Airport Performance and Construction Enlargement Activities

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Abstract. The evaluation of transportation infrastructure project should consider the contribution towards infrastructure growth. This research aims to analyze the effect of construction enlargement activities towards airport performance. This research is correlation study. The population includes 148 airports in Indonesia. By using total sampling, there were 148 sample airports. The result shows that the construction enlargement activities variable has relatively strong relationship to Airport Performance variable, while the adjusted R Square score shows the increasing construction enlargement activities that affected by the other factors aside from airport performance.

1. Introduction
The construction activities include new job, repair, addition and change, the establishment of pre-fabricated of building or structure in the project location and also construction that are temporary. The construction activity shall be carried out by general contractor, i.e. the company that has a construction job for other parties, even by special contractor, that is a business unit or individual that conducts construction activity to be used by them [1]. The result of construction activity is residence building construction, non-residence building construction, civil building construction, electric and telecommunication building construction, power plant, transmission, distribution and installation of communication network building, civil building, electricity installation, dredging, the finishing of civil construction, floor, wall, and building plafond, painting, interior finishing and decoration in finishing; exterior and gardening in the building and other civil buildings, the rent of construction tools, etc [2][3].

In the period of 1991-2010, Malaysia has strong correlation both construction sector. Considering the role of substantial sector’s construction in the development of Malaysia, the government of Malaysia needs to pay attention and focus on the construction sector to fulfill the requirements of developed country [4]. Meanwhile, Indonesia is still left behind in supporting service sector to generate construction enlargement activities.

In Sumatera, the construction performance is getting slower, 4.22% (yoy) in the 2\textsuperscript{nd} quarter of 2017, that lower than the previous quarter 4.48% (yoy), highway toll construction, port and the other...
supporting facilities of the Asian Games 2018 will support the improvement of construction performance. In Java, the construction enterprises' growth is 5.52% (yoy), that higher than the 1st quarter of 2017, at 4.64% (yoy), supported by the government project development or private, such as the establishment of MRT, LRT, New Tanjung Priok, Fly Over Semanggi, PLTU Batang, Central and East Java highway construction, new airport in D.I.Yogyakarta has a potential to give a positive contribution. The increasing Index Residential Property Price also reflects the optimism of construction sector. The increasing house price is encouraged by the incline of small type house price, especially in DKI Jakarta and Banten. Fifty-five infrastructure projects in Java are still in progress in this quarter of the total of asset, at Rp 399.1 trillion or 43.01% from the whole projects in Java. In east part of Indonesia, it improves from 4.86% (yoy) to 6.24% (yoy), acceleration happens in the major part of the province in KTI, except South-East Sulawesi, North Maluku, Papua, West Papua, and NTT, the supporting factor of the improvement is the acceleration of National Strategic Project (PSN), the construction of new factory, the addition of capacity in several areas of Kalimantan, Sulawesi, as well as North Maluku and NTB, the acceleration of the growth of the new project that worth more than 0.2 millions USD is started in the 2nd quarter of 2017 [5].

In the 3rd quarter of 2017, the enterprises construction growth is estimated slightly higher than the previous quarter, supported by the acceleration of construction project realization from the local government, including the process of action from new projects in 2017, the improvement of oil refineries’ capacity in Kalimantan, mineral downstream in Sulawesi and Papua, as well as Balinusra processed food industry development, the construction in supporting infrastructure in Country Border Post (PLBN), the construction of Special Zone Maloy Batuta, the construction of land and sea port, road access together with the construction of CPO storage tank, the construction of Trans-Papua road, the construction of power plant in North and West Sulawesi, the development of Buli Industrial Area in North Maluku [6]. In 2016 the realization of development in Indonesia has improved, especially in construction sector, at approximately Rp 14.2 Trillion, restaurant and hospitality at Rp. 2.4 Trillion, transportation sector, warehousing and communication at Rp. 27.5 Trillion, as well as real estate and company service sector at Rp. 17.5 Trillion [7]. The improvement of this development has indirectly affects to airport infrastructure. On the other hand, evaluation of infrastructure project of new transportation should consider the contribution to infrastructure growth. This research aims to analyze the effect construction enlargement activities towards Airport Performance.

2. Method
This research is correlation study. The correlation study is used when the research has two variables or more [8]. In this research, airport performance becomes X variable and construction enlargement activities becomes Y Variable. The population in the research include 148 airports in Indonesia. By using total sampling, there were 148 sample airports. The data of the research is analyzed by using linear regression analysis.

3. Result and Discussion
3.1. The Comparison of Construction Enlargement Activities with Airport Performance
From 148 airports that are taken as sample in this research, there are 30 airports that have the highest Construction enlargement activities in Indonesia. However, thirty airports with this highest Construction enlargement activities has not yet supported by a good airport performance. Table 1 shows that the area with the highest Construction enlargement activities in Jakarta, Semarang, Pekanbaru, Batam, Makassar, Bandung, Sidoarjo, Medan and Balikpapan. Yet only Semarang, Batam, Makassar, Sidoarjo, Medan and Balikpapan that enter top 10 highest Airport Performance in relation to Aircraft Arrival and Passenger Departure.
| No | Airport & City                  | Construction activities | Aircraft Arrival | Passenger Departure |
|----|--------------------------------|------------------------|-----------------|---------------------|
|    |                                |                        | Rank | Total | Rank | Total |
| 1  | Halim Perdanakusuma (Jakarta Timur) | DKI Jakarta            | 13,683 | 1,482,125 |
| 2  | Achmad Yani (Semarang)          | Semarang               | 17,598  | 1,754,468 |
| 3  | Sultan Syarif Kasim (Pekanbaru) | Pekanbaru              | 8,629   | 1,260,344 |
| 4  | Hang Nadim (Batam)              | Batam                  | 19,212  | 2,313,360 |
| 5  | Sultan Mahmud Badaruddin II (Palembang) | Palembang          | 12,773  | 1,632,277 |
| 6  | Hasanuddin (Makassar)           | Makassar               | 43,807  | 3,306,534 |
| 7  | Husein Sastranegara (Bandung)   | Bandung                | 10,258  | 1,250,087 |
| 8  | Juanda (Sidoarjo)               | Sidoarjo               | 61,412  | 6,821,775 |
| 9  | Kualanamu (Medan)               | Deli Serdang          | 23,804  | 1,260,344 |
| 10 | Sepinggan (Balikpapan)          | Balikpapan             | 33,405  | 3,242,802 |
| 11 | Temindung (Samarinda)           | Samarinda              | 2,717   | 43,035   |
| 12 | Adi Sumarmo (Surakarta)         | Surakarta              | 6,858   | 738,990  |
| 13 | Abdul Rachman Saleh (Malang)    | Malang                 | 2,531   | 310,307  |
| 14 | Soekarno Hatta (Tangerang)      | Tangerang              | 152,914 | 19,151,202 |
| 15 | Rogojampi/Blimbingsari (Banyuwangi) | Banyuwangi            | 960    | 50,796   |
| 16 | Raja Haji Fisabilillah (Tanjung Pinang) | Tanjung Pinang | 1,270   | 125,620  |
| 17 | Tunggul Wulung (Cilacap)        | Cilacap                | 3,729   | 6,697    |
| 18 | Japura Rengat (Indragiri Hulu)  | Indragiri Hulu         | 401    | 20       |
| 19 | Supadio (Pontianak)             | Pontianak              | 11,949  | 1,316,686 |
| 20 | Noto Hadinegoro (Jember)        | Jember                 | 338    | 154,020  |
| 21 | Adi Sucipto (Sleman)            | Sleman                 | 23,200  | 2,992,745 |
| 22 | Ngurah Rai (Badung)             | Badung                 | 36,966  | 4,191,558 |
| 23 | Raden Inten II (Lampung Selatan) | Lampung Selatan   | 7,476   | 716,616  |
| 24 | Jeffman -DEO (Sorong)           | Sorong                 | 6,599   | 359,998  |
| 25 | Mutiara(Palu)                  | Palu                   | 4,451   | 519,254  |
| 26 | Pinang Kampai (Dumai)           | Dumai                  | 591    | 23,709   |
| 27 | Eltari (Kapang)                 | Kapang                 | 10,048  | 752,753  |
| 28 | Sam Ratulangi (Manado)          | Manado                 | 10,162  | 1,014,885 |
| 29 | Melak (Kutai Barat)             | Kutai Barat           | 820    | 16,403   |
| 30 | Bontang (Badak Bontang)         | Bontang                | 583    | 17,993   |
Table 1 also shows that 30 areas with the highest Construction enlargement activities, has a very low rank in airport performance, i.e. Samarinda, Malang, Banyuwangi, Cilacap, Indragiri Hulu, Jember, Palu, Dumai, Kupang, Kutai Barat and Badak Bontang.

3.2. The Effect of Construction Enlargement Activities towards Airport Performance

The multiple linear regression analysis is used for identifying the effect of construction enlargement activities to airport performance by using multiple linear regression formula. The data analysis used data of 148 airports in Indonesia, where we took one airport each town and district. The research variables include:

The result of the analysis by using SPSS 20 version is obtained the regression coefficient as follows:

**Table 2. The Result of the Analysis of Multiple Linear Regression**

| Model | Unstandardized Coefficients | Standardized Coefficients | t | Sig. | Correlations |
|-------|------------------------------|---------------------------|---|------|-------------|
|       | B               | Std. Error   | Beta |       |             |
| 1     | (Constant)      | 673.008       | 487.898 | 1.379 | .170        |
| X1    | -4.994          | 1.874         | -12.096 | -2.817 | .010        |
| X2    | 5.440           | 1.732         | 13.201  | 3.036  | .003        |
| X3    | 0.022           | 0.008         | 6.457   | 2.903  | .004        |
| X4    | -0.007          | 0.007         | -2.333  | -1.060 | .291        |
| X5    | 0.000           | 0.000         | 1.076   | 1.249  | .214        |
| X6    | -0.002          | 0.001         | -5.530  | -4.474 | .000        |
| X7    | -9.784E-005     | 0.000         | -1.176  | -1.899 | .062        |
| X8    | -9.897E-005     | 0.000         | -3.382  | -2.773 | .006        |

| Model | Correlations |
|-------|--------------|
|       | Partial      | Part        |
| 1     |              |             |
| X1    | -217         | -.171       |
| X2    | .249         | .198        |
| X3    | .239         | .189        |
| X4    | .090         | .099        |
| X5    | .105         | .081        |
| X6    | -.355        | -.292       |
| X7    | -.143        | -.111       |
| X8    | -.229        | -.181       |

The formula of multiple regressions:

\[ Y = a + b_1X_1 + b_1X_2 + b_3X_3 + b_4X_4 + b_5X_5 \]

From the result of regression above, it is obtained the equation of multiple linear regressions as follows:

\[ Y = 673.008 - 4.904X_{31} + 5.44X_{32} + 0.022X_{33} + 0.007X_{34} - 0.007X_{36} \]

Based on the equation of multiple linear regression above, it can be seen that X₃₂ and X₃₃ (aircraft depart and passenger depart) have positive impact towards the improvement of construction enlargement activities, while variable X₃₁, X₃₃ dan X₃₆ (aircraft arrival, passenger arrival and baggage loaded) have negative impact of the decline of construction enlargement activities.
Table 3. Model Summary

| Model | R   | R Square | Adjusted R Square | Std. Error of the Estimate |
|-------|-----|----------|-------------------|---------------------------|
| 1     | .6494 | .409     | .375              | 4780.76009               |

a. Predictors: (Constant), X38, X37, X36, X32, X34, X36, X33, X31

Table 3 shows that the number of coefficient correlation (R) is at 0.409, which means Construction enlargement activities variable has relatively strong relationship with Airport Performance variable, while Adjusted R Square score is 0.375, which means 37.5% effect of Airport Performance variable has an impact towards the improvement of Construction enlargement activities, the rest 62.5% of Construction enlargement activities improvement is influenced by the other factors aside from airport performance.

4. Conclusion

In 2016 the development realization has increased, especially in construction sector, restaurant and hospitality sector, transportation sector, warehousing and communication as well as real estate and company service. The result of coefficient correlation (R) test shows that construction enlargement activities variable has relatively strong relation with Airport Performance variable, while the adjusted R Square value shows that the improvement of construction enlargement activities were influenced by aside from airport performance. Therefore, the government’s commitment is required for airport performance to have direct impact on construction enlargement activities.

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