

Kousoku Lane technology adaption for standard operation procedure in the restaurant: A case study of Genki Sushi

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Abstract. Technology has been building its sign on the restaurant industry by changing the restaurants standard operation procedure and adapt to new demand as well as challenges. To be successful in today's world, restaurant operator must be agile and adjust quickly. Following the industrial revolution from manpower into robots, the usage of robots in restaurant industry were meant to improve efficiency and productivity. Through Technology Adaption Management (TAM) theoretical framework, this study aimed to investigate customer's perception from the usage of *Kousoku Lane* technology at Genki Sushi JABODETABEK towards revisit intention. The quantitative study employs the primary data sourced from 270 customers of Genki sushi within the area of JABODETABEK that responded the designated of Likert scale questionnaires. The data obtained was analysed using the IBM SPSS Statistics 27 program to test the research hypotheses and present the indicators of TAM in *Kousoku Lane* that most influenced customer's revisit intention. From each test of, the results showed that each factors of TAM used for the test were reliable to determine its effects on customer's revisit intention, and it can be found that the 5 factors tested had impacts toward revisit intention, with factor Perceived Ease of Use, had the most effect on customer's revisit intention meanwhile factor Perceived Enjoyment, had the least effect on customer's revisit intention. To conclude, the result of this study proved that the adaption of *Kousoku Lane* technology improved Genki Sushi restaurant's performance and productivity that resulted customer to visit again. Despite the limitation of the study, this article opens a new conversation among restaurateurs to consider technology use and academic investigation towards the impact on restaurant sustainability.

1 Introduction

Hospitality industry was defined as collections of companies or businesses that provides accommodations and / or food and drinks to people that are leaving or away from their home [1]. The first Restaurant called a "public dining room," was opened in 1782 France by a vendor called *Beauvilliers* which diners set at tables and were served à la carte [2]. Along with the increasing population growth, the volume of demand for food and beverages increased. The food and beverage industry sector is one of the business sectors that continued to experience growth [3]. In a restaurant, there was waiter to serve guest. Their job was to greet the guest, take guest's order, and serve the food to the guest. But nowadays, the service in restaurant business that usually done by the human, were changed by a technology innovation [4].

Robot Technology in the restaurant business was built in order to improve the efficiency of the service especially when delivering food to the guest's table which usually done by human [10]. Even though lots of restaurant used robot for the service, it cannot replace human skill [11]. For example, one of the technology that used in restaurant is Artificial Intelligence (AI) which the robot had legs to deliver the food to the guest

and it can take order and taking out the dirty dishes from guest's table [12]. In particular, one of the restaurants in Indonesia that used technology in their operation is Genki Sushi [5]. Genki Sushi restaurant used Train Robot as the technology development in their service which called "*Kousoku Lane*" [5].

Genki Sushi opened their first store in Indonesia at Bandung on 29 November 2017 that introduced the concept speed of service through technology called "*Kousoku Lane*" [6]. Different from other sushi restaurant (see: Sushi Tei [7]), Genki Sushi applied intelligently delivery food to diners at their tables. The integrated technology service at the Genki Sushi restaurant covered ordering system and delivery food to a guest table that brings a unique unconventional experience [5]. Moreover, Genki Sushi restaurant operated around Indonesia, with most serving outlet that located in Jakarta among others in Bandung, Semarang, Yogyakarta, Surabaya, Batam, Bali, and Medan city. Total of Genki Sushi Restaurant in Indonesia is 32 outlets and still growing [5]. Genki Sushi provided the experience of sushi dining fused with modern technology [5]. Genki Sushi's idea was originated from Fumio Saito, a Japanese sushi chef who dreamed opening a trendy sushi eatery in 1968. Fumio Saito invented the *Kaiten* sushi concept which was the first to

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use a conveyor belt to serve sushi [5]. Genki Sushi offered fresh Japanese food that is prepared immediately after orders are placed using a technology device such as Apple iPad for ordering system or through a barcode that shows the list and pictures of menu. The guest's food order will be delivered by a miniature Shinkansen train that layered around the restaurant on *Kousoku* Lane [5]. *Kousoku* lane were double-decker railroad tracks that has twice the speed of a conveyor belts [8]. *Kousoku* Lane was also a terraced lane that were placed around the tables in the Genki Sushi's restaurant, with the concept that resembled train line, with a mini shinkansen train used to deliver the foods ordered by customers [9].

The Technology Acceptance Model (TAM) was a commonly used theory to break down the psychological mechanism for consumer acceptance of technology, including mobile apps, bank information services, and e-commerce [13]. Davis invented TAM in 1989 to comprehend the feelings of potential users while using a specific product or receive a type of service. The variables of TAM included attitude, perceived ease of use (PEOU), perceived usefulness (PU), and behavioural purpose [14]. The Theory of Rational Action, which formed the foundation of TAM, hold that users' attitudes would be affected by their behavioural intents and result evaluations, therefore PU and PEOU were being promoted as two elements that had an impact on the adoption of new technology [14]. In general, higher PU and PEOU would indicate that users have positive perception towards the technology system used in restaurant, which raised the user's behavioural intentions [14].

However, food delivery robots as a new technology in a restaurant business only received a little attention, particularly on customer satisfaction and the relationship with revisit intention at Genki Sushi Restaurant in Indonesia. In this sense, this research employed TAM in order to combine the factors of customer perception and customer satisfaction from the usage of *Kousoku* Lane towards revisit intention towards Genki Sushi customers.

Therefore, this study proposed the hypotheses as follow, H_0 : TAM does not have an effect towards Revisit Intention for customers at Genki Sushi Restaurant and H_1 : TAM will have an effect towards Revisit Intention for customers at Genki Sushi Restaurant customers.

2 Literature review

2.1 Technology Acceptance Model theory (TAM)

Study about TAM has been thoroughly investigated in the use of technology acceptance and has been changed to examine exterior variables that influence user approval in a variety of industry sectors, included in the hospitality sectors such as restaurant [16]. At the beginning, the model that was first introduced by Davis, presented which utilized three variables to foretell whether a person would embrace new technologies on

perceived usefulness, perceived easy of use, and perceived enjoyment [17]. Perceived usefulness was the extent to which a person believes that using a particular system would improve their job performance [20]. While perceived easy of use is the degree to which an individual thinks that using a specific technology will require no bodily or intellectual [20]. Furthermore, in 1989, Davis developed the theory to propose that a person's intention to adopt a new technology was significantly impacted by their perceptions of how easy the technology was to use and how helpful it would be to them [15]. TAM theory concluded that perceived usefulness and ease of use represented the beliefs that contributed to such acceptance. The perception of usefulness showed how the person's perception of the usefulness of technology improved its performance [15]. Meanwhile, perceived ease of use was the degree to which a person believed that used a particular system or technology would be effortless [16]. Referring to previous research, the indicators of TAM used in this study are as follow [17]:

- Perceived Usefulness
- Perceived Ease of Use
- Perceived Enjoyment
- Speed of Service
- Experience Novelty

2.2 Revisit intention

One of the important aspects of the tourism industry was the customer's desire to return to use the products and services again and again. Managers of tourist attractions and lodgings relied on the customer's desire to return for the business to survive and stay in the industry [18]. The indicators of revisit intention used in this study in refer to previous research that described as below [19]:

- The desire to recommend to others
- The desire to visit again

2.3 Effects of TAM towards revisit intention

2.3.1 Effects of Perceived Usefulness

The perception of usefulness showed how the person's perception of the usefulness of technology improves its performance [15]. The previous studies had investigated the perceived usefulness had a positive impact towards revisit intention [13]. It showed that people were more likely to go back to robot restaurants the more when they thought service robots are useful [13]. Other studies also explained that perceived usefulness had an impact towards customer's acceptance attitude towards the use of robot in Barista. Korean coffee drinkers thought that a robot waiter could make better coffee and gave better service than a human employee. Customers were confident in the quality of a robot barista's product and service because of its ability to stay consistent. Customers especially thought that getting service from a robot bartender was a very interesting and nice experience [21]

2.3.2 Effects of Perceived of Use

Perceived ease of use was the degree to which a person believed that using a particular system or technology would be effortless [16]. Based on the previous study which showed that there was positive impact of perceive ease of use towards perceive usefulness and it was stated that a piece of technology was more valuable to its end consumer if it was simple to employ [17].

2.3.3 Effects of Perceived Enjoyment

Previous study that was done by Hwang, Park, and Kim in South Korea showed that the Perceived Enjoyment was when people could enjoy using a robotic restaurant in which they would give a good image towards the restaurant [22].

2.3.4 Effects of Speed of Service

Based on the previous study, it showed that speed of service influenced the experience satisfaction most. Customer would be satisfied if the robot service in restaurant could perform faster service than human [17].

2.3.5 Effects of Experience Novelty

From the previous study about experience novelty towards behavioural intention, diners may find a restaurant with a higher concentration of entertainment options more interesting than one with fewer options [23]. The findings demonstrated that the pleasure experienced was more strongly associated with a desire to return to a new restaurant than to a less unusual one [23].

3 Research method

This study applied quantitative research method to produce a scientific result and findings [24]. This article employed @Google form to collect the data based on the designated questionnaire and share through social media application such as Whatsapp, Instagram, and Line. The questionnaire developed to include five TAM's indicators to represent X dimension (Perceived Usefulness, Perceived Ease of Use, Perceived Enjoyment, Speed of Service, Experience Novelty) and two Y's indicators that characterised Revisit Intention dimension (Desire to recommend to others and Desire to visit again). Likert scale questionnaire types from 1 (strongly disagree) – 5 (strongly agree) were applied [25]. The research framework model illustrated as below.

Additionally, the population of this research was decided as customers of Genki Sushi Restaurant from JABODETABEK (Jakarta, Bogor, Depok, Tangerang, Bekasi). Moreover, the sample of the research was calculated using Isaac and Michael Formula

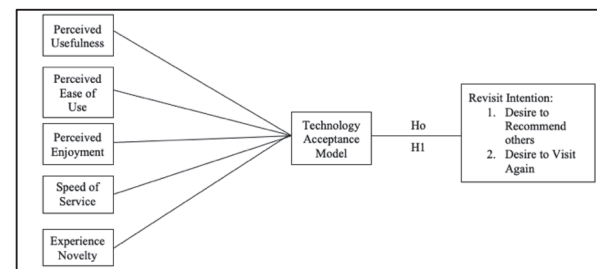


Fig. 1. Research Framework.

$$S = \frac{\lambda^2 \cdot N \cdot P \cdot Q}{d^2 (N-1) + \lambda^2 \cdot P \cdot Q} \quad (1)$$

S = Number of samples

N = Number of Population, 29.116.662 (Population of JABODETABEK)

λ^2 = Chi square, error rate 20%, chi square value: 2,706
 $d = 0,05$

$$S = \frac{2,706 \times 29.116.662 \times 0,5 \times 0,5}{0,05^2 (29.116.662 - 1) + 2,706 \times 0,5 \times 0,5}$$

$S = 270$

At this stage, the sample was 270 customers who were the respondents of this research. The result was tested with IBM SPSS Statistic 27 Program and analysed through Path Analysis to test the validity and reliability of the data. Furthermore, the test included reliability test, multicollinearity test, coefficients test, ANOVA test, model summary test, and descriptive analysis. The output of the test discussed on the following section.

4 Results

The result of each test determined whether the variable X (TAM) used in this study has an impact to variable Y (revisit intention). As mentioned in the hypotheses stated in the introduction before, this study tried to look deeper into the influence of each indicator of variable X (TAM) towards variable Y (revisit intention). Table 1 showed the reliability and validity of the test, and how each indicators could represents TAM in its influence towards revisit intention.

Table 1. Reliability test.

Variable	Reliability Test	
	Cronbach's Alpha	Cronbach's Alpha Level
TAM	X1 (0.728)	0.60
	X2 (0.804)	0.60
	X3 (0.816)	0.60
	X4 (0.860)	0.60
	X5 (0.892)	0.60
Revisit Intention	0.890	0.60

The Reliability Test result showed that all indicators from Technology Acceptance Model and Revisit Intention display consistency since the result were all above 0.60.

Table 2. Multicollinearity test.

Variable	Multicollinearity Test		
	Indicators	Tolerance	VIF
TAM	X1	0.391	2.558
	X2	0.524	1.908
	X3	0.363	2.752
	X4	0.429	2.330
	X5	0.463	2.161
Dependent Variable: Revisit Intention			

Table 2 presents the VIF value which was less than 10. The tolerance value for all indicators in independent variable were greater than 0.01. This meant that Technology Acceptance Model did not experience multicollinearity.

Table 3. Coefficients.

Coefficients ^a					
Model		Unstandardized Coefficients		Standardized Coefficients	Sig.
		B	Std. Error	Beta	
1	(Constant)	2.323	.747		.002
	Total X1	.256	.084	.223	.002
	Total X2	.064	.072	.056	.377
	Total X3	.117	.115	.077	.311
	Total X4	.280	.102	.190	.007
	Total X5	.220	.060	.248	<.001

a. Dependent Variable: Total Y

The T value for all indicators was greater than the T value in the table standards which means Technology affected Revisit Intention. (T table value: 1.968789). Table 3 showed that indicators 1, 4, and 5 had an impact towards variable Y (Revisit Intention).

Table 4. Coefficients test.

Coefficients ^a							
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics
		B	Std. Error	Beta			
1	(Constant)	2.323	.747		3.108	.002	
	Total X1	.256	.084	.223	3.058	.002	.391
	Total X2	.064	.072	.056	.885	.377	.524
	Total X3	.117	.115	.077	1.016	.311	.363
	Total X4	.280	.102	.190	2.737	.007	.429
	Total X5	.220	.060	.248	3.702	<.001	.463

a. Dependent Variable: Total Y

The total T value for all indicators at Technology Acceptance Model (X1-X5) were 11.398 (see Table 4) which meant it affected the dependent variable which was Revisit Intention.

Table 5. ANOVA.

ANOVA ^a					
Model		Sum of Squares	df	Mean Square	Sig.
1	Regression	633.167	5	126.633	43.522
	Residual	768.151	264	2.910	<.001 ^b
	Total	1401.319	269		

a. Dependent Variable: Total Y

b. Predictors: (Constant), Total X5, Total X2, Total X4, Total X1, Total X3

Table 5 presented that the F value was 43.522 which meant Technology affected Revisit Intention.

Table 6. Model summary.

Model Summary ^b					
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.672 ^a	.452	.441	1.706	1.956

a. Predictors: (Constant), Total X5, Total X2, Total X4, Total X1, Total X3

b. Dependent Variable: Total Y

From the Adjusted R Square value (see Table 6), Perceived Usefulness, Perceived Ease of Use, Perceived Enjoyment, Speed of Service, and Experience Novelty of the TAM variable have 44.1% effect toward revisit intention. Based on the result of Durbin-Watson, there were no autocorrelation symptoms between variable independent TAM and Variable dependent Revisit Intention.

Table 7. Descriptive statistics.

Descriptive Statistics					
	N	Minimum	Maximum	Mean	Std. Deviation
Total X1	270	3	15	12.53	1.986
Total X2	270	3	15	12.74	1.986
Total X3	270	2	10	8.32	1.499
Total X4	270	2	10	8.42	1.552
Total X5	270	3	15	12.01	2.568
Valid N (listwise)	270				

From Table 7, Total X2 showed as the second indicator which indicate that Perceived Ease of Use have the most effect on revisit intention while the X3 as the third indicator which is Perceived Enjoyment was the indicator with the least effect on revisit intention.

Hypotheses 1 which is TAM will have an effect towards Revisit Intention for customers at Genki Sushi Restaurant customers was supported since all the results from reliability test, multicollinearity test, coefficients test, ANOVA test, Model Summary test and descriptive statistics test clearly stated that there was an effect between TAM and revisit intention. Meanwhile Hypotheses 0 which is TAM does not have an effect towards Revisit Intention for customers at Genki Sushi Restaurant was rejected as the results of the tests conducted shows clearly that Kousoku Lane technology through TAM factors affected revisit intention.

5 Conclusion

The Technology Acceptance Model (TAM) was a widely used theoretical framework that explains how users adopt and use new technologies. It was first introduced by Fred Davis in 1989 and has since undergone several revisions and adaptations. Since businesses and industries were focused on co-operating between man and machines. As human creates programs for robots to perform tasks, for the purpose of better efficiency and productivity, also as a concept of service robot. One important purpose of the TAM model was in

predicting revisit intention, or the likelihood that a user would continue to use a technology in the future. The model proposes that these two factors directly impacted users' attitudes towards the technology, which in turn influence their intention to use the technology. In other words, if a user perceives a technology as useful and easy to use, they are more likely to have a positive attitude towards the technology and intend to use it.

This study focused on the impact of *Kousoku Lane* in Genki Sushi as service robots through TAM factors that influenced the revisit intention. *Kousoku Lane* allowed customers to order food through a barcode or through an iPad tablet, and let the restaurant operated the service of the food and beverage using a shinkansen train instead of manpower. The ordered food and beverage delivered through the *Kousoku Lane* around the tables and stops at the designated table.

This study confirmed that the Perceived Usefulness, Perceived Ease of Use, Perceived Enjoyment, Speed of Service, Experience Novelty that tested from *Kousoku Lane* technology adaption were positively influencing the customers of Genki Sushi Restaurant to revisit intention. In contrast to the customer's Perceived Enjoyment usage of *Kousoku Lane* in Genki Sushi Restaurant, the customers perceived usefulness of *Kousoku Lane*'s was what made most of them to revisit again.

This study still had some limitations. This research was conducted only on JABODETABEK (Jakarta, Bogor, Depok, Tangerang, Bekasi) area. As for the future research, a wider approach of areas such as Genki Sushi restaurant around Indonesia or Asia are possible. Moreover, the data collection was collected via google form which is online. For the future researchers, they might collect the data both from online and directly from the customer of Genki Sushi outlet.

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