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Analysis of the Influence of User Interface (UI) and User Experience (UX) on Big Data Application on Administrative Dashboard Function Interest on Portal News

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Abstract

The activities of the National Police are closely related to the community, therefore social media is an obligation for the National Police to involve themselves with the community, especially in the digital era which continues to open opportunities and improve technology. This research aims to determine the dashboard interface factors that can influence its function. This model is TAM and questionnaires will be distributed to staff admin and the data will be analyzed using Multiple Linear Regression, after analysis, interviews will be conducted with several selected people. The research results show that usefulness and ease of use have a huge influence on attitude towards using and this is represented in the real world by 56%. Ease of use and attitude towards using have a huge impact on actual system use and this is represented in the real world by 76%. The research concluded that usability and ease of use are important to pay attention to in order to increase user satisfaction and interest. Ease of use and user interest must be considered to increase application use. Still, usability should not be given too much attention because usability is more focused on user satisfaction and interest.

Keywords:

Media, Design, Dashboard, TAM, Multiple Linear Regression, Big Data, Analytics.

Introduction

Mediahub is the official website of the Public Relations Division of the National Police that provides coverage content that can be accessed for free by the Internal Police, Journalists, the General Public, and the Presidential Staff Office [5].

The dashboard page provides a consolidation of various indicators that allow decision-makers to get a brief overview of performance indicators [6]. The dashboard integrates data from various sources and arranges and interfaces the data in a meaningful way [7]. Therefore, it is important to pay attention to the interface on the dashboard. The dashboard shows big data analytics to help improve the performance of the website. Data visualization graphs increase by utilizing big data analytics [8]. Therefore, the appearance of the data analytics needs to be adjusted to provide a clearer picture on the dashboard page. The dashboard page provides a consolidation of various indicators that allow decision-makers to get a brief overview of performance indicators [6]. The dashboard integrates data from various sources and arranges and interfaces the data in a meaningful way [7]. Therefore, it is important to pay attention to the interface on the dashboard. The dashboard shows big data analytics to help improve the performance of the website. Data visualization graphs increase by utilizing big data analytics [8]. Therefore, the appearance of the data analytics needs to be adjusted to provide a clearer picture on the dashboard page.

To achieve this, it is essential to conduct user testing to identify pain points, adopt modern design principles, and implement iterative updates based on user feedback and evolving needs. Ensuring compliance with accessibility standards, such as the Web Content Accessibility Guidelines (WCAG), will further enhance inclusivity. By addressing

these aspects, the National Police activities platform can improve usability, strengthen public trust, and better serve its diverse user base.

Literature Review

A. Big Data Analytics

Big Data Analytics (BDA) refers to the process of examining and analyzing vast and diverse datasets to uncover patterns, correlations, trends, and other valuable insights. This field integrates advanced technologies, statistical methods, and computational algorithms to extract meaningful information from data that is characterized by its volume, velocity, variety, veracity, and value—commonly referred to as the 5Vs of Big Data.

B. Application of Big Data

Big Data is widely used for customer segmentation, demand forecasting, and sentiment analysis.[2] highlighted its role in improving supply chain efficiency and optimizing marketing strategies.

Big Data analytics aids in disease prediction, personalized medicine, and hospital resource management. [2] discussed its application in reducing healthcare costs and enhancing patient outcomes.

Government agencies leverage Big Data for urban planning, crime prevention, and disaster response.[3] noted its potential in evidence-based policymaking.

Educational institutions use Big Data to monitor student performance, personalize learning, and optimize administrative processes [4].

C. The Future of Big Data Analytic

The integration of Big Data Analytics with emerging technologies such as Artificial Intelligence (AI), Machine Learning (ML), and the Internet of Things (IoT) promises transformative changes. Trends such as edge analytics, real-time processing, and augmented analytics will continue to shape how organizations leverage data for competitive advantage.In essence, Big Data Analytics is not just about managing large datasets; it is about using those datasets to create value, drive innovation, and make informed decisions across industries[2].

D. Mediahub Application Dashboard

The Media Hub of the Indonesian National Police (Polri) is the official platform managed by the Public Relations Division of Polri. It offers a wide range of content accessible to Polri personnel, journalists, the general public, and other stakeholders. The platform serves as a centralized source for official reports and updates from Polri's activities at both the national headquarters and regional police departments across Indonesia.

E. Model TAM (The Technology Acceptence Model

The Technology Acceptance Model (TAM) is a theoretical framework that explains and predicts user behavior in accepting and utilizing technology. Developed by Davis (1986), TAM is widely used to study the adoption of new technologies in various fields, including information systems, healthcare, education, and business. The model identifies factors influencing an individual's decision to use technology, focusing on user perceptions and attitudes[8].

Research Methods

This research was conducted using a TAM Model methods.Questionnaires will be distributed through Google Form online and distributed using social media. The sampling method is cluster disproportionate random sampling and the research population is students. This research uses the TAM model which consists of 4 variables. The variables are usefulness, attitude towards using, ease of use, and actual system use. Figure 1 shows the TAM model used for this research.

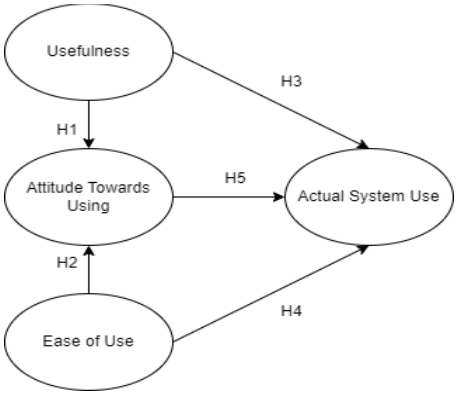

Fig. 1. Research Method

The hypotheses used in this study are as follows:
H10: Usefulness does not affect attitude towards using.
H1a: Usefulness affects attitude towards using.
H20: Ease of use does not affect attitude towards using.
H2a: Ease of use affects attitude towards using.
H30: Usefulness does not affect actual system use.
H3a: Usefulness affects actual system use.
H40: Ease of use does not affect actual system use.
H4a: Ease of use affects actual system use.
H50: Attitude towards using does not affect actual system use.
H5a: Attitude towards using affects actual system use.

Table 1. Questionnaire

Variable	Indicator
Usefulness	Mediahub interface helps users become more effective in utilizing dashboards. The dashboard on Mediahub interface is easy to use. The dashboard interface usage guide for users functions well.
Erase of Use	Users can easily access Mediahub interface. Mediahub interface is user friendly. Mediahub interface is flexible (can be used anytime and anywhere). Users can easily use the analysis provided by Mediahub interface.
Attutide Towards Using	Users understand how to use Mediahub interface. Users can understand the flow of using Mediahub interface. Users feel that Mediahub interface can help users.
Actual System Use	Users want to recommend it to other users. Mediahub interface guarantees user security. Users are satisfied with the services provided. Users will use Mediahub interface when they need important information from official parties.

The data obtained from the questionnaires will be analyzed using SPSS, and hypothesis testing will be conducted using the Multiple Linear Regression analysis method, which includes the F-test, R^2 test, and t-test. After the data has been analyzed, interviews will be conducted with several individuals.

Implementation

Before conducting the researcher, the author also distributed questionnaires to staff admin so that they could understand the application interface in terms of its analytical dashboard optimally in the company.

Based on data 2, 82.7% of respondents were male and 17.3% were female. In terms of age, 2% of respondents were 18 years old, 12.8% of respondents were 19 years old, 38.8% of respondents were 20 years old, 43.9% of respondents were 21 years old, and 2.6% of respondents were 22 years old.

Validity Test

The validity test is conducted to determine whether the indicators used can be used to measure the variables [12]. Data validity will be tested using the Pearson Correlation Coefficients. Pearson Correlation Coefficients is the correlation coefficient most commonly used to measure the linear correlation between two or more data sets [13]. Data will be considered valid if the significance value is less than 0.05 and the Pearson Correlation is positive. Conversely, if the significance value is less than 0.05 and the Pearson Correlation is negative or the significance value exceeds 0.05, the data will be considered invalid[14].

The following are the results of the validity test on the usefulness variable in Table 2.

Table 2. Type Styles

		U01	U02	U03	USUM
U01	Pearson Correlation	1	.588**	.509**	.821**
	Sig. (2-tailed)		.000	.000	.000
	N	196	196	196	196
U02	Pearson Correlation	.588**	1	.598**	.867**
	Sig. (2-tailed)	.000		.000	.000
	N	196	196	196	196
U03	Pearson Correlation	.509**	.598**	1	.840**
	Sig. (2-tailed)	.000	.000		.000
	N	196	196	196	196
USUM	Pearson Correlation	.821**	.867**	.840**	1
	Sig. (2-tailed)	.000	.000	.000	
	N	196	196	196	196

Table 2 shows that all indicators on the usefulness variable are valid.

Here are the results of the validity test on the ease of use variable in Table 3

Table 3. Type Styles

		EOU01	EOU02	EOU03	EOU04	EOUSUM
EOU01	Pearson Correlation	1	.425**	.219**	.243**	.658**
	Sig. (2-tailed)		.000	.002	.001	.000
	N	196	196	196	196	196
EOU02	Pearson Correlation	.425**	1	.278**	.262**	.704**
	Sig. (2-tailed)	.000		.000	.000	.000
	N	196	196	196	196	196
EOU03	Pearson Correlation	.219**	.278**	1	.439**	.702**
	Sig. (2-tailed)	.002	.000		.000	.000
	N	196	196	196	196	196
EOU04	Pearson Correlation	.243**	.262**	.439**	1	.716**
	Sig. (2-tailed)	.001	.000	.000		.000
	N	196	196	196	196	196
EOUSUM	Pearson Correlation	.658**	.704**	.702**	.716**	1
	Sig. (2-tailed)	.000	.000	.000	.000	
	N	196	196	196	196	196

Table 3 shows that all indicators on the ease of use variable are valid.

The following are the results of the validity test on the attitude towards using variable in Table 4.

Table 4. Type Styles

		ATU01	ATU02	ATU03	ATUSUM
ATU01	Pearson Correlation	1	.463**	.487**	.795**
	Sig. (2-tailed)		.000	.000	.000
	N	196	196	196	196
ATU02	Pearson Correlation	.463**	1	.535**	.813**
	Sig. (2-tailed)	.000		.000	.000
	N	196	196	196	196
ATU03	Pearson Correlation	.487**	.535**	1	.835**
	Sig. (2-tailed)	.000	.000		.000
	N	196	196	196	196
ATUSUM	Pearson Correlation	.795**	.813**	.835**	1
	Sig. (2-tailed)	.000	.000	.000	
	N	196	196	196	196

Table 4 shows that all indicators on the attitude towards using variable are valid.
Here are the results of the validity test on the actual system use variable in Table 5.

Table 5. Type Styles

		ASU01	ASU02	ASU03	ASU04	ASUSUM
ASU01	Pearson Correlation	1	.399**	.294**	.482**	.765**
	Sig. (2-tailed)		.000	.000	.000	.000
	N	196	196	196	196	196
ASU02	Pearson Correlation	.399**	1	.440**	.276**	.715**
	Sig. (2-tailed)	.000		.000	.000	.000
	N	196	196	196	196	196
ASU03	Pearson Correlation	.294**	.440**	1	.244**	.682**
	Sig. (2-tailed)	.000	.000		.001	.000
	N	196	196	196	196	196
ASU04	Pearson Correlation	.482**	.276**	.244**	1	.712**
	Sig. (2-tailed)	.000	.000	.001		.000
	N	196	196	196	196	196
ASUSUM	Pearson Correlation	.765**	.715**	.682**	.712**	1
	Sig. (2-tailed)	.000	.000	.000	.000	
	N	196	196	196	196	196

Reliability Test

The reliability test is conducted to determine whether the variables used can be relied upon and can be used to test the model used [15]. Data reliability will be tested using Cronbach's Alpha. Cronbach's Alpha is a reliability coefficient and a measure of internal consistency for testing and measurement [16]. Data can be considered reliable if the Cronbach's Alpha value is higher than 0.5. Conversely, if the Cronbach's Alpha value is lower than 0.5, the data cannot be considered reliable [17].

Table 6. Shows that the usefulness variable is reliable

Cronbach's Alpha	N of Items
.795	3

Here are the results of the reliability test on the ease of use variable in Table 7.

Table 7. Ease of use reliability test

Cronbach's Alpha	N of Items
.643	4

Table 7 shows that the ease of use variable is reliable.
Here are the results of the reliability test on the attitude towards using variable in Table 8.

Table 8. Attitude Towards Using Reliability Test

Cronbach's Alpha	N of Items
.746	3

Table 8 shows that the attitude towards using variable is reliable.Here are the results of the reliability test on the actual system use variable in Table 9.

Table 9. Actual System Use Reliability Test

Cronbach's Alpha	N of Items
.687	4

Table 9 shows that the actual system use variable is reliable.

F-Test

The F-test is conducted to test the influence of the independent variables on the dependent variable simultaneously[18].The following are the results of the F-test with the independent variables of usefulness and ease of use on the dependent variable attitude towards using in Table 10.

Table 10. Independent Variables of Usefulness and Ease Of Use on the Dependent Variable Attitude Towards Using F-Test T

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	14.577	2	7.289	126.138	.000[b]
	Residual	11.152	193	.058		
	Total	25.730	195			

a. Dependent Variable: ATU

b. Predictors: (Constant), EOU, U

Table 10 shows that the F-value is 126.138. This means that the independent variables of usefulness and ease of use have a very large influence on the dependent variable attitude towards using.The following are the results of the F-test with the independent variables of usefulness, ease of use, and attitude towards using on the dependent variable of actual system use in table 11.

Table 11. Independent Variables of Usefulness, Ease Of Use, and Attitude Towards Using on the Dependent Variable Actual System Use F-Test

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	16.361	3	5.454	208.501	.000[b]
	Residual	5.022	192	.026		
	Total	21.383	195			

a. Dependent Variable: ASU

b. Predictors: (Constant), ATU, U, EOU

Table11 shows that the F-value is 208.501. This means that the independent variables of usefulness, ease of use, and attitude towards using have a very large influence on the dependent variable of actual system use.

R^2 Test

The R^2 test is conducted to test the fit or suitability of the model in explaining the actual condition/phenomenon [19].The following is the result of the R^2 test with the independent variables of usefulness and ease of use on the dependent variable attitude towards using in table 12.

Table 12. Independent Variables of Usefulness and Ease Of Use on the Dependent Variable Attitude Towards Using R^2 Test

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.753[a]	.567	.562	.24038	2.304

a. Predictors: (Constant), EOU, U

b. Dependent Variable: ATU

Table 12 shows that the adjusted R^2 value is 0.562. Although the independent variables have a very large influence on the dependent variable, only 56% represent real-life conditions. This means that there are 44% of factors outside of the independent variables that have not been defined.Here are the results of the F-test with the independent variables of usefulness, ease of use, and attitude towards using on the dependent variable of actual system use in table 13.

Table 13. Independent Variables of Usefulness, Ease Of Use, and Attitude Towards Using on the Dependent Variable Actual System Use R^2 Test

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.875[a]	.765	.761	.16173	1.605

a. Predictors: (Constant), ATU, U, EOU

b. Dependent Variable: ASU

Table 13 shows that the adjusted R^2 value is 0.761. Although the independent variables have a very large influence on the dependent variable, only 76% represent real-life conditions. This means that there are 24% of factors outside of the independent variables that have not been defined.

t-Test

The t-test is conducted to test the influence of the independent variables on the dependent variable individually [20].The following are the results of the t-test with the independent variables of usefulness and ease of use on the dependent variable of attitude towards using in Table 14.

Table 14. Independent Variables of Usefulness and Ease Of Use on the Dependent Variable Attitude Towards Using t-Test

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	.580	.235		2.468	.014		
	U	.369	.062	.384	5.964	.000	.541	1.848
	EOU	.487	.072	.437	6.789	.000	.541	1.848

a. Dependent Variable: ATU

Table14 shows that the variables of usefulness and ease of use have significance values below 0.005. This means that usefulness affects attitude towards using and ease of use affects attitude towards using. In the unstandardized coefficient beta part, which shows how much influence an independent variable has on the dependent variable, attitude towards using inherently has a value of 0.580, and when added with usefulness, the influence value will increase by 0.369, and when added again with ease of use, the influence value will increase by 0.487.The following are the results of the t-test with the independent variables of usefulness, ease of use, and attitude towards using on the dependent variable of actual system use in table 15.

Table 15. Independent Variables of Usefulness, Ease Of Use, and Attitude Towards Using on the Dependent Variable Actual System Use t-Test

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	.315	.160		1.963	.051		
	U	.086	.045	.098	1.889	.060	.457	2.188
	EOU	.635	.054	.626	11.835	.000	.437	2.289
	ATU	.207	.048	.227	4.277	.000	.433	2.307

a. Dependent Variable: ASU

Table 15 shows that the usefulness variable has a significance value above 0.005, and attitude towards using and ease of use have significance values below 0.005. This means that usefulness does not affect actual system use, while ease of use and attitude towards using do affect actual system use. In the unstandardized coefficient beta part, which shows how much influence an independent variable has on the dependent variable, actual system use inherently has a value of 0.315, and when added with usefulness, the influence value will increase by 0.086, when added again with ease of use, the influence value will increase by 0.635, and when added again with attitude towards using, the influence value will increase by 0.207.

Hypothesis Test

Based on the F-test, R^2 test, and t-test that have been conducted, the results of the hypothesis testing of the independent variables of usefulness and ease of use on the dependent variable of attitude towards using are that h10 cannot be accepted and h1a is accepted, and h20 cannot be accepted and h2a is accepted.

Conclusions

Usefulness and ease of use have a very large influence on attitude towards using, and this is represented in real-life conditions by 56%. Ease of use and attitude towards using have a very large influence on actual system use, and this is represented in real-life conditions by 76%. Therefore, usefulness and ease of use are important to consider to increase user satisfaction and interest. Ease of use and user interest must be considered to increase application usage, but usefulness does not need to be considered too much because usefulness is more focused on user satisfaction and interest. To attract users, it is necessary to add media or features that allow for more interaction and provide more attention to the variety of content from publishers so that the content becomes more interesting. With aspects that can attract users, add design, color, and changes to some parts by utilizing icons to clarify information to make it easy and comfortable, thereby increasing the number of users of the application. Further analysis of external factors is recommended to better understand the undefined factors to avoid unwanted risks. The focus is on design and content variation that can trigger more attention to the media.

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