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Evaluation of Communication Management on Project Success: A Case Study of the Construction of the PT. XYZ

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ABSTRACT

PT. XYZ is an agro-business company in Gresik, East Java, which is currently in the factory construction stage. Field obstacles often occur, so the process of conveying information from all stakeholders involved is important. The author will evaluate communication management factors that influence project success using EFA-Maximum Likelihood and Spearman's rank order correlation. This analysis identified nine important factors: information technology, communication technology, communication skills, communication management plan, teamwork, clear channels in the organizational structure, project requirements management, project risk management, and environmental context. The language acquisition factor was excluded because it did not meet the EFA requirements. Spearman's rank order correlation shows that information technology, communication skills, communication management plans, teamwork, clear channels, project requirements management, and environmental context have a strong relationship with project success. These findings guide improving project communication management to achieve project success.

Introduction

The factory construction project by PT. XYZ is an expansion of the company's business line in the field of agro-business. The location of this project is in the Gresik area, East Java. In terms of ownership, this project is a private project that is currently still in the construction monarchy stage (Shan, Chan, Le, & Hu, 2015). This project uses a plant designer from one of the factory design companies in China. In its implementation, it is necessary to make some adjustments to drawings and materials that are unusual and do not exist in the Indonesian market, for that the project owner employs a local design consultant in order to help convert the plan drawings from Chinese standards to Indonesian National Standards (SNI), including converting some materials and material quality that are not available in the Indonesian market into materials and material quality that are more suitable and can be done by contractors Featured hotels. To be able to

understand more about the overview of stakeholders involved in this project, please see Figure 1.

In the world of construction projects, communication is at the core of the success of every project (Mavuso & Agumba, 2016). In the last few years, awareness of the importance of understanding and improving the way we communicate in construction projects has grown (Gamil & Abd Rahman, 2023). One of the most important factors that is also a challenge in construction projects is the form of communication used, where the wrong execution process can cause disputes between the parties involved and lead to project failure (Awwad, Barakat, & Menassa, 2016). Therefore, poor communication has played an important role and at the same time is the main cause of the failure of a construction project. Success in construction projects depends on the effective and efficient integration of labour resources, materials, and equipment. This integration of resources requires effective communication regarding work objectives to complete the project according to budget (cost), required standards (quality) and time. Communication processes that are not properly managed can lead to a demotivated workforce, design errors, slowdowns in the entire work and failure to execute projects (Khanyile, Musonda, & Agumba, 2019). The Project Management Institute (PMI) has conducted an intensive study on the importance of communication in the construction industry targeting construction organizations and found that stakeholders who communicate well achieve more success in executing a project. This study argues that communication is an important bridge between stakeholders, ideas, and information needed by the parties involved in a project. Communication directs and synergizes stakeholders in making decisions to make a project successful (Garbharran, Govender, & Msani, 2012). Therefore, improving communication in construction projects is very important, because the efficiency and effectiveness of the construction process are highly dependent on the quality of communication (Hoezen, Reymen, & Dewulf, 2006).

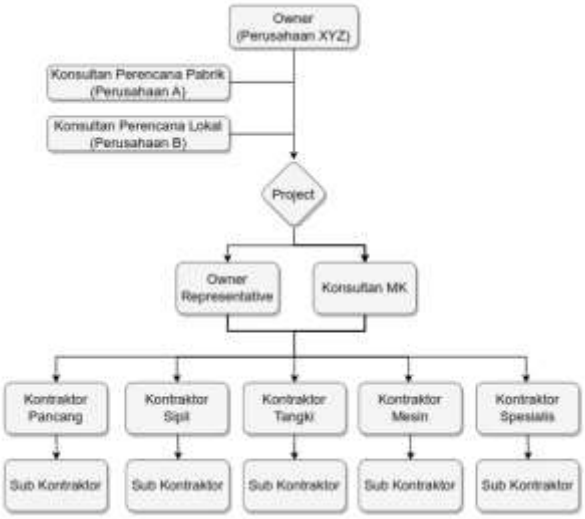

Figure 1. XYZ Project Organizational Structure and Workflow

In addition to designing the design of the building and system for the overall operation of the factory, the factory planning consultant who will later be referred to as company A, also supplies several materials and machinery for the operation of this factory. Some of these materials include tank plates, tanks that have been fabricated, pipes, panel cables and other machinery and accessories. The materials and goods are expected to be given to the relevant contractors who have been appointed to be processed into finished products used as equipment for the factory. In terms of responsibility, company A is responsible for ensuring the production capacity produced by the agreement contained in the contract between the project selector (Company XYZ) and the plant planner (Company A). In addition, company A is also responsible for supervising the implementation process from the construction stage to the commissioning stage until it is successful (Diva, Rachmatin, & Nurlaelah, 2018).

The process of conveying information from the planning stage to the implementation stage is an important part that cannot be separated from communication. Some of the information and communication that has occurred and been observed by the author include: first, incomplete drawings that cause additional work to meet the needs and functions of the building, second, incompatibility between structural drawings and machine drawings (non-composite drawings), so that there are several machines and civil works that need to be adjusted to this, Third, the completeness of the machine that is not complete, due to problems with delivery, this makes the civil work delayed because the work cannot be continued before the engine part of the machine is put into the building and positioned in place, because of the need for access to insert the machine, the fourth is the wrong design so that it also causes a lot of civil work that has been done according to the original plan drawings to be impossible used due to wrong design, it occurs because the machine that has arrived is not in accordance with the initial design that has been planned by the company's planning consultant, because apart from being a designer, company A is also a supplier of several machines needed by the factory, but in terms of supplying this machine, company A uses another vendor as the supplier of the machine, because in the supply chain the machine uses another vendor, and before being sent there is no Quality Control (QC) that re-confirms whether the machine is in accordance with the original plan design, then the goods are delivered in the condition as is, and when the positioning of the machine is carried out on the foundation, new obstacles and problems are found, fifth, there are design changes due to the decision of Value Engineering (VE) by the project manager because the change is made while the construction is ongoing. Although the project owner intends to make savings, it is also an obstacle and eventually causes many unexpected costs that burden the project owner, the sixth communication between all stakeholders involved in Figure 1 is also an obstacle due to the disconnection of information or the lack of complete information provided and received. Based on the problems that have been disclosed, the author wants to evaluate the communication management factors that occur in the XYZ factory construction project and correlate them with the success of the project.

Method

This research is a case study on the evaluation of communication management at PT. XYZ. The communication management approach is used in this study because the success criteria of a project depend on the implementation of efficient communication practices. This research will help companies in terms of finding out potential problems and obstacles that arise from the results of observation as secondary data which is then supported by questionnaires from each stakeholder involved as primary data. This research was carried out using a descriptive qualitative method. To better understand the flow of the research design, it can be seen in Figure 2.

Data Collection

From the research design, there are two stages of data collection in formulating the constraints experienced in the company PT. XYZ. The data collected are primary data and secondary data. Data on the identification of problems regarding communication management was obtained from direct observations carried out from the end of 2019 until now, while other data used as an evaluation of communication management in the XYZ project was questionnaire data obtained from practitioners directly involved in the PT. XYZ. The questionnaire used the approval level with a 5-point Likert scale, as follows (1 = strongly disagree, 2 = disagree, 3 = between agree and disagree, 4 = agree, 5 = strongly agree).

Figure 2. Research Design Flow in Project XYZ

Variables and Indicators

The variables and indicators used in this survey are the factors of communication management practices, to find out more about the factors of communication management practices can be seen in Table 1.

Table 1
Variables and Indicators of Communication Practices

Variable Communication Practice	Indicator
Information Communication Technology (TKI)	Project management software is used e.g. construction computer software (TKI1)
	Internet and intranet are available consistently (TKI2)
	Video *conferencing* facilities available (TKI3)
	Computer-aided design (CAD) software is appropriately adopted (TKI4)
	Building information modelling (BIM) software has been used (TKI5)
	Virtual office support software and portal available (TKI6)
	Social media communication is used, for example, chat platforms WhatsApp, WeChat, Telegram (TKI7)
Communication Skills or Competencies (KKK)	Excellent verbal communication among project stakeholders (KKK1)
	Excellent written communication among project stakeholders (KKK2)
	Effective use of communication technology among project stakeholders (KKK3)
	Proper interpretation of matters relating to communicated contracts (KKK4)
	Clarity or completeness of the working frame of reference (KKK5)
	Project team members have excellent listening skills (KKK6)
	Indicator
	The communication needs of the project team are critically analyzed in the project (1MP)
	Communication technology is used to convey information (2MP)
	Appropriate information delivery channels are established in the project organization (3MP)
	The communication structure or mechanism in the project is running well (4MP)
	Each personnel is responsible for the information they must submit (5MP)
	The organization identifies the recipient of the information to be sent (6MP)
	Effective communication and coordination among project stakeholders (KT1)
	Conducive working relationships among project stakeholders (KT2)

Group work efforts to improve the quality of communication (KT3)
Strong interdepartmental alliances in projects that allow communication to flow efficiently (KT4)
Organizational and operational processes are in place (SSO1)
Clearly defined roles and responsibilities of project stakeholders (SSO2)
There is marked communication from superiors to subordinates (SSO3)
Clearly defined lines of authority for project tasks to be completed (SSO4)
Clear definitions and boundaries of who will communicate with whom, and who will receive which information (SSO5)
The brief provides a precise definition of the client's needs (PP1)
The summary provides a precise analysis of the client's needs (PP2)
Changes to plans/decisions/designs are well managed (PP3)
Project risks are well communicated (PP4)
There is constant interaction among project stakeholders (PP5)
Constant knowledge sharing among project stakeholders (PP6)
Advantageous communication area, i.e. meeting vs linear seating arrangement (KL1)
Project stakeholders from different cultures are accommodated (KL2)
Conflicts resolved from previously conducted communications (KL3)
There is good interpersonal relationship among project stakeholders (KL4)
The use of foreign languages as a medium of communication (PB1)
The use of certain terms between practitioners with different disciplines in the project (PB2)
Indicator
The scope of the project work is achieved (HP1)
Projects on time (HP2)
Projects within budget (HP3)
The risk of the project is minimized, i.e. work accidents (HP4)
Quality of project work achieved (HP5)

The MSA (*Measure of Sampling dequacy*) test in equation (2), also determines the feasibility of the sample. Just likehe KM test, e sample can thee said to be fficiet the Svaluthe e ≥ 05. $MSA = \frac{\sum i \neq \sum jr^2{}_{ij}}{\sum i \neq \sum jr^2{}_{ij} + \sum i \neq \sum ja^2{}_{ij}}$ (2)

$rr^2{}_{ij}$ is the correlation coefficient between i and jl correlation coefficient between variables i and j

Uji *Bartlet Test of Sphrericity*, yang dapat dihitung dalam persamaan (3).

$$\left(-(n-1) - \frac{2p+5}{6}\right) \ln|R| \quad (3)$$

The *Bartlet Test of Sphericity* aims to test the hypothesis that simple correlation matrices are not correlated in the population, this can be known if the value of x^2 is calculated > x^2 table. In SPSS, it can also be seen in the significance value, where if the significance value is below 0.05, it is said that the sample is enough for further testing. [9].

Reliability and Validity Tests

To achieve internal reliability, the Alpha Cronbach measure is used to assess and measure the underlying construct, and a value of 0.70 or more is considered a good level of reliability.

Extraction Factors

The stage of factor extraction with the Maximum Likelihood method begins with the formation of a covariant variant matrix, through equation (4), which then determines the eigenvalue of the matrix, with this value then determining theeadg factorvalue through eqation (5).$h_i{}^2 = s_{ii} - \frac{1}{s_{ii}}$ (4)

thei $= e$ (5)

From this value, the value of communality will be determined which is the sum of the squares of each of the loading factor values. The initl conjecture is determined from the value of cmonality tat has bee obtainepreviously with equaton II(6). ψi $= s_{ii} - h_i{}^{2**}$ (6)

Determining the Number of Factors

Several methods can be used in determining the number of factors, some of these things include based on a priori, based on eigenvalue, based on screeplot and based on the percentage of variants, but in this study, the determination of the number of factors is carried out based on the eigenvalue value with a value of ≥ 1 (NAILINNI'MAH, 2020).

Factor Rotation

Factor rotation is one of the processes in factor analysis that is carried out by rotating loading factors. The purpose of this factor rotation is to transform the factor into a simpler matrix that is easier to interpret (Himayati, Switrayni, Komalasari, & Fitriyani, 2020). This can be done with equation (7).

L'= LI' (7)

Where
L is the loading factor matrix before rotation
It is the rotation matrix
L' is the loading factor matrix after rotation

Interpretation of Factors

Factor interpretation can be done by looking at the value of the loading factor on each variable for that factor. If the variable that has the highest loading factor value is in the same factor, then the variable is part of the factor and can be used as an interpretation of the factor represented (Ratnasari, 2020).

Factor Naming

Two ways can be used in naming the factor, naming the factor with a name that can represent the names of the variables that make up the factor. The second is by naming factors based on the variable that has the highest loading factor. This can be done if the researcher has difficulty giving names that can represent the variables that form the factor.

Uji Spearman Rank Correlation

The researcher used Spearman Rank Correlation to examine the influence between nine practices (or new factors beyond the nine predetermined factors) of communication management on the success of the PT. XYZ. This test can be carried out if it is in the form of a category with small data (n < 30). The correlation of the Spearman rank or the rho-spearman correlation coefficient can be used if the two variables to be tested have an ordinal scale and a score that can be sorted according to their rank. The strong relationship between these two variables is caed correlation coefficient of spem the the and rank. Th Spearman Rank orrelation test ca us the following equation

(8).$r' = 1 - \frac{\sum d^2}{n\,(n^2-1)}$

Where
n is the number of data pasd is the differencthe e in ratingsued. Corelation occurs f the value of the p-value < 0.05, itcan bethe sathe d that there is a relatioship between the two variables$r_s = \frac{\sum x^2 + \sum y^2 - \sum d^2}{2\sqrt{\sum x^2 \sum x^2}} tthe$ (9)$the\ \sum x^2 = \frac{N^3-N}{12} \sum Tx$

(10) $\sum y^2 = \frac{N^3-N}{12} \sum Ty$ ()$T =$

Results and Discussion

Questionnaire data collection is carried out online through a Google form which is shared with all stakeholders at the beginning of this section, it is necessary to give an introduction that is directly involved in the PT. XYZ, which will then be referred to as the response. From the results of the questionnaire distributed as many as 40 questionnaires to respondents, and returned as many as 36 questionnaires. The number of samples used in the correlation study was selected based on the acceptable sampling method and the minimum acceptable sample size was 30 samples, so that the data could be used (Yuliawati, 2019).

Information Communication Technology (TKI)

Information communication technology has a KMO value of 0.723, where this value is> 0.5, and with a significance value of 0.000 for Bartlett's test of sphericity value, where this value is < 0.05, while for MSA it has a ≥ value of 0.5, so it can be said that the data is feasible and meets the sample adequacy requirements, then the analysis of this factor can be continued.

Based on the eigenvalue ≥ 1, and with the help of SPSS 26, it is known that there are two eigenvalues ≥ 1. So two factors are formed. Factor interpretation is carried out by looking at the highest loading factor. The first factor is named "information technology" consisting of TKI1, TKI2, TKI3, TKI4, and TKI7, while the second factor is named "communication technology" consisting of TKI5 and TKI6.

The Cronbach alpha value for information technology factors (with variables TKI1, TKI2, TKI3, TKI4, TKI7) is 0.760 while the Cronbach alpha value for communication technology factors (with variables TKI5, TKI6) is 0.771 where these two values > 0.7 so that they can be considered to have a good level of reliability.

Communication Skills or Competencies (KKK)

Communication skills or competencies have a KMO value of 0.864, where this value is> 0.5, and with a significance value of 0.000 for Bartlett's test of sphericity value, where this value < 0.05, while for MSA it has a ≥ value of 0.5, so it can be said that the data is feasible and meets the sample adequacy requirements, then the analysis of this factor can be continued.

Based on the eigenvalue ≥ 1, and with the help of SPSS 26, it is known that only one eigenvalue is ≥ 1. So that only one factor is formed. The interpretation of the factors was carried out by the previous naming of "communication skills or competencies" (with the variables KKK1, KKK2, KKK3, KKK4, KKK5, and KKK6). The Cronbach alpha value for the communication skill or competency factor is 0.884 where this value > 0.7 so that it can be considered to have a good level of reliability.

Communication Management Plan (RMK)

The communication management plan has a KMO value of 0.737, where this value is> 0.5, and with a significance value of 0.000 for the value of Bartlett's test of sphericity, where this value is < 0.05, while for MSA it has a ≥ value of 0.5, so it can be said that the data is feasible and meets the requirements of sample adequacy, then the analysis of this factor can be continued.

Based on the eigenvalue ≥ 1, and with the help of SPSS 26, it is known that only one eigenvalue is ≥ 1. So that only one factor is formed. The interpretation of the factors was carried out by the previous naming of the "communication management plan" (with the variables of 1MPK1, 2MP, 3MP, 4MP, 5MP, 6MP). The Cronbach alpha value for the communication management plan factor is 0.911 where this value > 0.7 so it can be considered to have a good level of reliability.

Teamwork (KT)

The teamwork has a KMO value of 0.772, where this value is > 0.5, and with a significance value of 0.000 for Bartlett's test of sphericity value, where this value is <

0.05, while for MSA it has a ≥ value of 0.5, so it can be said that the data is feasible and meets the sample adequacy requirements, then the analysis of this factor can be continued.

Based on the eigenvalue ≥ 1, and with the help of SPSS 26, it is known that only one eigenvalue is ≥ 1. So that only one factor is formed. The interpretation of the factors was carried out by the previous naming of "teamwork" (with variables KT1, KT2, KT3, KT4). The Cronbach alpha value for the teamwork factor is 0.821 where this value > 0.7 so it can be considered to have a good level of reliability.

Clear channels in the organizational structure (SSO)

The clear channel in the organizational structure has a KMO value of 0.761, where this value > 0.5, and with a significance value of 0.000 for the value of Bartlett's test of sphericity, where this value < 0.05, while for MSA it has a ≥ value of 0.5, so it can be said that the data is feasible and meets the requirements of sample adequacy, then the analysis of this factor can be continued.

Based on the eigenvalue ≥ 1, and with the help of SPSS 26, it is known that only one eigenvalue is ≥ 1. So that only one factor is formed. The interpretation of the factors is carried out according to the previous naming of "clear channels in the organizational structure" (with variables SSO1, SSO2, SSO3, SSO4, SSO5). The Cronbach alpha value for the channel factor is clear in the organizational structure at 0.893 where this value > 0.7 so that it can be considered to have a good level of reliability.

Project Briefing (PP)

The project briefing has a KMO value of 0.698, where this value is > 0.5, and with a significance value of 0.000 for Bartlett's test of sphericity value, where this value is < 0.05, while for MSA it has a ≥ value of 0.5, so it can be said that the data is feasible and meets the sample adequacy requirements, then the analysis of this factor can be continued.

Based on the eigenvalue ≥ 1, and with the help of SPSS 26, it is known that there are two eigenvalues ≥ 1. So two factors are formed. Factor interpretation is carried out by looking at the highest loading factor. For the first factor, it is named "project needs management" consisting of PP1, and PP2, while for the second factor, it is named "project risk management" consisting of PP3, PP4, PP5, and PP6.

The Croncbach alpha value for the project needs management factor (with PP1, PP2 variables) is 0.906 while the Croncbach alpha value for the project risk management factor (with PP3, PP4, PP5, PP6 variables) is 0.891 where these two values > 0.7 so that it can be considered to have a good level of reliability.

Environmental Context (KL)

The environmental context has a KMO value of 0.694, where this value is> 0.5, and with a significance value of 0.000 for the value of Bartlett's test of sphericity, where this value is < 0.05, while for MSA it has a ≥ value of 0.5, so it can be said that the data is feasible and meets the requirements of sample adequacy, then the analysis of this factor can be continued.

Based on the eigenvalue ≥ 1, and with the help of SPSS 26, it is known that only one eigenvalue is ≥ 1. So that only one factor is formed. The interpretation of the factors was carried out according to the previous naming of the "environmental context" (with

variables KL1, KL2, KL3, KL4). The Cronbach alpha value for the environmental context factor is 0.853 where this value > 0.7 so it can be considered to have a good level of reliability.

Language Proficiency (NT)

The environmental context has a KMO value of 0.500, where this value is not > 0.5 and with this, language mastery is excluded from the analysis because the KMO value is not greater than 0.5 and can be said to not meet the specified requirement threshold. It can also be seen as a warning from SPSS which states that the degree of freedom has a negative value so the analysis of factors is not appropriate.

Project Results (HP)

The project results have a KMO value of 0.840, where this value is> 0.5, and with a significance value of 0.000 for the value of Bartlett's test of sphericity, where this value is < 0.05, while for MSA it has a ≥ value of 0.5, so it can be said that the data is feasible and meets the requirements of sample adequacy, then the analysis of this factor can be continued.

Based on the eigenvalue ≥ 1, and with the help of SPSS 26, it is known that only one eigenvalue is ≥ 1. So that only one factor is formed. The Cronbach alpha value for the environmental context factor is 0.912 where this value > 0.7 so it can be considered to have a good level of reliability.

EFA Process Results- Maximum Likelihood

After going through the Exploratory Factor Analysis Maximum Likelihood (EFA-Maximum Likelihood) process, from the nine initial communication management practice factors obtained:

1. Information Communication Technology (TKI) has two factors, being Information Technology (IT) and Communication Technology (TK)
2. Communication Skills or Competencies (KKK) remain only one factor
3. Communication Management Plan (RMK) remains only one factor
4. Teamwork (KT) remains only one factor remains only one factor
5. Clear channels in the organizational structure (SSO) remain only one factor
6. Project Direction (PP) has two factors, being Project Needs Management (MKP) and Project Risk Management (MRP)
7. Environmental Context (KL) remains only one factor
8. Language Proficiency (PB) is issued because it does not meet EFA requirements
9. Project Results (HP) remain only one factor

For more details regarding the results of the grouping along with the Cronbach alpha value, please see Table 2.

Table 2

Results of Factor Grouping After EFA-Maximum Likelihood

Communication Management Practices	Communication Management Practices After EFA	*Cronbach Alpha*

Communication Technology (TKI)	Information Technology (IT)	0.760
	Communication Technology (TK)	0.771
Communication Skills or Competencies (KKK)	Communication Skills or Competencies (KKK)	0.884
Communication Management Plan (RMK)	Communication Management Plan (RMK)	0.911
Teamwork (KT)	Teamwork (KT)	0.821
Clear channels in the organizational structure (SSO)	Clear channels in the organizational structure (SSO)	0.893
Project Briefing (PP)	Project Needs Management (MKP)	0.906
	Project Risk Management (MRP)	0.891
Environmental Context (KL)	Environmental Context (KL)	0.853
Language Proficiency (NT)	(Factors removed)	-
Project Results (HP)	Project Results (HP)	0.912

Korelasi Faktor Praktik Manajemen Komunikasi terhadap Hasil Proyek dengan Spearman's Rank Rho

The results for each communication management practice factor that correlates with the project results are shown with a p < value of 0.05 or can also be seen in the correlation value (correlation coefficient) marked with an asterisk (*) on the output from SPSS, the results of the correlation relationship are as follows,

a. Information Technology (IT): shows a correlation value of 0.421 and a p-value of 0.011 < 0.05, which means that there is a relationship between the two variables.
b. Communication Skills and Competencies (KKK): shows a correlation value of 0.744 and a p-value of 0.000 < 0.05, which means that there is a strong relationship between the two variables.
c. Communication Management Plan (RMK): shows a correlation value of 0.826 and a p-value of 0.000 < 0.05, which means that there is a strong relationship between the two variables.
d. Teamwork (KT): shows a correlation value of 0.773 and a p-value of 0.000 < 0.05, which means that there is a positive relationship between the two variables.
e. Clear Channel In Organizational Structure (SSO): shows a correlation value of 0.731 and a p-value of 0.011 < 0.05, which means that there is a relationship between the two variables.
f. Project Requirements Management (MKP): shows a correlation value of 0.704 and a p-value of 0.000 < 0.05, which means that there is a strong relationship between the two variables.

g. Environmental Context (KL): shows a correlation value of 0.523 and a p-value of 0.001 < 0.05, which means that there is a positive relationship between the two variables.

The results of the correlation relationship between communication management practice factors and project outcomes with Spearman's Rank Rho can be seen in Table 3.

Table 3
Correlation Between Communication Management Practice Factors and Project Results

			Project Results
Spearman's rho	Information Technology	Correlation Coefficient	0.421*
		Sig. (2-tailed)	0.011
		N	36
	Communication Technology	Correlation Coefficient	-0.020
		Sig. (2-tailed)	0.907
		N	36
	Communication Skills and Competencies	Correlation Coefficient	0.744**
		Sig. (2-tailed)	0.000
		N	36
	Communication Management Plan	Correlation Coefficient	0.826**
		Sig. (2-tailed)	0.000
		N	36
	Teamwork	Correlation Coefficient	0.773**
		Sig. (2-tailed)	0.000
		N	36
	Clear channels in the organizational structure	Correlation Coefficient	0.731**
		Sig. (2-tailed)	0.000
		N	36
	Project Requirements Management	Correlation Coefficient	0.704**
		Sig. (2-tailed)	0.000
		N	36
	Project Risk Management	Correlation Coefficient	0.240
		Sig. (2-tailed)	0.159
		N	36
	Environmental Context	Correlation Coefficient	0.523**
		Sig. (2-tailed)	0.001
		N	36

Conclusion

From the results of data analysis using SPSS 26 with the Exploratory Factor Analysis – Maximum Likelihood method, 10 factors were obtained with details of 6 old factors and 4 new factors, as well as 1 factor that was issued because it did not meet the requirements of KMO and Bartlett-test. These factors include new factors namely information technology, communication technology, project needs management, and project risk management, as well as old factors namely communication skills or competencies, communication management plans, teamwork, clear channels in the organizational structure, environmental context, and project outcomes. The factor that is removed is the use of language. Communication management factors that affect the success of the project include: information technology that plays an important role in visualizing the project planning process, communication skills or competencies that ensure the delivery of information is not only limited to the meeting room but also implemented according to the plan, communication management plans that ensure information is timely and on target so that no information is missed, especially for stakeholders, teamwork that requires interpersonal cooperation and information disclosure for effective communication, clear channels in the organizational structure to improve the quality of communication and ensure on-target communication, project needs management that requires high analysis to identify needs and create alignment in project implementation, and a positive environmental context in the form of physical context, social, historical, psychological, and cultural that increase the effectiveness of communication towards the success of the project.

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