CHAPTER 2
LITERATURE REVIEW AND THEORETICAL BACKGROUND

2.1. Distribution Management

Nowadays, many companies are facing problem to consider which kind of best distribution channel for getting their products into market and giving them into customer (Dent, 2008). Because direct selling method from the company to end customer gives highly risk cost, so company chooses to use distribution channel become a better alternative. According to Dent (2008), distribution business are difficult to run because there is no exact rules to achieve maximum competitive advantages. To maximize the business goals, ability to set the distribution system type and to define roles of distribution players become very important.

Distributor business is included manufacturer and customer or retailer as business partner. Understanding each other requirements is very important to build long-term business relationship. Saavedra (2016) stated that managing relationship between manufacturer and distributor is so challenging because relationship type is not similar with customer or supplier relationship but called as partnership. Key element of success partnership is when both parties has same perspective to achieve the goal. According to Saavedra (2016), manufacturer has responsibility to treat the distributor as an extension from the company and to include distributor in the business operation. The challenges that faced by manufacturer perspective to build partnership were maintaining integrity of their brands, attracting top sales talent and creating agreement with distributor. At the other hand, distributor has to realize about this and not just think that as customer that reselling the product but distributor should clearly define and stick to strategy has built, provide market intelligence and ask for help when there is problem occurred during the period of business corporation.

To capture general requirements of distributor selection from manufacturer a journal article by Qurniawati, et al. (2012) mentioned that some criteria that manufacturer needed to choose distributor partnership. Those criteria were initial capital and working capital of distributor, appropriateness of warehouse condition, number of delivery vehicle to support distribution activities, number of sales force and commitment of the distributor itself to support and sell the product of the manufacturer with several regulation that already decided before.

Gupta and Singh (2016) reported a journal article about distributor measurement in service quality using nineteen criteria based on manufacturer perspective. Those criteria were traceability of the system use to track product activities, delivery performance, strategy used to sell the product, logistic system, price of the product, number of profit that shred, financial performance, inventory, capacity of infrastructure, competitive advantage, time to market, lead time, attitude of the person in charge, buy back contract, sales growth, quality when reporting data, efficiency, safety and welfare activity. All of those criteria were support a manufacturer to measure the quality of service level in qualitative and quantitative aspect of distributor.

The criteria that considered by manufacturer to select distributor become important for distributor in order to capture manufacturer perspective. In the process of distributor selection among SMEs, five important criteria categories as performance indicator need to consider, such as distributor abilities in financial and management team, product factors, marketing skills to expand market, commitment and supporting facilitating factors (Cahyono,2010).

In the selection process of intermediary partner in marketing channel there is a framework of criteria needs to be developed. A journal article by Irani, et al. (2011) was developed a framework for a company to select intermediary partner towards four categories of criteria. Those criteria were payment term, negotiation and sales contract, management and customer support that intermediary partner agree to commit also how wide coverage area of selling product.

Another research reported by Lin and Chen (2008) discussed about the determinants of manufacturer selection criteria towards distributor. Those were four criteria categories needed to consider. First was firm infrastructure that mostly explain about the management ability, financial strength, experience and physical facilities that provided by distributor to support manufacturer. Second was marketing capabilities that included sales competence, market coverage and product lines. Then, relationship intensity that deeply talked about enthusiasm, commitment and willingness to share the information about current market condition to give recommendation about business strategy of manufacturer. The last was logistic capabilities that described about inventory management, efficient ways to deliver the goods, fulfillment customer orders system, what kind value

added that can distributor to support delivery service, the way to handle delivery cost and how much distributor put effort to give good customer service.

Based on Royan (2010) in distributorship management book, explained that key performance indicators to measure current distribution performance towards principal perspective divided into three categories. First was coverage included some criteria such as number of outlet survey, number of effective call, number of active outlet and area coverage. Second was capability that discussed about number of product that handled by distributor, number if sales force, warehouse area, number of delivery vehicle, administration system and customer service and the last category was capital that included money and equipment.

A journal article by Cahyono (2010) defined that factors which affected a long term business corporation of distributor and its manufacturer were, reputation of the distributor in the society, commitment, trust, dependency, satisfcation, communication and competitive advantages. Reputation talked about the prevoius business corporation with the previous or existing principals. Then commitment talked about how both parties believed with each others to maintain every values that agreed in the contract has been made before the corporation started. Credibility dicussed about how much company believed with the distributor, this factor could be measured with the abilities of distributor to complete its statement has been promised before. Dependency talked about the reason of the company should maintain the corporation with the distributor and would not choose another distributo while satisfaction mostly talked about how much distributor could satisfied the company through emotionally aspects. The next factor was communication that covered about the main way used by the distributor to keep in touch with the company, to share any infromations and problems that occurred during the period of corporation and to solve any unpredictable conflicts. The last is competitive advantages that explained any beneficial strategy that built by distributor rather than other competitors.

To make distributor business growth, as a distributor needs to check, measure and evaluate the performance based on their own perspective especially in the margin and capital. Some indicators used to measure current condition were number margins and profitability, working capital management, productivity measurement in gross margin and contribution margin also maintain sustainability by measuring return on investment (Dent, 2008).

2.2. Performance Measurement

Performance is a level of achievement of a result on the implementation of a particular task while company performance is a level of achievement from a company in order to fulfill the company goals. Company performance are affected by three main factors, which are support from the organization, ability, management effectivity and also performance of each individuals that included of the organization. Performance measurement is used to increase individual performance in an organization or a company in order to increase the overall performance. By conducting a performance measurement, the management can realize the level of achievement of each performances and evaluate any performances that are still under expectation so every level of management will motivate to increase the performance (Worldailmi, 2012).

Performance measurement only can be done after designing a measurement system. Design step is an important step of the performance measurement activity because in this step, any good and bad of performance will be identified. In general, the performance measurement steps are divided into five steps, which are design step, measurement step, evaluation step, planning step and re-evaluate step, means that performance measurement process in a continuity cycle. In the design step, the most important thing is to find and identify model of measurement will be used, the framework until to decide the Key Performance Indicator (KPI) as basis of the overall measurement system. Key Performance Indicator (KPI) used as a tools to give assessment in measurement step, so every Key Performance Indicator will be used to measure should be relevant and provides a clear result. Then, an evaluation step can be done based on result of every key performance indicators.

2.3. Rubric

The word rubric states by Merriam Webster in online dictionary means an authoritative rule, another meaning of rubric is a guide listing specific criteria for grading or scoring academic papers, projects, or tests (Brookhart and Chen, 2015). Hafner and Hafner (2003) stated that rubric is a simple scoring tools which describe the level of performance in each measurement criteria that used to assess the work of students from the lowest education level until highest education level. There are some advantages of using rubrics for grading system:

a. Rubric can be used as an objective and consistent assessment guidelines that clearly explain every criteria measurement.
b. Rubrics can provide information about weight of assessment in each level of student ability
c. Rubric can motivate the students to be more active in study
d. Students can use the rubric to determine the learning strategies
e. Students get an accurate feedback
f. Rubrics can be used as instruments for effective reflection about the learning process that has been attempted

In general, the step to design a rubric there are some basis component that should be completed, which are aspect or criteria will be measured, scale or category of each criteria, description of each criteria and the last is calculation of the total score. The important thing to design the scale or category is considering about how many level that will be used. Based on the experience of many observations, the number of the scale that recommended to design a rubric is about 3 until 5 scale, because if number of scales are less than 3 scales probably each of score cannot capture overall measurement and if the scales are more than 5 probably can give too much difficulties to the respondent. Scale that used in this rubric can be in quantitative number or qualitative based on the level of accuracy that needed by the evaluator.

Based on journal article from Kemenristekdikti (n.d) stated that there are two types of rubrics, Analytic Rubric and Holistic Rubric. Analytic Rubric is a rubric that used commonly to assess student performance. This rubric is used to assess assignments that can be divided into domains or criteria and every criteria that provided can be individually assessed. The element of analytic rubric can be seen based on matrix table below.

Table 2.1. Element of Analytic Rubric

Criteria/ Domain	Name of Task			Score of Each Criteria
	Performance Level 1	Performance Level 2	Performance Level n	
	Score	Score	Score	
Criteria 1				
Criteria 2				
Criteria n				
				Total Score

Note: Score is given numerically by using scale 1-10 or 1-100 depend on the level of accuracy of the score

To calculate the score of the rubric is using this following formulation,

$$\textit{Current Score of Measurement} = \textit{(Score of Each Aspect) / (Maximum Score)} \times 100 \quad (2.1)$$

While, holistic rubric is used when each criteria cannot be assessed individually. This case can be happened if there is interrelated and overlapped of criteria. Same way with complex creative tasks where the process can be approached in a variety of ways by students and the task is too difficult to be divided into components or criteria of assessment. For this reason, holistic assessment is conducted. In holistic rubrics, the score that given will be articulated into descriptive statements.

The element of holistic rubric can be seen based on matrix table below.

Table 2.2. Element of Holistic Rubric

Name of Task		
Grade	Score	Description of Grade
Grade 1	Score Grade 1	Description Grade 1
Grade 2	Score Grade 2	Description Grade 2
Grade n	Score Grade n	Description Grade 3

Note: Score is given numerically by using scale 1-10 or 1-100 depend on the level of accuracy of the score.

2.4. Pairwise Comparison

Pairwise comparison method is based on the psychological observation by some expert that said people brain was difficult to compare more than 5 until 9 values or conditions in one moment. Recently, the concept of pairwise comparison was implemented in Analytical Hierarchy Process (AHP) method that found by Thomas L. Saaty (Ramik, 2017). In AHP, pairwise comparison become an intrinsic part. Jayant (2018) explained in detail that, pairwise comparison use to set the priority and can be done by constructing pairwise comparison matrix. The method of conducting pairwise comparison matrix according to Saaty (1994) in (Ramik, 2017) as follow this steps:

1. Design Pairwise Comparison Matrix

Pairwise comparison matrix is a real n x n matrix A, which n is the number of criteria or condition that considered to compare. Each entry of a_{jk} of matrix A represents the level of importance of j-th criterion relative to k-th criterion. If, a_{jk} has value more than one, means that criteria j is more important rather than criteria k and vice versa. If two criteria have same level of importance, so the value a_{jk} become one. So, the constraint to make pairwise comparison matrix follows this formula:

$$ajk \, .akj \; = 1 \qquad (2.2)$$

In short, the pairwise comparison matrix will be in form of the following figure.

Attribute	A_1	A_2	...	A_n
A_1	1	a_{12}	...	a_{1n}
A_2	a_{21}	1	...	a_{2n}
...	...	...	1	...
A_n	a_{n1}	a_{knj2}	...	1

Figure 2.1. Pairwise Comparison Matrix

AHP employs an underlying scale with values from 1 to 9 to rate relative preference, as follow at Table 2.3. Table of Preference Point Scale.

Table 2.3. Table of Preference Point Scale

Intensity of Importance	Definition	Description
1	Equal Importance	Two activities contribute equally to the objective
3	Weak Importance of one over another	Experience and judgement slightly favor one activity over another
5	Essential or strong important	Experience and judgement strongly favor one activity over another
7	Demonstrated importance	An activity is favored very strongly over another, its dominance demonstrated in practice
9	Absolute importance	The evidence favoring one activity over another is of the highest possible order of affirmation
2,4,6,8	Intermediate value between the two adjacent judgment	When compromise is needed

2. Calculating Geometric Means

Assessment of pairwise comparisons that involved more than one expert will result in different assessments. The results of the assessment of each expert will be combined and calculated into a comparative value that represents all assessment results. The merger is done by finding an average. The method is used to find an average value is Geometric Mean.

Each value of each pairwise comparison results is multiplied by each other and rooted according to the number of experts. Mathematically, the formulation of geometric means is written as follows:

$$\mu ij=\sqrt{(n\&aij1aij2….aijn)} \quad (2.3)$$

Where,

μij : Geometric mean of row-i and column-j

n : number of expert

3. Calculating Eigenvector Value (λ)

After all number of matrix are developed and the result of geometric mean is achieved, the next step is to calculate the eigenvectors or called as relative weights (the degree of relative importance amongst the elements) and the maximum Eigen-value (λ max). To calculate the Eigen-value in row i, first of all the Eigen-vector in every row (w) should be calculated is using the formula:

$$Wi = \frac{Geometric\ Means\ row\text{-}i}{Total\ Average\ of\ Geometric\ Means\ Accumulation} \quad (2.4)$$

After finding each of Eigen-vector the value of Eigen-value (λi) can be calculated by multiplying all of elements of matrix pairwise comparison with Eigen-vector of each criteria so there will be a new column in the matrix. While, to find the maximum Eigen-value (λ max) can be found by calculated the average number of all Eigen-value (λi).

$$Total\ Matrix = \sum_{j=i}^{m} aixwj \quad (2.5)$$

While the Eigen-value (λi) can be calculated by this formula:

$$\lambda i = \sum_{j=i}^{m} ai\ x \frac{wj}{wi} \quad (2.6)$$

where,

λi : Eigen-value row-i

ai : value of matrix row-i

wj : Eigen-vector column j

wi : Eigen-vector column i

m : number of rows

The value of Eigen-value(λ max) value is used to validate parameter in AHP and can be used for computing consistency ratio CR of estimated vector as validation computation that prove that pair-wise comparison matrix has been developed is consistent.

4. Checking the consistency

This step is very important because prove the quality of ultimate decision relates to the consistency of judgements that decision maker made at pairwise comparison steps. AHP provides measurement judgement in order to computing consistency index and consistency ratio to evaluate about decision that make. To calculate the consistency, first calculate the eigen-vector or the relative weights and λ max for each matrix of order m then calculate the consistency index for each matrix with formula, as follows:

$$CI=(\lambda max - n) / (n-1) \quad (2.7)$$

After finding consistency index, then calculate the consistency index that determine indication of inconsistent judgement.

$$CR=\frac{CI}{RI} \quad (2.8)$$

Where,

CI = Consistency index

CR = Consistency ratio

RI = Random index

n = Number of elements

To find Random Index can be seen as table below, Table 2.4. Table of Random Index.

Table 2.4. Table of Random Index

N	3	4	5	6	7	8	9	10	11	12	13	14	15
CI	0.58	0.9	1.12	1.24	1.32	1.41	1.45	1.51	1.52	1.54	1.56	1.57	1.59

If the value of CR is equal to, or less than that value indicates as good level of consistency in the comparative judgments determined in comparison matrix. Vice versa, if CR is more than the acceptable value will be indicates as inconsistency of judgments that suggest to do evaluation process for reviewing, reconsidering and improving judgement. Random consistency index (CI) varies depend on the order of matrix.

2.5. Traffic Light System

Alda,et al (2013) stated Traffic Light System used to give a signal to the scoring system whether score or a Key Performance Indicators indicates the need for improvement or not. In the traffic light system there are three colors used i.e.

a. Green colors

   Green means the achievement for a Key Performance Indicator has been achieved.

b. Yellow colors

   Yellow means that the management must increase level of carefulness because the achievement still has been achieve although close to the target.

c. Red colors

   Red means achievement is below the target set and needs immediate repairs.

2.6. Customer Satisfaction Index (CSI)

Nurfarida (2015) stated that in accordance with Customer Satisfaction Index (CSI) theory, to categorize the assessment criteria can be done using several steps, i.e.

a. Define the lowest value (a) and highest value (b) that can be reach at the assessment.

b. Define the range of the lowest value and highest value (r).

c. Determine the interval based on the range (r) and the number of level (n) that needed. This formulation as follow,

$$c=\frac{a-b}{n} \quad (2.9)$$

d. Determine the range of each level as follow,

$$b + nc \leq CSI \leq a \quad (2.10)$$