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Web Based Ordering and Inventory Information System for Online Printing Services with TAM Method

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A B S T R A C T

In this digital era, people's activity are made easier with the help of technology. For example online shopping. PT Media Langit Persada is a company engaged in digital printing, but the order process is still done manually.For example customer must come to the printing house and make direct order transactions.The management division performs data collection manually too. This is considered less effective because it may causes many human errors whenstoring dataincludingthe information obtained by the customer. This study aims to create a web-based ordering system that is expected to ease customer when making transactions, and make it easier in managing other business processes for the company. This system will later be tested using the Technology Acceptance Model (TAM) method which will determine whether this system is suitablefor use and can be accepted by the community or not. This task can be done by distributing questionnaires to several prospective respondents who are considered to be contributing to this system.

I. INTRODUCTION

In the Digital Era nowadays, the development of information technology is growing very fast. Information technology is used by companies to advance and improve the service quality of the company. Using information technology will be very helpful in various aspects, example increasing worker productivity, reducing office operational costs, improving decision making by stakeholders, improving customer relationships, and developing new strategic applications. Another feature of information technology is the internet, anyone can easily access internet to get the information needed. PT. Media Langit Persada is a company engaged in the digital printing sector. Printing company is usually associated with books or newspapers and so on [1]. The products available are promotional media in the form of posters, banners, business cards, brochures and several types of banners. The order process by PT. Media Langit Persada still done manually. Customers must come directly to place an order.This method was considered less effective besides customers also did not get full information about the products. Storing data for example customer

order processing, storing data of raw material are also done manually. This data could be inaccurate and what often happen is human errors during report generation. Stock or Inventory can be broken down into some category. First, stock or materials ready for sale in the ordinary course of business, second, stock in the production process, third, stock as form of supplement materials or equipment for use in the production process or providing services [2].

Based on the problems described above, it will be solved by designing a web-based ordering and inventory information system. This system will facilitate and assist the management divisi on to manage data, order data collection, and data searching. Even more, it can ease customers when order digital printing service. From this application, customer can easily provide detailed information that is required.

II. LITERATURES REVIEW

Information systems are organized ways to store, manage, control, and report information in such a way so an organization can achieve its stated goals [3].

Website or web can be interpreted as a collection of page and information in digital format, whether in the form of text, images, video, audio, and other animations provided through an internet connection [4].

Internet (Interconnected Network) is a computer network that connects global networks, the internet, can also be called a network in a wide network [5].

Inventories are generally intended for goods that owned bycompanies, both in the form of wholesale and retail businesses when these goodsare ready for sale [6].

In research conducted by Aryo Nur Utomo and Muhammad Alfaridzi, web-based information systemcan be used fororder printing services online which aims to make it easier for consumers when placing orders at Citra Kencana Printing [7].

In Adi Supriyatna's research, he created a Web-Based Printing Service Information System that can simplify and generate products as desired by consumers. This information system provide convenience to consumers both in terms of finding detailed product information and ordering transactions for the desired product [8].

Subsequent research was carried out by Muhammad Susilo, Rezki Kurniati, Kasmawi in designing a website for online selling computer accessories in the Bengalis area. This research resulted an online store system that could facilitate and provide what needed for consumers. This online store has detailed product information and ordering transactions for the desired product and there are stock reports too [9].

In Yulistia's research, we can see how user attitudes and behavior influence by E-Commerce websites to MSEs, especially computer shops in Palembang city. It has a significant influence on online website use. Users believe that using E-Commerce will get them some benefit. Users find it's easy to use platform and has a positive impact on their business [10].
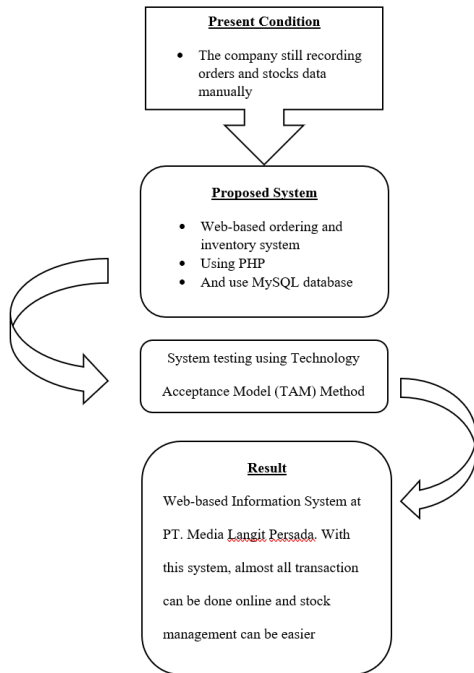
III. FRAMEWORK

Figure 1. Framework

IV. METHODS

TAM method is used for system testing, which aims to determine the user's perception. This test will determine respondent attitude in accepting the use of information technology [11]. The TAM method was first recognized by Davis et al in 1989. Several factors that influence the use of a system according to the TAM model by Davis 1989 are Perceived Usefulness (PU), Perceived Ease Of Use (PEOU), Attitude Toward Use (ATU), Behavioral Intention to Use (BITU), Actual System Use.

In this test, a questionnaire is needed which is distributed to prospective respondents on a scale of 1-5 with a description:

1 = Strongly disagree
2 = Disagree
3 = Enough
4 = Agree
5 = Strongly agree

The following list are criteria question distributed in the questionnaire:

Table 1. Questionnaire

No.	Variable	Indicator
1.	*Perceived Usefulness*	Does this system simplify the customer order process? Does this system ease data management for management division? Does this system accelerate the company's performance and business processes?
2.	*Perceived Ease Of Use*	Is this system easy to use? Is this system interface user friendly?
3.	*Attitude Toward Use*	Are users happy with this system? Are users satisfied with this system?
4.	*Behavioral Intention to Use*	Will customers always use this system to place orders? Will company employees always use this system to do their job?
5.	*Actual System Use*	Will the customer recommend using this system to other customers who have not used the system?

This questionnaire was distributed to 21 employees, and 10 customers with total is 31 respondents.

After get questionnaire results from respondents, here are several stages while testing with the TAM methodas follows:

1. Making path diagrams in calculation applications.
   In this stage, we describe all the variables, relate the variables and load all the indicators according to the variables.

2. Outer Model Validation Test Phase
   In the outer model validation test phase, there are several values that must be tested. That are convergent validation test, discriminant validation test, and construct reliability test.

In the convergent validation test, there are two values that must be tested.The first to be tested is the outer loading value.The outer loading value is considered valid if it's value above 0.7 [12]. The second values to be tested is average variance extracted (AVE). That data taken from values of Perceived Usefulness (PU), Perceived Easy of Use (PEOU), Attention to Use (ATU), and Behavioral Intention to Use (BITU). The data on the AVE is considered valid if the value of each variable is above 0.5 [12].

In the discriminant validation test, there are two values that must be tested. Those two

values are Fornell-Larcker and Cross Loading [12]. Fornell-Larcker results are considered valid if the value of the correlation between one variable and another is not greater than the correlation between the variables themselves, while Cross Loading is considered valid if the indicator value measured from the variable is not greater than the other variables.

In the Construct Reality Test there are two values that must be seen, namely Cronbach's Alpha and Composite Reliability. The value at these two points is considered valid if it is above 0.6 [12].

3. Inner Model Validation Test Phase

In this stage, there are two results that will be used.That are the results of the r-square and the results of the hypothesis. The r-square value is a value that shows how much the independent variable (exogenous) affects the dependent variable (endogenous).The hypothesis value is the result of the test by comparing the t-static value with the existing t-table 5% and the p-value value below 0.5 then declared positive and significant.

The following is the procedure for the printing order system:

1. The customer opens the website.
2. Customers must register before placing an order to create a customer account.
3. After registration, customers can login to the website.
4. The customer's frontend web page will display several kinds of products provided by the company then the customer can select, order product, and view the shopping cart.
5. On shopping cart page, the customer can re-check the items ordered and to

be paid according to the existing price details.

6. After that the customer checkout to make an order transaction and immediately make a payment to the destination account number on the checkout page.
7. After finished, then the customer uploads proof of payment at customer order section and then customer can print an invoice.
8. Admin will get incoming orders on the admin backend.
9. Admin checks order data and incoming payments.
10. The admin processes orders and updates the order status until it's finished, but if the stock data is lacking then the admin must fill in the raw material data in the stock system before being able to process orders.
11. The use of raw materials will be automatically reduced if there is a customer order from the website.
12. Order and stock reports will be recorded in accordance with the order and use of materials from the website.

V. RESULT

The first step that must be done is to create a path diagram for the application as shown below:
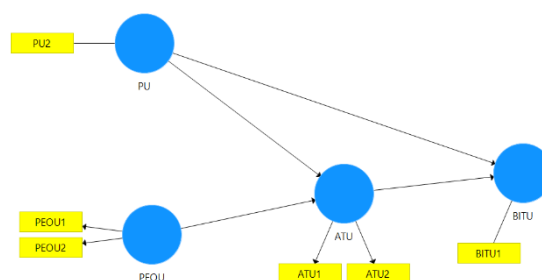

Figure 2. Path Diagram

Next step is the convergent validity test phase.The first thing that must be tested is the outer loading value. The value of outer loading is considered valid if it is above 0.7. We can see in the table below that the value of outer loading in each variable has a value above 0.7 which means that all data generated is valid.

Table 2. Outer Loading

	ATU	BITU	PEOU	PU	RESULT
ATU1	0.905				VALID
ATU2	0.917				VALID
BITU1		1.000			VALID
PEOU1			0.941		VALID
PEOU2			0.928		VALID
PU2				1.000	VALID

The next convergent validity test is average variance extracted (AVE) test. Raw data used are taken from values of Perceived Usefulness (PU), Perceived Easy of Use (PEOU), Attention to Use (ATU), and Behavioral Intention to Use (BITU). The data on the AVE is considered valid if the value of each variable is above 0.5. Seen from the table below that the value of each variable is above 0.5 which proves that this data is valid.

Table 3. Average Variance Extracted (AVE)

	AVE	HAS|RESULT
ATU	0.831	VALID
BITU	1.000	VALID
PEOU	0.873	VALID
PU	1.000	VALID

The next stage is to enter the discriminant test stage.This stage begins by looking at the Fornell-Larcker results. The Fornell-Larcker results are considered valid if the value of the correlation between one variable and another is not greater than the correlation between the variables themselves. It can be seen from the table below that the correlation value between the same variables is greater than the other variables which proves that this data is valid.

Table 4. Fornell-Larcker

	ATU	BITU	PEOU	PU
ATU	0.911			
BITU	0.763	1.000		
PEOU	0.714	0.799	0.934	
PU	0.625	0.727	0.740	1.000

The next stage of discriminant validation test is to see the value of Cross Loading. Cross Loading is considered valid if the value of the indicator measured from the variable is not greater than the other variables.Table below shows that the value of the indicator variable whose correlation is measured is not smaller than the correlation of other variable indicators.

Table 5. Cross Loading

	ATU	BITU	PEOU	PU
ATU1	0.905	0.661	0.644	0.554
ATU2	0.917	0.728	0.657	0.585
BITU1	0.763	1.000	0.799	0.727
PEOU1	0.696	0.801	0.941	0.672
PEOU2	0.635	0.688	0.928	0.713
PU2	0.625	0.727	0.740	1.000

The next stage is construct reliability test.There are 2 values that must be seen, namely Cronbach's Alpha and Composite Reliability. The value at these 2 points is considered valid if it is above 0.6, and the table below shows that the value obtained is above 0.6, which means that this data is valid and the variables tested are reliable.

Table 6. Construct Reliability

	Cronbach's Alpha	Composite Reliability
ATU	0.796	0.907
BITU	1.000	1.000
PEOU	0.855	0.932
PU	1.000	1.000

Next is to see the value of R-Square. The result that will be used is the Adjusted R-Square value because more than 1 variable

appears. ATU as an endogenous variable is influenced 49% by exogenous variables, BITU as an endogenous variable is influenced by 66% by exogenous variables (PU, PEOU).

Table 7. R-Square

	R Square	R Square Adjusted	RESULT
ATU	0.530	0.497	49%
BITU	0.685	0.662	66%

After all the stages of testing (the convergent, discriminant, construct reliability and r-square validation tests) have produced valid data, the next step is the inner model test phase which aims to analyze the results of the data that has been obtained.

Table 8. Hypothesis

	T Statistics (|O/STDEV|)	P Values
ATU -> BITU	2.293	0.022
PEOU -> ATU	2.713	0.007
PU -> ATU	0.908	0.364
PU -> BITU	1.642	0.101

a. Hypothesis 1, based on Attention Toward Use (ATU) testing on Behavioral Intention to Use (BITU) produces a t-static value that is greater than t-Table (2,293-2.051) and the existing P-values are less than 0.5, namely 0.022. This proves that Attention to Use (ATU) has positive and significant results on Behavioral Intention to Use (BITU).

b. Hypothesis 2, based on the Perceived Easy of Use (PEOU) test on Attention Toward Use (ATU) produces a t-static value that is greater than t-Table (2.713-2.051) and the existing P-values are less than 0.5, namely 0.007. This proves that Perceived Easy of Use (PEOU) gets positive and significant results on Attention Toward Use (ATU).

c. Hypothesis 3, based on the Perceived Usefulness (PU) test for Attention Toward Use (ATU) produces a t-static value that is smaller than the t-Table (0.908-2.051) and the existing P-values are more than 0.5, namely 0.364. This proves that Perceived Usefulness (PU) has positive and insignificant results on Attention Toward Use (ATU).

d. Hypothesis 4, based on the Perceived Usefulness (PU) test on Behavioral Intention to Use (BITU) produces a t-static value that is smaller than the t-Table (1.642-2.051) and the existing P-values are more than 0.5, namely 0.101. This proves Perceived Usefulness (PU) has positive and insignificant results on Behavioral Intention to Use (BITU).
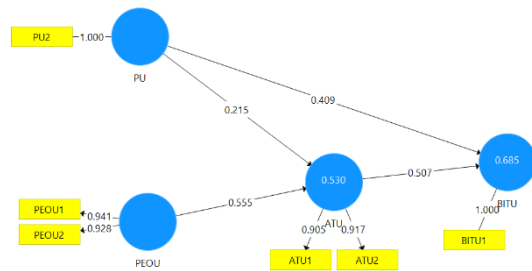

Figure 3. Inner Model Test Result

The results of the TAM test show that all indicators have a positive influence on one another. The most influential indicator is Perceived Easy of Use (PEOU) on Attention Toward Use (ATU) with the perceived ease when using the system makes users feel happy and satisfied after using this system. The convenience provided by this system also makes users feel the benefits resulting from using this system.

VI. CONCLUSION

Based on the results of research conducted at PT Media LangitPersada, there are several conclusions, namely:

1. The design of this system is done to make it easier for customers to place orders while the management division helped in managing data.
2. Order and stock data storage using a web-based system and stored in a database.

This website-based system is tested using the TAM method. The results of the processed questionnaire provethat this system is acceptable for use by users.

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BIOGRAPHY

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