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# Modelling customer loyalty using partial least square: An empirical evidence from online food industry

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**Abstract.** The online food delivery service industry has emerged as huge and prospective industry. In this competitive business environment, having and developing loyal customer are essential; yet, research to examine customer loyalty modelling in this industry is limited. This study is designed to assess the applicability of Partial Least Square Modelling to assess the customer loyalty toward online food delivery service. This study uses a survey of 405 online food service customers collected from greater Bandung region. The model, including four quality system predictors (efficiency, fulfilment, availability, and privacy), was examined using SmartPLS software. The results show that the model of loyalty toward online food has an acceptable Goodness of Fit Index. Further, the R<sup>2</sup> of the customer loyalty in the model is 0.67. These results indicate that the method applied is suitable for modelling customer loyalty. This study offers an empirical evidence on the applicability of Partial Least Square to model the customer loyalty toward online food delivery service. This result extends the existing methodological and managerial practices to develop loyalty in the online food industry.

## 1. Introduction

The importance of having customer loyalty and its determinant factors are discussed in studies [1,2]. From all factors that contribute to loyalty, the studies believe that quality of product or services is the building block of loyalty [3]. Loyalty have been studying for many studies in various industry case, but researches [4] agree that customer loyalty not understood well. Finding from one industry will be difficult to be generalized to others that have different characteristic. It makes the scholar must examining loyalty formation in other industries. Applying OFD service in food business is popular and common in the future [5], unfortunately, literature how the dimension of e-service quality drivers customer behavior towards OFD seems to be silent.

Driven by this problem, this study is intended to inspect how e-service quality impacts on loyalty in the context of OFD services by employing Partial Least Square method. More specifically, this study is evaluating the effect of e-service quality dimensions on customer loyalty. Conducting such a study, besides giving valuable information for restaurant business owners to develop effective strategies to restaurateurs in developing effective strategies in their business activity, will enrich the existing consumer loyalty literatures in the OFD services context.

## 2. Research method

E-service quality is measured by four dimensions which are system availability, privacy, efficiency, and fulfilment [6]. The online loyalty is measured by intention to repurchase, write positive comments on social media, recommend, and switch to other online providers. All items of e-service quality and



loyalty were measured using Likert scales (5 points:1 strongly disagree to 5 strongly agree). The data for this study was collected from OFD service customers in Bandung City. The customers were given a self-administered questionnaire. Of the 439 participants filled the questionnaire, but only 405 questionnaires could be proceed. Male respondents are 173 while the female are 230 respondents. Of the respondents, 85% are young tourists (<35 years old), while older tourists (>45 years old) are 10%. In terms of education, most of the respondents (68%) has education of high school or less. The model measurement appraised by applying confirmatory factor analysis using variance-based Partial Least Squares (PLS). The PLS was also employed to verify the structural model and test the developed hypotheses. PLS enables a researcher to examine latent constructs using a small and medium sample size and non-normality distributed data.

### 3. Results

Evaluation of model measurements is carried out through two stages, firstly, measuring the validity and reliability of research instruments, assessing the validity, this study measured composite reliability (CR), loading factor, and average variance extracted (AVE). In table 1, it can be seen that all indicators except F7 are satisfactory [7], with values higher than the recommended cut-off value of 0.6 (factor loading), 0.7 (Cronbach' Alpha and composite reliability), and 0.5 (average variance externally [8]).

**Table 1.** Reliability and validity check

Construct/item	Loading	Construct/item	Loading
<b>Efficiency (EE)</b>		Delivering time in suitable time frame (F2)	0.721
Easy to find what I need (E1)	0.823	Quick delivers an order (F3)	0.709
Easy to get anywhere on this site (E2)	0.821	Sending the right items (F4)	0.839
transaction completed quickly (E3)	0.805	Honest offerings (F5)	0.820
Information is informative (E4)	0.742	The accurate promise about delivery (F6)	0.856
Simple to use (E5)	0.842	<b>Privacy (PP)</b>	
Well organized (E6)	0.799	Protecting shopping information (P1)	0.918
<b>System Availability (SA)</b>		Not share customer information (P2)	0.943
Always available for business (SA1)	0.818	Protecting customer card information (P3)	0.916
It launches and runs right away (SA2)	0.849	<b>Loyalty</b>	
Not crash (SA3)	0.760	-Continue to purchase (RP1)	0.691
Not buffering after ordering (SA4)	0.792	-Intention to recommend (RP2)	0.837
<b>Fulfilment (FF)</b>		-Intention to say positive thing (RP3)	0.704
Delivers orders when promised (F1)	0.821	-Continue purchase if price increase (RP4)	0.602

Assessing discriminant validity based on the Heterotrait-monotrait ratio method as discussed by Henseler, Ringle [9], which uses a measurement standard of 0.9 as the upper limit of the ratio, table 1 presents the results of the construct Heterotrait-monotrait test showing that all distribution values show less than 0.9, so it is stated that the three constructs are valid discriminant.

Secondly, evaluating the structural model and testing the developed hypotheses. The data on this study was proceed using SmartPLS. Bootstrap procedure was used to evaluate the path coefficient, in this data processing 5000 repetitions are performed so that a satisfactory value is obtained. GoF assessment results show that the tested model has a value of 0.377, indicating that the fitness of the model is relatively acceptable. The explanatory power of each construct constructor indicated by  $R^2$  corrected from online loyalty was 0.218 (21.8%), indicating that the four dimensions of service quality explained 21.8% of the variance of customer loyalty. Among the dimensions, only the efficiency

dimension significantly influenced loyalty ( $b: 0.307, p < 0.01$ ). The relationship between the variables tested is illustrated in Figure 1.

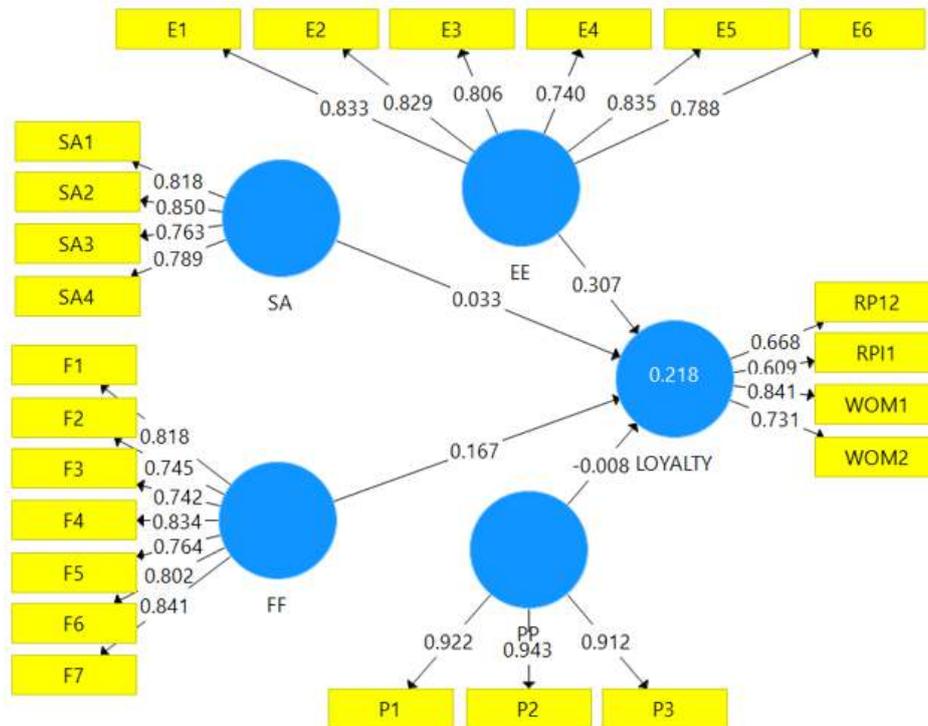


Figure 1. Result of model tested.

**4. Discussion**

This study reveals that the e-services quality is very important in determining customer loyalty. This has a significant direct effect in determining whether customers will repurchase and give positive commend the OFD in the future. However, looking at the effect of overall e-service quality on loyalty, this factor does not have a substantial effect on customer loyalty, indicating that other variables determine loyalty to OFD. This study shows that e-service quality is not only factor that strengthens loyalty toward OFD. High e-services quality is important, but it does not encourage an OFD customer to be loyal. It shows that food is the main object in OFD service, food most likely has a key factor in determining customer satisfaction and loyalty toward OFD. Even though e-service quality is not the main factor that fulfils what the customer need, but it will affect customer’s perception to the food quality, which will have a high customer loyalty towards the OFD. In OFD system customer use online devices, making a well-designed online service is important factors toward customer loyalty.

The result of path analyses shows that efficiency is the only significant e-service quality dimension which significantly impacts on customer loyalty, indicating high efficiency will be followed by high intention to repurchase and recommend the OFD in the future. This finding corroborates with previews studies suggest efficiency as a critical dimension in measuring e-service quality [10]. This study measures efficiency with easy to find, easy to operate, quick, informative, simple to use, and well organized. This result suggests that the OFD service provider should make sure that their e-service matches with the efficiency as expected by customers. As the dimensions of system availability, fulfilment, and privacy are important factors in influencing customer behavior in the previous study [6,10], the insignificant of this factor suggest that customer perceive no differences between the OFD service providers on these dimensions. Thus, these dimensions are not considered urgent in determining their loyalty.

## 5. Conclusion

The findings of this study extend our understanding on factors that influence consumer loyalty to OFD services, but there are still drawbacks that can be developed in future studies. Firstly, respondents should be resentful from several cities in Indonesia that can represent the character of Indonesian society, so the findings can be generalized. Secondly, developing a robust model, elements of forming consumer loyalty is should be developed by adding other elements such as trust, image, involvement and other demographic factors that can influence customer satisfaction and loyalty to OFD services [11].

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