



Relationship Model of Competitiveness and Productivity of Engineering Procurement and Construction for Indonesia Construction Industry

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Abstract: The need for EPC Contract Work Services is increasing along with economic development and infrastructure needs in Indonesia. For the success of EPC, the productivity of EPC companies and their competitiveness are very much needed. This study aims to determine the factors of competitiveness that affect the productivity of companies and their people. In addition, this study also intends to find out the factors that affect the productivity of internal parts and investigate the model of the relationship between competitiveness and productivity. Collecting data is quantitative by distributing questionnaires to several 20 respondents. Data analysis was carried out in 4 (four) stages, namely data collection, data reduction, data presentation, and drawing conclusions. The data analysis process was carried out using SPSS and Smart PLS software. The results of this study are believed to be able to add to the knowledge base, especially in the field of employee productivity development for EPC companies in Indonesia. The findings obtained from this study state that factor analysis shows the factor of Competitiveness (Independent Variable) is influenced by Appreciation of Criticism (X11), Oral Communication (X8), Performance Theory (X3), Personality Theory (X2), Problem Analysis Skills (X6), Integrity (X15), Team Collaboration Skills (X10), Engagement (X13), Customer Orientation (X14), Observation Skills (X7), Openness to Criticism (X12) and Writing Skills (X9). While Productivity (Y) is strongly influenced by Labor (Y1) and Materials (Y2).

Keywords: Relationship model, competitiveness, productivity, EPC company

1. Introduction

Indonesia's competitiveness is still ranked 50th out of 141 countries listed by the World Economic Forum in 2019 (WEF, 2019), where the infrastructure factor is ranked 72nd out of 141 countries. Based on law no. 18 of 1999 on Construction Services, an integrated construction service company or an EPC company (Engineering, Procurement, Construction) is a planning, execution, and supervision service company that can be implemented in an integrated manner considering the amount of work or cost, the use of advanced technology and the main risk to parties or public interests in construction work.

The EPC work system is generally used for oil and gas industry development projects, factory construction, and power plants including infrastructure, where the evaluation is not only on the completion of the work but also on the project performance requirements. The Employer or Owner only provides global data on functionality and capacity as a reference for the initial design. As a result, the contractor will receive a greater impact of risk due to the state of

uncertainty during the project life cycle from design to implementation including testing and commissioning (Yasin, 2003; Joko & Suly, 2014; Mairizal, 2020).

In the dynamics of industry competition from various construction service companies with EPC patterns, it demands that each company devise a better competitive strategy. The design of competitive strategy refers to several factors of approach that will increase the productivity, profit, growth, sustainability, and competitiveness of the company (Porter, 1990; Kagioglou et.al., 2002; Kale & Ardit, 2002; Ermon, 2011; Mairizal, 2016). According to Porter (2016; 2020), the state of productivity growth of EPC companies in Indonesia shows an increase, which is an average of +/- 1 billion rupiah per year. It also shows fluctuations with a maximum figure of 10.04 billion rupiahs and a minimum of 2.6 billion rupiahs. PT Rekayasa Industri (EPC company) ranges between 6.16 - 6.93 billion rupiah compared to some other state-owned enterprises (BUMN) which is as much as 1-2 billion per year. This research aims to identify the success factors of competitiveness and formulate strategies as follows: (1) identify the competitiveness factors that affect productivity, (2) determine the factors that affect the internal side of productivity, and (3) investigate the relationship model between competitiveness and productivity.

2. Literature Review

According to Law No. 18 the Year 1999 (Ministry of Public Works, 2011; Setneg, 1999) and No. 02 Year 2017 (Setneg, 2017) regarding construction services, planning, implementation, and supervision can be carried out in an integrated manner considering the amount of work or cost, the use of advanced technology, as well as the main risk to parties or public interests in construction work. In other words, the integrated Construction Services Industry / EPC is a combination of several parts of work in the General Construction Services Industry, that is, planners, supervisors, and at the same time as equipment suppliers, and construction implementers.

The word 'competence' is often used interchangeably by researchers and sometimes confuses others because they cannot distinguish what it means (Delo & Hepworth, 2010). To avoid confusion, this study explores the differences or similarities between the two theoretical concepts and some previous studies. Spencer and Spencer (1993) in their book "Competencies in the Workplace: A model for superior performance" explained that knowledge and skills are considered "surface" competencies because they can be identified and developed easily through training.

Roe (2002) in his book entitled 'What makes a component psychologist' explained that competence builds knowledge, skills, and attitudes acquired through basic academic education and initial professional training and refined through professional practice. Meanwhile, Armstrong (2006) in his book "The 10th edition of the human resource management practice guide" explained that the concept of efficiency has reached a significant level because it is performance. Similarly, Crawford (1997; 1998) stated that competence or efficiency is a widely used term that gives different meanings to different people.

There are three groups of competencies described in the book written by Roe (2002) entitled "Management skills and competencies - Critique and recommendations for a comprehensive theory-based approach" in 2002 as stated in Table 1:

Table 1 - Competence factors which affect competitiveness by Roe (2002)

No.	Knowledge	Skill	Attitude
1.	Cognitive Theory	Problem Analysis Skills	Respect for Criticism
2.	Personality Theory	Observation skills	Openness to Criticism
3.	Performance theory	Oral communication skills	Involvement
4.	Career Theory	Writing Skills	Customer Orientation
5.	Job Design Theory	Team Collaboration Skills	Integrity

Apart from Roe (2002), other scholars define knowledge competence. Knowledge is a theoretical or practical understanding of a particular subject. Collection of information in the form of facts, procedures, and ways of doing things, knowledge can be divided into three types, namely: declarative knowledge, entering information into the brain or memory; procedural knowledge, knowing how to do something; and solving problems, namely the ability to solve problems based on two types of prior knowledge (Marsam, 2016). In addition, skills are the ability to use knowledge to achieve certain goals. A skill or expertise can be started from a variety of specific training, but must be able to master a particular skill. In this case, the most important factor is to keep practicing and gain experience in the required field. Meanwhile, attitude is a way of thinking or something that is felt by someone about how it is reflected in the form of behavior. Everything we do as humans can be enhanced or hindered by our attitudes. Furthermore, communicating effectively, and expressing empathy and courtesy with fellow educators, educational staff, parents, and the community (Marsam, 2016).

In general, productivity is a very important factor in maintaining and developing a successful institution, organization, or company. As we all know, every institution/organization/company invests important resources (human

resources, materials, and money) to produce goods/services. Using these human resources effectively will provide better results. Whereas in theory, productivity can be interpreted as a comparison between output (goods and services) and inputs (labor, materials, and money). Low productivity is a reflection of institutions, organizations, and companies that waste their resources.

Productivity is a measuring tool for every company in order to assess the work performance achieved by its employees. Productivity is also a concept that describes a relationship between capital, land, and energy used to produce an output (Swastha, 2002). In a study conducted by Jergeas et al. (2020) and Mairizal (2016), industry recommendations for increasing construction productivity are categorized and tabulated into 10 main areas. These areas include workforce management, front-end project planning (loading) and workforce planning, construction management and support, building construction in engineering design, engineering management, communications, contract strategy, contractor selection, government influence, modularization, prefabrication, and pre-made. According to Sudarto et al. (2009), the success standard of a company, especially a construction company, which can be seen from its performance. This means that the better the performance of a company, the more successful the company is.

Indicators of a successful company can be seen from the company's ability to earn profits (profitability), the ability to develop and grow (growth), the ability to carry out ongoing projects and maintain its sustainability, and the ability to compete (competitiveness). Competition is shown with other people, and companies, both foreign and local. Meanwhile, referring to Jarkas and Bitar (2012), Kuwait started a massive government-driven development in January 2010 but was still plagued by inefficiency and excessive spending. Even though new technologies are accessible to builders, excess building materials, equipment, and financing are available, contractors are still faced with increasing construction costs, longer project schedules, and cost overruns (Ugulu et.al. 2019).

According to research by Attar et.al. (2012) in Ugulu et.al. (2019) confirms that identifying and evaluating factors that affect productivity are important for construction managers. In fact, according to Hendrickson and Au (2003), good project management in construction should vigorously pursue efficient use of labor, materials, equipment, and increased labor productivity should be a primary and ongoing concern for those in charge of cost control. construction facility.

3. Research Methodology

This study uses a statistical approach that can be used as a statistical analysis for data collection and processing, namely a quantitative approach (Mairizal, 2016; Fielding & Schreier, 2001; Chua, 2006). This quantitative approach is not the same as the various methods or other techniques used. These methods or techniques include objectives, concepts, research approaches, sampling, data collection methods, and data analysis (Mairizal, 2016; Chua, 2006). The initial stage of research is the collection of literature which is closely related to the productivity and competitiveness of companies. The studies conducted in this regard are not only limited to various articles published in several peer-reviewed and prestigious journals. These articles were published by various well-known publishers, including other previous research such as thesis writing, student dissertations, and various books. Literature collection was conducted on studies conducted between 2015 and 2019, including studies that also yielded new findings. The second step is to collect all the factors or various variables that have an impact on productivity and competitiveness. After that the questionnaire was distributed to several respondents using a method, namely the purposive sampling method. The selected number of respondents are those who have a lot of experience and are directly involved in various EPC project work activities in several industrial sectors in Indonesia. The prepared questionnaire contains general information about the background of the respondents followed by various data stating the importance of productivity and competitiveness factors identified through the literature as shown in Figure 1, Table 2, and Table 3.

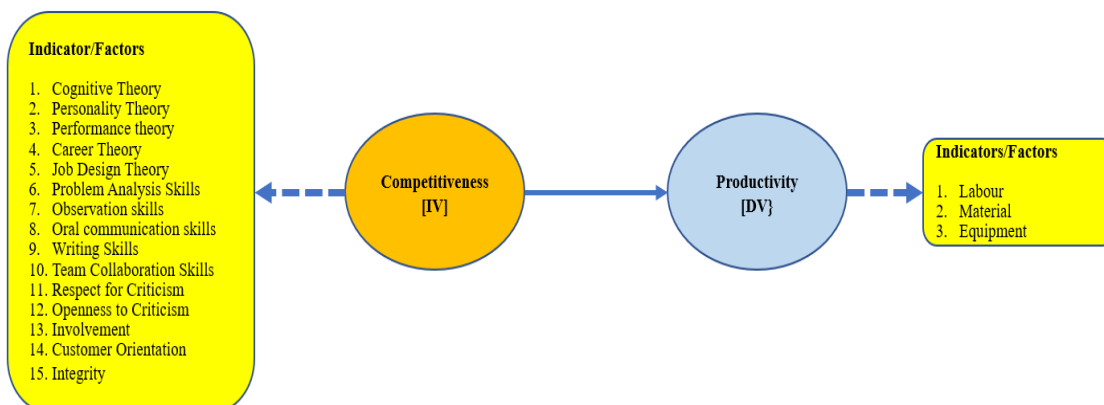


Fig. 1 - Relationship model between competitiveness and productivity

Table 2 - Competence factors which affects competitiveness

No.	Author	Competence Factors
1	Roe (2002); Ermon (2011); Mairizal (2016)	Cognitive Theory
2	Roe (2002); Ermon (2011); Mairizal (2016)	Personality Theory
3	Roe (2002); Ermon (2011); Mairizal (2016)	Performance theory
4	Roe (2002); Ermon (2011); Mairizal (2016)	Career Theory
5	Roe (2002); Ermon (2011); Mairizal (2016)	Job Design Theory
6	Roe (2002); Ermon (2011); Mairizal (2016)	Problem Analysis Skills
7	Roe (2002); Ermon (2011); Mairizal (2016)	Observation skills
8	Roe (2002); Ermon (2011); Mairizal (2016)	Oral communication skills
9	Roe (2002); Ermon (2011); Mairizal (2016)	Writing Skills
10	Roe (2002); Ermon (2011); Mairizal (2016)	Team Collaboration Skills
11	Roe (2002); Ermon (2011); Mairizal (2016)	Respect for Criticism
12	Roe (2002); Ermon (2011); Mairizal (2016)	Openness to Criticism
13	Roe (2002); Ermon (2011); Mairizal (2016)	Involvement
14	Roe (2002); Ermon (2011); Mairizal (2016)	Customer Orientation
15	Roe (2002); Ermon (2011); Mairizal (2016)	Integrity

Table 3 - Productivity factors

No.	Author	Productivity Factors
1	Hendrickson and Au (2003); Attar, Gupta, & Desai (2012); Ogulu & Allen (2020)	Labour
2	Hendrickson and Au (2003); Attar, Gupta, & Desai (2012); Ogulu & Allen (2020)	Material
3	Hendrickson and Au (2003); Attar, Gupta, & Desai (2012); Ogulu & Allen (2020)	Equipment

4. Data Collection and Data Analysis

Questionnaires were distributed to 20 respondents, where they are several Senior Managers from various fields who have worked for >20 years at PT. XYZ. Respondents who were selected using the purposive sampling method, must be the number = n + 1 or more of the number of questions circulated. Several responses have been received from those with 20 responses. Measurements were made using a five-point Likert scale to measure the importance of productivity for the competitiveness of EPC companies. All data received were analyzed using descriptive statistics and all data from interview responses were analyzed using the Statistical Package for Social Sciences (SPSS). The reliability value was found to exceed 0.70 (Cronbach's Alpha), while the validity value exceeded the “r” value as in the reference table.

Data processing used in this study uses SPSS, where the testing technique in the validity test is Pearson bivariate correlation (Pearson Moment Product) and item-total correlation correction (Supriyadi, 2014). This study used the Corrected item-total method with the result that the number of data (n) = 15 and obtained r-table = 0.4409 (Pearson Product Moment r-table) with a significance level = 0.05. The results of data analysis using SPSS can be seen in Table 4.

Table 4 - Corrected item-total correlation results

Item-total statistics				
	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
X1	47.7000	190.853	.523	.954
X2	48.2500	176.829	.774	.949
X3	47.9000	180.411	.820	.948
X4	48.0000	181.895	.640	.952
X5	47.7500	185.776	.639	.952
X6	47.4000	182.463	.825	.948
X7	47.6500	182.661	.723	.950

X8	48.1500	172.345	.817	.948
X9	47.9000	179.884	.718	.950
X10	47.7500	184.303	.803	.949
X11	47.7000	182.011	.851	.948
X12	48.0000	181.684	.693	.951
X13	48.4000	178.042	.802	.948
X14	48.2000	175.642	.776	.949
X15	48.1500	178.766	.775	.949

Based on Table 3, the Corrected Item-Total Correlation value, the r count value (Pearson Correlation), none of the r counts are below the r table value or all factors meet the validity test. The reliability test method uses the Cronbach's Alpha method whose value is > 0.7 and is used to determine reliability and shows Cronbach's Alpha for all factors > 0.700. Data processing was carried out using a structural equation model (SEM) with the Smart PLS version 4 tool, which is useful for seeing the relationship between the two component factors, namely the Independent Factor (IV) and the Dependent Factor (DV) as shown in Figure 2.

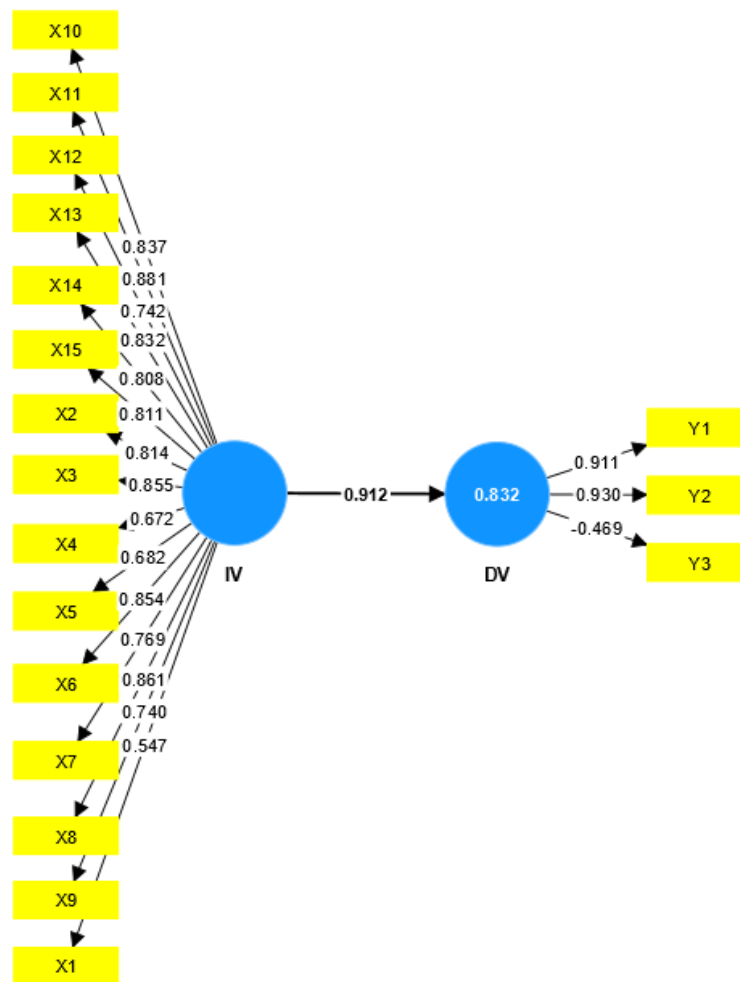


Fig. 2 - Results of model between Independent Factors (IV) and Dependent Factors (DV)

The results of data processing using the Algorithm Test menu produce 3 (three) Independent Factors (IV) which have Factor Loading <0.70, namely X1 = 0.547, X4 = 0.672, and Dependent Factor (DV), namely X5 = 0.682. In addition, one (1) dependent factor was found, namely Y3 which was also excluded from the model because outer loading = -0.469. Because these four factors have a Loading Factor value of <0.70, these four factors are excluded from the factor analysis process and factor processing is carried out to a further stage (Figure 3).

After retesting with algorithm tests for twelve (12) independent factors and two (2) dependent factors, all factors have fulfilled the reliability test with outer loading > 0.70 (Figure 3).

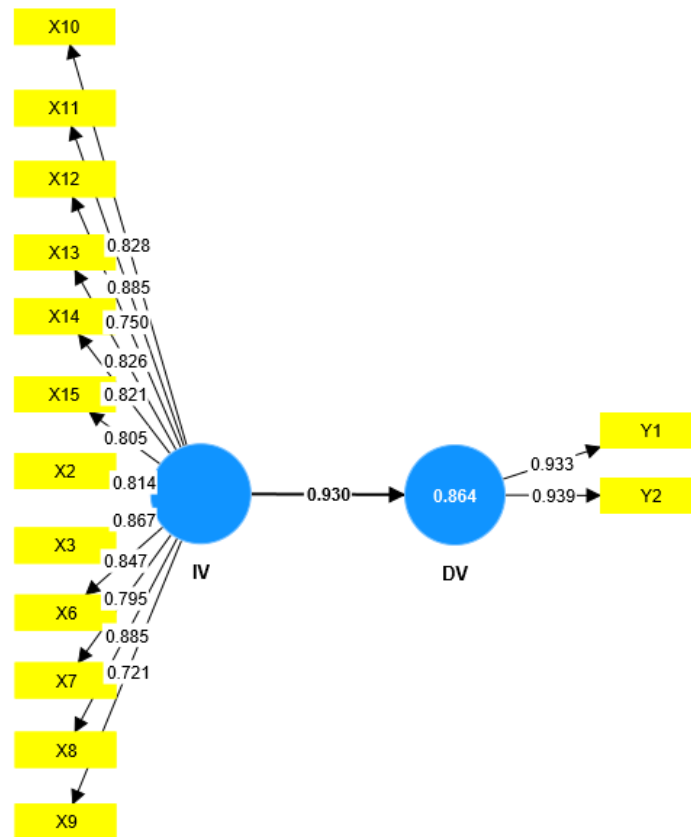


Fig. 3 - Results of re-testing model between Independent Factors (IV) and Dependent Factors (DV)

4.1 Measurement Model (Outer Model)

Convergence conclusion checks then build trust by looking at the composite output of trustworthiness and Cronbach's alpha. The criterion that is said to be reliable is the composite value of trustworthiness or Cronbach's alpha of more than 0.7. The final check for good convergent validity is if the AVE value is more than 0.50. The twelve Independent Variables (IV) above are critical competitiveness factors.

Table 5 - Corrected item-total correlation results

	Cronbach's alpha	Composite reliability (rho_a)	Composite reliability (rho_c)	Average variance extracted (AVE)
DV	0.859	0.861	0.934	0.876
IV	0.956	0.959	0.961	0.675

Based on the data shown in Table 5 above, it can be seen that the composite reliability value for all research factors is > 0.6. These results indicate that each factor has met composite reliability so that it can be concluded that all factors have a high level of reliability. Similar to the Cronbach's Alpha value data above in Table 5, it can be seen that the Cronbach's Alpha value for each research factor is > 0.7. Thus these results can indicate that each research factor has met the requirements of the Cronbach's Alpha value so that it can be concluded that all factors have a high level of reliability.

4.2 Structural Model (Inner Model)

This study describes the results of the path coefficient test, the goodness of fit test, and the hypothesis test. Evaluation of the path coefficient (path coefficient) is used to show how strong the influence or influence of the independent factor is on the dependent factor. While the coefficient of determination (R-Square) is used to measure how much the endogenous factors are influenced by other factors. Chin mentions the results of $R^2 = 0.67$ and above for endogenous latent factors in the model. Meanwhile, if the result is 0.33 - 0.67 then it is included in the medium category, and if the result is 0.19 - 0.33 then it is included in the weak category (Ghozali, 2014).

There are several stages to evaluating a structural model. The first step is to see the importance of the relationship between the constructs. This can be seen from the path coefficient that describes the strength of the relationship

between constructs. The next step is to evaluate the R² value. The explanation of the R² value is the magnitude of the variability of endogenous factors that can be explained by exogenous factors. According to Chin and Newsted (1999) and Yamin and Kuniawan (2011), the criteria for limiting R² values are in 3 classifications, namely R² values of 0.67, 0.33, and 0.19 as large, medium, and weak.

Table 6 - R-square

	R-square	R-square adjusted
DV	0.864	0.858

Based on the data shown in Table 6 above, it can be seen that the R-Square value for the factor of competitiveness (DV) is 0.864. This value explains that competitiveness can be affected by its sub-factors as much as 86.40% of competitiveness.

The evaluation of goodness should be known from the Q-Square value. The Q-Square value has the same meaning as the coefficient of determination (R-Square) in regression analysis, where the higher the Q-Square, the model can be said to be better or better suited to the data. The result of calculating the Q-Square value is as follows:

$$\begin{aligned}
 \text{Q-Square} &= 1 - (1 - \text{DV}^2) \\
 &= 1 - [(1 - 0.864^2)] \\
 &= 1 - 0,254 \\
 &= 0,746
 \end{aligned}$$

Based on the results of the calculation above, the Q-Square value is 0.746. This shows the magnitude of the diversity of research data that can be explained by the research model is 74.60%. While the remaining 25.4 0% is explained by other factors that are outside the research model. Therefore, from this result, this research model can be stated to have good goodness of fit.

4.3 Hypothesis Testing Model with Bootstrapping Resampling

Based on the objectives of the study, the hypothesis test design in this study is presented based on the research objectives in the form of Bootstrapping Resampling Test (Figure 4). This means that all factors can be continued to test the hypothesis by bootstrapping testing (Figure 4).

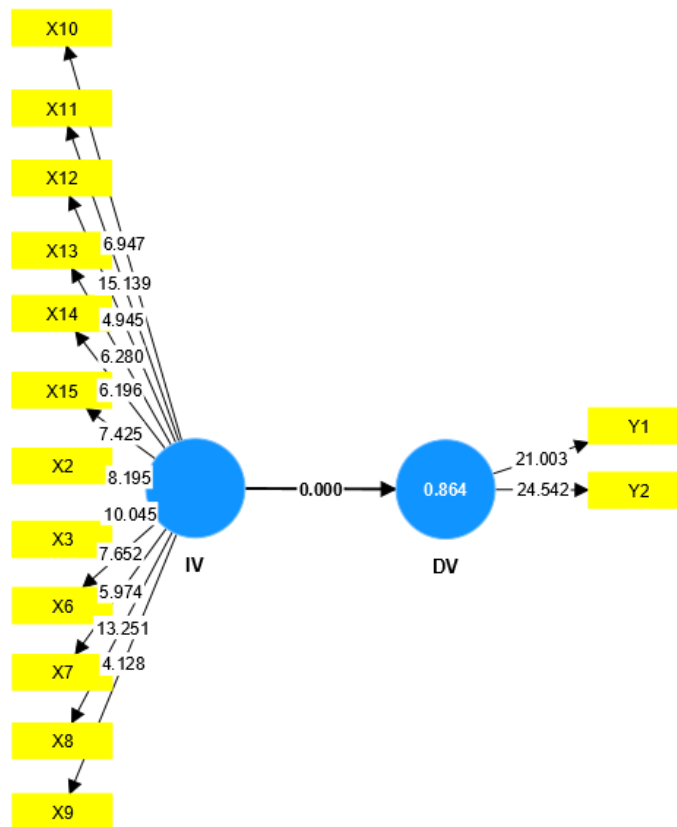


Fig. 4 - Results of hypothesis between Independent Factors (IV) and Dependent Factors (DV) (re-testing)

Table 7 - Path coefficient by bootstrapping

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	t-Statistics (O/STDEV)	p- values
IV → DV	0.930	0.936	0.030	31.238	0.000

To obtain the hypothesis, referring to the confidence rating used, it is 95% or the limit of inaccuracy (α) = 5% = 0.05 and produces the value of t table of 1.96. Referring to Figure 4 and Table 7 above, an explanation of the hypothesis results are as follows: IV→DV : means that Productivity is strongly influenced by the competitiveness factor with t-statistic value = 31.238 > 1.96 and p-value = 0.000 < 0.05.

5. Results and Discussion

From the hypotheses above, it can be explained that the competitiveness factor (IV) can affect the productivity (DV) of an EPC company in Indonesia. The results of the factor analysis show that the competitiveness factor is influenced by Respect for Criticism (X11), Oral Communication (X8), Performance theory (X3), Personality Theory (X2), Problem Analysis Skills (X6), Integrity (X15), Team Collaboration Skills (X10), Involvement (X13), Customer Orientation (X14), Observation skills (X7), Openness to Criticism (X12) and Writing Skills (X9). Meanwhile, Productivity (Y) is strongly influenced by Labor (Y1) and Material (Y2).

Based on the two groups described above, it seems that the dominant factors affecting competitiveness are the Respect for Criticism and Oral Communication factors. While what determines the effect of high productivity is the material factor.

6. Conclusion

From the discussion of the hypothesis, it can be concluded that there are 15 (fifteen) factors influencing competitiveness. When viewed in terms of internal productivity, there are 2 (two) factors that are affected. While the determinants of competitiveness obtained through factor analysis using SEM are 12 (twelve) determinants of competitiveness and 2 (two) determinants of productivity. Furthermore, the very high influence on competitiveness is the Respect for Criticism factor (X11) and Oral Communication (X8). As for the internal factors, the factor that has a very high influence is Labor (Y1) and Materials (Y2).

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References

- Andrew Delo and Andrew Hepworth (2010). Assessing the competent project manager, Proverk, pp. 2-6
- Armstrong, M. (2006). A Handbook of Human Resource Management Practice, 10th edition (Kogan Page Limited, Philadelphia) PA 19147
- Attar, A. A, Gupta, A. K and Desai, D. B (2012). A Study of Various Factors Affecting Labour Productivity and Methods To Improve It, IOSR Journal of Mechanical and Civil Engineering 3, pp. 11-14
- Basu Swastha (2002). Manajemen Pemasaran Edisi Kedua, (Cetakan Kedelapan : Liberty, Jakarta, Indonesia)
- Chua, Y. P (2006). Kaedah Dan Statistik Penyelidikan: Kaedah Penyelidikan, Mcgraw-Hill Education, Kuala Lumpur, Malaysia
- Crawford, L (1997). Project Management Competence for the Next Century, (Project Management Institute – Illinois), IL
- Crawford, L (1998). Standards for a global profession - project management, 29th Annual Project Management Institute Symposium (Long Beach – California)
- Diaz P Marsam (2016). Mengenal-Konsep-Ksa Knowledge-Skill-Attitude-Dalam Outbound Training, Retrieved on 21 July 2021, from <http://artikel.spotexcellen.com/2016/05/22/mengenalkonsep-ksa-knowledge-skill-attitude-dalam-outboundtraining/>
- Ermon, D. H. N (2011). Strategi Peningkatan Daya Saing Untuk Meningkatkan Profit Perusahaan Jasa Konstruksi, (Universitas Indonesia, Depok, Indonesia)
- Fielding, N and Schreier, M (2001). Introduction: On the Compatibility Between Qualitative and Quantitative Research Methods, Forum: Qualitative Social Research 2(1), pp. 1-21
- Ghozali, Imam. 2014. Structural Equation Modeling, Metode Alternatif dengan Partial Least Square (PLS). Edisi 4. Semarang : Badan Penerbit Universitas Diponegoro.
- Hendrickson, C. and Au, T. (2003). Project Management for Construction: Fundamentals Concepts for Owners, Engineers, Architects, and Builders <http://www.ce.com.edu/pmbook/10>

- Jarkas, A. M and Bitar, C. G (2012). Factors affecting construction labor productivity in Kuwait, *Journal of Construction Engineering and Management* ASCE 138(7), pp. 811-820
- Jergeas, J. F. P. E, Chishty, M. S. and Leitner, M. J. (2020). *Construction Productivity: A Survey of Industry Practices*, AACE International Transactions, Edmonton, Alberta
- Kagioglou, M, Cooper, R and Aouad, G (2001). *Performance Management in Construction: A Conceptual Framework*, University of Salford UK
- Kale, S. and Arditi, A. (2002). *Competitive Positioning in the United States Construction Industry*, ASCE Publisher, Chicago
- Kementerian Pekerjaan Umum (2011). *Pembagian Subklasifikasi dan Subkualifikasi Usaha Jasa Konstruksi*, (Kementerian Pekerjaan Umum dan Perumahan Rakyat, Jakarta, Indonesia)
- Mairizal (2016). *Perancangan Strategi Keunggulan Bersaing Perusahaan EPC*, (Institut Sains & Teknologi Nasional, Jakarta, Indonesia)
- Mairizal, Edrizal, Mohammad Ismail & Rosli Mohd. Zin (2020). Identifying of project manager competence factors in managing EPC projects in Indonesia, *IOP Conf. Series: Materials Science and Engineering* 849 (2020), 012003
- Porter, M. E. (1990). *Competitive Advantage-Creating and Sustaining Superior Performance*, (The Free Press: New York)
- Roe, R. A. (2002). What Makes a Competent Psychologist?, *European Psychologist* 7 (3), pp. 192–202
- Spencer, L and Spencer, S. M (1993). *Competence at Work: Models for Superior Performance*, (Wiley Publisher: New Jersey)
- Sudarto, Abidin, I. Trigunaryah, B. and Leni, S (2008). *The Influence of Market Forces on Construction Companies Performance in Indonesia*, EASEC-11
- Supriyadi, E (2014). *SPSS+AMOS, Perangkat Lunak Statistic*, In Media Publisher, Jakarta, Indonesia
- Tri Joko, W.A and Suly, Y (2014). *Pemodelan Estimasi Biaya Kontingensi Berbasis Resiko Pada Proyek Engineering-Procurement-Construction, Infrastruktur* 4, pp. 50 – 57
- Ugulu R. A, Arewa, A and Allen, S (2019). Project-Specific Constraints Influencing Productivity of Tradespeople in The Nigerian Construction Industry, *Built Environment Project and Asset Management* 10 (1), pp. 94-109
- World Economic Forum (2019). *The Global Competitiveness Report 2019-2020*, World Economic Forum. Geneva-Switzerland
- Yasin, N (2003). *Mengenal Kontrak Konstruksi di Indonesia*. Gramedia, Jakarta, Indonesia