Analysis Influence of Managerial Competence, Technical Competence, and Strategic Competence on Firm Performance in Electrical Engineering Company in Bandung

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Abstract. The industry sectors that have an important role in the era of globalization is the electro engineering sector. The era of globalization led to intense competition. One of the negative effects of the intense competition is declining profits. Drop in profits caused many firms reduces their employees without seeking the root cause of declining profits in detail. Whereas, employee is the important resources to maintain competitive advantage. Competitive advantage can be measured by the performance of which is owned by the firm. The firm's performance can be formed of competencies that is unique, rare, irreplaceable, and difficult to imitate within the firm, one of them is the competence of the individual. According to a competency-based approach and the resource-based approach, individual competence that affect the performance of the firm is managerial competence, technical competence, and strategic competence. Questionnaire is built based on the dimensions of the firm's performance, managerial competence, technical competence, and strategic competence. Questionnaire is built based on the dimensions of the firm's performance, managerial competence, technical competence, and strategic competence, are processed using partial least squares application. The results indicate that managerial competence negatively impact firm’s performance with weak ties. The technical competence and strategic competence positively affect firm’s performance with moderate ties.

1. Introduction
The industry sectors that have an important role in the era of globalization is the electro technical sector \[14\]. The era of globalization led to intense competition. One of the negative effects of the intense competition is declining corporate profits. Drop in profits caused many firms reduces their employees without seeking the root cause of the decline in profit factors in detail. Whereas, the employee is one of the necessary resources to maintain a competitive advantage. According to a competency-based approach \[6\] \[11\] and the resource-based approach \[6\] \[11\], individual competencies that affect the performance of the firm is managerial competence \[3\] \[15\], technical competence \[2\] \[4\] \[8\], and strategic competence \[13\]. Individuals who have a vital role is at the level of middle management employees such as managers, senior managers, and general managers \[8\] \[11\]. The firm which is used as a research study is state-owned enterprises in the field of electrical engineering and its subsidiaries in Bandung. Models built in this study consists of the dimensions of firm performance, managerial competence, technical competence and strategic competence to act as second order latent variables. The dimensions of firm performance are consisted of three indicators, namely market share, sales growth, and customer satisfaction that were acted as first order latent variables \[4\] \[9\]. While the managerial competence is composed of 11 dimensions, technical competence is composed of two dimensions, and strategic competence is composed of two dimensions. All dimensions of the three competencies are acts as second order latent variables. The purpose of this study was to confirm the effect of the managerial competence, technical competence, and strategic competence of the firm's performance in state-owned enterprises in Bandung, Indonesia.
2. Material and Methods

2.1. Literature Review on Competencies and Firm’s Performance

Resource-based view emphasizes the importance of internal resources to maintain a competitive advantage. This view proved that firm performance is a function of how well the manager builds the firm by using the resources of high value, rare, not easily imitated, and difficult to replace. The ability of the manager is a resource that is not easily replicable and related to company performance [10].

The competence became general discussion on human resources systems to compare humans with other resources you need. This view helps firms to identify the knowledge, skills, attitudes, and capabilities that are required in certain occupations to align corporate strategies and priorities [13]. Competence can act as an input or output to human behaviour [13]. Competence is defined as the ability to maintain the coordination of the deployment of assets as the basis for achieving the company's goals. Based on the cognitive aspect and the aspect of action, competence is defined as the ability and the specific skills of the company in the development of their resources by considering the cognitive characteristics to achieve the desired objectives of the company [5]. Personal competence is a combination of experience, knowledge, and skills possessed by an individual or group of individuals [6].

High performance managerial competency is a set of interrelated behaviours to distinguish high performance with average performance [3]. Managerial competence used in this study is high performance managerial competency that has been tested empirically and has 11 dimensions. Dimensions that form the high performance managerial competency are achievement orientation, proactive orientation, presentation, self-confidence, impact, development orientation, managing interaction, interpersonal search, conceptual flexibility, concept formation, and information search.

Technical competence is defined as understanding in the field of Technology, technical equipment and engineering work, product applications, the evolution and direction of technology, and relationships with assistive technologies [8]. Technical competence is important for managers to be able to work effectively. Literature which describes the dimensions that measure the technical competence is not found then the dimensions of technical competence derived from research [8] and a study that used a view based on competence. From the translation of that study concluded that technical competence is formed of two dimensions, technical skills and knowledge that is unique, irreplaceable, rare, and limited which is owned by a manager. Two dimensions is measured using indicators technical skills of research [5] and knowledge of research [2].

The strategic competence is reflection of knowledge and wisdom, meaningful action in deeds, and require a high competence and quality [13]. Rong-rong et al [13] suggest that the strategic competencies that senior managers must have, can be formed from three capabilities. These capabilities include the ability to analyse the strategy, the ability to decide the strategy, and the ability of implementation and control strategy. Two of three capabilities are used in this study whereas the capability of implementation and strategy control is not, because this capability is an element of managerial competence.

A multidimensional approach is used to determine the dimensions that make up the firm’s performance [9]. The dimensions consist of market-based performance, financial performance, and customer satisfaction. Market-based performance is measured using indicators of sales growth and market share growth. Financial performance indicators are measured using the total cost reduction, return on investment, return on assets, financial liquidity, and net profit. Customer satisfaction is measured using indicators of the reduction of response time for product design changes, the reduction of response time for product for product volume changes, the accuracy of order processing for customers, the reduction of product return ratio, the speed of order handling, and the reduction of response time for product return. However, the financial dimension is not used in this study by considering the difficulty of getting financial data from the company.

2.2. Partial Least Square

Structured equation modelling (SEM) is one of the multivariate statistical methods to explain the relationship between latent variables based on the variable observed [12]. SEM method has a high degree
of flexibility for researchers to connect between theory and data. SEM consists of two types of
covariance-based SEM and variance-based SEM (Partial Least Square). Comparison of the two types of
SEM methods are described in Table 1.

| Criteria          | CB SEM                | Partial Least Square |
|-------------------|-----------------------|----------------------|
| Objective         | Parameter Oriented    | Prediction Oriented  |
| Approach          | Covariance            | Variance             |
| Assumption        | Parametric            | Non-parametric       |
| Parameter estimates | Consistent           | Consistent           |
| Implication       | Optimal for parameter precision | Optimal for prediction precision |
| Model complexity  | small-medium          | Large                |
| Sample size       | 200-800               | 100-1000             |
| Latent variable score | Indeterminate       | Explicitly estimated |

PLS is an analysis method that can be relied upon because it does not assume the data must
use a scale of specific measurement and small sample size. Determination of the number of samples in
the method PLS is (1) ten times the number of the biggest indicators of reflexive or (2) ten times the
amount of the biggest indicators of reflexive or (3) to ten times the largest number of lanes structural
directed to construct certain structural model [6]. The PLS model evaluation can be done in two ways,
namely the evaluation of the measurement model and structural model evaluation.

2.3. Conceptual Framework and Hypothesis
Based on figure 1, which has been through elaboration stages of literature study, hence determined five
hypothesis that is:
H1: there is a positive and significant influence given by managerial competence on firm performance
H2: there is a positive and significant influence given by strategic competence on firm performance
H3: there is a positive and significant influence given by technical competence on firm performance
H4: there is a positive and significant influence given by strategic competence on managerial
competence
H5: there is a positive and significant influence given by strategic competence on technical competence

Based on figure 2, managerial competence, technical competence, and strategic competence
are acted as second order variables whilst firm performance is acted as first order variable. The 11
dimensions of managerial competence, two dimensions of technical competence, and two dimensions
of strategic competence are acted as first order variables. Each of first order variables have two or more
indicators or item questionnaire.
2.4. Research Methodology

2.4.1. Preparation Research Instrument

The research instrument used in this study was a questionnaire enclosed. Questionnaire established based on the operationalization of latent variables, dimensions / variables manifest and latent variables statement items of managerial competence, technical competence, strategic competence and firm performance. Scale used in the questionnaire is Likert scale consisting of six ratings points. Scoring points for the variable performance of the company is very low, low, low enough, high enough, high, and very high. Scoring points for managerial competence, technical competence, and strategic competence variables are strongly disagree, disagree, somewhat agree, quite agree, agree, and strongly agree.

2.4.2. Identification of the Population and the Respondent

The population of this study is the middle level managers and senior managers of the company from state-owned enterprises in the field of electrical engineering and infrastructure. An overview of the study population is shown in table 2 and table 3.

| Table 2. The Result of Questionnaire Distribution |
|-----------------------------------------------|
| Firms      | Manager | Senior Manager | distributed | returned | valid |
|------------|---------|----------------|-------------|----------|-------|
| PT. LEN Industri | 17      | 3              | 20          | 18       | 16    |
| PT. SEI      | 3       | -              | 3           | 3        | 3     |
| PT. ELTRAN   | 4       | -              | 4           | 4        | 4     |
| Total       | 27      | 25             | 23          |          |       |

| Table 3. Population of Respondent |
|-----------------------------------|
| Data                          | Frequency |
| Genders                        |           |
| Male                           | 22        |
| Female                        | 1         |
| Level of Education            |           |
| S1                             | 21        |
| S2                             | 2         |
| S3                             | 6         |
| Manager                       | 18        |
| Senior Manager                | 5         |
| L ≤ 10 years                  | 1         |
| 10 years < L ≤ 20 years       | 7         |
| 20 years < L ≤ 30 years       | 15        |
| L > 30 years                  | 0         |
2.4.3. Determining the Sampling Method

The sampling method used is non-probability sampling, by using purposive judgment sampling. This method is used because samplers provide equal opportunities for every member of the target population to be a respondent. Purposive technique used for samples taken pre-defined criteria with the best position to provide the required information. Samples in this study were managers and senior managers at companies in the electrical engineering industry which is a state-owned enterprise. The minimum sample used in this study followed the equations raised by Ghozali [7], which is ten times the amount of structural path. The number of structural path in this study is three that is the path that leads to the variable firm performance. Therefore, the minimum number of samples used is 30 respondents.

2.4.4. Data Collection and Data Processing

Data collected in this study consisted of primary data and secondary data. The primary data obtained from questionnaires while the secondary data obtained from historical data of the company. Raw data from the results of questionnaires was processed using SPSS 13 and SmartPLS 2.0 to determine the validity and reliability of the questionnaire and the statement of the questionnaire. Questionnaire statement declared valid and reliable then be processed using SmartPLS 2.0 to perform path analysis, analysis of measurement model and structural model.

2.4.5. Analysis

Analysis used in this study is a qualitative and quantitative analysis. Quantitative analysis based on the analysis of validity, reliability, and path analysis. Qualitative analysis is based on a comparison between the test results with theoretical models of the research with previous research.

3. Result and Discussion

3.1. Reliability and Validity Test of Questionnaire

First, tested the validity and the reliability of all items of the questionnaire statement that compose the first order factor variables. Total items statement is 64 items, 42 items compose 11 first order factor of managerial competence, 10 items compile two first order factor of technical competence, nine items compile two first order factor of strategic competence, and three items compile the firm performance. Reliability and validity test of items questionnaire statements are processed using SPSS with respect to value of Cronbach’s Alpha and Spearman Rho. The statement items are declared reliable if it has Cronbach’s Alpha greater than 0.6 [1] whilst the item statements are declared valid if the Spearman Rho is greater than 0.5 at the 5% significance level. Based on data processing using SPSS, the 64 items have Cronbach Alpha greater than 0.6, it’s indicate that all item is consistent to measure the first order factor. SPSS processed results show that there is a Spearman Rho smaller than 0.5 at a significance level 5%. The item consists of each one item from first order factor of information search, managing interaction, conceptual flexibility, presentation, and firm performance customer satisfaction item, and two items are from the first order factor achievement orientation.

3.2. Reliability and Validity Test of Measurement Model

The reliability and validity test of structural model is processed using SmartPLS by considering the value of Cronbach’s Alpha and Composite Reliability as well as loading factor. Reliability test is performed on first order factor variables whilst validity test is performed to item statement of questionnaire. The first order factor variable is declared reliable if it has Cronbach’s alpha and composite reliability value greater than 0.6 and the statement item is valid if it has a loading factor greater than 0.5 [6].

| First Order Factor Variables | Cronbach’s Alpha | Composite Reliability |
|------------------------------|------------------|-----------------------|
| Achievement Orientation      | 0.642            | 0.699                 |
| Concept Formation            | 0.779            | 0.874                 |
| Conceptual Flexibility       | -0.029           | 0.296                 |
Table 4. Continued

| First Order Factor Variables | Cronbach’s Alpha | Composite Reliability |
|------------------------------|------------------|------------------------|
| Contextual Knowledge         | 0.86             | 0.90                   |
| Development Orientation      | 0.487            | 0.742                  |
| Impact                       | 0.658            | 0.748                  |
| Information Search           | 0.43             | 0.18                   |
| Interpersonal Search         | 0.796            | 0.81                   |
| Managing Interaction         | 0.16             | 0.32                   |
| Presentation                 | 0.32             | 0.66                   |
| Proactive orientation        | 0.62             | 0.80                   |
| Strategic analysis ability   | 0.85             | 0.89                   |
| Self-confidence              | 0.77             | 0.82                   |
| Strategic decision-making ability | 0.74       | 0.78                   |
| Technical Skill              | 0.79             | 0.86                   |

Based on table 4, there are five first order factor variables that are not reliable because the Cronbach’s alpha and Composite Reliability value less than 0.6. These variables are conceptual flexibility (CFle), development orientation (DO), information search (IS), managing interaction (MI), and presentation (P), therefore, the five variables are excluded from measurement model. The measurement model that has experienced the reduction of first order factor variable. Then tested the validity by considering the loading factor value of all statement items. Currently the tested statement item leaves only 49 items, of that amount having a loading factor value greater than 0.5 is 39 items after three validity tests using SmartPLS.

3.3. Reliability and Validity Test of Structural Model
The reliability and validity of structural model is processed using SmartPLS by considering the value of path coefficient and t-statistics between first order factor variable with second order factor variable. Second order factor in this study is managerial competence, technical competence, and strategic competence. Each variable second order factor has its own first order factor. Managerial competence leaves only six first order factor of 11, whilst technical competence and strategic competence still has two first order factor. The relationship between first order factor and second order factor is said to be reliably and valid if it has path coefficient greater than 0.5 and t-statistics value is greater than t-tables with n-1 degrees of freedom at 5% level of significance. The following table provide an overview of the value of path coefficient and t-statistics from the result of the data.

Table 5. The Relationship between first order factor and second order factor

| Second order factor   | First order factor | PC  | t-statistics |
|-----------------------|--------------------|-----|-------------|
| Managerial competence | AO                 | 0.92| 77.87       |
|                       | CF                 | 0.74| 0.92        |
|                       | I                  | 0.40| 5.21        |
|                       | ISea               | 0.45| 5.69        |
|                       | PO                 | 0.80| 23.28       |
|                       | SC                 | 0.73| 9.87        |
| Technical competence  | CK                 | 0.93| 83.73       |
|                       | TS                 | 0.79| 27.22       |
| Strategic competence  | SA                 | 0.72| 10.69       |
|                       | SD                 | 0.70| 70.99       |

The value of t-table with degrees of freedom 22 at 5% significance level is 2.074 (two-tailed), according to table 5, it is known that all t-statistics is greater than 2.074. It’s indicates that all significant first order factors are used as measure for every second order factor. A first order factor is said to be worthy of use as measure for second order factor if it has a coefficient path value greater than 0.5. Based
on table 5, there is still a first order factor which has a coefficient path value less than 0.5, these are I and ISea. It’s indicates those two first order factors are less precise used as measure for second order factor managerial competence in stated-owned enterprises. Further, testing of the hypothesis used in this study, hypothesis accepted if it has a value of t-statistics greater than 2.074 and gives positive influence on the dependent variable. Table 6. below provide an overview of the path coefficient and t-statistics values of the hypotheses tested.

Table 6. The Hypothesized construct variable relationship

| Hypotheses | Relationship | PC  | t-stats |
|------------|--------------|-----|--------|
| H1         | Managerial competence to firm performance | -0.38 | 4.29 |
| H2         | Strategic competence to firm performance | 0.40 | 7.87 |
| H3         | Technical competence to firm performance | 0.49 | 6.02 |
| H4         | Strategic competence to managerial competence | 0.48 | 5.51 |
| H5         | Strategic competence to technical competence | 0.55 | 7.81 |

Based on table 6, it is known that all hypotheses are accepted because they have t-statistics value greater than 2.074. However, the influence given by the independent variable to dependent variable is not big enough. Furthermore, there is independent variable giving negative effect to firm performance. The relationship is between managerial competence on firm performance, this indicates that in stated-owned enterprises, managerial competence is considered to have negative impact on firm performance. This phenomenon can occur because of shortcomings that exist in the research and environment of stated-owned enterprises are not dynamics.

4. Conclusion
Conclusions of this study is the technical competence and strategic competence have a significant influence and positive impact on the firm performance in the state-owned enterprises. However, managerial competence significantly affects firm performance but have a negative impact on firm performance on stated-owned enterprises. It indicates a model built to confirm the relationship between the managerial competence, technical competence, and strategic competence on firm performance in the state-owned enterprises have differentiation with the model of the referenced based on previous research. In the previous study, population and sample used were functional manager in private companies with sample size greater than 100. In this study, population and sample used are functional managers in stated-owned enterprises with sample size less than 30. Further research is expected to correct the deficiencies that exist in this study by increasing the number of population and sample, not only on one type stated-owned industry but in various types of stated-owned enterprises.

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