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COMPETENCY OF WEST SUMATERA PROVINCIAL ROAD CONSTRUCTION PROJECT SUPERVISING CONSULTANTS IN OWNER PERCEPTION

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ABSTRACT

This paper presents perception of construction project owners on the technical competency of supervisions consulting personnel in West Sumatera provincial road construction projects. Data for this study was collected in 2016 by distributing a questionnaire to three key persons who are in charge in provincial road construction projects during 2014. An Expectation-Performance Analysis was conducted in order to map the required competency of the personnel in a quadrant. The study found that from 35 items of required competency, 15 items are performed under expectation and need to be improved.

Key words: Technical Competency, Supervision Consultants, Importance-Satisfaction Analysis, Provincial Road Construction Projects.

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1. INTRODUCTION

Supervising consultant personnel are playing and importance role in the success of a road construction work. They represented owner in the field and responsible for the quality assurance of the project as well as the conformity of the contract. The personnel are also responsible for providing information, recommendation and justification for the changes or addendum of the contract when required.

There was a rising rumour among road construction workers that the assigned personnel from supervision consultants were performed under expectation, but no evident available to justify the opinion. The widespread of the opinion would discourage contractors to obey the instruction from the personnel. Furthermore, without evident, there is nothing could be done in order to fix the problem.

Therefore, it is importance to seek if the rumour is evitable and to study them in more detail, what competency are under expectation. So that an improvement programs could be initiated. It is also owner or government responsibility to improve the competency of the construction workers to assure the quality of the constructed infrastructure and make it more sustained.

The objectives of this presented study are to map technical personnel competencies of the supervision consultants whose involved in provincial road construction projects in 2014, to identify item of competencies which perceived to be performed below the expectation so that have to be improved, and to propose alternative solution to improve them and reduce the gap.

2. METODOLOGY

Data for this study was collected by distributing questionnaire to selected persons who were in charge in the Provincial Road Construction Project in 2014 at *Dinas Prasarana Jalan, Tata Ruang dan Pemukiman Propinsi Sumatera Barat* (Road Infrastructure, Spatial and Settlement Agency of West Sumatera Province), Indonesia. The persons include so called *Pejabat Pelaksana Teknis Kegiatan (PPTK)* or Technical Activities Executive Officer, *Kepala Urusan Teknik (KAUR)* or Head of Technical Affair and *Pengawas* or Inspector. They were involved in the project on behalf of Road Infrastructure, Spatial and Settlement Agency of West Sumatera Province Office (the owner of the project). There were 24 packages of the year 2014 project and in every package, one *PPTK*, one *KAUR* and at least one *Pengawas* were involved. There were 11 *PPTKs*, 11 *KAURs* and 11 *Pengawases* at Road Infrastructure, Spatial and Settlement Agency of West Sumatera Province. Some of the persons were involved in more than one package.

In this study, the *PPTK*, the *KAUR* and one of the *Pengawas* were selected as respondents to assess consultants' personnel for each package. With 24 packages and 3 data intended to be collected from each, total of our data should be 72. However, two of the intended data could not be obtained because one of the *PPTK* who involved in two packages has been retired and could not be contacted.

The questionnaire includes respondents' demographic data such as gender, age, education and work experience; and perception data consists of four aspects of competency namely general perception about the company, personnel knowledge on contract administration, personnel skills in completion tasks, and personnel personality. In total, there were 35 items to be rated by respondents in 5-point Likert-scale. This will be done for the level of the competence they expect and their satisfaction with the performance of the personnel. Rating 1 suggesting the items has lowest and 5 is the highest rate.

The data were analysed using a form of quadrant analysis methods which was modified from the Importance-Satisfaction Analysis (ISA) or the Importance-Performance Analysis (IPA) introduced by Martilla and James (1977). These methods were managerial tools to

evaluate the priority among several issues, based on the preferences of the costumers. The IPA and ISA have been used in many studies such as Sorensson and Friedrichs (2013), Coghlan (2012) and Arabatzis and Grigoroudis (2010) in tourism studies; Lo et al. (2012) in commerce; Wang and Tseng (2011) in students' satisfaction; Yahya and Bell (2010) and Freitas (2013), Chow et al. (2011), Yosritzal et al., 2014; and Yosritzal et al. (2017) in passenger transportation studies.

The modified methods could be named as Expectation-Performance Analysis (EPA). In EPA, the rate of expectation shows the expected level of the competence being possessed by personnel in respondents' perception. Whilst the rate of performance shows the competence of personnel in respondents' perception. It would be perfect if the performance is higher than expectation, but a slightly lower performance is accepted with notification.

3. DATA ANALYSIS AND DISCUSSION

3.1. Respondents characteristics

Characteristics of respondents are shown in Figure 1 to 4. In terms of gender, our respondents are mostly male. Whole *Pengawas*, and four-fifths of *PPTK* and two-thirds of *KAUR* are male. In terms of age and jobs experience, our respondents are mostly 40 years old or over with more than 5 years work experiences. More over, in terms of education, 78% of our respondents are university graduates either at Diploma 3, Undergraduate and Master level.

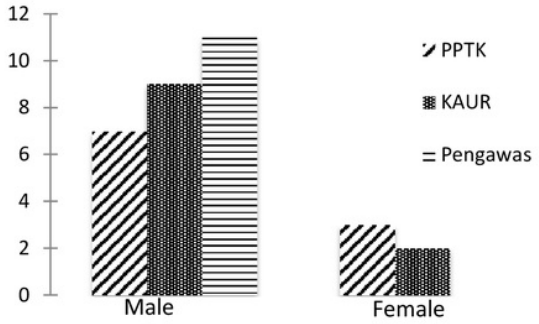

Figure 1 Distribution of respondents by gender and occupation

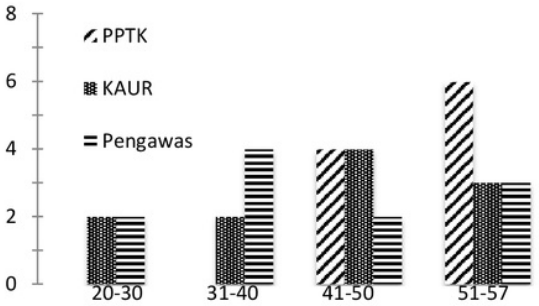

Figure 2 Distribution of respondents by age and occupation

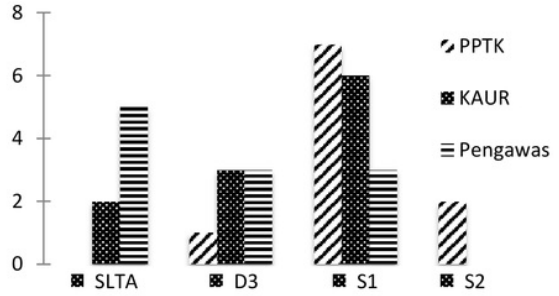

Figure 3 Distribution of respondents by working experience

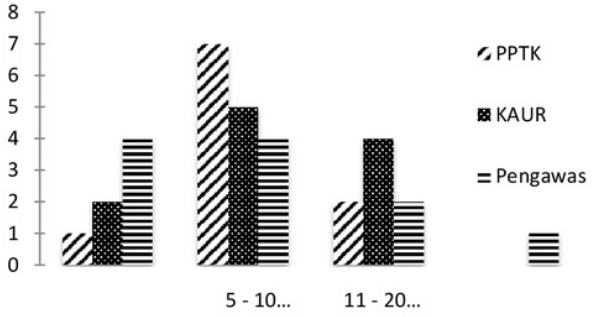

Figure 4 Distribution of respondents by education

Those figures show the maturity of our respondents suggesting that our respondents are competent in completing the questionnaire. They were over 40-year-old with experience more than 5 years in the field and they involved in the case study projects.

3.2. Quadrant analysis

Before conducting EPA, data was tested for their reliability. In this study, Cronbach Alpha (α) reliability test was used. According to Nunnally (1978), data is reliable if the $\alpha \geq 0.7$. From the test, it was revealed that both the Expectation and the Performance data were reliable with $\alpha = 0.948$ and $\alpha = 0.976$ respectively.

Table 1 shows the mean of the perception data and the gap between the expectation and the performance. Generally, all of performance data are lower than the expectation. The largest gap is revealed in terms of perception on the company in general and on the skills and tasks of personnel. This data will be elaborate more in order to know which ones should be improved first. Therefore, EPA was conducted and the results is shown in Figure 5. The hair line is set to be the Average of Expectation and Average of Performance.

Table 1 Average perception on company in general.

No.	Item Statement	Expect-ation	Perfor-mance	Gap
Company in General				
1	Technically, personnel has ability to represent owner in supervising the on-going project in the field.	4.91	3.21	1.70
2	The assigned technical staffs of the company are in accordance with those in the contract document.	4.96	3.47	1.49
3	The conformity of the price and work duration with those in the contract document.	4.40	3.44	0.96
4	The organisational chart is completed (full team)	4.87	3.81	1.06
5	The consultant has their own office.	4.30	3.47	0.83
6	The presence of personnel in the field.	4.94	3.41	1.53
Average		4.73	3.47	1.26
Knowledge about Administration				
7	Personnel knowledge of the contract	4.89	3.37	1.52
8	Personnel knowledge of rules and legislations related to construction works.	4.90	3.37	1.53
9	Personnel Knowledge of engineering drawing and technical specifications.	4.96	3.87	1.09
10	Personnel knowledge of unit price analysis	4.83	3.54	1.29
11	Personnel knowledge of calculation technique of construction cost	4.86	3.36	1.50
12	Personnel knowledge of general and technical administration	4.86	3.63	1.23
13	Personnel knowledge of health and safety in workplace.	4.36	3.54	0.82
14	Personnel knowledge in controlling environmental impact and security.	4.47	3.41	1.06
Average		4.72	3.56	1.17
Personnel Skills in Completing Tasks				
15	The ability of personnel in managing their resources (humans, equipment and materials).	4.79	3.46	1.33
16	The ability of personnel in mastering pavement construction methods.	4.91	3.71	1.20
17	The ability of personnel in supervising the work plan based on the technical specification	4.90	3.61	1.29
18	The ability of personnel in controlling and supervising the quality of works.	4.91	3.46	1.45
19	The ability of personnel in controlling project schedule	4.90	3.53	1.37
20	The ability of personnel in optimising project budget	4.77	3.33	1.44
21	The ability of personnel in pacing of project achievement.	4.89	3.66	1.23
22	The ability of personnel to accept or reject contractor's job based on the conformity of the technical term.	4.86	3.57	1.29
23	The ability of personnel in inventory the changes and adjustment in the field.	4.90	3.61	1.29
24	The ability of personnel in learning and providing consultant's judgment to owner about project addendum	4.94	3.50	1.44

No.	Item Statement	Expect-ation	Perfor-mance	Gap
25	The ability of personnel in providing technical assistant and alternative in order to ensure the quality assurance	4.90	3.50	1.40
26	The ability of personnel in providing letter of statement about the progress of the project.	4.59	3.59	1.00
27	The ability of personnel in holding a periodic field evaluation meeting	4.87	3.36	1.51
28	The ability of personnel in providing daily, weekly and monthly report on time.	4.90	3.34	1.56
29	The ability of personnel in providing letter of statement for maintenance and hand over of the project.	4.20	3.61	0.59
Average		4.73	3.48	1.25
Personality of Personnel				
30	The ability of personnel in maintaining a good communication with owner and contractor.	4.86	3.76	1.10
31	The leadership, ethics and work culture of the personnel	4.89	3.69	1.20
32	The ability of personnel in mastering information and communication system.	4.80	3.76	1.04
33	The ability of personnel in mastering negotiation techniques	4.50	3.79	0.71
34	The ability of personnel in understanding the social and culture of the community around the project	4.53	3.90	0.63
35	The ability of personnel in applying good corporate governance	4.53	3.59	0.94
Average		4.69	3.75	0.94

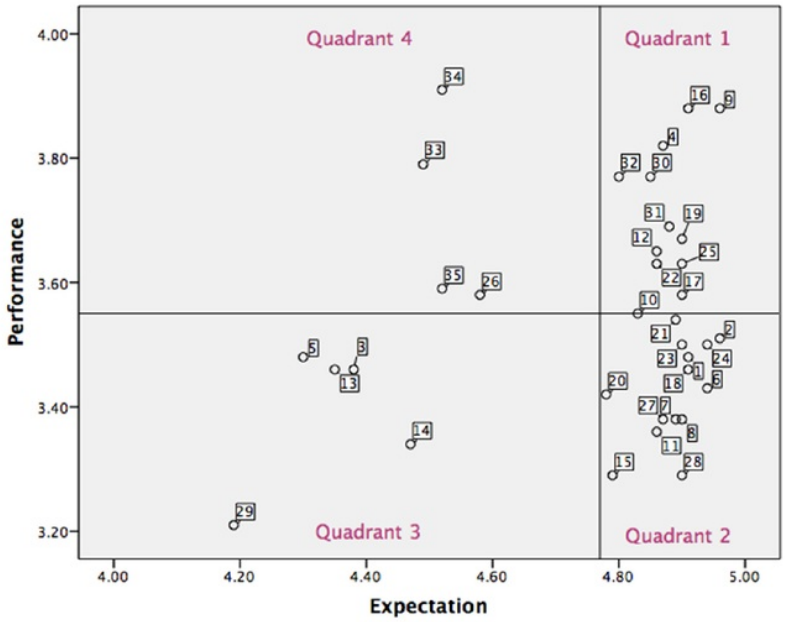

Figure 5 Expectation-performance analysis quadrant

Compared to the average, the items in the first quadrant has higher expectation and the performance of personnel are satisfying. Therefore, personnel and company should keep up this good performance. The items are shown in Table 2.

Table 2 Items in Keep Up the Good Work quadrant

No Item	Item or statement
4	The organisational chart is completed (full team)
9	Personnel Knowledge of engineering drawing and technical specifications.
12	Personnel knowledge of general and technical administration
16	The ability of personnel in mastering pavement construction methods.
17	The ability of personnel in supervising the work plan based on the technical specification
21	The ability of personnel in pacing of project achievement.
22	The ability of personnel to accept or reject contractor's job based on the conformity of the technical term.
23	The ability of personnel in inventing the changes and adjustment in the field.
30	The ability of personnel in maintaining a good communication with owner and contractor.
31	The leadership, ethics and work culture of the personnel
32	The ability of personnel in mastering information and communication system.

The number in a box near to a data point is the corresponding number of the statement in Table 2.

The owners appreciated the consultants who have assigned personnel in a full team. High scores were also given to the ability or knowledge of the consultants' personnel about drawing and technical specifications, administration, constructions methods, pacing project achievement, accepting/rejecting the jobs, inventing the changes, communication skills and ethics. The owners expected a higher score for those items and they thought consultants performed relatively well compared to other items. Consultants should keep this good works up with an improvement when possible.

The highest priority items to be improved are shown in the second quadrant. The items in this quadrant have higher expectation but the performance is lower. If the performance is improved, the satisfaction to the performance of the personnel is significantly improved. The items in this quadrant is shown in Table 3. It is surprising to find that this quadrant has almost a half of total items. This finding suggested that there were some problems with the competency of supervision consultants' personnel for road construction project in West Sumatera such as the personnel assigned to a project was differ from the personnel declared in the contract document. The personnel have good personality but lack of many knowledge and skills required in completing their tasks.

Table 3 Items in high priority quadrants

No Item	Item or statement
1	Technically, personnel has ability to represent owner in supervising the on-going project in the filed.
2	The assigned technical staffs of the company are in accordance with those in the contract document.
6	The presence of personnel in the field.
7	Personnel knowledge of the contract

No Item	Item or statement
8	Personnel knowledge of rules and legislations related to construction works.
10	Personnel knowledge of unit price analysis
11	Personnel knowledge of calculation technique of construction cost
15	The ability of personnel in managing their resources (humans, equipment and materials).
18	The ability of personnel in controlling and supervising the quality of works.
19	The ability of personnel in controlling project schedule
20	The ability of personnel in optimising project budget
24	The ability of personnel in learning and providing consultant's judgment to owner about project addendum
25	The ability of personnel in providing technical assistant and alternative in order to ensure the quality assurance
27	The ability of personnel in holding a periodic field evaluation meeting
28	The ability of personnel in providing daily, weekly and monthly report on time.

The findings are arguable as it was based on subjective perceptions, but it gives signals that the rumour mentioned earlier that consultants' personnel are incompetent, at some degree, might be true. Rather than blaming the methods of the study and the subjective perceptions of respondents, it would be beneficial to initiate some improvement programmes, such as organise some competency trainings with emphasising to the 15 items in Table 3.

The third quadrant shows the items that have lower expectation and also lower performed. Although the performance was lower than average, those items are not priority to be improved because the expectation for the items are low as well. The items in this quadrant are shown in Table 4.

Table 4 Items in low priority quadrant

No Item	Item or statement
3	The conformity of the price and work duration with those in the contract document.
5	The consultant has their own office.
13	Personnel knowledge of health and safety in workplace.
14	Personnel knowledge in controlling environmental impact and security.
29	The ability of personnel in providing letter of statement for maintenance and hand over of the project.

Finally, over performed were revealed for 4 items as shown in Table 5. Those items were in the fourth quadrant. The items in this quadrant have lower expectation than average but the performance is higher than the average. No action need to be taken for these items.

Table 5 Items in over performed quadrant

No Item	Item or statement
26	The ability of personnel in providing letter of statement about the progress of the project.
33	The ability of personnel in mastering negotiation techniques
34	The ability of personnel in understanding the social and culture of the community around the project
35	The ability of personnel in applying good corporate governance

4. CONCLUSION

A quadrant analysis has been conducted to map the expectation and performance of supervising consultant's personnel for provincial road construction project in West Sumatera in the owner perceptions. The findings indicated that the rumour that assigned personnel in the project were incompetent more likely to be true as about a half of required competencies were preformed lower than the average expectation of the Owner. The largest gap of performance to the owner expectation are revealed for the items related to the company in general and the skills of personnel.

The personnel's knowledge about contract documents, rules and legislation, unit price analysis, construction cost were perceived to be under expectation as well as the ability of personnel to manage their human, equipment and materials resources, controlling the quality of works and project schedule, optimise budget, make justification, offer alternatives, hold periodic meeting and write periodic report. Moreover, the owner perceived the ability of the personnel in representing them were also below expectation. It was also emerged that the owner expected that the assigned personnel in the field should be in accordance with those written in the contract documents, however they suspected the consultants assigned someone else with lower competency. With many weaknesses in the side of the consultants, their personnel attendance in the field was also perceived to be lower than the expectation.

Despite the findings were based on owner perception alone which could be very subjective, it is better to reduce the gap between the expectation to the perceived performance of the personnel in the future. Therefore, it is recommended for the Road Infrastructure, Spatial and Settlement Agency of West Sumatera Province who is responsible for the provincial road construction projects to improve the competency of the supervising consultants' personnel. First of all, it should be clear that all applicable rules in procuring of consultants' personnel has to be strictly followed. Therefore, all assigned personnel are those who are declared in contract documents. Punishment should be given to the violators including those whose have low attendance in the project site. Regarding the gap between expectation and performance for the knowledge and ability of personnel, there are some possible improvement programs could be run such as organizing personnel competency training especially with the material related to the items in the second quadrant as mentioned above such as contract knowledge, managerial and technical skills.

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