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# Partnership in Improving Smart City Performance

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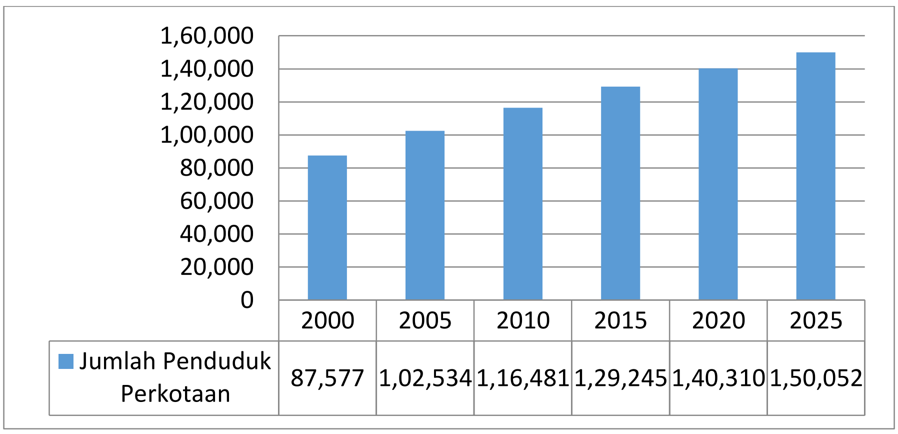
***Abstract***- The aim of this research is to analyze to what extent the effect of the partnership on the improvement of Smart City performance (Survey on Cities and Regencies in West Java Province). For the population in this study were the heads of city and regency Bappeda in West Java Province, totaling 27 cities and districts, with the sample unit taken, namely as much as the whole of the total population studied as respondents. Thus, the sampling used in this study, namely saturated samples or census, which is a sampling method in which all members of the population are used as samples. The research method used is a survey research method, in which information and data related to the problem under study is collected through a written list of questions / questionnaires distributed to Bappeda structural officials as respondents. Meanwhile, the data processing and analysis techniques used are in the form of the PLS-SEM approach, which is calculated using statistical tools in the form of the SmartPLS-3 software program. Based on the results of data processing and analysis, it is known that partnerships can have a positive and significant impact on improving Smart City performance. Thus, it is concluded that if the implementation of the partnership strategy goes well, the performance shown by the city / local government in realizing the Smart City program can be even better. .

***Keywords:*** *Partnership, Smart City Performance.*

## 1. INTRODUCTION

It is estimated that in the next few years more than half of the world's population will prefer to live in urban areas and its surroundings (Siuryte & Davidaviciene, 2016). In fact, it is predicted that in 2050 the world's population who will live in urban areas will reach 70% (Lierow, 2014; Shen et al., 2010). Meanwhile, it is estimated that the number of Indonesians living in urban areas in the coming 2025 will reach as many as 150 million. This figure shows a significant increase in population when compared to the number of people residing in urban areas in 2000, which was 70%.



Source: Tjiptoherijanto, 1999
Figure 1. Urban Population Growth Rate in Indonesia (in million)

Along with the increasing number of residents living in cities and surrounding areas, this condition can cause problems that can endanger the economic and environmental sustainability of a city (Nierotti et al., 2014). As for the problems in the city that arise as a result of higher population growth rates, including the number of people who are difficult to census, scarcity of resources, traffic jams, environmental degradation, the emergence of slum settlements, the problem of waste and pollution is getting worse. , the use of electrical energy is getting bigger, the crime rate is increasing, the problem of waste, and others (Bitjoli et al., 2017; Kurnaedi, 2017).

Therefore, it is necessary to have a concept that can be projected as one way to overcome various problems in the city which is called the concept of "Smart City" (Kummitha & Crutzen, 2017). Basically, the concept of "Smart City" has the aim of providing accurate information at the right time for the city community and their government, so that all decisions taken can become policies that can create a better and more sustainable quality of life for urban communities (Khansari et al., 2013). Several studies on the Smart City concept have been implemented and carried out in various cities in other countries in the world, including in the City of Curitiba, South Brazil (Macke et al., 2018), Changsha, China (Liu & Zhu, 2016), Vienna, Austria (Fernandez-Anez et al., 2017), India (Chatterjee et al., 2018), Singapore (Mahizhnan, 1999), and Barcelona, Spanish (Bakici et al., 2012).

In Indonesia, the concept of "Smart City" has been developed in several major cities in Indonesia, including Jakarta, Bandung, Yogyakarta, Surabaya, Malang, Balikpapan, Makassar, and others. Even so, in practice, there are still many kinds of obstacles that can be obstacles to the creation of a smart city which should be a solution in overcoming various urban problems. Therefore, in order to create a smart city, the city or regional government does not necessarily do it alone, but it requires cooperation between the government and other parties, in this case cooperation with the private sector.

However, until now there have not been many research results that discuss the use of the partnership strategy used in analyzing the successful implementation of the “Smart City” program which has an impact on the increasing performance of a city government. So far, research that has examined partnership strategies is more related to the efforts of city / local governments which are obliged to improve public services provided to their communities through cooperation agreements between the government and the private sector, especially in the provision of public infrastructure.

Based on this explanation, the authors became interested in conducting a study entitled "Partnerships in Improving Smart City Performance".

## 2. METHODOLOGY

The research method used is descriptive and verification research methods. The definition of descriptive research method is a research method used to analyze data which is done by describing the collected data as it is without intending to make general conclusions. And the verification research method is a research method that aims to test the predetermined hypotheses (Sugiyono, 2014). In this study, the variables studied consisted of 2 (two) main variables, including the partnership strategy variable (X) as the independent variable and the “Smart City” performance variable (Y) as the dependent variable. The main hypothesis in this study is the partnership strategy has a positive and significant effect on improving the performance of "Smart City".

The population in this study were the heads of city and regency Bappeda throughout West Java Province, totaling 27 cities and districts, with the sample unit taken, namely as much as the total number of the population studied as respondents. Thus, the sampling used in this study, namely saturated samples or census, which is a sampling method in which all members of the population are used as samples.

The data collection techniques used in this research were carried out in various ways, including through the distribution of questionnaires which were distributed to structural officials of Bappeda cities and districts in West Java Province as respondents, and documentation and literature studies carried out by reading, studying, and understand mandatory books (literature) and other references, such as journals and various other articles that are still related to the topic under study.

Furthermore, the data processing and analysis techniques used in this study were carried out using the Structural Equation Model (SEM) method based on Partial Least Squares (PLS) whose calculations can be calculated with the help of the SmartPLS-3 software program.

## 3. RESULTS AND DISCUSSION

### a. Results of data processing

**Results of the Measurement Model Analysis (Outer Model)**

In the PLS method, analysis of the measurement model, or what is also called the outer model, needs to be done first, which aims to determine the specific relationship between latent variables and their respective manifestations. The so-called outer model is a measurement model that is intended to test or obtain the validity and reliability value of the constructs used or the research model formed (Jogiyanto & Abdillah, 2016).

The following is a table that contains an explanation of the outer loading value in the initial measurement model for the Partnership Strategy variable.

**Table 1. Outer Loading Value in the Partnership Strategy Variable Initial Measurement Model**

| Latent Variable | Dimensions | Indicator | Outer Loading | | AVE | CR | Cr. Alpha | V or TV | R or TR |
|---|---|---|---|---|---|---|---|---|---|
| | | | Dimensional indicator | Latent Indicator Variable | | | | | |
| Partnership Strategy | Stakeholder Relationship | X.1.1 | 0,785 | 0,715 | 0,584 | 0,899 | 0,858 | V | R |
| | | X.1.2 | 0,786 | 0,701 | | | | V | R |
| | | X.1.3 | 0,162 | 0,152 | | | | TV | R |
| | | X.1.4 | 0,877 | 0,788 | | | | V | R |
| | | X.1.5 | 0,706 | 0,613 | | | | V | R |
| | | X.1.6 | 0,862 | 0,803 | | | | V | R |
| | | X.1.7 | 0,902 | 0,808 | | | | V | R |
| | Information Flow | X.2.1 | 0,924 | 0,875 | 0,779 | 0,955 | 0,942 | V | R |
| | | X.2.2 | 0,761 | 0,791 | | | | V | R |
| | | X.2.3 | 0,896 | 0,807 | | | | V | R |
| | | X.2.4 | 0,925 | 0,855 | | | | V | R |
| | | X.2.5 | 0,880 | 0,815 | | | | V | R |
| | | X.2.6 | 0,899 | 0,850 | | | | V | R |
| | Conflict Resolution | X.3.1 | 0,933 | 0,875 | 0,846 | 0,943 | 0,908 | V | R |
| | | X.3.2 | 0,952 | 0,861 | | | | V | R |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | X.3.3 | 0,873 | 0,798 | | | | V | R |
| Partnership Strategy | | | | | 0,602 | 0,958 | 0,951 | V | R |

Source: Results of SmartPLS Data Processing

Based on the data shown in Table 1, it is known that there is one indicator that has an outer loading value of not more than 0.7, namely the X.1.3 indicator, with a value of 0.162, on the stakeholder reliability dimension, so that the indicator can be declared invalid. That way, a revision of the measurement model is needed in the partnership strategy variable, where for the X.1.3 indicator on the stakeholder reliability dimension, as well as several other indicators that can cause this variable to be invalid due to the outer loading value which is less of 0.7, such as indicators X.1.3 and X.1.5, it needs to be removed from this measurement model which aims so that all indicators and dimensions in the reliability partnership variable can have valid and reliable values, so that they can be used in further measurements.

**Table 2. Outer Loading Value of Revised Results in the Partnership Strategy Variable Measurement Model**

| Latent Variable | Dimensions | Indicator | Outer Loading | | AVE | CR | Cr. Alpha | V or TV | R or TR |
|---|---|---|---|---|---|---|---|---|---|
| | | | Dimensional Indicators | Latent Indicator Variable | | | | | |
| Partnership Strategy | Stakeholder Relationship | X.1.1 | 0,809 | 0,718 | 0,730 | 0,931 | 0,907 | V | R |
| | | X.1.2 | 0,844 | 0,715 | | | | V | R |
| | | X.1.4 | 0,870 | 0,779 | | | | V | R |
| | | X.1.6 | 0,867 | 0,799 | | | | V | R |
| | | X.1.7 | 0,879 | 0,793 | | | | V | R |
| | Information Flow | X.2.1 | 0,924 | 0,880 | 0,779 | 0,955 | 0,942 | V | R |
| | | X.2.2 | 0,759 | 0,770 | | | | V | R |
| | | X.2.3 | 0,895 | 0,797 | | | | V | R |
| | | X.2.4 | 0,925 | 0,862 | | | | V | R |
| | | X.2.5 | 0,881 | 0,817 | | | | V | R |
| | | X.2.6 | 0,901 | 0,861 | | | | V | R |
| | Conflict Resolution | X.3.1 | 0,933 | 0,882 | 0,846 | 0,943 | 0,908 | V | R |
| | | X.3.2 | 0,952 | 0,870 | | | | V | R |
| | | X.3.3 | 0,874 | 0,814 | | | | V | R |
| Partnership Strategy | | | | | 0,661 | 0,965 | 0,960 | V | R |

Source: Results of SmartPLS Data Processing

Based on the data shown in Table 2, it is known that the value of the validity parameter shown in the revised measurement model results in the partnership strategy variable (partnership reliability) has met the rule of thumb that should be. This can be seen through the outer loading value of the manifest variable towards the dimensional construct, as well as the outer loading value of the dimensional construct on the partnership strategy factor variable (partnership relationship), all of which have a value greater than 0.7. In addition, the AVE value that he showed for each dimensional construct and variable of the partnership strategy (partnership relationship) had a value that was above 0.5. Thus, it can be said that testing the convergent validity of the partnership strategy factor variable (partnership relationship), along with its manifestations, can be fulfilled or declared valid.

**Table 3. Correlation Value between Dimensional Constructs**

| | Correlation Value between Constructs | | | | Discriminant Validity |
|---|---|---|---|---|---|
| | Conflict Resolution | Information Flow | Stakeholder Relationship | AVE | Fulfilled |
| Conflict Resolution | 0,920 | | | 0,846 | |
| Information Flow | 0,846 | 0,883 | | 0,779 | |
| Stakeholder Relationship | 0,773 | 0,720 | 0,854 | 0,730 | |
| AVE | 0,846 | 0,779 | 0,730 | 0 | |

Source: Results of SmartPLS Data Processing

Furthermore, for the calculation of the discriminant validity test on the partnership strategy variable, it is carried out by comparing the root of the AVE of a construct which must have a higher value than the correlation between these latent variables (AVE Square Root> Correlation between Latent Constructs), or measurement. which is calculated through the cross loading value of the measurement with the construct. As for the calculation results whose data is shown in the table, it is known that the value of the square root AVE of each related construct has a value that is greater than the value of the correlation square between latent constructs. Thus, it can be said that the discriminant validity test on the partnership strategy factor variable has been fulfilled or declared valid.

To test the reliability of a construct, by referring to the data shown in Table 2, it is known that, both the Cronbach's Alpha value and the composite reliability value for each dimensional construct and its variables show a much larger number than the rule of thumb that should be, namely> 0,70. Thus, it can be said that reliability testing on the partnership strategy variable (partnership reliability), along with its manifestations, has been well stated or has a good reliability value.

The following is a table that contains an explanation of the outer loading value in the initial measurement model for the Smart City Performance variable.

**Table 4. Outer Loading Value of the Smart City Performance Variable Initial Measurement Model (Smart City Performance)**

| **Latent Variable** | **Dimensions** | **Indicator** | **Outer Loading** | | **AVE** | **CR** | **Cr. Alpha** | **V or TV** | **R or TR** |
|---|---|---|---|---|---|---|---|---|---|
| | | | **Dimensional Indicator** | **Latent Indicator Variable** | | | | | |
| Smart City Performance | Smart People | Y.1.1 | 0,677 | 0,516 | 0,552 | 0,786 | 0,607 | TV | R |
| | | Y.1.2 | 0,812 | 0,777 | | | | V | R |
| | | Y.1.3 | 0,734 | 0,496 | | | | V | R |
| | Smart | Y.2.1 | 0,911 | 0,814 | 0,781 | 0,914 | 0,859 | V | R |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Economy | Y.2.2 | 0,973 | 0,782 | | | | V | R |
| | | Y.2.3 | 0,753 | 0,493 | | | | V | R |
| | Smart Environment | Y.3.1 | 0,905 | 0,820 | 0,835 | 0,938 | 0,900 | V | R |
| | | Y.3.2 | 0,966 | 0,822 | | | | V | R |
| | | Y.3.3 | 0,869 | 0,752 | | | | V | R |
| | Smart Governance | Y.4.1 | 0,987 | 0,737 | 0,943 | 0,980 | 0,969 | V | R |
| | | Y.4.2 | 0,963 | 0,720 | | | | V | R |
| | | Y.4.3 | 0,962 | 0,708 | | | | V | R |
| | Smart Mobility | Y.5.1 | 0,949 | 0,787 | 0,928 | 0,975 | 0,961 | V | R |
| | | Y.5.2 | 0,972 | 0,897 | | | | V | R |
| | | Y.5.3 | 0,969 | 0,904 | | | | V | R |
| | Smart Living | Y.6.1 | 0,930 | 0,850 | 0,851 | 0,945 | 0,911 | V | R |
| | | Y.6.2 | 0,875 | 0,821 | | | | V | R |
| | | Y.6.3 | 0,960 | 0,836 | | | | V | R |
| Smart City Performance | | | | | 0,586 | 0,961 | 0,956 | V | R |

Source: Results of SmartPLS Data Processing

Based on the results of the PLS Algorithm running on the initial measurement model of the smart city performance variables shown in Table 4, it is known that there is still one indicator that has an outer loading value lower than 0.7, namely the Y.1.1 indicator, with a value of 0.677, at dimensions of smart people, so that these indicators can be declared invalid. In this way, a revision of the measurement model for the smart city performance variable is needed, where for the Y.1.1 indicator on the dimensions of smart people, as well as several other indicators that can cause this variable to become invalid in relation to the outer loading value values less than 0.7, such as indicators Y.1.1 and Y.2.3, need to be removed from this measurement model which aims so that all indicators and dimensions in the smart city performance variables can have valid and reliable values, so that they can be used in further measurements.

**Table 5. Revised Outer Loading Value on the Smart City Performance Variable Measurement Model (Smart City Performance)**

| Latent Variable | Dimensions | Indicator | Outer Loading | | AVE | CR | Cr. Alpha | V or TV | R or TR |
|---|---|---|---|---|---|---|---|---|---|
| | | | Dimensional Indicators | Latent Indicator Variable | | | | | |
| Smart City Performance | Smart People | Y.1.2 | 1,000 | 0,784 | 1,000 | 1,000 | 1,000 | V | R |
| | Smart Economy | Y.2.1 | 0,965 | 0,793 | 0,927 | 0,962 | 0,921 | V | R |
| | | Y.2.2 | 0,961 | 0,748 | | | | V | R |
| | Smart Environment | Y.3.1 | 0,902 | 0,823 | 0,835 | 0,938 | 0,900 | V | R |
| | | Y.3.2 | 0,965 | 0,889 | | | | V | R |
| | | Y.3.3 | 0,872 | 0,787 | | | | V | R |
| | Smart Governance | Y.4.1 | 0,987 | 0,738 | 0,943 | 0,980 | 0,969 | V | R |
| | | Y.4.2 | 0,963 | 0,716 | | | | V | R |
| | | Y.4.3 | 0,962 | 0,714 | | | | V | R |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Smart Mobility | Y.5.1 | 0,949 | 0,782 | 0,928 | 0,975 | 0,961 | V | R |
| | | Y.5.2 | 0,973 | 0,897 | | | | V | R |
| | | Y.5.3 | 0,969 | 0,898 | | | | V | R |
| | Smart Living | Y.6.1 | 0,930 | 0,876 | 0,851 | 0,945 | 0,911 | V | R |
| | | Y.6.2 | 0,875 | 0,839 | | | | V | R |
| | | Y.6.3 | 0,960 | 0,861 | | | | V | R |
| Smart City Performance | | | | | 0,659 | 0,967 | 0,963 | V | R |

Source: Results of SmartPLS Data Processing

Based on the data shown in Table 5, it is known that the validity parameter values shown in the revised measurement model results in the smart city performance variable have met the proper rule of thumb. This can be seen through the outer loading value of the manifest variable towards the dimensional construct, as well as the outer loading value of the dimensional construct on the smart city performance variable, all of which have a value greater than 0.7. In addition, the AVE value that he shows for each dimensional construct and the smart city performance variable has a value that is above 0.5. Thus, it can be said that the convergent validity test of the smart city performance variable, along with its manifestations, can be fulfilled or declared valid.

**Table 6. Correlation Value between Dimensional Constructs**

| | Correlation Value between Constructs | | | | | | | Discriminant Validity |
|---|---|---|---|---|---|---|---|---|
| | Smart Economy | Smart Environment | Smart Governance | Smart Living | Smart Mobility | Smart People | AVE | Fulfilled |
| Smart Economy | 0.963 | | | | | | 0.927 | |
| Smart Environment | 0.729 | 0.914 | | | | | 0.835 | |
| Smart Governance | 0.548 | 0.520 | 0.971 | | | | 0.943 | |
| Smart Living | 0.639 | 0.876 | 0.619 | 0.922 | | | 0.851 | |
| Smart Mobility | 0.658 | 0.748 | 0.612 | 0.791 | 0.964 | | 0.928 | |
| Smart People | 0.576 | 0.771 | 0.395 | 0.780 | 0.658 | 1.000 | 1.000 | |
| AVE | 0.927 | 0.835 | 0.943 | 0.851 | 0.928 | 1.000 | 0 | |

Source: Results of SmartPLS Data Processing

For discriminant validity testing, the parameter that can be used to measure it is by comparing the square root value of the AVE of a construct which must have a higher value than the correlation between its latent variables. Based on the test results shown in Table 6, it can be said that all dimensions and indicators used in measuring the smart city performance variable have been declared fulfilled or proven valid. This can be seen from the results of the calculations which show that the value of the square root AVE of each related construct has a value that is greater than the value of the correlation squared between latent constructs. Then, in the reliability test, the results are shown in Table 5, it is known that the Cronbach's Alpha value for each dimensional construct and the variable shows a value greater than 0.7, as well as the composite reliability value for each dimensional construct and variable whose value is above 0.7. Thus, it is concluded that the smart city performance variable, along with its manifestations, has a good reliability value.

**Results of the Structural Model Analysis (Inner Model)**

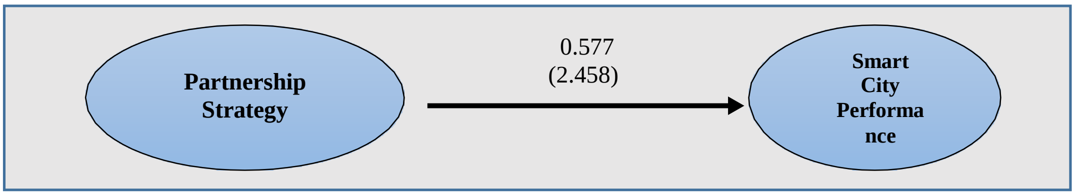
In the PLS method, the evaluation of structural model analysis is carried out by using the calculation of the R2 value for the dependent latent construct, the path coefficient value or the T-value of each path to test the significance between constructs in the structural model (Jogiyanto & Abdillah, 2016).

**Table 7. Path Coefficients, t-statistic significance, p-value, and model strength parameters (R2, f2, and Q2 values)**

| | Path Coef. | t-stat. | P-value | Ket. | $f^2$ | $R^2$ | $Q^2$ |
|---|---|---|---|---|---|---|---|
| Partnership Strategy -> Smart City Performance | 0.577 | 2.458 | 0.014 | S | 0.498 | 0.332 | 0.165 |

Source: Results of SmartPLS Data Processing

Based on the data shown in Table 7, it is known that the R-Squares value obtained is 0.577, which means that the partnership strategy variable can have a positive effect on improving Smart City performance with a percentage of 57.7%, while the rest is influenced by variables others who were not examined in this study. Furthermore, it is also known that statistically the relationship between the two variables has a significant effect at the 5% real level which can be seen through the t-statistic value, which is 2.458, which has a greater value than the t-table value (greater of 1.96) with a p-value of 0.014 (less than 0.05). Thus, it can be said that if the partnership relationship can be carried out well, the performance of the city / local government in an effort to realize a Smart City can increase.




Source: Results of SmartPLS Data Processing

**Figure 2. Research Structural Model**

The following is an explanation of the value of the structural model evaluation (inner model) which is intended to measure the strength of the structural model in making predictions in this study, including:

1. Based on the rule of thumb the strength of the prediction model states that the R2 value is 0.67; 0.33; and 0.19 indicates a strong, moderate and weak model (Chin, 1998), it is known that the R2 value of 0.332 in the structural model of this study indicates that the strength of the model in explaining the variation in sample data in predicting the population is classified into the moderate category. Thus, it can be said that as much as 33.2% of the "Smart City" performance enhancement variable can be caused by the implementation of a partnership strategy that works well.
2. Based on the rule of thumb regarding the effect size f2 which states that if the value is 0.02 it is

considered small; a value of 0.15 is declared moderate; and a value of 0.35 is stated as large (Chin, 1998), it is known that the f2 value obtained is 0.498 in the structural model of this study showing that the predictor of the latent variable of the partnership strategy has a great influence on improving the performance of "Smart City".

3. Based on the rule of thumb regarding the Q2 predictive relevance value whose value is obtained through the blindfolding process in the SmartPLS-3 software program, it is known that the research model which has a Q2 value of 0.165 indicates that the partnership strategy variable is used in predicting increased performance. "Smart City" has been declared relevant in this research model.

**b. Discussion**

Based on the results of calculations and data processing that have been shown previously, it is known that the partnership strategy variable as the independent variable (X) has a significant or significant effect on the performance improvement variable "Smart City" as the dependent variable (Y). Thus, the results of this study indicate that the success of the partnership relationship between the government and the private sector can have an impact on the increasing performance of the government which has earned the nickname as a smart city. It cannot be denied that the government's ability to procure public infrastructure that can give citizens satisfaction with the quality of public services is still considered limited. Therefore, it is necessary to have cooperation with other parties, especially cooperation between the government and the private sector, in meeting these needs (Adha, 2011). Several reasons for the need for a good partnership relationship between the government and the private sector, especially in the provision of public infrastructure that can support the realization of the “Smart City” program, including 1) the increasing number of urban residents while the government itself has limited financial resources; 2) the private or private sector is considered to be more efficient in providing services; 3) the ability of the private sector to serve the needs of services that the government has not been able to handle without having to take over its responsibilities; and 4) the emergence of competition that encourages an entrepreneurial approach in national development (Asikin, 2013).

## 4. CONCLUSION

Based on the results of the research and discussion that has been stated above, it is concluded that if the partnership relationship that exists between the partners can work well, the performance shown by the city or regional government that has earned the nickname as a smart city can be even better. good, too. Thus, it is stated that the partnership strategy has a significant effect on improving the performance of "Smart City".

The author realizes that this study still has several shortcomings. Therefore, if in the future this research wants to be even better, it is advisable to conduct research again by expanding the scope of the research object which is no longer limited to only city and district governments in West Java, but also includes cities and regencies that are located in West Java. in other provinces in Indonesia.

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