

Analysis of User Acceptance Levels of the e-AMP Information System at Kadi International Ltd. Using the Technology Acceptance Model (TAM)

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Abstract— Speed, effectiveness, and efficiency of information in a company today are crucial. The rapid development of computer devices, increasing company data volume, and bandwidth congestion require companies to develop systems to ensure smooth workflow. This research seeks to understand how well users or administrative staff at Kadi International Ltd. have accepted the new technology introduced by the company, specifically the e-AMP application. The study uses the Technology Acceptance Model (TAM), which is a method for predicting user acceptance of new technology. Based on the results of the TAM analysis, 69% of respondents agree and 28.17% strongly agree that the e-AMP system significantly aids in their daily work.

Keywords— Technology Acceptance Model, User Acceptance, Information System, Kadi International Ltd., e-AMP.

I. INTRODUCTION

Administrative staff of Kadi International Ltd. are still comfortable recording manually using paper forms and handwriting, resulting in frequent queues at the truck scale (truck weighing area). Every day more than 200 dump trucks enter and exit the Asphalt Mixing Plant (AMP) to carry asphalt-making materials or to carry mature asphalt to the project site.

To address these issues, Kadi International Ltd. introduced the e-AMP (Electronic Asphalt Mixing Plant) system, designed to automate the administrative processes related to the entry and exit of raw materials and asphalt. This research seeks to assess the user acceptance of the e-AMP system, focusing on whether it has facilitated work or added to the workload of staff. The method used to measure user acceptance is the Technology Acceptance Model (TAM).

II. RESEARCH METHODOLOGY

The research process was conducted in stages to examine each variable defined in this study.

The research method is presented as follows and the flow chart shows the stages of the research and the methods for further research:

Problem Identification

After the e-AMP Information System was implemented, the first step was to identify potential issues that may arise and hinder the system’s adoption and effectiveness. This process is necessary to help the company assess and evaluate the system for future improvements to ensure it operates optimally and is kept up to date.

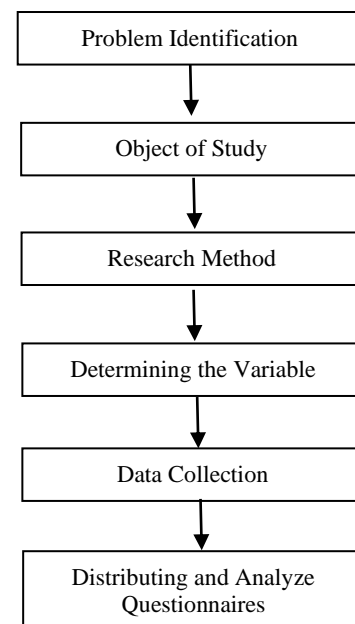


Fig. 1. Methodology of Research Flowchart

Object of Study

The object of this research was the users of the e-AMP system at Kadi International Ltd. The total population at Kadi International Ltd. consists of 256 employees, but the research sample focused on 24 staff members from the Finance, Procurement, and Cost Control Departments who are directly involved with the system.

Research Method

The Technology Acceptance Model (TAM) was chosen for this study as it is well-suited to the company's environment and modern technological advancements.

Determining the Variable

Determination of variables is used for the questionnaires analysis, which output is the User Acceptance Level for the e-AMP Information System. There are two types of variables, dependent variable and independent variable. Explanations of the variables are:

1. The independent variables (free) used consist of 4 variables, they are user design interface (X1), perceived ease of use (X2), attitude toward using (X3), and behavioral intention to use (X4).

- The dependent variable (bound) used is actual use behavior (Y1).

Data Collection

At this stage, the author just started learning from the experiences of previous researchers, further exploration of the system environment in the company and its users to collecting samples with questionnaires. The methods are as follows:

- Literature Review: Gathering references related to TAM and other relevant resources, including books, journals, and online articles.
- Field Research: Direct observation of users interacting with the e-AMP system at Kadi International Ltd.
- Questionnaires: A survey instrument was distributed to respondents, designed based on the research variables. The questionnaire was distributed digitally via Google Forms to support paperless practices.

Distributing and Analyze Questionnaires

The questionnaire focused on measuring responses to four variables (X1-X4) and one dependent variable (Y1), with questions using a Likert scale (1 for "strongly disagree" and 4 for "strongly agree"). The list of questions in the questionnaire that we created is as follows:

- User Design Interface (X1). The question items in this variable are "the suitability of the use of colors and background designs in the e-AMP application is easy to use", "the e-AMP application design model makes it easy to use in operating the application", "the layout of buttons and menus is easy for users to read", "the appearance of the e-AMP application is easy to adapt", "the output (report) is presented in a format that suits your needs".
- Perceived Ease of Use (X2). The question items on this variable are "the e-AMP application makes my work easier to do", "the e-AMP application has an easy input process", the "e-AMP application provides convenience and time efficiency", "the e-AMP application can be operated during working hours comfortably without any obstacles" and "the e-AMP application is easy to learn".
- Attitude Toward Using (X3). The question items on this variable are "the e-AMP application gives me more control over my work", "the e-AMP application increases the effectiveness of my work", "the e-AMP application provides data or information in a format that suits my needs", "the e-AMP application has provided up-to-date information" and "the e-AMP application always provides information when needed".
- Behavioral Intention to Use (X4). The question items on this variable are "the e-AMP application system can make it easier and have an impact on other users", "the e-AMP application has the expected capabilities and functions", "e-AMP application users will not feel too busy to respond to supplier requests", "the e-AMP application has complete data documentation" and "the existing system provides reports that suit the user's needs".
- Actual Use Behavior (Y1). The question items in this variable are "the e-AMP application never experiences problems so that transactions often fail", "the e-AMP

application always runs when needed even though it is accessed anywhere and anytime by the user", "the e-AMP application is very helpful in electronic archiving and physical archiving", "the e-AMP application program has added value by producing valid information regarding the volume of material", both physical and system" and "the use of the e-AMP application system program has been optimally utilized in its operational use".

Next step after the questionnaire completed is to distribute the questionnaire. Distribution is carried out with two ways, that distributed via the company's email mailing list and by broadcasting messages with the Company Whatsapp group.

After the questionnaire is distributed and the researcher receives responses from the respondents, the next stage is to analyze the data from the questionnaire results according to the answers given by the respondents.

Next, analyzing the factors of the level of acceptance using 3 types of testing, namely validation tests, reliability tests and analysis tests. The validity test aims to see the quality of respondents' answers by looking at the total correlation using a significance level of 5% (0.05) or by comparing the calculated r value with the r table. The reliability test is carried out to see the level of consistency of respondents' answers based on the cronbach alpha value > 0.60. Furthermore, an analysis test is carried out using the classical assumption test, linear regression test, t test, F test and R test.

III. ANALYSIS PROCESS AND RESULT

The following is an overview of the e-AMP Information System at Kadi International Ltd.

A. Dashboard (General Summary)

Dashboard (General Summary) is the first page that appears after the user logs in. This page contains information about a comparison graph between the amount of asphalt production plans that the company has planned and the actual amount of asphalt production.

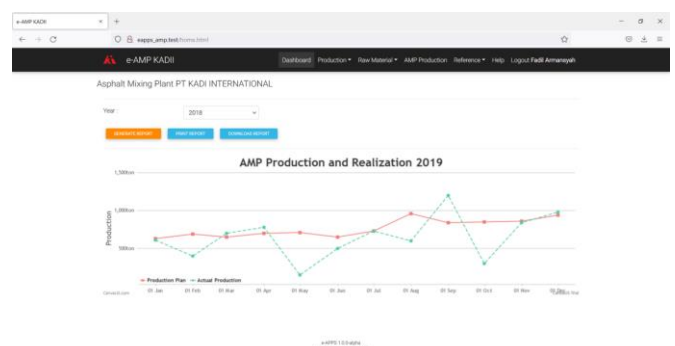


Fig. 2. Dashboard e-AMP.

B. Contract

The contract menu is used by the Procurement Department to track all details of asphalt paving contracts, including client names, asphalt specifications, and order quantities.

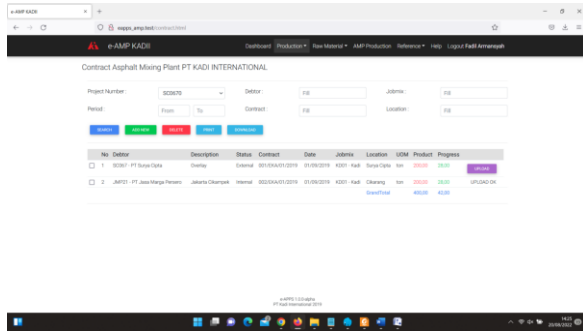


Fig. 3. Contract Menu e-AMP

C. Raw Material

The raw material menu, used by the Procurement and Finance Departments, lists all purchase orders from suppliers of raw materials. The system also provides a summary of available stock.

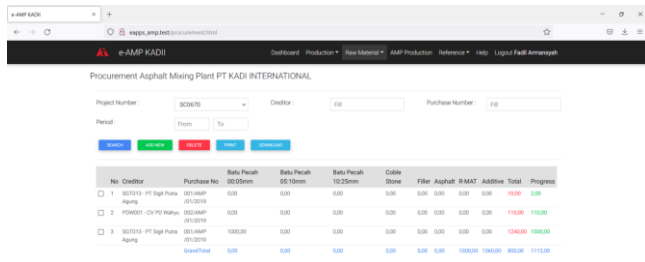


Fig. 4. Raw Material Menu e-AMP

D. Production

The production menu is used by the Cost Control Department to compare the amount of asphalt produced with the amount delivered to project sites.

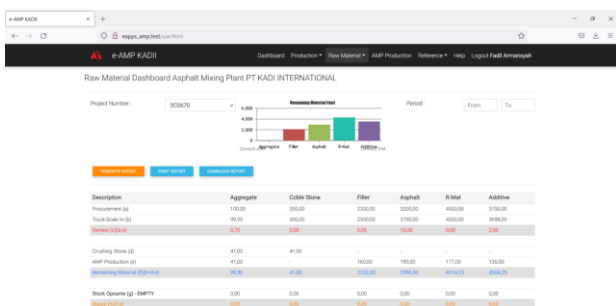


Fig. 5. Production e-AMP.

Questionnaire Preparation

The questionnaire was prepared to measure the variables that were established in the study. This questionnaire was created using Google Forms to support paperless and environmentally-friendly initiatives. The questionnaire consists of five sections and contains a total of 24 questions. The questions are organized based on the research variables, and each variable is measured using a Likert scale with the following values:

TABLE I. Questionnaire Details.

No	Section	Variable	Question Details
1	1	X1	The use of color and background design in the e-AMP application is appropriate and comfortable.
2	1	X1	The design model of the e-AMP application is easy to use and operate.
3	1	X1	The layout of buttons and menus in the e-AMP application is easy to read and understand.
4	1	X1	The reports generated by the e-AMP system are in formats that meet the users' needs.
5	2	X2	The e-AMP application makes my work easier to perform.
6	2	X2	The input process in the e-AMP application is simple.
7	2	X2	The e-AMP application provides convenience and time efficiency.
8	2	X2	The e-AMP application can be comfortably operated during work hours without issues.
9	2	X2	The e-AMP application is easy to learn.
10	3	X3	The e-AMP application gives me greater control over my work.
11	3	X3	The e-AMP application improves the effectiveness of my work.
12	3	X3	The e-AMP application provides data or information in formats that suit my needs.
13	3	X3	The e-AMP application provides up-to-date information.
14	3	X3	The e-AMP application always provides the information I need when I need it.
15	4	X4	The e-AMP system can facilitate and positively influence other users.
16	4	X4	The e-AMP system has the expected capabilities and functions.
17	4	X4	Users of the e-AMP system do not feel overwhelmed by supplier requests.
18	4	X4	The e-AMP system has complete data documentation.
19	4	X4	The system provides reports in formats that meet user needs.
20	5	Y1	The e-AMP application rarely experiences issues, causing failed transactions.
21	5	Y1	The e-AMP application works whenever needed, regardless of location or time.
22	5	Y1	The e-AMP application helps significantly with both electronic and physical archiving.
23	5	Y1	The e-AMP application adds value by providing valid information on material volumes.
24	5	Y1	The e-AMP system has been optimally utilized in its operations.

The questionnaire was created using Google Forms and distributed to users of the application by sending the Google Forms link through internal WhatsApp groups and via broadcast email to the e-AMP application user group.

Tabulation of Questionnaire Data

The questionnaire was distributed to 24 employees at Kadi International Ltd., and all were completed and returned, resulting in a 100% response rate. Below are the tabulated results from the questionnaire:

TABLE II. Details of the Number of Questionnaires

No	Rincian Kuesioner	Jumlah
1	Questionnaire distributed	24
2	Questionnaire returned	24
3	Questionnaire filled	24
4	Questionnaire distributed presentation	100%
5	Questionnaire returned presentation	100%

TABLE III. Questionnaires Answers

No	Sec	Var	Questionnaires Answer			
			Strongly Agree	Agree	Disagree	Strongly Disagree
1	1	X1	70,80%	29,20%	0%	0%
2	1	X1	66,70%	33,30%	0%	0%
3	1	X1	62,50%	37,50%	0%	0%
4	1	X1	66,70%	33,30%	0%	0%
5	2	X2	58,30%	41,70%	0%	0%
6	2	X2	75%	25%	0%	0%
7	2	X2	54,20%	45,80%	0%	0%
8	2	X2	62,50%	33,30%	4,20%	0%
9	2	X2	62,50%	33,30%	4,20%	0%
10	3	X3	75%	25%	0%	0%
11	3	X3	66,70%	33,30%	0%	0%
12	3	X3	70,80%	25%	4,20%	0%
13	3	X3	58,30%	37,50%	4,20%	0%
14	3	X3	66,70%	25%	8,30%	0%
15	4	X4	79,20%	20,80%	0%	0%
16	4	X4	79,20%	20,80%	0%	0%
17	4	X4	79,20%	16,70%	4,10%	0%
18	4	X4	70,80%	25%	4,20%	0%
19	4	X4	75%	25%	0%	0%
20	5	Y1	79,20%	20,80%	0%	0%
21	5	Y1	54,20%	16,70%	29,20%	0%
22	5	Y1	70,80%	20,80%	0%	0%
23	5	Y1	79,20%	20,80%	0%	0%
24	5	Y1	75%	25%	0%	0%

TABLE IV. Summary of Respondents' Answers

Variable	Strongly Agree	Agree	Disagree	Strongly Disagree
X1	33,3333	66,6667	0,0000	0
X2	35,8333	62,5000	1,6667	0
X3	29,1667	67,5000	3,3333	0
X4	21,6667	76,6667	1,6667	0
Y1	20,8333	71,6667	7,5000	0
Total	140,8333	345,0000	14,1667	0,0000
%	28,17%	69%	2,83%	0%

To assess the quality of the data, a validity test was conducted. This test determines whether the responses (instruments) provided by respondents are valid. For the validity test, the researcher used the SPSS Version 25 software. The results are shown in Table V below:

TABLE V. Results of the Validity Test

Variable	r-calculated	r-table	Description
X11	0,717	0,456	VALID
X12	0,85	0,456	VALID
X13	0,866	0,456	VALID
X14	0,731	0,456	VALID
X21	0,787	0,456	VALID
X22	0,889	0,456	VALID
X23	0,667	0,456	VALID
X24	0,84	0,456	VALID
X25	0,878	0,456	VALID
X31	0,772	0,456	VALID
X32	0,808	0,456	VALID
X33	0,916	0,456	VALID
X34	0,865	0,456	VALID
X35	0,906	0,456	VALID
X41	0,867	0,456	VALID
X42	0,903	0,456	VALID
X43	0,839	0,456	VALID
X44	0,864	0,456	VALID
X45	0,867	0,456	VALID
Y11	0,597	0,456	VALID
Y12	0,875	0,456	VALID
Y13	0,909	0,456	VALID
Y14	0,909	0,456	VALID
Y15	0,917	0,456	VALID

Based on the table above, all the variables tested in the validity test were deemed valid. A result is considered valid if the r-calculated value is greater than the r-table value. Therefore, the questionnaire data are considered valid for analysis.

B. Reliability Test

The Reliability Test was conducted to determine the consistency, accuracy, and predictability of the variables. The reliability was tested using Cronbach's Alpha. The results of the reliability test are shown in Table VI below:

TABLE VI. Results of the Reliability Test

Variable	Cronbach's Alpha	Threshold	Description
X1	0,802	0,60	VALID
X2	0,868	0,60	VALID
X3	0,907	0,60	VALID
X4	0,916	0,60	VALID
Y1	0,861	0,60	VALID

Based on the results in Table VI, all variables (both

Based on the tabulation results above, in section 1 (rows 1, 2, 3 and 4) it is dominated by Agree answers. Likewise in section 2 (rows 5, 6, 7, 8 and 9) which are dominated by Agree answers, only rows 8 and 9 have respondents answering disagree. Section 3 (rows 10, 11, 12, 13 and 14) the answers are dominated by Agree answers, rows 12, 13, and 14 have respondents answering disagree. Section 4 (rows 15, 16, 17, 18 and 19) is also dominated by Agree answers, only rows 17 and 18 have respondents answering disagree. Section 5 (rows 20, 21, 22, 23 and 24) is also dominated by Agree answers with only row 21 having a disagree answer.

Testing and Analysis of Results

The study was conducted to determine the influence of each variable that has been determined. Furthermore, sampling was carried out using purposive sampling techniques. The basis for sampling was aimed at employees/staff who use or are related to these systems in their work. The measurement scale used a 4-point Linkert scale. The scale score does not have a middle category, does not have a significant difference, where the measurement reliability and item validity do not experience any difference, the difference at the score variance only.

A. Validation Test

The Technology Acceptance Model (TAM) test involves validating each survey statement by calculating the percentage of respondents' answers. The results are summarized in Table IV below.

Based on Table IV, it can be concluded that the majority of respondents (69%) answered "Agree" and 28.17% responded "Strongly Agree" regarding the analysis of the e-AMP Information System. This indicates a high level of agreement from respondents that the system is effective.

dependent and independent) have a Cronbach’s Alpha value greater than 0.60, indicating that the questionnaire is reliable and suitable for further testing.

C. Analysis Test

The analysis test was conducted to assess the data using various statistical tests, including classical assumption tests and multiple linear regression analysis. The following are the steps and results of the analysis.

1. Classical Assumption Test

The classic hypothesis test includes normality test, multicollinearity test and heteroskedasticity test in order to fit the data for regression analysis.

Normality Test

The Skewness and Kurtosis Test was used to examine the distribution of the data, checking for skewness (asymmetry) and kurtosis (peakedness). This test is particularly useful for small sample sizes (less than 30). The results from the normality test, processed using SPSS Version 25, are shown in Table VII.

TABLE VII. Results of Skewness and Kurtosis Normality Test

Var	N	Skewness			Kurtosis		
		Stat.	Std. Error	Ratio	Stat.	Std. Error	Ratio
X1	24	0,830	0,472	1,757	-0,812	0,918	-0,885
X2	24	0,649	0,472	1,375	-1,126	0,918	-1,227
X3	24	0,695	0,472	1,472	-0,216	0,918	-0,235
X4	24	0,750	0,472	1,588	1,484	0,992	1,496

Based on the results of the Skewness and Kurtosis Test, the data is considered normally distributed, as the Skewness and Kurtosis ratios fall between -2 and +2.

Multicollinearity Test

The multicollinearity test was conducted to determine whether there is a correlation between independent variables. The criteria for detecting multicollinearity are based on the Variance Inflation Factor (VIF) values (which should be less than 10) and Tolerance values (which should be greater than 0.10). The results of the multicollinearity test, processed using SPSS Version 25, are shown in Table VIII.

TABLE VIII. Results of Multicollinearity Test

Model	Collinearity Statistics	
1 (Constant)	Tolerance	VIF
X1	0,309	3,241
X2	0,174	5,744
X3	0,242	4,132
X4	0,155	6,461

Based on Table VIII, the results show that there is no multicollinearity between the independent variables, as the VIF values are below 10 and the Tolerance values are above 0.10.

Heteroscedasticity Test

The heteroscedasticity test was conducted to check if there is unequal variance in the residuals. The Glejser method was used for this purpose. The results of the heteroscedasticity test, processed using SPSS Version 25, are shown in Table IX.

TABLE IX. Results of Heteroscedasticity Test

Model	Sig
1 (Constant)	
X1	0,506
X2	0,852
X3	0,941
X4	0,422

Based on Table IX, the results indicate that there is no heteroscedasticity, as the significance values are all greater than 0.05. This means that the classical assumption tests have been satisfied.

2. Multiple Linear Regression Analysis

Multiple linear regression was conducted to assess the relationship between the independent variables (X1, X2, X3, and X4) and the dependent variable (Y1). The results of the multiple linear regression analysis, processed using SPSS Version 25, are shown in Table X.

TABLE X. Coefficients of Multiple Linear Regression Analysis

Model		Unstandardized Coefficients		Sig.
		B	Std. Error	
1	(constant)	-0,103	1,504	0,946
	X1	0,243	0,189	0,213
	X2	-0,346	0,185	0,076
	X3	0,370	0,148	0,022
	X4	0,767	0,210	0,002

From the table, it can be observed that at a 95% confidence level ($\alpha = 0.05$), the following conclusions can be drawn:

- The variable X3 (Attitude toward Using the System) has a significance value of 0.022, which is less than 0.05, indicating that it significantly affects the dependent variable (Y1).
- The variable X4 (Behavioural Intention to Use) has a significance value of 0.002, which is also less than 0.05, indicating that it significantly affects the dependent variable (Y1).
- The variables X1 (User Interface Design) and X2 (Perceived Ease of Use) have significance values greater than 0.05, indicating that they do not have a significant effect on the dependent variable.

3. Determination Test (R-Square Test)

The determination test (R-Square) was conducted to measure how much of the variance in the dependent variable (Y1) can be explained by the independent variables (X1, X2, X3, X4). The results are shown in Table XI.

TABLE XI. R-Square Test

Model	R	R Square
1	0,94	0,883

Based on the results in Table XI, the R-Square value is 0.883, which means that 88.3% of the variation in the dependent variable (Y1) is explained by the independent variables (X1, X2, X3, X4), while the remaining 11.7% is explained by other variables not included in the model.

4. t-Test

The t-test was conducted to determine the partial effect of

each independent variable on the dependent variable. The results of the t-test are shown in Table XII.

TABLE XII. t-Test Results

Variable	t-value	t-table	Conclusion
user design interface (X1)	1,287	1,729	H0 accepted Ha rejected
perceived easy of used (X2)	-1,874	1,729	H0 accepted Ha rejected
attitude toward using (X3),	2,503	1,729	H0 rejected Ha accepted
behavioral intention to use (X4).	3,654	1,729	H0 rejected Ha accepted

From the t-test results, it can be concluded that:

- X3 (Attitude Toward Using the System) and X4 (Behavioral Intention to Use) have a t-value greater than the t-table value, which means that these variables have a significant effect on the dependent variable (Y1).
- X1 (User Interface Design) and X2 (Perceived Ease of Use) have a t-value less than the t-table value, which means these variables do not have a significant effect on the dependent variable.

5. F-Test

The F-test was conducted to assess the simultaneous effect of the independent variables on the dependent variable. The results of the F-test are shown in Table XIII.

TABLE XIII. F-Test Results

Model	F	Sig.
1		
Regression	35.848	0.000 ^b
Residual		
Total		

Based on the results, the F-test shows a significance value of 0.000, which is less than 0.05, and an F-value of 35.848, which is greater than the F-table value of 2.90. This indicates that the independent variables X1, X2, X3, and X4 simultaneously have a significant effect on the dependent variable Y1.

IV. CONCLUSION AND RECCOMENDTION

Based on the data analysis from the user acceptance of the e-AMP system at Kadi International Ltd., most users (69%) agreed and 28.17% strongly agreed that the system is user-friendly and has significantly eased their daily work. However, 28% of users expressed concerns about occasional system downtime during transactions, limiting access when

and where needed, and issues with the timeliness of data provision.

Overall, the implementation of the e-AMP system has significantly reduced paper usage, contributing positively to the company’s shift toward a paperless environment. The high user acceptance of the e-AMP system indicates that it is a valuable tool in the users’ daily tasks without adding extra burden.

Recommendations:

The company should use this research as a reference for further system improvements, particularly in enhancing user infrastructure (PCs, LAN/Internet connections), which were highlighted as major concerns in the study.

Given the fast pace of technological development, regular system evaluations should be conducted to ensure that user acceptance remains high and the system evolves with current trends.

The e-AMP system should be developed into a mobile app using public IP addresses to make it even more accessible for users, especially those with high mobility.

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