DIGITAL TECHNOLOGY USAGE INFLUENCE ON THE EFFECTIVENESS OF THE CONSTRUCTION IMPLEMENTATION TEAM

by Pinondang Simanjuntak

Submission date: 15-Dec-2023 03:33PM (UTC+0700)
Submission ID: 2259734144
File name: On_The_Effectiveness_Of_The_Construction_Implementation_Team.pdf (570.82K)
Word count: 5645
Character count: 32059

IJSSR
International Journal of Social Service and Research

Vol. 03, No. 02, February 2023
e-ISSN: 2807-8691 | *p*-ISSN: 2807-839X

DIGITAL TECHNOLOGY USAGE INFLUENCE ON THE EFFECTIVENESS OF THE CONSTRUCTION IMPLEMENTATION TEAM

Pinondang Simanjuntak
Faculty of Engineering, Universitas Kristen Indonesia, Indonesia
Email: pinondang.simanjuntak@uki.ac.id

Article Information
Received: January 20, 2023
Revised: January 30, 2023
Approved: February 21, 2023
Online: February 24, 2023

ABSTRACT

The construction project implementation team generally consists of clients, project managers, financiers, legal consultants, design leaders (architects or structural engineers), other specialized consultants, main contractors, subcontractors, cost consultants and suppliers, who must work together effectively to realize project objectives. Under these conditions and with current technological developments, the role of using digital technology will become an important part of the effectiveness of the project implementation team. This study aims to determine the positive influence of digital technology (digitalization) on the effectiveness of the project implementation team. This research is a survey research, involving 200 company respondents, members of the construction industry professional association in Jakarta. Multiple regression was used to analyze the data. The results of the study show that digital technology (digitalization) has a significantly positive effect on the effectiveness of the project implementation team.

Keywords
digital technologies; the effectiveness of the project implementation team; project

INTRODUCTION

The team approach, and the use of digital technology in the implementation of construction projects, has recently become a dominant topic of discussion in the construction industry because it is a viable means of meeting client expectations (Simanjuntak et al., 2021). Therefore, evaluating the effectiveness of the project implementation team is considered important to do. However, there is a lack of consensus on what factors contribute and determine the effectiveness of project implementation teams globally and the current rapid development of digital technologies. Simanjuntak (2020) stated that knowledge of what factors contribute and determine the effectiveness of the project implementation team is important to understand for the success of construction projects and the industry in general.

Construction project implementation team refers to a group of people who are responsible for the planning, design and construction of a construction project from start to finish. Establishing a project implementation team involves assembling and assembling personnel and professionals who have different skills, knowledge, expertise and character to perform the interrelated collaborative tasks of initiating and completing the project.

The construction project implementation team generally consists of clients, project managers, financiers, legal consultants, design leaders (architects or structural engineers), other specialized consultants, main contractors, subcontractors, cost consultants and suppliers, who must work together effectively to realize project objectives. Project implementation teams may vary in size and composition from one phase of a project to another, but what matters to the success of a team is how integrated and effective it is. According to Azmi (2012), globalization, technology and the complexity of emerging construction projects, as well as the dynamics of project implementing teams, indicate the need to consider achieving team effectiveness as very important and a living image of team performance and success in the construction industry.

https://doi.org/10.46799/ijssr.v3i2.267

In essence, the effectiveness of the project implementation team is strongly influenced by intrapersonal, interpersonal and team organizational factors. Theoretically, the effectiveness of the project implementation team really requires integration and teamwork so that the team can work well in achieving goals. The success of the project implementation team is determined by how much effort is exerted to provide an acceptable level of performance in completing tasks. In addition, the team must have adequate knowledge and skills that support the work and function of the team and also adapt the most appropriate strategy to the job and the context in which the work is carried out (Kwofie et al., 2015).

Because the factors of intrapersonal, interpersonal, and team organizing as well as factors of adequate knowledge and skills really support and influence the effectiveness of the project implementing team, this research will discuss one that is considered decisive of the many important factors related to the effectiveness of the project implementing team, namely use of digital technology (digitalization).

Azmy (2012) stated that the effectiveness of project execution team is believed to produce high-end project results that exceed standards and, therefore, increase overall productivity. Based on these empirical studies, in this study the effectiveness of the project implementation team was chosen as the dependent variable in the research model.

Aghimien et al. (2018) in his research revealed that digitalization has become a popular concept throughout the world today because of its ability to create efficiency in operations, effectiveness, and provide new opportunities (Maskuriy et al., 2019). Industries such as banking, manufacturing and retail have all understood the benefits of digitalization and have entered the future using it as a new approach to ensure competitive advantage and efficiency. The advantages of using digital technology as part of construction development are enormous. In fact, Aghimien et al. (2018) identify the benefits of using digital technology in the procurement of construction projects including improving process quality, adequate construction cost savings, adequate client and participant satisfaction, increased responsiveness and productivity, market expansion, and project completion in the most effective way. Based on the description of the empirical study, in this study digital technology (digitalization) was chosen as the independent variable in the research model.

Table 1. Relevant Prior Research

No	Researcher	Research Title	Research result	Information
The relationship of digital technology to team effectiveness				
1.	Tetik et al. (2019)	Direct digital construction: Technology-based operations management practice for continuous improvement of construction industry performance	The DDC concept improves efficiency, not only within the limited project or product portion of construction industry operations but also throughout the construction supply chain throughout its life cycle. DDC fills existing gaps in technology-based construction operations practices and creates additional value by eliminating inefficiencies and establishing ways to continuously improve the design, engineering, production and maintenance of buildings.	This research This research does not discuss the effect of digital technology on the effectiveness of the Construction Implementation team
2.	Rimmington et al. (2015)	Impact of Information and Communication Technology (ICT) on construction projects	This study confirms the existence of tensions and conflicts in the human-electronic and human-human communication interfaces in the study environment. It is proposed that the increased use of ICT occurs at the expense of soft systems communication. The main effect of this is a form of 'human interference' which adversely affects the performance of the project team.	This research does not discuss the influence of digital technology on the effectiveness of the Construction Implementation team.
3.	Chowdhury et al.	Review of digital technologies to improve the	From a practical perspective, clients and contractors can be persuaded to invest in digital technology, increase or accelerate	This research does not discuss the

No	Researcher	Research Title	Research result	Information
The relationship of digital technology to team effectiveness				
	(Chowdhury et al., 2019)	productivity of the New Zealand construction industry	uptake, and become more aware of the benefits digital technology can add to productivity performance, growth and long-term success.	influence of digital technology on the effectiveness of the Construction Implementation team
4.	Hetemi et al. (2020)	An Institutional Approach to Digitalization in Sustainability-Oriented Infrastructure Projects: The Limits of the Building Information Model.	This paper adopts an institutional analysis and places the BIM approach within the (inter)organizational context of infrastructure provision. Based on empirical data from three organizations in the provision of infrastructure in Spain, this paper analyzes the tensions between actors during the adoption and implementation of BIM.	This research does not discuss the influence of digital technology on the effectiveness of the Construction Implementation team
5.	Madanayake and Çıdık. (2019)	The potential of digital technology to improve construction productivity	It concluded that digitization enables performance gains that can be linked to increased productivity, but this is dependent on the presence of certain skills and knowledge, which require training. It was also concluded that the lack of impact of digitalization on several factors affecting productivity could limit the impact of digitalization on overall productivity, causing productivity to stagnate.	This research does not discuss the influence of digital technology on the effectiveness of the Construction Implementation team

The previous studies mentioned above generally discussed digital technology variables in relation to the effectiveness of the project implementation team and project performance. So that the main difference between the studies mentioned above and this research is that in this study it discusses the influence of digital technology variables on the effectiveness of the project implementation team and or construction project performance. Based on the previous description, it can be identified that the purpose of this research is; (1) to find out and understand the positive influence of digital technology (digitalization) on the effectiveness of the project implementing team, and (2) to find out how far the positive influence of digital technology (digitalization) has on the effectiveness of the project implementing team.

METHODS

The research method used is a survey with a causal design. Survey methods are usually used to describe existing phenomena, but can also be used to compare conditions studied with certain predetermined criteria (Creswell, 2017). Survey methods can also be used to assess the effectiveness of a program, as well as to investigate effects or to test hypotheses. The survey method depends on (1) the number of people being sampled; (2) the degree to which the sample is representative, meaning it represents the group being investigated; (3) The level of confidence in the information obtained from the sample (Nasution, 2009).

Each method and research design has advantages and disadvantages so that the choice of method depends on the type and nature of the research. The survey method has advantages, including: (1) a large number of people are usually involved in surveys to reach general conclusions or general conclusions that can be accounted for. It is necessary to try to ensure that the sample is truly representative of the entire group under investigation; (2) various data collection techniques can be used in surveys such as questionnaires, interviews, and observations according to the choice of the researcher; (3) problems that were previously unknown or suspected in the survey often appear, so that at the same time they are exploratory in nature;

(4) surveys can confirm or reject certain theories; (5) the cost of the survey is relatively cheap in view of the large number of people providing information. Especially when using a questionnaire that can be sent by post, at a low cost. If interviews are used with contacts, with samples, of course, the cost is much higher (Nasution, 2009).

Population and Research Sample

The population in this study is the management of all consulting companies (planners, Quantity Surveyors and Construction Management or Supervisors) and Implementing Contractors who are domiciled in Jakarta who are members of the Indonesian National Association of Consultants (INKINDO), Indonesian Contractors Association (AKI), Association of National Construction Entrepreneurs (GABPEKNAS), Association of Indonesian Construction Entrepreneurs (GAPEKSINDO), Association of Indonesian National Design and Build Companies (GAPENRI).

Kelloway and Marsh et al argue that the sample size for the structural equation model (SEM) is at least 200 observations (Kuncoro and Riduwan, 2008:56). Meanwhile, according to Hair et al, the recommended sample size for use with an estimated Maximum Likelihood is 100-200 (Ghozali & Fuad, 2008). Based on the considerations of these experts, the company sample was determined to be 200 staff/ management of companies that are members of professional associations in Jakarta. The sampling technique was carried out by random sampling, research questions were sent via e-mail through each association.

Variables and Operationalization of Research Variables

Project Implementation Team Effectiveness (Y)

Conceptual definition according to Mohrman et al in Azmy (2012) defines team effectiveness, based on three aspects. First, team performance is the degree to which the group's productive output meets its customer's approval. Second, interdependent functioning is the degree to which teams are interdependent on one another. Third, team satisfaction is the extent to which the team is satisfied with team membership.

Operational definition is team effectiveness with twelve characteristics of an effective team from Parker in Azmy (2012): (1) clear goals; (2) informality; (3) participation; (4) listen; (5) civilized disagreement; (6) decisions based on consensus; (7) open communication and trust; (8) clear roles and work assignments; (9) shared leadership; (10) external relations; (11) stylistic diversity; (12) self-assessment.

Instrument Grille

Table 2. Project Implementation Team Effectiveness Instrument Grid (Y)

Variable	Dimensions	Indicator	Item Number	Number of Items
Project Implementation Team Effectiveness	clear goals	vision, mission, goals, team tasks	1	2
		action plan	2	
	informality	working climate	3	1
	participation	discussion participation	4	1
	listen	listening technique	5	1
	civilized disagreement	convenient disagreement	6	1
	decisions based on consensus	decision making	7	1
	open communication and trust;	expression of opinion	8	1
		trust	9	1
	clear roles and work tasks	distribution of roles and tasks	10	1
	shared leadership	leadership function	11	2
		behavior	12	
	external relations	external relations	13	3
		resource	14	
		credibility	15	
	style diversity	member spectrum	16	1
	own judgment	effectiveness evaluation	17	1
			Amount	**17**

Digital Technology (X1)

The conceptual definition according to Rouse (2017) in Aghimien et al (2018) defines digitization as the process of organizing and transforming information into different data sets that are digital in nature. This converted information into binary data that is understandable and can be processed by computers and other devices with computing capacity.

Operational definition is digital technology with ten dimensions of perceived benefits that can be obtained from the application of digital technology in the construction industry from a professional perspective put forward by Aghimien et al. (2018); namely: (1) Save time; (2) Increasing productivity; (3) Increase working speed; (4) Improving document quality; (5) Speed up response time; (6) Simplify work methods; (7) More accurate documentation; (8) Reducing the level of difficulty; (9) Reducing construction errors; and (10) Proportion of new jobs.

Instrument Grille

Table 3. Digital Technology Instruments Grid

Variable	Dimensions	Indicator	Item Number	Number of Items
Digital Technology (Digitalization)	Time	Saving time	1	1
	Productivity	Increase productivity	2	1
	working speed	Increase working speed	3	1
	Document quality	Improve document quality	4	1
	Response time	Speed up response time	5	1
	working method	Simplify work methods	6	1
	Documentation	More accurate documentation	7	2
		Document standardization	8	
	Degree of difficulty	Reduced difficulty level	9	1
	Construction error	Reducing construction errors	10	1
	New job	The proportion of new jobs	11	1
			Amount	**11**

Data collection technique

Data collection was carried out using an instrument in the form of a questionnaire to measure five research variables, namely Digital Technology (X1) and the Effectiveness of the Project Implementation Team (Y). The indicators for each variable are expressed in the form of questions presented in a questionnaire which is compiled and built based on the theoretical basis which is the source of reference. The type of questionnaire is a closed questionnaire where the questionnaire distributed to respondents has provided answers in the form of five answer choices, so that respondents only have to choose one of the five answers provided. The measurement scale of the questionnaire uses a Likert scale with alternative answers as follows:"SA = Strongly Agree" is given a score of 5; "A = Agree" is given a score of 4; "N = Neutral" is given a score of 3; "D = Disagree" is given a score of 2; and "SD = Strongly Disagree" is given a score of 1.

After the questionnaires were compiled, before being widely distributed to research respondents, the questionnaires were tested on 40 respondents who were not included in the research sample group, with the aim of knowing the validity and reliability of each question item in each questionnaire. This validity and reliability determines how far the question items on each questionnaire have measured the variable indicators being measured. Testing the validity and reliability of the instrument was carried out using SPSS software.

Validity test is a process to see a picture of the validity of the instrument items by correlating the score of each item with the total score using the Pearson Product Moment Correlation technique formula. The validity of each item is declared valid if the rcount value > rtable The rtable value for n = 40, α = 0.05 is greater than or equal to 0.312

The reliability of valid instrument items was analyzed using the Alpha Cronbach technique, with the consideration that this formula can be used to test the reliability of instruments whose scores are in the form of a scale of 1-5 (Arikunto, 2013). The calculation of the reliability coefficient of the instrument is carried out after the invalid items are dropped, in other words, the invalid items are not included in the calculation of the instrument reliability. The reliability test of this instrument is an internal reliability test obtained from the results of data analysis from the trial results. A good Cronbach Alpha value is between 0 and 1; the closer to 1 it is

said the more reliable; meaning that the instrument can be trusted and relied upon as an instrument for collecting research data.

The results of the instrument trials were distributed to 40 respondentswhich are not included in the research sample group, are as follows:

Project Implementation Team Effectiveness Instrument (Y)

1) Validity test

Table 4. Results of Instrument Validity Test for Project Implementation Team Effectiveness (Y)

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Y1	64.48	154.358	.976	.995
Y2	64.70	155.036	.887	.996
Y3	64.55	155.485	.941	.995
Y4	64.58	154.610	.932	.995
Y5	64.33	155.969	.950	.995
Y6	64.40	154.041	.977	.995
Y7	64.40	154.810	.977	.995
Y8	64.43	155.276	.970	.995
Y9	64.43	153.635	.976	.995
Y10	64.38	155.471	.966	.995
Y11	64.33	155.969	.950	.995
Y12	64.45	153.895	.981	.995
Y13	64.55	156.408	.933	.995
Y14	64.35	155.208	.964	.995
Y15	64.38	154.548	.974	.995
Y16	64.45	153.895	.981	.995
Y17	64.45	154.767	.975	.995

Table 4 shows the Corrected Item-Total Correlation value of all question items greater than 0.312; this means that the project implementation team effectiveness instrument (Y) is valid for distribution. No question items are "dropped"

2) Reliability Test

Table 5. Results of the Instrument Reliability Test for the Effectiveness of the Project Implementation Team (Y)

Reliability Statistics

Cronbach's Alpha	N of Items
.995	17

Table 5 shows the value of Cronbach's Alpha = 0.996 close to one; this means that the project implementation team effectiveness instrument (Y) is reliable to use.

Because the results of the instrument reliability validity test are valid and reliable, the Project Implementation Team Effectiveness instrument grid (Y) is fixed as shown in table 5 Digital Technology Instruments (X1)

3) Validity test

Table 6. Digital Technology Instrument Validity Test Results (X1)

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
X2_1	40.23	57.307	.967	.989
X2_2	40.33	59.302	.923	.990
X2_3	40.28	57.897	.957	.989
X2_4	40.13	57.856	.967	.989
X2_5	40.23	57.717	.971	.988
X2_6	40.48	59.948	.864	.991
X2_7	40.13	58.471	.955	.989
X2_8	40.08	58.789	.937	.989
X2_9	40.03	57.769	.920	.990
X2_10	40.20	58.626	.955	.989
X2_11	40.18	57.276	.972	.988

Table 6 shows the Corrected Item-Total Correlation value of all question items greater than 0.312; this means that the digital technology instrument (X2) is valid for distribution. No question items are "dropped"

4) Reliability Test

Table 7. Digital Technology Instrument Reliability Test Results (X1)

Reliability Statistics

Cronbach's Alpha	N of Items
.990	11

Table 7 shows the value of Cronbach's Alpha = 0.990 close to one; this means that the digital technology instrument (X1) is reliable to use.

Because the results of the instrument reliability validity test are valid and reliable, the Digital Technology instrument grid (X1) is fixed as shown in table 7. The description above shows that the research instrument has fulfilled the required validity and reliability requirements; so that questionnaires can be distributed and data collection can begin.

Data Analysis Techniques

The data in this study are primary data in the form of respondents' answers to the questions posed in the research instrument. Data analysis techniques in this study include: (1) descriptive data analysis, (2) requirements test, (3) inferential data analysis.

Descriptive analysis in this study is intended to present data descriptively so that readers can easily understand statistical measures to obtain an overview of the characteristics of the distribution of values for each variable studied. Descriptive analysis is used in terms of data presentation, central measurement, and distribution size. Presentation of data using distribution lists and histograms. Central measures include the mean, median, and mode. Measures of the spread include the variance and standard deviation. The requirements test carried out in this study includes (a) data normality test; (b) Autocorrelation test; (c) Multicollinearity test; and (d) Heteroscedasticity test.

Inferential analysis is used to test the hypothesis using multiple correlation analysis (multiple regression). All hypothesis testing is done using $\alpha = 0.05$.Data analysis was performed using SPSS software.

Statistical Hypothesis

Based on the research analysis model, a statistical hypothesis is formulated which will then be tested statistically, namely:

H1: Digital Technology (X1) has a positive effect on the Effectiveness of the Project Implementation Team (Y)

H0: $\beta y2 \leq 0$

Ha: $\beta y2 > 0$

RESULTS

Analysis Results

Description of Statistics

Tabulation of research questionnaire answer data from 200 respondents can be seen in the appendix, by producing the following statistical descriptions:

Table 8. Statistical Description of Research Data
Descriptive Statistics

	N	Minimum	Maximum	Sum	Mean	Std. Deviation
X1	200	40	55	9500	47.50	2.773
Y	200	67	85	15200	76.00	3.340
Valid N (listwise)	200					

Information:
X1 = digital technology variable (digitization)
and
Y = variable effectiveness of the project implementation team.
N = number of research samples

Table 8 shows that 200 respondents also answered the digital technology variable (digitalization) questionnaire (X1) with an average (mean) answer score of 47.50. Because there are 11 items in the digital technology statement (digitalization) (X1); means that the average respondent answered with a score of 4.32 or gave a statement between agreeing and strongly agreeing.

The 200 respondents also answered the questionnaire on the variable effectiveness of the project implementation team (Y) with an average (mean) answer score of 76.00. Because there are 17 items in the statement of the effectiveness of the project implementation team (Y); means that the average respondent answered with a score of 4.48 or gave a statement between agreeing and strongly agreeing. Thus, it can be said that the research respondents answered with a positive score to all of the questionnaire statement items, namely between agree and strongly agree.

Testing Requirements Analysis

Normality test

The normality test is carried out to test whether the independent and dependent variables in the regression model have a normal distribution or not. If the data is not normally distributed, the results are still unbiased, but no longer efficient.

The method used in the normality test is the Shapiro-Wilk method with the Liliefors significance correction.

The hypothesis used is:

H0: Data is normally distributed

Ha: The data is not normally distributed

Normality testing criteria are

H_0 is rejected if the probability value is <5%, meaning that the data does not have a normal distribution because the Shapiro-Wilk statistical value is not equal to zero

H_0 is accepted if the probability value is > α 5%, meaning that the residuals have a normal distribution because the Shapiro-Wilk statistical value is close to zero.
The results of the research data normality test are as follows:

Table 9. Research Data Normality Test Results

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
X1	.072	200	.014	.989	200	114
Y	.060	200	.077	.992	200	.330

a. Lilliefors Significance Correction

Table 9 shows that the Sig. Shapiro-Wilk from each research variable data sequentially X2 = 0.114; and Y = 0.330, all of which are ≥ 5%, which means H0 is accepted or the data is normally distributed. This shows that all research data are normally distributed

Autocorrelation Test

Autocorrelation in the regression model means that there is a correlation between the members of the sample which are arranged based on the time they are correlated with each other. This arises because successive observations over time are related to each other or the disturbance of a period is correlated with the disturbance of the previous period. This test aims to determine whether there is a correlation between data in the observation variables. To detect the presence of autocorrelation, you can use the Durbin-Watson method, namely by checking the Durbin-Watson (DW) value of the results of the analysis, whether it is included in the area where autocorrelation symptoms occur, the area is doubtful or the area is free of autocorrelation symptoms on a normal graph.

The results of the autocorrelation symptom analysis using the Durbin-Watson method are as follows:

Table 10 Durbin-Watson Regression Results

Tabel 4.3 Nilai Durbin-Watson Hasil Regresi

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson

a. predictors: (Constant), X1
b. Dependent Variable: Y

Table 10 shows that the results of the regression of the digital technology variable (X1) on the effectiveness of the project implementation team (Y) produce a Durbin-Watson value = 2.179.

The Durbin-Watson table shows that for regression with three independent variables and a sample size of 200, dL = 1.7382 and dU = 1.7990 are obtained.

If the calculated Durbin-Watson value is compared with the table dL and dU values on the normal chart, the following picture is obtained:

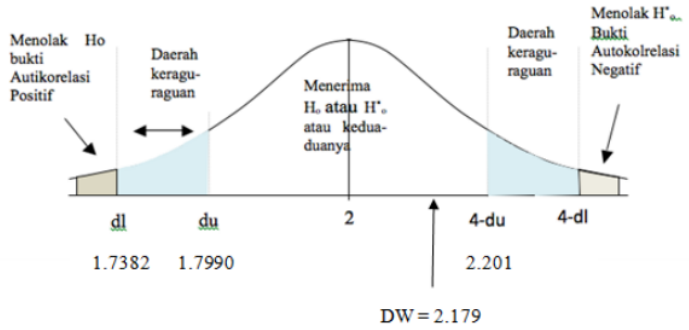

Figure 1. Durbin-Watson Autocorrelation Test Results

Figure 1 shows that the calculated value of DW = 2.179 is in the autocorrelation symptom-free region of the dL and dU tables. This shows that the research model is free from autocorrelation symptoms

Multicollinearity Test

The multicollinearity test is used to determine whether there are deviations from the classical multicollinearity assumption, namely the presence of a linear relationship between the dependent variables in the regression model or to test whether there is a perfect or imperfect relationship between some or all of the explanatory variables. To find out whether or not multicollinearity exists is to look at the Variance Inflation Factor (VIF) value. The basis for decision making is as follows:

1) If the VIF value > 10 then H0 is accepted and Ha is rejected, meaning that the model contains multicollinearity
2) If the VIF value < 10 then H0 is rejected and Ha is accepted, meaning that the model does not contain multicollinearity

The results of the multicollinearity test are as follows:

Table 11. Multicollinearity Test Results

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	31.830	1.551		20.517	.000		
	X2	.378	.070	.314	5.419	.000	114	8.758

a. Dependent Variable: Y

Table 11 shows that the VIF value of digital technology (X2) = 8,758; which is ≤ out of 10. This shows that the research model is free from multicollinearity symptoms.

Hetroscedasticity Test

This test aims to determine whether in the regression model there is an inequality of variance from one observation residual to another.

To detect the presence or absence of heteroscedasticity, it can be seen through the significant effect of the independent variables on the residuals. The hypothesis is:

H0: There is no heteroscedasticity

Ha: There is heteroscedasticity

The criteria for testing heteroscedasticity are as follows:

1) If the significance value is less than 0.05, then H0 is accepted and Ha is rejected, meaning there is a heteroscedasticity problem.
2) If the significance value is greater than 0.05, then H0 is rejected and Ha is accepted, meaning that there is no heteroscedasticity problem

The results of the heteroscedasticity test are as follows:

Table 12. Heteroscedasticity Test Results

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.000	3	.000	.000	1.000[a]
	Residual	166.943	196	.852		
	Total	166.943	199			

a. Predictors: (Constant), , X1,
b. Dependent Variable: Unstandardized Residual

Table 12 shows that the Sig. digital technology independent variables (X2), the residual value is 1.00 which is greater than 0.05. This means that H0 is rejected and Ha is accepted, meaning that there is no heteroscedasticity problem in the research model.

Table 13. Model Summary

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.962[a]	.925	.924	.923

a. Predictors: (Constant), , X1
b. Dependent Variable: Y

Hypothesis test

The results of the analysis of the influence of Digital Technology (X2), on the Effectiveness of the Project Implementation Team (Y) are as follows:

Table 14. ANOVA models

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	2053.057	3	684.352	803.465	.000[a]
	Residual	166.943	196	.852		
	Total	2220.000	199			

a. Predictors: (Constant), , X1,
b. Dependent Variable: Y

Table 15. Model Coefficient

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	31.830	1.551		20.517	.000
	X2	.378	.070	.314	5.419	.000

a. Dependent Variable: Y

Table 14 shows the value of R-Square = 0.925; this means that the independent variables of Digital Technology (X1), are factors that can explain the Effectiveness of the Project Implementation Team (Y) of 92.5%; while the remaining 7.5% is determined or explained by other factors outside the study.

Table 15 shows the Sig. ANOVA = 0.000 which is less than 0.05; this means that the independent variables of Digital Technology (X1) have a significant positive effect on the Effectiveness of the Project Implementation Team (Y).

Table 14 shows that the research model equation is as follows:

Y = 31.830 + 0.378 X1

This regression equation reveals that in conditions where X1 = 1, an increase in digital technology (X1) by 1 point will increase the effectiveness of the project implementation team at a constant of 31,830.

Table 15 also shows that the Sig. each independent variable = 0.000 which is smaller than 0.05. This means that the independent variable Digital Technology (X1) directly has a significant positive effect on the Effectiveness of the Project Implementation Team (Y).

Discussion

The Effect of Digital Technology (X1) on the Effectiveness of the Project Implementation Team (Y)

The results of the analysis show that Digital Technology (X1) has a significant positive effect on the Effectiveness of the Project Implementation Team (Y).

The results of this study are in line with the studies of Tetik et al. (2019); Rimmington et al. (2015); Chowdhury et al. (2019); Hetemi et al. (2020); and Madanayake and Çıdık (2019) which shows a significant positive relationship between digital technology and team effectiveness.

According to Chowdhury et al. (2019), from a practical perspective, clients and contractors can be persuaded to invest in digital technology, increase or accelerate uptake, and become more aware of the benefits digital technology can add to the productivity performance, growth, and long-term success of the construction industry, as studies so far reveal that digitalization enables increased performance that can be associated with increased productivity (Madanayake & Cidik, 2019), however, it is recognized that this depends on having certain skills and knowledge, which require training.

CONCLUSION

Referring to the research hypothesis and the results of the analysis and discussion, it can be identified that the research conclusion is that digital technology (digitalization) has a significantly positive effect on the effectiveness of the project implementing team. Sig. Value = 0.000 < 5%.

The theory states that there are several factors that influence the effectiveness of the project implementation team, but in this study, it is revealed that at least among the construction industry in Jakarta, the factor of digital technology (digitalization), turns out to have a positive and significant effect on the effectiveness of the project implementing team.

REFERENCES

Aghimien, D., Aigbavboa, C., Oke, A., & Koloko, N. (2018). *Digitalisation in Construction Industry: Construction Professionals Perspective. Conference Paper December 2018*. 25 Sept 2020. https://www.researchgate.net/publication/329141252

Arikunto, S. (2013). *Prosedur penelitian suatu pendekatan praktik*.

Azmy, N. (2012). *The role of team effectiveness in construction project teams and project performance*. Iowa State University.

Chowdhury, T., Adafin, J., & Wilkinson, S. (2019). *Review of digital technologies to improve productivity of New Zealand construction industry*.

Creswell, J. W., & Creswell, J. D. (2017). *Research design: Qualitative, quantitative, and mixed methods approaches*. Sage publications.

Ghozali, I., & Fuad. (2008). *Structural equation modeling: teori, konsep, dan aplikasi dengan Program Lisrel 8.80*. Badan Penerbit Universitas Diponegoro.

Hetemi, E., Ordieres-Meré, J., & Nuur, C. (2020). An institutional approach to digitalization in sustainability-oriented infrastructure projects: The limits of the building information model. *Sustainability*, *12*(9), 3893.

Kwofie, T. E., Alhassan, A., Botchway, E., & Afranie, I. (2015). Factors contributing towards the effectiveness of construction project teams. *International Journal of Construction Management*, *15*(2), 170–178.

Madanayake, U., & Cidik, M. (2019). The potential of digital technology to improve construction productivity. *Proceedings of 35th Annual ARCOM Conference*, 416–425.

Maskuriy, R., Selamat, A., Maresova, P., Krejcar, O., & David, O. O. (2019). Industry 4.0 for the construction industry: Review of management perspective. *Economies*, *7*(3), 68.

Nasution, S. (2009). *Metode Research (penelitian ilmiah)*.

Rimmimgton, A., Dickens, G., & Pasqire, C. (2015). Impact of Information and Communication Technology (ICT) on construction projects. *Organization, Technology & Management in Construction: An International Journal*, *7*(3), 1367–1382.

Simanjuntak, P., Purnomo, C. C., Filipus, C., & Haryady, H. (2020). *Pengaruh Kepemimpinan Transformasional, Teknologi Digital dan Keragaman Budaya Kerja Terhadap Efektivitas Tim Pelaksana Konstruksi*.

Simanjuntak, P., Purnomo, C. C., Filipus, C., & Haryady, H. (2021). *Laporan Akhir Penelitian: Pengaruh Kepemimpinan Transformasional, Teknologi Digital dan Keragaman Budaya Kerja Terhadap Efektivitas Tim Pelaksana Konstruksi*.

Tetik, M., Peltokorpi, A., Seppänen, O., & Holmström, J. (2019). Direct digital construction: Technology-based operations management practice for continuous improvement of construction industry performance. *Automation in Construction*, *107*, 102910.

DIGITAL TECHNOLOGY USAGE INFLUENCE ON THE EFFECTIVENESS OF THE CONSTRUCTION IMPLEMENTATION TEAM

ORIGINALITY REPORT

19%	17%	8%	2%
SIMILARITY INDEX	INTERNET SOURCES	PUBLICATIONS	STUDENT PAPERS

PRIMARY SOURCES

1	www.researchgate.net Internet Source	13%
2	www.warse.org Internet Source	2%
3	journal.unj.ac.id Internet Source	2%
4	Rimi Gusliana Mais, Hendrawati ., Herry Eka Putra. "Factors Affecting Profit Distribution Management in Sharia Banks in Indonesia", KnE Social Sciences, 2019 Publication	2%

Exclude quotes	On	Exclude matches	< 2%
Exclude bibliography	On		