Human resource competency relationship and competitive advantages in logistic performance improvement

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Abstract. Logistic problems often occur in the field such as problems in the material demand process, problems in negotiations and material purchases, material delivery problems, the process of receiving and storing goods and material issues. This issue is assessed on the basis of competence of Human Resources and competitive advantage. Data processing based on Structural Equation Model. A result of research has positive effect Human Resource Competence and Competitive Advantage to Logistic Performance.

1. Introduction

Logistics is very important in development that is aiming to get the right goods, at the right time, with the right amount, the right conditions, at a reasonable cost. In this case even though the company has a high product but if the logistics are not appropriate so that the company's goal is still difficult to achieve. Problems are many that cause it, one of which is human resources. Human resources needed so far have not provided an important role in improving logistics performance.

Considering the increasing economic growth, there are still problems that occur in the field such as problems in the material demand process, problems in negotiation and material purchasing, material delivery problems, the problem of the process of receiving and storing goods and the issue of material expenditure. Other problems in the field of logistics also [1] are: price of commodity goods / prices is more expensive than in some other countries, the difference of price, the price of fluctuating commodities with high price difference and the frequent scarcity of commodity goods in need. Apart from the above problems there are other factors that hamper the smooth logistics of maritime connectivity that has a large archipelago, shipping costs, information and communication technology and infrastructure. The above problems indicate that logistics performance has not been efficient or logistics performance is still low [2].

The highly developed potential is supported by the birth of an electronic-based 4.0 industry era, which is an accelerated and e-commerce optimization effort to minimize the timeliness of delivery. The e-commerce roadmap 2017-2019 provides guidance and preparation and implementation steps based on a range of electronic devices and procedures [3].

Very rapid changes in the environment greatly affect the ability of human resources (HR) itself. HR that develop from time to time due to adjusting to the needs of the company itself. Trends such as globalization and increased competition have put HR at the forefront and key positions in corporate sustainability. From some previous researchers such as Abu Bakar [4], stated that the competence of human resources is very influential on the performance of logistics while research Phana Dullayaput [5], Daw Nge [6] and Arulrajah [7] stated human resources have no effect in logistics performance.
Looking at the results of previous researchers still, occur research gap then the authors are interested to continue research. Further research conducted by the author is to examine how the competence of human resources needed to obtain superior logistics performance.

To achieve a strong competitiveness in the field of logistics needs to be supported by logistics personnel who have competence, a trusted professional to realize the efficiency and effectiveness of logistics performance itself. To be able to achieve the human resources it is necessary to review and evaluate a competence that excels in the field of logistics.

1. Problem formulation
Based on the above background then the formulation of the problem is;
1. What competence variables are influential in improving logistics performance so that it can answer the weaknesses why not integrated logistics so far?
2. Can competence of human resources improve logistics performance so as to establish the maximum level of service to overcome the weakness of logistics performance?

1.2 Object of research
The research objective of designing an effective concept framework model is used identify weaknesses and advantages of logistics performance. The general purpose of this study can be described as below:
1. Developing competency variable of human resources to improve logistics performance that can be applied in general in a company.
2. Develop an effective model of human resource competency knowledge to emphasize logistics costs in the system.
3. Making recommendations and generalizations of human resource competency models on logistics performance that can be used in the field.

2. Platform theory

2.1 Logistics theory
Etymologically, logistics is derived from the ancient Greek language consisting of two syllables, namely "Logic" which means rational, reasonable and accountable. The second syllable is "Thicos" which means thinking. If the meaning of these two syllables is strung together, it has the meaning of rational thinking and can be accounted [8] As the time progresses, the meaning of logistics undergoes a shift. Logistics is the entire material, goods, tools, and means necessary and used to assist the activities of the organization in the context of achieving the goal.

The above opinion is reinforced by the opinion of Lukas Dwiantara and Rumsari H.S which mentions "Logistics are all things or tangible objects, which are used to carry out principal activities as well as supporting activities (administration)" [10]

While Yolanda M. Siagian [11] sees logistics in terms of the business world: Logistics is part of a supply chain process that functions to plan, control effectively, efficiently the procurement process, management, storage of goods, services and information from the point of origin to point of consumption in order to meet the needs consumers. Thus the logistics are everything either in the form of materials, goods, tools, or means used to assist the activities of the organization in the context of achieving the goal.

Logistics increasingly plays an important role in everyday business, and is a major factor of market differentiation, as referred to by Bowersox et al. [12], Gunasekaran and Ngail [13]. The current competitive climate exists strong pressure to operate product and service differentiation, and on the other hand, operates on price factors that enable logistic cost reduction.
Logistics is a term used to describe the transportation, storage, and handling of products when moving from raw material sources, through manufacturing systems to the end point of sales where purchases occur for final consumption (McKinnon et al. 2009). [14] Logistics consists of the following activities:
1. Transportation of goods
2. Storage
3. Inventory management
4. The overall handling of materials
5. Processing related information

Research from Fugate et al [15], empirical research to analyze the interrelationships between different variables of logistics performance and its impact on organizational dimensions, conceptual model in figure 1.

![Figure 1. Logistic Performance Model](image1)

Source: Fugate et al. (2010)

Results of the study were found by Fugate et al, [15] Li et all. [16], and Toyli [17] developed by Rui Mansiddo [18], became the basis for research development for Researchers by taking Variable Logistics Performance and Competitive Advantage. But it does not take the company's Performance Variables because that will be developed later is Logistic Performance. Logistics Performance which will be the purpose of the search will be done.

![Figure 2. Concept Model of Logistics Performance, and Competitive Advantage](image2)

Source: Rui Mansiddo (2014), Li et al, (2006), Ebrahim Karim (2014), Toyli at al, (2008).
2.2 Competence

Competence is the ability to perform or perform a job and based on the skills and knowledge and supported by the work attitude demanded by the work Wibowo [19]. According to Spencer and Spencer [20], competence is the basic foundation of people's characteristics and identifies ways of behaving or thinking, equalizing situations and supporting for long periods of time. Organizational performance that is influenced by human resources according to Arulrajah [21] gives a positive result on performance. Indicators that affect human resources are an input and innovation in achieving performance. Indicators according to Arul rajah like the model below:

Based on the results of research from Dullayaput, et al [5] Human resource competence consists of three elements of competence factors consisting of basic knowledge, skills and attributes meta-quality seta relationships provide 14 components of different variables. The concept of Human Resources Competence can be seen as the following figure:

Based on literature reviews relating to human resource competence so that there are three variables (Know How, Skill and Self Concept) Harmein [22] with each having three indicators: Know How consists of performance indicators, analytic thinking and information knowledge; Skills with indicators of practical expertise, Conceptual thinking, and Linguistic abilities, and Self Concept consist of indicators of Initiative, Certainty of work and teamwork. This indicator becomes an indicator of human resource competence selected to be included in the survey questionnaire and used to collect data or information in writing.
2.3 Competitive advantages
Competitive advantage is created when the correspondence between the distinctive competencies of the firm and the critical factors for success in the industry allows the company to outperform its competitors. The results of his research belows:
1. Competitive advantage is achieved when a firm executes a cost strategy to offer products at a lower price than competitors.
2. Competitive advantage can be achieved by product differentiation strategy so that customers have a perception of the unique benefits that justify the high price.

There are several indicators that can be used to measure the competitive advantage of a company. Li, et al. [16] competitive advantage is measured using indicators; price, quality, delivery dependability, product innovation, and time to market.

![Figure 5. Model of Competitive Advantage](source)

Concept model Researchers thinking as follows:

![Figure 6. Concept Framework](source)

This concept was developed with influencing variables from several previous researchers such as Individual indicators of human resource competence derived from the results of Spencer and Spencer’s research [20], Harmein [22], Daw Nge [6], Arul Rajah [7], Phana Dullayaput [5], Udompong [23] in the form of indicators: Know How, Skill and Self Concept. This indicator is used to collect information and data in the Research.
2.4 Hypothesis formulation

2.4.1 Formulation hypothesis know how with human resources competence
H.0: Know How Factor has no effect on Human Resource Competence
H.a: Know How Factor positively influence Human Resource Competence

2.4.2 Formulation of Skill Hypothesis with Human Resource Competence
H.0: Skill Factor has no effect on Human Resource Competence
H.a: Skill factor has a positive effect on Human Resource Competence

2.4.3 Self Concept Hypothesis Formula with Human Resource Competence
H.0: Self Concept Factor has no effect on Human Resource Competence
H.a: Self Concept Factor has a positive effect on Human Resource Competence

2.4.4 Formulation of Human Resources Competency Hypothesis with Competitive Advantage
H.0: Human Resources Competency Factors have no effect on competitive advantage
H.a: Human Resource Factor positively influence to Competitive Advantage

2.4.5 Hypotheses Formulation Competitive Advantage of Logistics Performance
H.0: Factors Competitive advantage has no effect on Logistics Performance
H.a: Factors Competitive advantage positively affects Logistics Performance

2.4.6 Formulation Hypothesis of Human Resources Competence with Logistics Performance
H.0: Human Resources Competency Factors have no effect on Logistics Performance.
H.a: Human Resource Competence Factors have a positive effect on Logistics Performance

3. Results and evaluations
Data collection was conducted at convection business in Sumatera by taking samples of 350 respondents with probability sampling method, Sukaria [24] with reason because the area is so vast that random sampling is done. The number of samples taken based on Generalized least squares estimation technique with the amount of data 200-500 samples. Data processing of the research by distributing questionnaires was done by using structural equation model, Haryono (25).
3.1 Test validity and reliability
Validity test is done to find out a measuring instrument can measure real condition. Instrument question items are said to be valid if t-count more ≥ t-table. Calculation of validity assisted with SPSS program version 19. Based on the r product moment table, where the amount of data is 30 then degrees of freedom (dk = 30 - 2 = 28), with a confidence level of 95%, obtained r-value of 0.362 (r-critical = 0.362). All data is valid and Reliability.

3.2. Match analysis
The analysis of data matching level with the model is done through several stages, namely (Wijanto, 2008):
b. Compatibility analysis of measurement model (measurement model fit)
c. Compatibility analysis of the structural model (structural fit model)
Recapitulation of the calculation results in table 1.

| Table 1. Overall Model Match Analysis Results |
|----------------------------------------------|
| Size GOF | Target match rate | Estimation result | Match rate |
|---------|-------------------|-------------------|------------|
| Chi-square | Goodness of Fit Index (GFI) | ≥ 0,90 | 0,868 | Marginal fit |
| Probability | Root Mean Square Error of Approximation (RMSEA) | ≥ 0,05 | 0,000 | Good fit |
| CMIN / DF | Small value | 1216,146 | Not good |
| Non-Centrality Parameter (NCP) | Small Value | 374,146 | Not good |
| Root Mean Square Residual (RMR) | Small Value | 0,045 | good fit |
| Adjusted Goodness of Fit Index (AGFI) | ≥ 0,90 | 0,852 | Marginal fit |
| Tucker-Lewis Index (TLI) | ≥ 0,90 | 0,807 | Marginal fit |
| Normed Fit Index (NFI) | ≥ 0,90 | 0,592 | Not Good |
| Incremental Fit Index (IFI) | ≥ 0,90 | 0,825 | Marginal fit |
| Comparative Fit Index (CFI) | ≥ 0,90 | 0,820 | Marginal fit |
| Parsimonious Normed Fit Index (PNFI) | ≥ 0,90 | 0,552 | Not Good |
| Parsimonious Goodness of Fit (PGFI) | ≥ 0,90 | 0,773 | Not Good |

Source: Data Processing (2018)

The results of the calculations are still there that are less good so it is recommended for modification of the model. Modification model (modification indices) is done to add several lines of correlation between latent and residual. This addition will lower the Chi-square value and raise the probability price and other goodness of fit size (Widagdo, 2011). Modified Results as Table 2.
Table 2. Overall Match Model Modification Results

| Size GOF                                | Target match rate     | Estimation result | Match rate   |
|-----------------------------------------|-----------------------|-------------------|--------------|
| Chi-square                              | Nilai yang kecil      | 955,736           | Good fit     |
| Goodness of Fit Index (GFI)             | ≥ 0,90                | 0,895             | Marginal fit |
| Probability                            | ≤ 0,05                | 0,000             | Good fit     |
| Root Mean Square Error of Approximation (RMSEA) | ≤ 0,08          | 0,024             | Good fit     |
| CMIN / DF                              | < 5 (wheaton,1977)    | 1,205             | Good fit     |
| Non-Centrality Parameter (NCP)         | Nilai yang kecil      | 162,736           | Good fit     |

Source: Data Processing (2018)

From Table 2, it can be seen that there are 8 GOF sizes showing good matches, 3 GOF sizes showing marginal fit and 2 GOF sizes showing poor matches. This indicates that although there are some GOF sizes indicating poor matches most of the GOF sizes show a good match, it can be concluded that the overall fit of the modified model is good (good fit).

3.3 Compatibility analysis of measurement model (measurement model fit)
All default loading factor values of the indicator variable (≥ 0.5). Thus it can be stated that the validity of all manifest variables to latent variables is good. After the analysis of the validity of the construct done, then the next stage is to analyze the reliability of the construct. Here's the calculation of construct reliability (CR) and variance extracted (VE) that has been done.

Table 3. Measurement Model Analysis

| Pengukuran             | Hasil Perhitungan | Keterangan |
|------------------------|-------------------|------------|
|                        | CR    | VE    |
| Know How               | 0.885 | 0.556 | Good    |
| Skill                  | 0.894 | 0.517 | Good    |
| Self Concept           | 0.902 | 0.508 | Good    |
| Competitif Adventage   | 0.857 | 0.501 | Good    |
| Logistics Competence   | 0.819 | 0.569 | Good    |

Source: Data Processing (2018)
### 3.4 Match analysis of structural model (structural model fit)

The calculation result of all parameter values of latent variables on structural model significantly give positive influence to endogenous latent variable. In Table 4, summarizes the results of the evaluation of the structural model in this study.

| Path         | t-count | Parameter Value | Probability | Conclusion                        |
|--------------|---------|-----------------|-------------|-----------------------------------|
| KSDM → KH    | 2.074   | 0.496           | 0.028       | Positive and Significant impact    |
| KSDM → SK    | 2.161   | 0.425           | 0.026       | Positive and Significant impact    |
| KSDM → SC    | 2.116   | 0.489           | 0.017       | Positive and Significant impact    |
| KSDM → KK    | 2.861   | 0.172           | 0.083       | Positive and Significant impact    |
| KL → KK      | 2.554   | 0.345           | 0.011       | Positive and Significant impact    |
| KL → KSDM    | 2.076   | 0.249           | 0.031       | Positive and Significant impact    |

Source: Data Processing (2018)

### 3.5 Evaluation of research hypotheses

3.1.1 Hypothesis 1: The value of t-count (critical ratio value) = 2.284 > 1.96 is in the acceptance and probability 0.028 < 0.05, it can be stated that H1 is accepted, that is know how positively and significantly affect the competence human Resources.

3.1.2 Hypothesis 2: The value due to t-count (critical ratio value) = 2.277 > 1.96 is in the acceptance and probability 0.026 < 0.05, it can be stated that H1 is accepted, that skill positively and significantly influence to competence human Resources.

3.1.3 Hypothesis 3: The value of t-count (critical ratio value) = 2.229 > 1.96 is in the acceptance and probability area 0.017 < 0.05, it can be stated that H1 is accepted, ie the concept of the concept has a positive and significant effect on the competence human Resources.

3.1.4 Hypothesis 4: The value of t-count (critical ratio value) = 2.993 < 1.96 is outside the acceptance and probability area 0.083 < 0.05, it can be stated that H1 is rejected, which expresses the competence of human resources positively and significantly against excellence.

3.1.5 Hypothesis 5: The value of t-count (critical ratio value) = 2.514 > 1.96 is in the acceptance and probability 0.011 < 0.05, it can be stated that H1 is accepted, ie the support of human resource competence positively and significantly on logistics performance.

3.1.6 Hypothesis 6: The value due to t-count (critical ratio value) = 2.076 > 1.96 is in the acceptance and probability 0.038 < 0.05, it can be stated that H1 is accepted, ie the competence of human resources positively and significant to logistics performance.

### 4. Conclusions and recommendations

#### 4.1 Conclusions

1. The most influential variable of human resource competence in improving logistics performance is know how with factor coefficient 0.496, skill with factor coefficient 0.425, and self-concept factor coefficient 0.489. This supports the Harmein (2012) and Arul Rajah (2014) variables and rejects the opinions of Phana Dullayapat (2013), Yakubu et al (2011) and Dawng et al (2016). For variables, Competitive advantage strongly supports indicator by researcher Li, B. Ragu-Nathan, T.S. Ragu-Nathan, and Rao, (2006) and gave a significant positive value to this study.

2. The results showed that the Competence of human resources affect the performance of Logistics seen from the results of the hypothesis that human resource competence affects the significance of logistics performance. Competitive advantage also affects logistics performance. Based on the value of direct or indirect influence that the competence of human resources gives the effect of 0.395 to logistics performance and 0.249 to competitive advantage.
4.2 Recommendations
1. For further research, it is expected to develop a logistics performance measurement system in general and find the variables that influence it. Besides, it can develop other variables that affect logistics performance.
2. The results of research that has been done, would be an input for the business associated with logistics to be implemented in an effort to improve company performance. The steps that can be taken to implement the research results are:
   a. Establish a socialization team to analyze research results and communicate them to stakeholders of logistics, procurement sections and company leaders related to logistics performance.
   b. Elaborate on the results of research with reality in the field.
   c. To evaluate the employees of the logistics department to the performance achieved after the implementation is done to know the weakness so that it can be improved.

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