions revealed in it. Digital era brings us to spread the questionnaires through email, QR code, post them to social network, google form, SMS and many others. Based on Glasow (2005), the determination of the sample size in the survey depends on the five factors:

1. Desired agree of precision
2. Statistical power required
3. Ability of the researcher to gain access to the study subjects
4. Degree to which the population can be stratified.
5. Selection of the relevant units of analysis

The purpose of the survey can be divided into:

1. Explorative

   Researchers are still looking for the problem to be studied.

2. Descriptive

   The researcher conducts careful measurements of certain social phenomena based on the facts.

3. Explanatory on the fact

   To explain causal relationships and hypothesis testing.

4. Evaluation

   To find out how far the objectives that formed at the beginning of the program are achieved or potentially will be achieved.

5. Predict or forecast certain events in the future
6. Operational research

   Identifying the variables related to operational aspects of a program.

7. Development of social indicators

The development of this indicator can be developed based on surveys conducted periodically.

2.2.7 Questionnaire Testing

Questionnaire testing is a step that is used in order to determine the validity and reliability of the questions that will be asked to the respondent.

A. Validity Test Questionnaire

This test is done to find out the validity of the statement. A valid statement will then be distributed to the respondent. While those that are not yet valid need to be repaired in the form of changes or omissions. The formula for testing the validity of the questionnaire is:

$$r_{xy} = \frac{N(\Sigma xy) - (\Sigma x)(\Sigma y)}{\sqrt{\{N\Sigma x^2 - (\Sigma x)^2\}\{N\Sigma y^2 - (\Sigma y)^2\}}}$$

Information:

N	=	The total of instrument
X	=	Respondent score on the instrument (question)
Y	=	Total score all of the instrument (question) on every respondent
r_{xy}	=	Correlation coefficient between variables X and variable Y
Σxy	=	The number of multiplications between variables X and Y
Σx^2	=	The sum of the squares of the X value
Σy^2	=	The sum of the squares of the Y value
$(\Sigma x)^2$	=	The number of X values is then squared
$(\Sigma y)^2$	=	The number of Y values is then squared

The basis used in making decisions on each of the questions said to be valid or not is described as follows:

a. If r counts ≥ r table, then the question or statement can be said to be valid.
b. If r count <r table, then the question or statement can be said to be invalid

B. Realibility Test Questionnaire

Reliability is an indicator that shows the suitability of the measuring instrument with what is measured. The formula used to determine the reliability of a research instrument can be calculated using the following Cronbach alpha formula:

$$\alpha = \left[\frac{k}{(k-1)}\right]\left[1 - \frac{\Sigma{\sigma_j}^2}{\sigma^2}\right]$$

Information:

α	=	Instrument reliability
k	=	Total question item that testing
$\Sigma{\sigma_j}^2$	=	Value of the variance of the j-th question
σ^2	=	Total variance

Before using the Cronbach alpha formula, first determine the number of variance items, the formula that can be used is as follows:

$$\sigma^2 = \frac{\Sigma x^2 - \frac{(\Sigma x)^2}{N}}{N}$$

Information:

σ^2	=	Instrument variance
Σx^2	=	Number of X squares
Σx	=	Number of scores for each instrument

Figure 2.1 Number of Variance Formulation Explanation

Therefore, the basis for making decisions on these measuring instruments whether it is reliable or not as follows:

- If r alpha ≥ r table, then the variable can be said to be reliable.
- If r alpha < r table, then the variable cannot be said to be reliable.

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2.2.8 Structural Equation Modeling (SEM)

SEM can be used for solving research problems to treat unobservable and difficult to measure variables (Wong, 2013). Most of the SEM success can be attributed to the ability of methods to evaluate the measurement of non-measurable variables, while also examining the relationship between these variables (Babin, Hair, & Boles, 2008).

In using SEM there are several assumptions. SEM assumptions are:

1. Sample size

   The minimum recommended sample size in the use of SEM is as much as 100 or using a comparison of 5-10 times the number of observations for each estimated parameter or indicator used. The estimation technique used is the maximum likelihood in accordance with the provisions of the sample tested is 100 to 200.

2. Normality

   Normality and linearity data distribution must be analyzed to see whether normality assumptions are met. Normality can be tested through image histogram data. Linearity test can be done through scatterplots from the data that is by selecting the data pair and seeing the pattern of its spread to predict whether there is linearity.

3. Outliers

   Outliers, which are observations with extreme values both univariate and multivariate that arise because of the combination of unique characteristics that they have and look very much different from other observations.

4. Multicollinearity and singularity

   The very small determinant value of the covariance matrix gives an indication of the problem of multicollinearity or singularity. Treatment is done by issuing variables that cause multicollinearity or singularity.

5. No correlation among error terms :

   In the structural equation modeling method, it is assumed that there is no correlation among the error terms.

6. Linearity

SEM is the bunch of factor and regression analysis. In the structural equation model, it is assumed that there are linear relationships between latent variables and also between observed and latent variables.

7. Absence of outliers

   The outlier affects the significance of the existence model negatively.

Based on the Sarwanto (2010), structural equation modeling has several functions including:

1. It has possibility to make more flexible assumption.
2. As the used of confirmatory factor analysis that aims to reduce measurement error within many indicators in one variable
3. The interest of graphical modelling interface to simplify the used of result analysis.
4. It has possibility of the model testing in the whole of on each coefficient.
5. The ability of model testing in term of using some variables.
6. The ability of making a model in the error term
7. The ability of making a model within the intermediary variables.
8. The ability of external coefficients testing between some subjects.
9. The ability of solving difficult data.

The main application of the structur al equation modelling such as:

1. Causal modelling or usually called as path analysis, which arranged the hypothesis on the causal relationship.
2. Confirmatory factor analysis is a countinous technical of factor analysis where as hypothesis testing

3. Second order factor analysis, a variance of a factor analysis technique where as correlation matrix of common factor analyzed its factor in term of making second factor.
4. Regression model is a continous technique of linear regression analysis where regression weight is limited.
5. Convariance structure model is a hypothesis model that has different shape of the matrix covariance.
6. Correlation structure model is a hypothesis model that has different shape of the matrix correlation.

Civelek(2018) said that there are two kinds of variables in the structural equation modeling (SEM) such as endogeneous and exogeneous variables. Both of the variables are used in the structural equation modeling as more accurate distinction because a variable can be assumed as dependent and independent variable in one time. A variable called as endogeneous variable if it is a dependent variables explained by other variables. However, it will be exogeneous variables if it is independent variables that are not explained by any variables. More explanation about those two variables is shown on the figure 2.3 below. In the figure, Z, W and T are endogeneous variable. Exogeneous variables in the figure can be shown in part of X and Y.

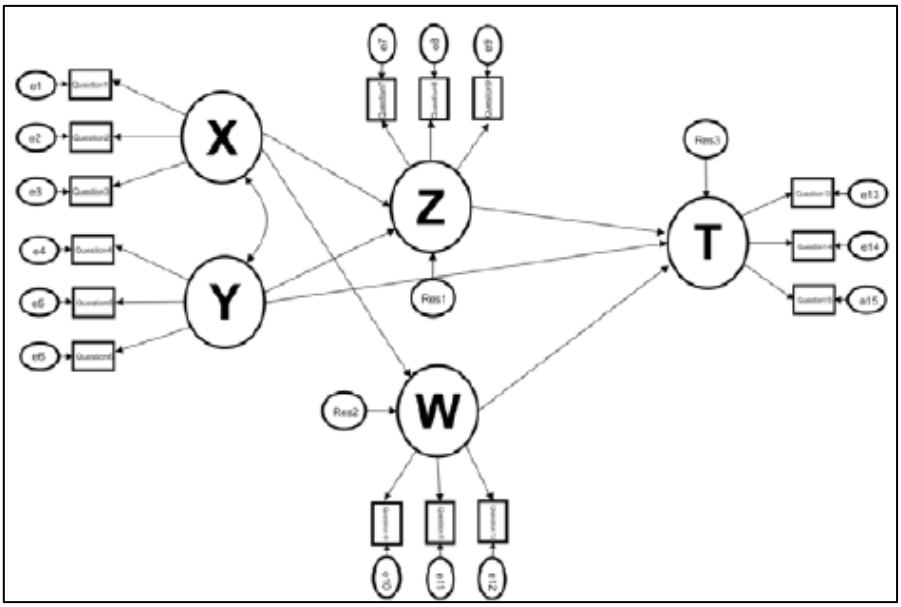

Figure 2. 3Endogeneous and Exogeneous Variables

(Civelek, 2018) suggested that there are several types of structural equation model including:

1. Path Analysis Models

   The basis of strutural equation can be described depends on the path analysis. This model is similar with the multiple regressions, but it is more complex rather than multiple regressions. It is due to one dependent variable in the multiple regressions.

2. Confirmatory Factor Analysis Models

   The theoritically predetermined factor of structure in the structural equation model is confirmed by the current data.

3. Structural Regression Models

   This model is formed by latent variables in the structural equation model. This contains the combination between the measurement model and structural model.

4. Latent Change Model

   These models are used to explain the growth and decay of an event over time, similarities or differences within and between units.

2.2.9 Simulation

Simulation is one of the ways that can be done as problem solving. Shannon (1975) said that simulation is the process to make a model design of real system and also the experiment with the model, the purpose of this model is to understand the system behavior or evaluating various strategies for the operation of the system.

Simulation can be conducted by using many tools including the conventional or modern tools. Uncomplicated simulation can be done by using the conventional tools. However, the complex cases which has sophisticated calculation, is better solved with computer simulation. The examples of the tools for computer simulation are powersim, flexsim, velsim and many others.

1. **Simulation Models**

   Simulation provides characteristics for its model. The models of simulation can be deterministic or stochastic, static or dynamics and continous or discrete. Continous model is applied on the classical mechanics. While, discrete model is more likely about queuing, inventory and machine shop models.

2. **Simulation Advantage**

   There are some advantages of the simulation such as:

1. The company can explore new policies, operating procedures, information flow and others without disrupting ongoing operation of the real system.
2. It is more efficient because simulation does not need committing resources while simulate new model.
3. Time adjustment can be applied to observe the models.
4. The company can find out about the affected variables on the models.
5. Determining the bottleneck, so it can reduce delay.
6. Understanding on how a model operated in a system.
7. "What if" questions can be answered.

3. Simulation Disadvantage

Beside its advantages, simulation also has disadvantages:

1. Models usually have some special treatments, such as the requirement of an input (template).
2. Some of simulation models are difficult to interpret.
3. Simulation modeling and analysis can be time consuming and expensive.

2.2.10 System Thinking

Arnold and Wade (2015) defined system thinking as a set of synergistic analytic skills that used as the capability improvement of identifying and understanding its system, predicting their behaviors and arrangeing modifications. This kind of skills work together as the system.

System thinking has its systemigram in order to its application. The systemigram on the system thinking is divided into eight elements such as recognizing interconncections, identifying feedbcak, understanding feedback, differentiating types of stocks, flows and variables, identifying and undestanding non-linear relationship, reducing complexity by modelling system conceptually and understanding system at different scales. The figure 2.4 shows us about the systemigram flows of a system thinking.

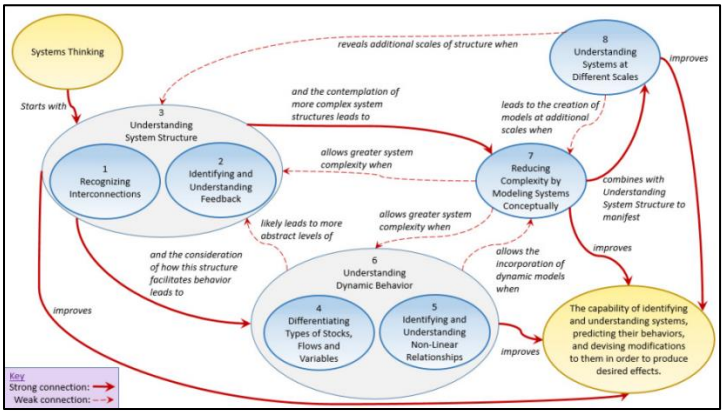

Figure 2. 4 System thinking systemigram

System thinking is used to make the system more efficient. There are some enability of system thinking:

1. Change our thinking about the system which sometimes has dynamics complexity.
2. Communicate with other, trying to find out new ways and rooted understading.
3. Identify and test a wider variety of possible actions.
4. Expand the available choices to us and identify those choices where we can develop significant leverage.

2.2.11 System dynamics

Based on the figure below, system dynamics is the used of system analysis results in term of reconstruct the system of causalities. System dynamics is used to asses the performance of reproducing the events and histories of the system and to predict future behaviour.

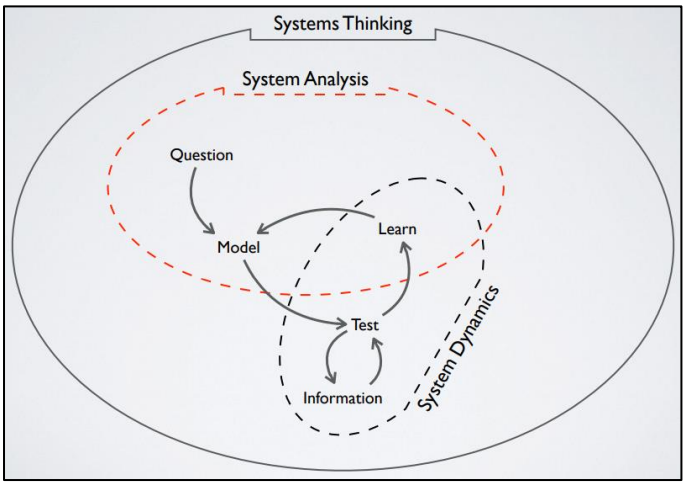

Figure 2. 5 System dynamics

1. Causal Loop Diagram

Causal loop diagram called as influence diagram, it is because the diagram aims to build the model within generally describe the model by cause and effect relationship in the system. By using a Causal Loop Diagram modelers can quickly structure the model based on the assumptions used. There are two things that must be conjectured while the researcher wants to build a causal loop diagram:

1. Variable

   Variable contains about the point that will be observed by the researcher and has influence toward the system

2. Relation/interaction

   The characteristic of system dynamic is that there is a causal relationship from one variable to another, which is represented by an arrow. The relation included

in the system could be positive (+) and negative (-).A positive relationship occurs if one variable gives the same effect as another variable, while a negative relationship is the opposite.

The use of causal loop diagram can be in the varios type of research. Based on Sterman(2000), causal loop diagram is very reasonable to use :

1. Provide a faster hypothesis of cause and effect in dynamic problems.
2. Get a better mental model from individuals and teams.
3. Means of communication to get feedback from problems that occur.

2. Flow Diagram

Flow diagram is the representative of from a detailed form of system depiction. The main purpose of flow diagrams is to represent the flow and structure of the system in detail in order to facilitate mathematical modeling.

Flow diagram is an advanced description of CLD, which in this model already contains formulas and numbers needed in a simulation. In simpler terms, the difference between CLD and flow diagrams is that causal loop diagrams only provide a qualitative relationship by providing various cause and effect perspectives to produce a conceptual model. While, Flow Diagrams will provide quantitative solutions so that they can provide real solutions in accordance with the wishes of the modeler.

There are some variables in the flow diagram:

1. Level (stocks)

Level is an accumulation of other variables. This variable is affected by in rate and out rate. This variable becomes the point in solving problems.

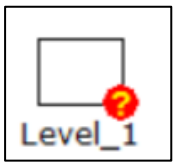

Figure 2. 6 Level Sign

(Sterman, 2000)

2. Rate (flow)

The type of variable that affects the level variable directly. It can contain mathematical calculations and constant variables.

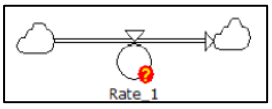

Figure 2. 7 Rate Sign

(Sterman, 2000)

3. Auxillary

This variable provides the basic calcualtion on other variables.

Figure 2. 8Auxillary sign

(Sterman, 2000)

4. Constant

The variable aims to make a fixed value to be used in calculation of auxiliary variables or flow variables.

Figure 2. 9 Constant Sign

(Sterman, 2000)

5. Link

   It is a tool that connected the variables includes the model. Theses tools can be divided between link and delayed link.

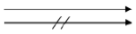

Figure 2. 10 Link and Delayed Link Sign

(Sterman, 2000)

2.2.12 Expert Judgement

Expert judgement or usually called as expert opinion is needed in this research in order to fulfil the data related to provide the rating on the variable, determine the other information that will be needed in this research. Expert judgement fulfils gaps when there are missed data in data collection (Benini , Chataigner , Noumri , Parham, Sweeney, & Tax, 2017). Based on the Benini et al, there are several reason why the researcher has to use expert jugdement as their method as follows :

1. Flawed normal data
2. High uncertainty.
3. Experts are better, faster, or cheaper than other method.
4. Additional validation is required.
5. Available data are rich.

2.2.13 Systematic Literature Review (SLR)

Structured literature review is a methodology that usually used by the researcher(s) to find out and aggregate all of the theories related to their research (Mahad & Saiim, 2014). There are three phases of SLR such as planning review, conducting the review and reporting the review.

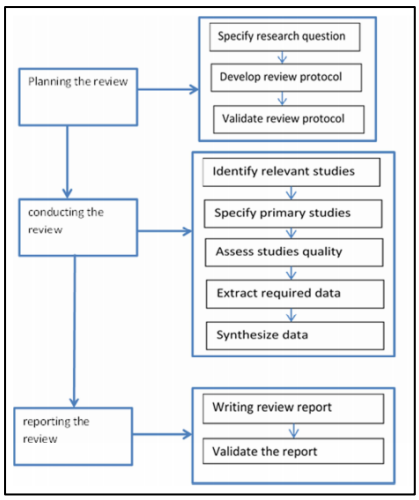

Figure 2. 11 Systematic Literature Review Process

(Mahad & Saiim, 2014)

The theories that are taken for the SLR derived from the previous studies that have been done by other researchers or also other references. The following step below is the step to summarize the journal:

1. Open the publisher's web address (www.emeraldinsight.com; www.sciencedirect.com; www.springerlink.com; https://ieeexplore.ieee.org; www.wiley.com; https://dl.acm.org; www.tandfonline.com; https://ncbi.nlm.nih.gov/pubmed/;).
2. Use the search menu / advance search.
3. Use appropriate keywords, for example "green marketing".
4. Open the article related to the research that will be conducted.

5. Look for DOI code from the paper.
6. Visit the https://sci-hub.tw page.
7. Enter DOI in the box provided.
8. Search for articles based on DOI.
9. Download the paper that has been found.

2.3 Conceptual Model (Framework of Research)

Based on the researchs that have been done before, the conceptual model will be made to facilitate research. The conceptual model that will be made is about the relationship of exogenous variables and the indicator to the endogenous variables. The endogenous variable is customer engagement. The the exogenous variable will be explained below.

1. Enthusiasm

This represents an individual's strong level of excitement and interest regarding the focus of engagement, such as brand. Most of the researches said that enthusiasm gives a positive affecting state both for the work engagement and customer engagement (So, King, & Sparks, 2012). The customer that excited about the activity and participation will has encourage to take risks and overcome difficulties or obstacles (Vivek, 2009). Based on the explanation above, the hypothesis can be proposed that enthusiasm has an influence on customer engagement (**H1**).

2. Attention

Attention refers to a customer's level of focus, consciously or sub-consciously. Huge attention by the customer can lead higher levels of engagement (Scholer & Higgins, 2009). It can be said that the attention as the key dimension of engagement. Attention

can be said as an invisible material resource that can be allocated in multiple ways by a person. Someone with high engaged will focus on the attention of a brand (So, King, & Sparks, 2012). Based on the explanation above, the hypothesis can be proposed that attention has an influence on customer engagement (**H2**).

3. Absorption

Absorption represents effortless concentration, loss of self-consciousness, distortion of time, and intrinsic enjoyment. Absorption means while the customer spending time toward a brand, the time will passing quickly (So, King, & Sparks, 2012). Absorption is the positive impact for the firms, wheres the customer will be absorbed by the brand (Yu, Patterson, & Ruyter , 2015). Based on the explanation above, the hypothesis can be proposed that absorption has an influence on customer engagement (**H3**).

4. Interaction

Interaction includes ideas' sharing, thoughts and feeling of other people about the engaged consumer's participation and the focus of engagement (Vivek, 2009). This refers to both of online and offline participation with the customer. This interaction includesg idea's sharing and exchange. If the engagement increases, the probability of the customer involvement to the company activities will be higher (So, King, & Sparks, 2012). The increasing of the engament level, the interaction will be more interested. Based on the explanation before, the hypothesis can be proposed that interaction has an influence on customer engagement **(H4)**.

5. Identification

Identification will appear when the customers describe themselves as the brand or the product. The customer with high identification towards a brand will call themselves as the brand (So, King, & Sparks, 2012). The customers can be identified by the brand that they use, especially those that match their self-image (Bagozzi & Dholakia, 2006). Based on the explanation before, the hypothesis can be proposed that identification has an influence on customer engagement **(H5)**.

6. Irritation

Beside the variables that increase the value of customer engagement. This research also requires for negative variable. According to the research that has been done by Heinonen (2017), irritation is the negative variable that contributed in the engagement. Iritation means the activity that comes from other customer can also be perceived unfavorly. This variable is related to the misbehavior and perceived disturbances. Based on the explanation above, the hypothesis can be proposed that irritation is negatively affect the customer engagement **(H6)**.

7. Customer Satisfaction

As the additional, So (2014) with other researchers added three variables that also gave positive impact on the customer engagement value. Those three variables refer to the service brand evalutioan including the perception of value for money and customer satisfaction with the puchase. Based on the explanation above, the hypotheses can be proposed that customer satisfaction has an influence on customer engagement **(H7)**.

8. Service Quality

Service quality is perceived as the prosocial behaviour by customers that improves the relationship between the customer and the firm by building the positive affect (Chenet, Dagger, & O'Sullivan, 2010). Based on the Chaniotakis and Lymperopoulus (2009), customer engagement can be positively affected by the service quality within word-of-mouth and customer recommendation. Therefore, based on the preciding explanation, the hypothesis can be proposed that service quality has an influence on customer engagement **(H8)**.

Table 2. 3 Instrument Sources and Measures

Instruments	Source(s)
Enthusiasm	(So, King, & Sparks, 2012) and (Vivek, 2009)
Attention	(Scholer & Higgins, 2009) and (So, King, & Sparks, 2012)
Absorption	(Yu, Patterson, & Ruyter , 2015) and (So, King, & Sparks, 2012)
Interaction	(Vivek, 2009)&(So, King, & Sparks, 2012)
Identification	(So, King, & Sparks, 2012)&(Bagozzi & Dholakia, 2006)
Irritation	Heinonin(2017)
Customer Satisfaction	(So K. K., King, Sparks, & Wang, 2014)
Service Quality	(Chenet, Dagger, & O'Sullivan, 2010)&(Chaniotakis & Lymperopoulos, 2009)

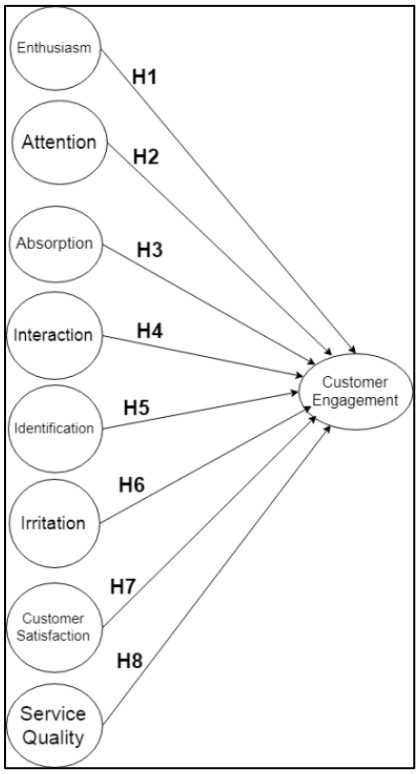

Figure 2. 12 Conceptual Model of Customer Engagement

In order to complete the data, each of the variables above has its own indicators. There are several indicators of the conceptual models that have been prepared which will explain the related variables and attributes in this study. The explanation is shown in the table 2.3 below.

Table 2. 4 Variables attributes

No	Variable	Attributes	Instruments code
1.	Ethusiasm	The customer really like the eco-friendly products offered by Industrial Property Yogyakarta.	EN1
2.		In choosing an environmentally friendly brand, the customer is enthusiastic about Industrial Property Yogyakarta.	EN2

No	Variable	Attributes	Instruments code
3.		The customer feel excited about environmentally friendly products offered by Industrial Property Yogyakarta.	EN3
4.	Attention	The customer is interested in finding out about eco-friendly promotions offered by Industrial Property Yogyakarta.	AT1
5.		The customer gives more attention to the eco-friendly promotions offered by Industrial Property Yogyakarta.	AT2
6.		The customer took the time to look for eco-friendly promotions offered by Industrial Property Yogyakarta.	AT3
7.	Absorption	When the customer interacts with Industrial Property Yogyakarta, I forget about other brands.	AB1
8.		When the customer interacts with Industrial Property Yogyakarta, I feel happy.	AB2
9.	Interanction	The customer like to participate in the brand community to discuss eco-friendly promotions from Industrial Property Yogyakarta.	IN1
10.		The customer like to interact with other people who think the same in the Community Industrial Property Yogyakarta.	IN2
11.		The customer often participates in all the eco-friendly promotions offered by Industrial Property Yogyakarta.	IN3
12.	Identification	When someone criticizes this brand about its campaigning for the environment, the customer feels like a personal insult.	ID1

No	Variable	Attributes	Instruments code
13.		The success of Industrial Property Yogyakarta is the customer's success.	ID2
14.	Irritation	Sometimes I get irritated by some users' moralistic or argumentative behaviour	IR1
15.		Sometimes i am getting disturbed of other customers' discussion	IR2
16.	Customer Satisfaction	As a customer, as a whole, how do you rate Industrial Property Yogyakarta in implementing environmentally friendly programs / products?	
17.		Very dissatisfied - Very satisfied	CS1
		Very unpleasant - very pleasant	CS2
18.	Service Quality	As a customer, what is the rating for environmentally friendly products offered by the Industrial Property Yogyakarta?	SQ1
		Poor – Excellent	
19.		Low Standards – High Standards	SQ2
20.	Customer Engagement	The customer would say positive things about the property brand to other people.	CE1
21		The customer would recommend the property brand to someone who seeks their advice.	CE2
22.		The customer would encourage friends and relatives to do business with this tourism site.	CE3

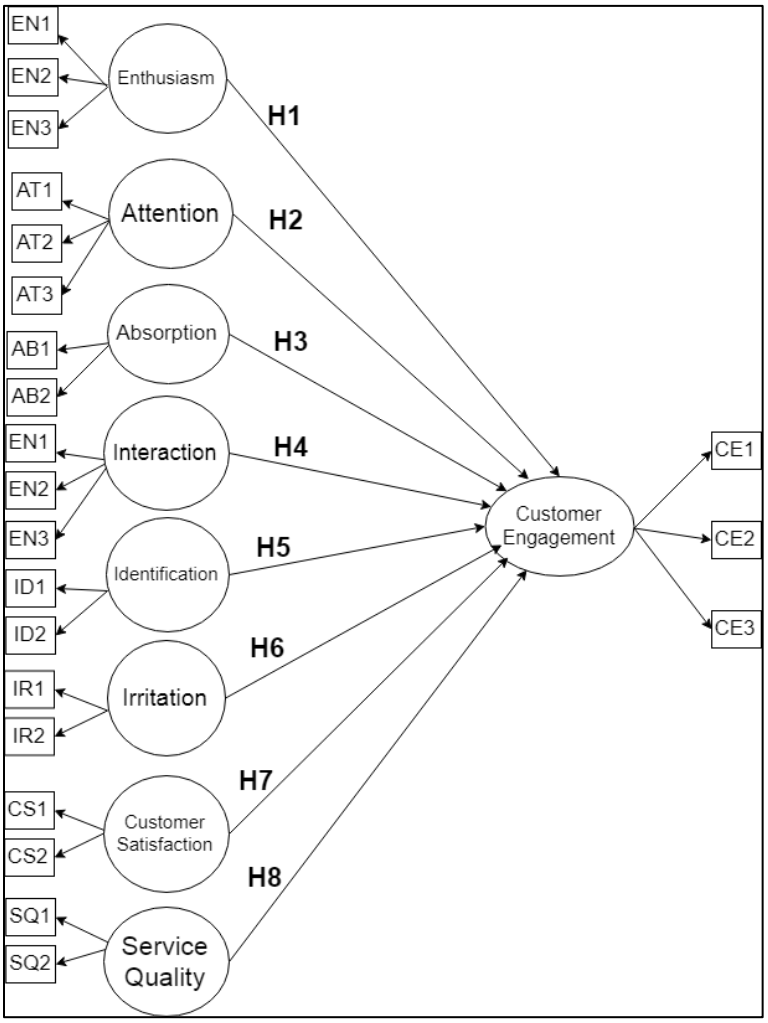

Figure 2. 13 Conceptual Model of Customer Engagement

This research was conducted as the complement version of the previous research that has been done by Nadya Oktarizma in the year of 2018. The last research used three variables only such as identification, interaction and customer satisfaction. However, this research develops the model within eight variables and twenty two indicators involve. The researcher was used SEM calculating such as AMOS software. The researcher also develops the research by adding the system dynamics method. The application of system dynamics is powersim software. After the researcher obtaining the results from the AMOS software, then the fixed variable will be adopted as the raw data to the application of powersim.