

## The Impact of Project Performance on Customer Satisfaction

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### Abstract: Introduction

Project management performance, which means the overall capability of the performing project team to deliver the project to satisfy the customer's requirements, has always been considered as one major key in achieving customer satisfaction, especially in a business-to-business organizational relationship. In this research, the researchers tried to find out how project performance actually impacts upon customer satisfaction. The project performance consisted of variables project scope management performance, project schedule management performance, project cost management performance, project human resource management performance, project risk management performance, project quality management performance, project communication management performance and project stakeholders management performance.

### Method.

This research used quantitative approach. Data is collected through questionnaire distribution to companies in Jakarta and Bandung. Samples are respondent's representative of companies, hold managerial position or decision maker. From around 400 distributed questionnaire, this researched managed to collect 112 valid response from 112 companies. Data is analyzed its validity and reliability and hypotheses testing employ regression analysis with SPSS software.

### Findings

The research found that, In Indonesia, especially for the private sectors (93% of the respondents came from the private sectors, and only 7% come from public sectors), only four variables, which were project schedule, cost, human resources and risk management performance that significantly affected customer satisfaction. When the researcher interviewed 20 of the respondents most of them were the upper management in their organization, and most of them agreed on these findings.

One of the most acknowledged reason for this is because most of the projects in the respondents' projects were triggered by senior management decisions rather than fulfilling the organizations' needs or the project deliverables' users. These users were the ones who actually would use the project deliverables either in the form of products, applications, SOPs or even services. It was a very interesting finding, that many organizations actually conducted projects without actually needing the project's outcomes. An organization should create a project to support its program, portfolio, vision and mission.

**Keywords:** Scope management; project schedule management; project risk management; project quality management; project communication management; project stakeholders management performance

## 1. Background

A project is a temporary endeavor undertaken to create a unique product, service or result. In a business to business relationship project, the capability of the project team in delivering the project outcomes to match the needs and requirements of the user of the project is believed to impact the satisfaction of the customer, which in this case is the user of the project deliverables.

In managing a project, the project team needs to overcome many challenges that may cause the project to not achieve the intended outcomes of the project. These challenges are usually called project constraints that will impact customer satisfaction. There are six constraints that can be measured as the project performance achievement which are:

- Scope
- Quality
- Schedule
- Budget
- Resources, and

- Risks

The capability of the performing project team in managing these constraints is assumed to be aligned with customer satisfaction and will be measured on this research. With a capable project team to manage the project's scope, quality, schedule, budget, resources and risks, the higher the chances are of customers being satisfied. Managing scope means making sure that the required activities, services, tools, or products to deliver the project objectives/goals required to meet the customer requirements. Quality is all about meeting customer requirements. Schedule means meeting the customer's expectation on how long before the project should be finished. Resources include the human resources, tools and budget required to deliver the project objectives and meet customer expectations. Risk means that all possible threat for the project can be reduced as small as possible, and all the opportunities can be maximized for the benefit of the project.

### Research Question

Based on the notion, the research question are as following:

1. Does the capability of the project team in managing the scopes, schedule, budget, human resources, risks, deliverables' quality, project communications, and project stakeholders make a positive impact on customer satisfaction?
2. What are the most dominant factors of the performance that significantly impact on customer satisfaction?
3. What are the business implications that can be concluded from the impact of project performance on customer satisfaction?

## 2. Literature Review

### Project Performance

The Project Management Institute in the book 'Project Management Body of Knowledge' (2013a), defined 10 areas that a project team should manage in delivering the project, and they are:

1. Project Integration Management
2. Project Scope Management
3. Project Schedule Management
4. Project Cost Management
5. Project Human Resources Management
6. Project Risk Management
7. Project Quality Management
8. Project Communication Management
9. Project Procurement Management
10. Project Stakeholder Management

The Project Management Institute and Microsoft (2005) published an essay on how effective project management benchmarking can be achieved, and there are several metrics that can be used, which are:

1. Project Cost Management Performance
2. Project Schedule Performance
3. Return on Investment
4. Project Staffing and productivity
5. Project Cycle Time
6. Risk Management
7. Alignment to Strategic Business Goals (Scope and Communication Management)

## 8. Customer Satisfaction

Research by Blanas G., Koukoumialos S. & Kylandri S (2012) found that the main factors that can be measured for the success of a project are time management, cost spending performance, quality of the project outcomes, resources management and performance in fulfilling the needs and desires of the customer that will lead to customer satisfaction. PM Solutions (2005) in their research found that the best practice to benchmark a project performance is by measuring the project requirements, quality, strategy alignment, budget, schedule, employee satisfaction, customer satisfaction, team productivity, risk management, time to market and change management.

Based on this literature, the researcher decided to take scope, schedule, cost, human resource, risk, quality, communication and stakeholder management as the independent variables, that can impact customer satisfaction as the dependent variable. The researcher excluded integration management because it is the combination of all other areas, and a dedicated procurement team in an organization usually conducts procurement for the project. The capability of the project team in managing each variable is called project management performance, and we will measure the project performance for each variable in this project.

### 3. Customer Satisfaction

Akewushola et al. (2012), found that technical success in delivering the project contributed significantly to customer satisfaction because naturally technical success of the project will ensure that the scope of project execution is relevant to the needs and requirements of the customer. This technical success is usually measured based on the project performance itself, and according to Project Management Institute and Microsoft Dynamics (2005), there are several metrics in benchmarking the project management, which are:

1. Project Cost Performance
2. Project Schedule performance
3. Return on Investment
4. Project Staffing performance
5. Project Team productivity
6. Project Cycle Time
7. Post-project Review
8. Project Risk Management
9. Project Scope Management
10. Customer Satisfaction

The performance significantly impacts both directly and indirectly on customer satisfaction as it determines the magnitudes of disconfirmation of the expected performance. The performance itself and the impact of the performance will significantly and positively on customer satisfaction (Amstrong & Seng, 2000).

On the corporate level or enterprise level, there are two main factors that can affect customer satisfaction. The first one is the quality of the services and the second one is the quality of the goods or in this case the products of the project. Project management is part of the service being delivered to the customer. How the project team performs the project will affect directly and indirectly the quality of the deliverables of the project. This shows us how important the performance of the project team is in fulfilling customer satisfaction (Nagel & Cilliers, 1990). As discussed previously, the quality of the product is the degree of achievement of the project's products or services to meet the customer requirements and expectations.

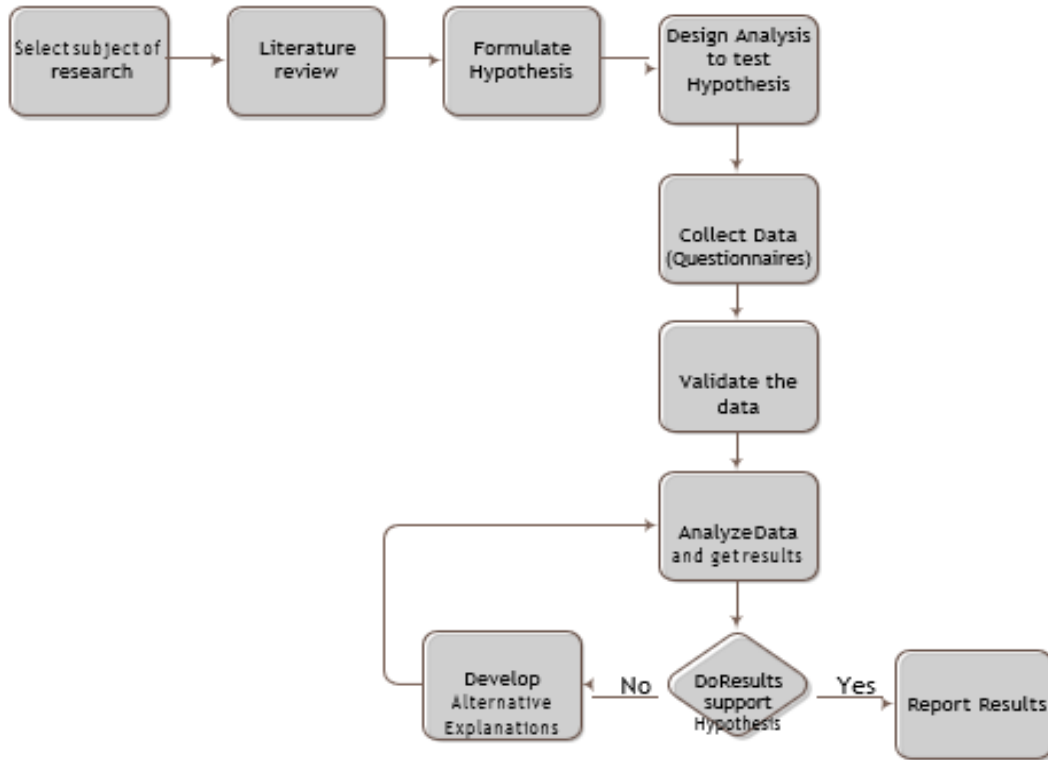
### 4. Methodology

The research will use descriptive method, which will be researching, analyzing and presenting the gathered data so that it can provide a clear picture of the research objectives, which are the relationship of project performance and customer satisfaction, what is (are) the most dominant factor(s) and the business implications.

The data of this research was taken from a questionnaire, which customers of the projects took. The questionnaire was given in order to identify how the project team's performance in managing the project affected their satisfaction. There were 38 questions with a scale of 1 to 5; scale 1 represented 'really unsatisfied' and scale 5 represented 'very satisfied'. The respondents, which were the customers of the project,

answered the questionnaire by choosing the answer that defined their experiences the most.

Figure 1 shows the flow of the research method that was carried out by the researcher (Sekaran & Bougie, 2016)



**Figure 1.** Research Method

In this research the independent variables for project performance consists of eight variables namely:

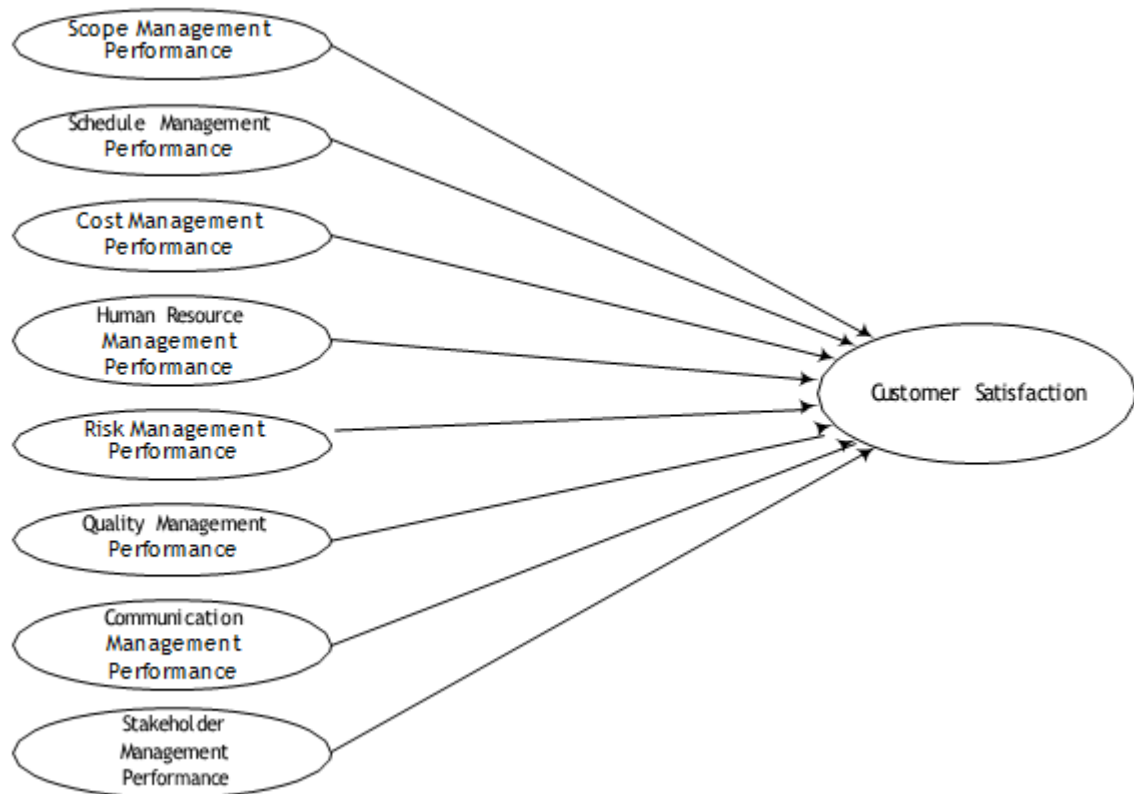
1. Scope ManagementPerformance
2. Schedule ManagementPerformance
3. Cost ManagementPerformance
4. Resources ManagementPerformance
5. Risk ManagementPerformance
6. Quality ManagementPerformance
7. Communication ManagementPerformance
8. Stakeholder ManagementPerformance

And the dependent variable is Customer Satisfaction

This research is conducted from July 2017 to March 2018. Data was collected in Bandung, during the Symposium and Exhibition of Project Management Institute Indonesia Chapter was conducted, and in Jakarta where most of the companies in Indonesia have their headquarters.

## 5. Research Model

The model of this research is depicted as follow.



**Figure 2.** Research Model

Based on the research model, this research developed eight hypotheses:

Hypothesis 1 (H1): There is a positive correlation between project scope management performance and customer satisfaction

Hypothesis 2 (H2): There is a positive correlation between project schedule management performance with customer satisfaction

Hypothesis 3 (H3): There is a positive correlation between project cost management performance with customer satisfaction

Hypothesis 4 (H4): There is a positive correlation between project human resources management performance with customer satisfaction

Hypothesis 5 (H5): There is a positive correlation between project risk management performance with customer satisfaction

Hypothesis 6 (H6): There is a positive correlation between project quality management performance with customer satisfaction

Hypothesis 7 (H7): There is a positive correlation between 7 project communication management performance with customer satisfaction

Hypothesis 8 (H8): There is a positive correlation between project stakeholder management performance with customer satisfaction

## 6. Population and Sampling

Sample were taken from population of managers or decision makers in the field of operation and production of companies in Jakarta and Bandung. Sampling technique used convenience sampling with quota sampling approach. The researcher managed to get valid 112 response from 112 respondents. Data were collected from distributed questionnaire using online line and email as media.

## 7. Data Analysis Technique

Data analysis was conducted with data validity and reliability tests, continued with descriptive statistics analysis, multiple regression analysis stepwise regression analysis and completed with interviews.

## 8. Findings and Discussion

### Respondents Profile

There are 77.7% male and 22.3% female respondents. About 33% of the respondents are project managers, 23.2% of the respondents are functional managers 21.4% of them are directors, VPs or general managers. Respondents came from various industries, but IT (26.8%), telecommunication provider (25.9%) and oil, gas and mining (8%) are the top three industries. Among them 45.5% of the respondents work on multinational companies, while 54.5% of them work for local companies. Most of the respondents have project management experiences more than 7 years (64.3%), 6-7 years (14.3%) and 4-5 years (15.2%). Validity and

### 9. Reliability Test

Table 1 to table 9 show the results of validity test that were conducted for the data for each variable, for the items that were not valid were not included in these tables

Table 1 Validity Test Result for Scope

Variable	Indicator	KMO	Sig	Factor Loading
Scope	SCO02	.767	.000	.697
	SCO03			.720
	SCO04			.640
	SCO05			.728
	SCO06			.688
	SCO07			.618

Table 2 Validity Test Result for Schedule

Variable	Indicator	KMO	Sig	Factor Loading
Schedule	SCH01	0.812	.000	.726
	SCH02			.784
	SCH03			.831
	SCH04			.770
	SCH05			.658

Table 3 Validity Test Result for Cost

Variable	Indicator	KMO	Sig	Factor Loading
Cost	COS01	.593	.000	.843
	COS02			.864
	COS05			.620

Table 5 Validity Test Result for Risk

Variable	Indicator	KMO	Sig	Factor Loading
Risk	RIS01	.877	.000	.645
	RIS02			.744
	RIS03			.830
	RIS04			.769
	RIS05			.699
	RIS06			.652
	RIS07			.796
	RIS08			.768
	RIS09			.782

Table 6 Validity Test Result for Quality

Variable	Indicator	KMO	Sig	Factor Loading
Quality	QUL01	.743	.000	.841
	QUL02			.849
	QUL03			.843
	QUL04			.794

Table 7 Validity Test Result for Communication

Variable	Indicator	KMO	Sig	Factor Loading
Communication	COM01	.737	.000	.667
	COM02			.608
	COM03			.757
	COM04			.646
	COM05			.766

Table 7 Validity Test Result for Communication

Variable	Indicator	KMO	Sig	Factor Loading
Communication	COM01	.737	.000	.667
	COM02			.608
	COM03			.757
	COM04			.646
	COM05			.766

Table 8 Validity Test Result for Stakeholder

Variable	Indicator	KMO	Sig	Factor Loading
Stakeholder	STA01	.738	.000	.678
	STA02			.945
	STA03			.902
	STA04			.800

Table 9 Validity Test Result for Customer Satisfaction

Variable	Indicator	KMO	Sig	Factor Loading
Customer Satisfaction	CUS01	.878	.000	.787
	CUS02			.774
	CUS03			.831
	CUS04			.815
	CUS05			.858
	CUS06			.836
	CUS07			.787
	CUS08			.760
	CUS09			.647

Table 10 shows the result of reliability testing for the data that had already been tested and proved reliable .

Comparing the respondent's feedback based on their company profile, it was found that there were different perspectives related to independent variables, but on the dependent variables, both local and multinational company respondent's answers were equal as can be seen below:

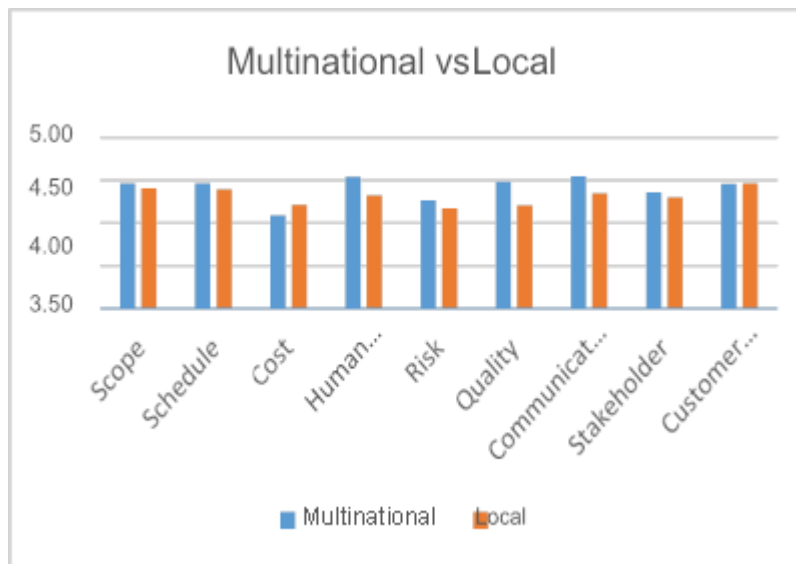


Figure 3. Respondents' Responses Based on Company's Profile

Figure above show, from scale 1 to 5 in the questionnaire, the average answers from the multinational company were higher on project scope, schedule, human resources, risk, quality, communication and stakeholder management performance. Only on project cost management performance, the average scored from local company's respondents were higher compare to the multinational company's respondents. For customer satisfaction. The highest gap was in the project quality management performance (4.48 to 4.21) that indicated that multinational companies value quality more than local companies.

**10. Model Summary**

Based on the analysis that was done using SPSS, table 6.11 shows the result of model summary

**Table 11. Model Summary**

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.740 <sup>a</sup>	.548	.513	.33060

a. Predictors: (Constant), Stakeholder, Schedule, Cost, Scope, Communication, Quality, Risk, Human\_Resource

**F-Test**

Table 12 shows the F-Test result. It can be concluded that the research regression model was valid with a p-value or significance of 0.000 where the independent variables; scope management performance, schedule management performance, cost management performance, quality management performance, risk management performance, human resources management performance, communication management performance, and stakeholder management performance have a significant impact on customer satisfaction.

**Table 12. ANOVA Table**

ANOVA <sup>a</sup>						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	13.661	8	1.708	15.624	.000 <sup>b</sup>
	Residual	11.257	103	.109		
	Total	24.918	111			

a. Dependent Variable: Customer\_Satisfaction  
 b. Predictors: (Constant), Stakeholder, Schedule, Cost, Scope, Communication, Quality, Risk, Human\_Resource

**Hypothesis Testing**

The hypothesis testing is resented in bellow tables.

**Table 13. Coefficients of Regression Standardized Residual**

Coefficients <sup>a</sup>						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.869	.377		2.304	.023
	Scope	-.017	.080	-.018	-.214	.831
	Schedule	.214	.078	.234	2.763	.007
	Cost	.121	.055	.178	2.216	.029
	Human_Resource	.278	.113	.284	2.459	.016
	Risk	.169	.100	.194	1.685	.095
	Quality	-.024	.078	-.028	-.307	.759
	Communication	.030	.090	.031	.330	.742
	Stakeholder	.057	.058	.075	.972	.334

a. Dependent Variable: Customer\_Satisfaction



Table 14 t-Test Result

Variable	Regression Coefficients	Sig.	Conclusion
Scope	-.017	.831	Not Significant
Schedule	.214	.007	Significant
Cost	.121	.029	Significant
Human Resource	.278	.016	Significant
Risk	.169	.095	Not Significant
Quality	-.024	.759	Not Significant
Communication	.030	.742	Not Significant
Stakeholder	.057	.334	Not Significant

Table 14 shows only 3 independent variables that actually impacted significantly on the dependent variable (customer satisfaction) for the p-value was lower than 0.05. The independent variables were schedule management performance, human resource management performance and cost management performance. The researcher discussed this result with 20 respondents: CXO, VP, GM, or senior managers from their companies, and they agreed on the result, stating that the presence of experts on the project, the capability of the project team to meet the deadline and lower costs would significantly affect their customer satisfaction. Below is the formula showing the multiple regression model for this research

$$Y = 0.869 - 0.017 X_1 + 0.214 X_2 + 0.121 X_3 + 0.278 X_4 + 0.169 X_5 - 0.024 X_6 + 0.030 X_7 + 0.057 X_8$$

Where

Y = Customer Satisfaction

X1 = Project Scope Management Performance

X2 = Project Schedule Management Performance

X3 = Project Cost Management Performance

X4 = Project Resources Management Performance

X5 = Project Risk Management Performance

X6 = Project Quality Management Performance

X7= Project Communication Management Performance

X8 = Project Stakeholder Management Performance

**Stepwise Analysis**

Table 15 and 16 show the result of using Stepwise Regression Analysis that focused only on the most significant variables that impacted customer satisfaction as the dependent variable.

Table 15. Stepwise Analysis Model Summary

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.650 <sup>a</sup>	.422	.417	.36183
2	.700 <sup>b</sup>	.491	.481	.34126
3	.723 <sup>c</sup>	.523	.509	.33191
4	.737 <sup>d</sup>	.543	.526	.32623

a. Predictors: (Constant), Human\_Resource  
 b. Predictors: (Constant), Human\_Resource, Cost  
 c. Predictors: (Constant), Human\_Resource, Cost, Schedule  
 d. Predictors: (Constant), Human\_Resource, Cost, Schedule, Risk

Table 16. Stepwise Regression Analysis

Coefficients <sup>a</sup>						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.645	.316		5.211	.000
	Human_Resource	.636	.071	.650	8.963	.000
2	(Constant)	1.317	.310		4.251	.000
	Human_Resource	.529	.072	.541	7.298	.000
	Cost	.193	.050	.284	3.829	.000
3	(Constant)	1.028	.320		3.213	.002
	Human_Resource	.413	.083	.422	5.002	.000
	Cost	.165	.050	.243	3.309	.001
	Schedule	.207	.077	.226	2.689	.008
4	(Constant)	.965	.316		3.056	.003
	Human_Resource	.276	.102	.282	2.695	.008
	Cost	.125	.052	.184	2.382	.019
	Schedule	.213	.076	.233	2.816	.006
	Risk	.192	.088	.220	2.190	.031

a. Dependent Variable: Customer\_Satisfaction

Stepwise regression analysis shows the sequence of the top variables that impacted customer satisfaction the most. From the tables above, they showed that human resources management performance was the top variable that impacted customer satisfaction the most, followed by cost management performance, schedule management performance and risk management performance.

Based on the results above, below are the formula showing the stepwise regression model for this research:

$$Y = 0.965 + 0.276 X1 + 0.125 X2 + 0.213 X3 + 0.192 X4$$

Where:

Y = Customer Satisfaction

X1 = Project human resource Management Performance

X2 = Project Cost Management Performance

X3 = Project Schedule Management Performance

X4 = Project Resources Management Performance

This analysis actually describes the behavior of the Indonesian project's customer, and from the analysis it can be concluded that making sure the performing organization has experts as part of the project team (or making sure the project team has the right skill to deliver the project) was something that would significantly impact customer satisfaction. The second one was cost management performance of the project that tells us most of the customers preferred not to add any additional costs even though the project would have issues with the quality of the deliverables. The third most significant factor that impacted customer satisfaction is the schedule management performance. This tells us that meeting the project timeline would significantly impact on customer satisfaction, that in some cases sacrifices the quality of the deliverables too like in achieving the ability to maintain the costs of the project that was previously discussed.

### 11. Conclusion

This research concluded that for Indonesian project management practitioners that most of them were the users/customers of the projects that were being performed; the project schedule, cost, human resource and risk management performance were the factors that actually impacted significantly and positively on customer satisfaction. While the project schedule, communication and stakeholder management performance did not impact significantly on customer satisfaction.

### 12. Managerial Implication

Based on the results of the research, there are several things that can be highlighted in creating a business strategy.

1. To win a project in Indonesia, making a guarantee that the project will be on time, offering the lowest cost and the presence of experts in delivering the project will be very crucial and deal breakers in the procurement process.
2. Proper project feasibility study and customer requirements accommodation will increase the probability of the project to deliver the intended benefits to the company or organization.
3. Projects should be created to support the program, portfolio, vision and mission of an organization. Leadership is a crucial component to make sure that all the required stakeholders will positively support any project that will be executed.
4. Project quality management that can help one organization in achieving the most from project deliverables is still not considered as important, causing many projects not to add significant value or benefits to the performing organization.
5. Crashing methodology in fast tracking a project is common; that will add cost and produce more risk in the project.

### **13. Further Research**

There are several suggestions from the researcher for any future research related to project management performance impact on customer satisfaction.

1. This research focus was only for Indonesian project management practitioners; it is suggested in the future to have research that has a wider audience such as finance, operations, or sales which are not directly involved during the project execution.
2. Related to human resource management, this research focused only for the capability of the project manager to make sure that the project team will consist of required personnel that match the requirements of the project; it is suggested to conduct research focusing on the impact of project management leadership on customer satisfaction.
3. To conduct research that investigates the factors during the project initiation that can impact project performance and customer satisfaction.
4. To conduct research that investigates the impact of project maturity level on customer satisfaction.
5. To conduct research with respondents from public sectors, since most of the respondents on this research are from private sectors.

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