ISSN No:-2456-2165

Analysis of Competitive Advantages of Heavy Equipment Rental Business Using System Telematic Real Time

Achmad Noval [I*], Mohammad Iqbal [II*]
Master of Information Systems Management Department, Business Information System,
Gunadarma University, Indonesia

Abstract:- Current usage Information Technology (IT) as a tool in business activities has become a very common thing. Business transactions are carried out with the help of IT equipment so that they can be processed properly by the system. But actually this is only a small part of the use of IT in supporting business activities. In heavy equipment rental construction companies there are problems, namely knowing business activities in the field to be integrated into the head office, the role of IT can be increased by designing and implementing a system that can extract and change business information from existing operational data so that in the end it can provide support to business decisions for company leaders. One of the many construction information systems (heavy equipment rental) namelyreal time telematic system that can support the company's activities as a whole for its business processes so that the company can run well and efficiently, then the company can also know the development of definitions, sources and contributions of sustainable competitive advantage (Sustained Competitive Advantage) or what is commonly called SCA, because of that problem the author is compelled to help analyze the system "real time telematic system"Assisted by this IT system business analysis application using SEM, SPSS and SmartPLS this analysis will help companies in knowing the business process.
Keywords : Business Strategy Analysis, Heavy Equipment Rental, Real Time Telematic Systems, SCA.

I. INTRODUCTION

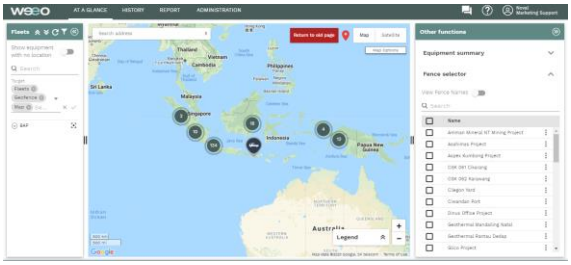
Construction services is an industry that continues to grow along with the rapid development and infrastructure, as can be seen from the increasing number of companies engaged in the construction service business. The government encourages the growth of the construction sector by 5-15% per year. Based on data [11], the construction sector growth in 2018 in the fourth quarter was 5.73%, in 2019 the fourth quarter was 5.79%, and in 2020 the fourth quarter was due to the minus 5.67% covid-19 virus pandemic. The government through the Ministry of National Development Planning/National Development Planning Agency predicts that in 2021 the construction sector will grow 5.2-6.7% [10]

Technological innovations that are required especially for construction companies, especially heavy equipment rentals such as advances in technology with specifications for needs in heavy equipment rentals such as tool detection at work sites, knowing the actual working hours of equipment usage, the results of the daily total equipment reports are increasing as well, to increase data acceleration internal company entry in terms of access to data and information, it is necessary to have a forum that can provide better ease of use of the system, therefore innovations are developed, especially in heavy equipment rental companies using a real time telematic system. accessing the required information One of the analyzes that can be used to design a company's competitive business strategy is (Sustainable Competitive Advantage, hereinafter referred to as SCA) in order to maintain its survival in the global competition of the suit business world. a construction, with this analysis it is expected that the company can make strategic plans related to its competitive position [3].

In addition to innovation, construction service companies cannot be separated from the application of information technology (information technology, hereinafter referred to as real time telematic system). ranging from structural analysis, presentation of technical and artistic drawings, to traffic (transfer) data. Information technology facilitates access to information and makes functions within the organization more related so that organizational capabilities increase which will further increase the company's competitive advantage [9]. Therefore, the performance of information technology (hereinafter referred to as IT Performance) in construction service companies reflects the company's overall performance which has a positive effect on SCA [6].

II. LITERATURE REVIEW

A . *System Telematic Real Time*



Picture 1. *System Telematic Real Time*

Telematic Real Time tracking Heavy equipment is a Special Tracking Tool for the best heavy equipment in 2020 such as Crawler Crane, Excavator, Dozer, Vibro, Crane, Meaning Dump Truck and so on. In addition to monitoring the position of heavy equipment, it can also detect when and how long the heavy equipment is working or in other words the engine is running, one of the heavy equipment company Caterpillar Inctracking, which is designed specifically for hardware and applications, can also monitor the hours meter or working hours on heavy equipment, fuel sensor, camera capture, handling sensor, temperature sensor, data record blank signal and ECU theft alarm. As is well known that most heavy equipment rental companies set the rental price for heavy equipment based on hours of use with prices that vary depending on the type and type of heavy equipment, therefore this telematic tracking heavy equipment calculation sensor can help the management of heavy equipment rental companies monitor online the total working hours of heavy equipment which can later be matched with real hour data installed on the heavy equipment.

B . Sustainable Competitive Advantage (SCA).

Sustainable Competitive Advantage (SCA) [1] states that sustainable competitive advantage is a form of strategy to help companies maintain their survival. This opinion is supported by [2] which states that in a competitive market, the company's ability to produce performance, especially financial performance, is highly dependent on the degree of its competitive advantage. To perpetuate its existence, the company's competitive advantage must also be sustainable because basically the company wants to perpetuate its existence. Sustainable competitive advantage is the company's strategy to achieve its ultimate goal, namely performance that produces high profits. That is, sustainable competitive advantage is not the end goal, but is a means to achieve the company's ultimate goal, namely high performance.

C .Concept Variables

- **Organizational culture**

The successful implementation of information technology is also influenced by the vision and support from management. This support is mainly obtained from top management as strategic decision makers. The thing to note is the consistency of the support. Top management commitment plays an important role in the successful application of information technology [8].

H1: Organizational Culture has a positive effect on Information Technology Performance

- ***Business Resource***

Hardware and software will not function optimally if they are not supported by capable brainware that is able to connect them with the company's business management. One alternative in developing a competitive IT system including the units in it is through benchmarking [7]. Companies should integrate IT with business practices and business logistics of the company. This includes IT planning, namely the integration of IT into the company's business practices and logistics. Furthermore, it is said that this logistics is also related to parties outside the company, namely suppliers (supplier relationships). This means that the company will be more fluent and efficient in dealing with its suppliers using electronic data interchange (EDI). Of course, this must be supported by the IT capabilities of its suppliers.

H2: Business Resources have a positive effect on Information Technology Performance

- **Technology Resource**

To build and support information technology infrastructure, it must be arranged between existing information technology units and establish standards for their implementation. [6] argues that the arrangement (management) of IT units or known as architecture makes calculations and data distributed smoothly and synergistically, and standardization of IT mechanisms is an efficient implementation of IT in company management. From the opinion, [6] above, technology resources in the form of architecture, standardization of information technology systems as well as hardware and software of information technology units, have a positive effect on information technology performance. It can be hypothesized that there is a positive influence between technology resources on information technology performance.

H3: Technology Resources have a positive effect on Information Technology Performance

- **Specific Asset Complexity**

Proprietary innovation through patents, copyrights or confidentiality can protect the company from competitors who will imitate the advantages of its products. The business secrets contained in patents are stored in the form of hidden knowledge. Hidden knowledge becomes difficult to reveal and difficult for competitors to imitate. Furthermore, it is said that most service companies, especially construction service companies, have used information technology to maintain the confidentiality of their properties. Special assets in innovation have an impact on the difficulty of the innovation to be imitated. When innovation is commercialized, it requires specialized assets in marketing and in production. The ability of innovation to be imitated will be hindered by the degree of complexity (complexity) and the number of special assets required, the ease of imitation of company assets in this case technological innovation and knowledge, is hindered by the degree of complexity (complexity) of these assets, it is hypothesized that the complexity of specific assets has a positive effect on technological innovation.

ISSN No:-2456-2165

H4: Specific Asset Complexity has a positive effect on Technological Innovation

- **Differentiation**

Innovation is based on differences that competitors do not have. According to Day & Wensley (1988), product differentiation produces unique products that are innovative and difficult to imitate by competitors [1]. Every innovation that has the power to sell (has a selling point) tends to be quickly duplicated by competitors.

H5: Differentiation has a positive effect on Technological Innovation.

- ***IT Performance***

Information technology (Information Technology-IT) refers to the collective meaning of assembling, storing and retrieving data in the form of sentences, numbers, images and sounds electronically [6]. Information technology is used to create information systems, including all hardware and software used to implement computer-based information systems [6].

H6: Information Technology Performance has a positive effect on Sustainable Competitive Advantage.

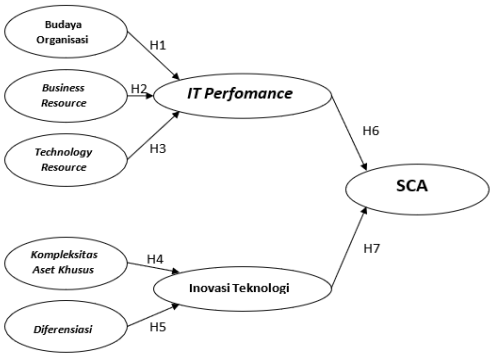
- **Technology Innovation**

Conventionally, innovation is defined as a method breakthrough related to a new type of product. Innovation is defined as a broad concept that addresses the application of new ideas, products and processes. Furthermore, it is said that innovation is a company's mechanism to adapt in a dynamic environment.

H7: Technological Innovation has a positive effect on Sustainable Competitive Advantage

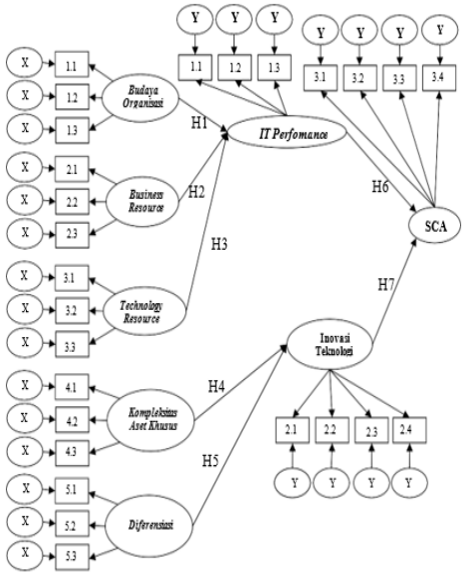
III. III RESEARCH METHOD

Based on the literature review above regarding the relationship between organizational culture, Business Resources, Technology Resources, specific asset complexity, differentiation, IT Performance, technological innovation and Sustainable Competitive Advantage (SCA), the research framework can be formulated as follows.



Source : Private Document
Picture 2. Research Framework

This section will explain the data that describes the maximum, minimum and average (Mean) values of the 10 response scales provided for each questionnaire statement. This descriptive data is based on respondents' responses to organizational culture variables (X1.1 — X1.3), business resources (X2.1 — X2.3), technology resources (X3.1 — X.3), complexity of special assets (X4 .1 — X4.3), differentiation (X5.1 — X5.3), IT performance (X5 Y1.1 — Y1.2), technology innovation (Y2.1 — Y2.4) and SCA (Y3.1— Y.3.4).



Source : Private Document
Picture 3. Research Flowchart

X1.1: Top management commiment (Komitmen Direktur Utama dalam mengikuti perkembangan teknologi informasi).	**X5.2:** Diferensiasi teknologi metode pembangunan konstruksi.
X1.2: Organization flexibility (Keluwesan organisasi perusahaan dalam menyikapi perkembangan teknologI informasi).	**X5.3:** Diferensiasi teknologi manajemen konstruksi.
X1.3: Dukungan anggota organisasi, yaitu IT staff technical skill (Kemampuan teknis staf teknolog informasi dalam mengoperasikan dan mengikuti perkembangan perangkat keras dan lunak teknlogi informasi).	**Y1.1:** Kecepatan komputasi masingmasing unit sistem IT.
X2.1: IT Training (Pelatihan bagi staf-staf teknologi informasi).	**Y1.2:** Kecepatan lalu lintas data antar unit-unit sistem IT.
X2.2: Benchmarking (Pengukurankinerja unit dan sistem teknologi informasi).	**Y1.3:** Keselarasan unit dan sistem IT dengan tujuan strategis perusahaan.
X2.3: IT Planning (Perancangan sistem teknologi informasi beserta unit-unit di dalamnya).	**Y2.1:** Penemuan teknologi baru.
X3.1: Architecure (manajemen unitunit dalam sistem IT).	**Y2.2:** Aplikasi teknologi baru.
X3.2: Standardisasi sistem IT.	**Y2.3:** Keinovatifan.
X3.3: Hardware dan software yang digunakan dalam sistem IT.	**Y2.4:** Kapasitas berinovasi.
X4.1: Kompleksitas peralatan.	**Y3.1:** Sistem teknologi yang bernilai bagi konsumen.
X4.2: Kompleksitas kecakapan SDM.	**Y3.2:** Sistem teknologi yang tidak dapat ditiru.
X4.3: Kompleksitas pengetahuan (knowledge).	**Y3.3:** Sistem teknologi yang jarang ada.
X5.1: Diferensiasi teknologi layanan jasa konstruksi.	**Y3.4:** Sistem teknologi yang tidak tergantikan.

Source : Private Document
Picture 4. Structural Development Model Indicators

ISSN No:-2456-2165

In accordance with the formulated hypothesis, in this study the analysis of inferential statistical data was measured using SmartPLS software starting from the measurement model (outer model), model structure (inner model) and hypothesis testing [5]. PLS is an alternative approach that shifts from a covariance-based Structural Equation Modeling (SEM) approach to a variance-based approach. Covariance-based SEM generally tests causality/theory, while PLS is more of a predictive model. PLS is a powerful analytical method, it does not have to meet the requirements of the assumption of data normality and the sample size does not have to be large [4]. Besides being able to be used as a confirmation of theory, PLS can also be used to build relationships for which there is no theoretical basis or to test propositions.

IV. IV RESULTS AND DISCUSSION

The object of this research is a large-scale construction service company (classification B1 and B2) in Indonesia with a total of 1541 companies. In this study, questionnaires were sent to 193 large classified construction service companies spread across Indonesia. There are 150 respondents who responded to the questionnaire properly and can be used as primary research data. This means that the appropriate questionnaire responses to be used as research data are 100% of the total required amount. The number of appropriate questionnaire responses exceeds the minimum requirements for the number of research samples, which is 130 pieces. There were 43 questionnaires that were not answered or returned by the respondents.

- **Evaluasi Measurement (Outer) Model**

Model specifies the relationship between latent variables and their indicators. or it can be said that the outer model defines how each indicator relates to its latent variable.

1. Validity Test

Validity test is used to measure the validity or validity of a questionnaire. A questionnaire is said to be valid if it is able to reveal something that will be measured by the questionnaire. This test is carried out using a measure of convergent validity in PLS.

The convergent validity value of each indicator can be seen from the loading value. Individual indicators are considered valid if they have a loading value above 0.70. Research in the early stages of developing a measurement scale for loading values of 0.5 to 0.6 is considered adequate. In this study, a loading factor limit of 0.6 will be used. [5].

Table 1. Result for Cross Loading

	Budaya Organisasi	Bussiness Resource	Diferensiasi	IT Performance	Inovasi Teknology	Kompleksitas Asset Khusus	SCA	*Technology resource*
X1.1	0,801							
X1.2	0,699							
X1.3	0,752							
X2.1		0,775						
X2.2		0,681						
X2.3		0,794						
X3.1								0,728
X3.2								0,718
X3.3								0,831
X4.1						0,815		
X4.2						0,718		
X4.3						0,715		
X5.1			0,813					
X5.2			0,615					
X5.3			0,830					
Y1.1				0,791				
Y1.2				0,721				
Y1.3				0,752				
Y2.1					0,703			
Y2.2					0,739			
Y2.3					0,727			
Y2.4					0,564			
Y3.1							0,706	
Y3.2							0,795	
Y3.3							0,855	
Y3.4							0,672	

Based on the results of the validity test that has been carried out, it is known that not all questionnaire items that will be used to collect data are valid so they must be cut.

Table 2. Result for Cross Loading After Cutting

	Budaya Organisasi	Bussiness Resource	Diferensiasi	IT Performance	Inovasi Teknology	Kompleksitas Asset Khusus	SCA	*Technology resource*
X1.1	0,801							
X1.2	0,699							
X1.3	0,752							
X2.1		0,775						
X2.2		0,681						
X2.3		0,794						
X3.1								0,728
X3.2								0,718
X3.3								0,831
X4.1						0,817		
X4.2						0,694		
X4.3						0,747		
X5.1			0,804					
X5.2			0,641					
X5.3			0,821					
Y1.1				0,791				
Y1.2				0,721				
Y1.3				0,752				
Y2.1					0,757			
Y2.2					0,719			
Y2.3					0,791			
Y3.1							0,705	
Y3.2							0,793	
Y3.3							0,853	
Y3.4							0,677	

Source : Private Document

It can be seen that these conditions have been met so that all the constructs in the estimated model meet the criteria for good discriminant validity, meaning that the results of data analysis can be accepted because the values that describe the relationship between constructs develop. Another method to see discriminant validity is to look at the Square Root of Average Variance Extracted (AVE). The recommended value is above 0.5. The following is the AVE value in this study:

ISSN No:-2456-2165

Table 3. Average Variance Extracted (AVE)

	Average Variance Extracted (AVE)	√AVE
Budaya Organisasi	0,565	0,751
Bussiness Resource	0,565	0,751
Technology resource	0,579	0,760
Kompleksitas Asset Khusus	0,569	0,754
Diferensiasi	0,577	0,759
IT Performance	0,570	0,754
Inovasi Teknology	0,572	0,756
SCA	0,578	0,760

Source : Private Document

Table 3 shows the AVE value above 0.5 for all constructs contained in the research model, so it can be concluded that all indicators in this study are declared valid. The lowest AVE value is 0.751, namely on the constructs of Organizational Culture and Bussiness Resource.

2. Reliability Test

A. The questionnaire is said to be reliable or reliable if someone's answer to the statement is consistent or stable from time to time [6]. Reliability test is the level of stability of a measuring instrument in measuring a symptom/event. The higher the reliability of a measuring instrument, the more stable the measuring instrument is. A construct is said to be reliable if it gives a Cronbach Alpha value > 0.60 [5].

Tabel 4. Cronbach Alpha

	Cronbach Alpha
Budaya Organisasi	0,613
Bussiness Resource	0,614
Technology resource	0,634
Kompleksitas Asset Khusus	0,622
Diferensiasi	0,631
IT Performance	0,622
Inovasi Teknology	0,627
SCA	0,753

Source : Private Document

Table 4. shows the results of the Cronbach Alpha of each good construct, which is above 0.6.

B. Apart from Croanbach Alpha, to assess the reliability of a construct, it can also be done by looking at the Composite Reliability between constructs with the indicators giving good results, which are above 0.70. where the loading factor of 0.70 and above is good.

Table 5. Composite Reliability

	Composite Realibility
Budaya Organisasi	0,795
Bussiness Resource	0,795
Technology resource	0,804
Kompleksitas Asset Khusus	0,798
Diferensiasi	0,802
IT Performance	0,799
Inovasi Teknology	0,800
SCA	0,844

Source : Private Document

Table 5. shows the results of the composite reliability of each good construct, which is above 0.7. According to Chin (1998) an indicator is said to have good reliability if its value is above 0.70 and can be maintained and accepted at a value of 0.50 to 0.60. It can be seen here that the value for all variables has a composite reliability value of > 0.5, meaning that it has a good reliability value and can be used for further research processes. What is meant by reliable here is that the indicators used in real research are in accordance with the real conditions of the research object.

- **Structural Model Testing (Inner Model)**

After the estimated model meets the discriminant validity criteria, the structural model (inner model) test is then carried out. Assessing the inner model is to see the relationship between latent constructs by looking at the estimation results of the path parameter coefficients and their significance level [5]. Here is the Adjusted R-square value on the construct.

Table 6 .Adjusted R-Square

	Adjusted R-Square
IT Performance	0,299
Innovasi Teknology	0,313
SCA	0,237

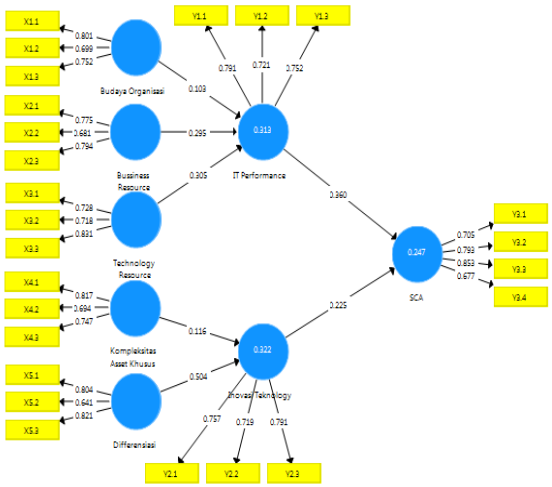
Source : Private Document

Table 6. shows that the Adjusted R-square value of the IT Performance (Y1) construct is 29.9%. This means that the variables of Organizational Culture, Business Resources and Technology resources can explain the construct of the IT Performance variable by 29.9%, while the remaining (100%-29.9% = 70.1%) is explained by other variables.

The Technology Innovation Construct (Y2) is 31.3%. This means that the variable construct of Special Asset Complexity and Differentiation is able to explain the variable construct of Technology Innovation (Y2) by 31.3%, while the remaining (100%-31.3% = 68.7%) is explained by other variables.

The adjusted R-square of the Sustainable Competitive Advantage (SCA) construct is 23.7%. This means that the variable constructs of Organizational Culture, Business Resources, Technology resources, Complexity of Special Assets, Differentiation, IT Performance and Technology Innovation are able to explain the variable construct of Sustainable Competitive Advantage (Y3) by 23.7%, while the rest of the remaining (100%- 23.7% = 76.3%) is explained by other variables.

- **Implementation of PLS Full Model Results**



Picture 5. SmartPLS Display Algorithm Results

To determine whether a hypothesis is accepted or not by comparing t-count with t-table with the condition that if t-count > t-table or p values < alpha level (0.05), then the hypothesis is accepted..

Table 7. Hypothesis testing

	Sampel Asli (O)	Rata-rata Sampel (M)	Standar Deviasi (STDEV)	T Statistik (| O/STDEV |)	P Values
Budaya Organisasi -> IT Performance	0,103	0,114	0,070	1,478	0,140
Bussiness Resource -> IT Performance	0,295	0,306	0,078	3,795	0,000
Technology resource -> IT Performance	0,305	0,309	0,072	4,209	0,000
Kompleksitas Asset Khusus -> Inovasi Teknology	0,116	0,132	0,080	1,445	0,149
Diferensiasi -> Inovasi Teknology	0,504	0,497	0,088	5,737	0,000
IT Performance -> SCA	0,360	0,367	0,073	4,911	0,000
Inovasi Teknology -> SCA	0,225	0,233	0,072	3,131	0,002

1. The Influence of Organizational Culture on IT Performance.

Based on the results of the PLS test in table 7. above against the first hypothesis, namely the influence of Organizational Culture (x1) on IT Performance (y1), it is known that the original sample estimate result is 0.103, the t value (1.478) < t table (2.00) and the P values 0.140 < 0.05. Organizational Culture has no significant positive effect on IT Performance.

2. Effect of Business Resources on IT Performance.

Based on the results of the PLS test in table 7. above on the second hypothesis, namely the influence of Bussiness Resource (x2) on IT Performance (y1), it is known that the original sample estimate result is 0.295, the t value (3.795) > t table (2.00) and the P value values 0.000 < 0.05. Business Resource has a significant positive effect on IT Performance.

3. Influence of Technology resources on IT Performance

Based on the results of the PLS test in table 7. above, Technology resource (x3) on IT Performance (y1), the third hypothesis is known. The original sample estimate result is 0.305, the t value is 4.209 > t table (2.00) and the p value is 0.000 < 0, 05. There is a significant and positive influence of Technology resource on IT Performance, meaning that the better the Technology resource, IT Performance will be better.

4. The Effect of Specific Asset Complexity on Technology Innovation

Based on Table 7. above the Complexity of Special Assets (x4) against Technology Innovation (y2), the fourth hypothesis is known that the original sample of estimate value is 0.116 and the t-count value is 1.445 < statistical t-value (2.00) and the p-value is 0.149 > 0.05 so that it can be concluded that there is no significant and positive influence between the Complexity of Special Assets on Technology Innovation.

5. The Effect of Differentiation on Technology Innovation

Based on table 7. above, Differentiation (x5) towards Technology Innovation (y2), the fifth hypothesis is known that the original sample of estimate value is 0.504 and the t-count value is 5.737 > the statistical t-value (2.00) and the p-value is 0.000 <0.05 so that it can be it can be concluded that there is a significant and positive influence between differentiation and technological innovation, meaning that the better the differentiation, the higher the technological innovation.

6. Influence of IT Performance on Sustainable Competitive Advantage

From Table 7. above, IT Performance (y1) against Sustainable Competitive Advantage (y3) the sixth hypothesis is known that the original sample of estimate value is 0.360 and the t-count value is 4.911 > the t-statistical value (2.00) and the p-value is 0.000 <0.05 so it can be concluded that there is a significant and positive influence between IT Performance on Sustainable Competitive Advantage, meaning that the better IT Performance will increase the Sustainable Competitive Advantage.

7. Influence of Technology Innovation on Sustainable Competitive Advantage

From Table 7. above, Technology Innovation (y2) against Sustainable Competitive Advantage (y3) the seventh hypothesis is known that the original sample of estimate value is 0.225 and the t-count value is 3.131 > the t-statistical value (2.00) and the p-value is 0.002 <0.05 so it can be concluded that there is a significant and positive influence between Technology Innovation on Sustainable Competitive Advantage, meaning that the better the Technology Innovation, the more Sustainable Competitive Advantage will be.

V. CONCLUSION

The core problem in this research is how to increase sustainable competitive advantage through information technology performance (IT performance real time telematic system) and technological innovation.

Based on the analysis of the effect using SPSS 26 and SmarPLS 3.3.3, the core problem in this research is answered, namely the sustainable competitive advantage of construction service companies must be improved through technological innovation with a real time telematic system. The sustainable competitive advantage of construction service companies can be enhanced through the performance of real time telematic information technology systems with good features and high computing speed and integrated into the business practices of heavy equipment rental construction companies.

REFERENCES

[1] **Day & Wensley** Article citations [Article].
[2] **Ferdinand** 2003[Book]
[3] **Fleisher and Bensoussan** usiness and Competitive Analysis: Effective Application of New and Classic Methods. New Jersey: Pearson Education Inc [Book] - [p.103] 2007
[4] Ghozali, Imam Aplikasi Analisis Multivariate dengan Program IBM SPSS 23. [Book] 2015
[5] Ghozali Imam, Partial Least Squares: Concepts, Techniques and Applications using SmartPLS 3 [Book] 2015
[6] Goodhue et al. Article citations [Article]
[7] Hammer & Champy, 1993 Reengineering the Corporation: A Manifesto for Business Revolution [Book] (1993)
[8] Henderson & Venkrataman (1993) [Book]
[9] Holland, Lockett dan Blackman, Planning for electronic data interchange [Book]. 1992
[10] Kementerian PPN/Bappenas Ministry of National Development Planning of the Republic of Indonesia [Online] // https://www.bappenas.go.id/.
[11] Statistics Indonesia Banyaknya Perusahaan Konstruksi Indonesia 2018-2020 [Online] // https://www.bps.go.id/indicator/4/2 16/1/banyaknya-perusahaan- konstruksi.html. https://www.functionize.com/blog/t ypes-of-software-testing/.
[12] Venkrataman, Corporate Governance and Strategic Resource Allocation [Book]. 1993