What affects customers to make online grocery purchasing?

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Abstract. The rapid development of internet technology in this era makes consideration of renewal in business, especially in marketing strategy. Nowadays, the online platform starts to replace grocery shopping habits from the traditional market. Therefore, it is necessary to identify reason behind customer behaviour towards grocery shopping online. This study aimed to determine factors behind consumer behaviour in buying online using the Theory of Planned Behaviour (TPB) approach. Data were collected from 127 grocery shoppers using questionnaires and analysed by Structural Equation Modelling - Partial Least Square (SEM-PLS). Results have shown that Attitude Towards Behaviour (ATB), Subjective Norm (SN), and Perceived Behavioural Control (PBC) have significant influences on purchase intention (PI). It also shown that PI (willingness, online preferential, and recommendation) had a significant effect on online grocery purchasing behaviour. The higher the intention, the greater behaviour reflected in the online purchase. Therefore, this study can be used to assist online grocery retailers to formulate effective strategies to gain more customers’ confidence to do online grocery shopping.

1. Introduction

Utilisation of the internet today is not only a medium of communication but also a medium of transaction. Limitations of space and time make some business people switch from conventional marketing methods and start to formulate new marketing strategies through online marketing strategies. This online transaction referred to E-commerce, namely commercial transactions using the internet, web, or applications [1]. The existence of E-commerce is driven by an increase in the number of internet users who converted into potential markets for marketing. Some standardized goods such as books, furniture, and fashion successfully sold on the internet. As the internet gradually plays more crucial role in simplifying transactions among sellers and buyer, the products traded are increasingly diverse, include perishable and non-perishable products.

In a decade, online grocery shopping is becoming more popular [2,3] with the growing internet-based activity. However, previous studies showed that online grocery shopping is a new concept, lack of implementation, and many people still unfamiliar with this concept [4-7]. Internet grocery shopping has faced serious difficulties in spreading to consumers [8,9].

The purchase of grocery products online is still behind compared to non-food grocery products such as fashion, cosmetics, electronic devices, and so on. This condition is because there is still a lack of consumer knowledge regarding grocery expenditure online. However, some consumers in Java are starting to switch from traditional grocery shopping to online shopping.

In the context of online shopping, attitude refers to general consumer feelings of favourableness or unfavourableness towards the use of online shopping. Favourable attitudes are most likely to lead to
enhanced online shopping intentions, while unfavourableness is related to the unsatisfactory experience that leads it to the opposite directions [10]. Previous researchers found out that attitude towards online shopping is a significant predictor of purchasing behaviour [11,12].

Moreover, subjective norms refer to consumer perceptions regarding the use of online shopping by the opinions of the referent group (such as friends or colleagues). Perceived behavioural control describes consumer perceptions of the availability of knowledge, resources, and opportunities necessary for using online shopping.

Recent research has provided more insight into customer acceptance of internet shopping by the Theory of planned behaviour (TPB) [13]. TPB provides an improved method of predicting consumer intentions to shop online [14]. There was a belief that influence of Attitude Towards Behaviour (ATB), Subjective Norms (SN), and Perceived Behavioural Control (PBC) affect behavioural intention [14]. However, yet much empirical research has been performed to examine the influence of TPB in the context of online grocery shopping in Indonesia. The main purpose of this study is to examine and compare which intention-based model is best for predicting consumer intentions to shop groceries online.

Ajzen proposed TPB in 1991 and became one of the most popular theories to analyse personal intention and behaviour. TPB is an extension of the Theory of Reasoned Action (TRA). This extension is by adding Perceived Behavioural Control (PBC) as one of determinant factors to show that behaviour not only depends on personal intention but also depends on other factors that are beyond individual control, such as the availability of resources and the chances to show that behaviour. Possessing the ability to adopt certain behaviour possibly establishes high behavioural intentions. Based on Ajzen’s theory, this study proposed four hypotheses about online grocery purchasing.

Hypothesis 1 (H1): ATB has a positive effect on online Purchase Intention (PI).
Hypothesis 2 (H2): SN has a positive effect on online PI.
Hypothesis 3 (H3): PBC has a positive effect on online PI.
Hypothesis 4 (H4): PI has a positive effect on online Purchasing Behaviour (PB).

2. Method
2.1. Research design
This study based on the TPB approach consists of ATB, SN, and PBC to predicted consumer intention on online grocery shopping. Furthermore, intention was analysed to predict its effect on online purchasing behaviour.

2.2. Sampling and data collection method
The primary data have been obtained from 127 online grocery shoppers from different location in Java by using a convenience sampling method. Convenience sampling was chosen based on the easy-access issue for researcher in gaining information from the target respondents. A survey questionnaire has been used as an instrument for data collection in the present study. Data were collected for two months.

2.3. Instrument
In this study, a structured questionnaire was used. It consisted of the closed-ended multiple choice questions and Likert-scale questions which enable respondents to express their level of agreement and select the best answer that suits them best. The Likert-scale questions for this study used five points of responses. Items for measuring ATB, SN, and PBC which adapted from previous researches [11, 15-17] as shown in Table 1.
Table 1. Research constructs

| Code  | Variables                        | Indicators            |
|-------|----------------------------------|-----------------------|
| X1.1  | Attitudes Towards Behaviour (ATB)| Pleasure Activity     |
| X1.2  |                                   | Amenities             |
| X1.3  |                                   | Good innovation       |
| X1.4  |                                   | Wise decision         |
| X2.1  | Subjective Norms (SN)            | Family’s Suggestion   |
| X2.2  |                                   | Partner’s Suggestion  |
| X2.3  |                                   | Positive feedback     |
| X2.4  |                                   | Prestige              |
| X3.1  | Perceived Behavioural Control (PBC)| Personal capability |
| X3.2  | Control (PBC)                     | Resource availability |
| X3.3  |                                   | Manageable expenditure|
| Y1.1  | Online Purchasing Intention (PI)  | Willingness           |
| Y1.2  |                                   | Online Preferential   |
| Y1.3  |                                   | Recommendation        |
| Y2.1  | Online Purchasing Behaviour (PB)  | Conviction about action|
| Y2.2  |                                   | Frequently action     |

2.4. Measure reliability and validity
This research used reflective model to analyse the hypothesis. Reflective model evaluation includes construct reliability, Average Variance Extracted (AVE), and discriminant validity [18]. Confirmatory factor analysis (CFA) was used to examine construct reliability. According to PLS’s rule of thumbs, the value of loading factor must be greater than 0.70 for confirmatory research and in explanatory research, the value of loading factor bigger or equals with 0.5 is still acceptable. Whether for explanatory or confirmatory research, AVE values must be greater than 0.5 [19]. Discriminant validity was used to represent the extent to which the construct is empirically distinct from other constructs or, in other words, the construct measures what it is intended to measure. Construct’s AVE should be higher than its squared correlation with any other construct [20].

2.5. Data analysis
The hypothesized models are empirically tested using the Structural Equation Modelling-Partial Least Square (SEM-PLS) supported by WarpPLS software. The measurement model was estimated reliability and validity of the measurement model to examine the model fit results of the proposed theoretical models.

2.6. Model fit evaluation
Evaluation of structural models (inner models) started with seeing the magnitude of the variance is explained by the R-square, Q², and Full collinearity VIF (FVIF). Meanwhile, Goodness of Fit (GoF) test were done to measure overall model fit. Changes in the value of R-Square are used for explaining the substantive effect of endogenous latent variables. High value of R-Square means the variance can be explained well by model predictor. GoF is used to know the predictive power of a model in research. The GoF classification criteria were divided into 3 namely small (≥0.1), medium (≥0.25), and large (≥0.36). APC, ARS, and AARS are used to determine the average Path Coefficient, R-square, and Adjusted R-square values generated in the model as an indication of model fit with a significance level of 5%. AVIF and AFVIF are used to test the collinearity problem in the model. AVIF and AFVIF are considered to be ideal when ≤ 3.3 and are still acceptable when GoF is a square root of the average communality multiplied by ARS [21].
3. Results and Discussion

3.1. Respondent’s characteristics
The respondent’s demographic profile is illustrated in Table 2. A total of 150 questionnaires were distributed to the potential online grocery shopper in Java. From the total number of questionnaires that have been distributed, 130 sets of questionnaires were returned. However, 3 sets of questionnaires were discarded due to incomplete information.

| Characteristic (years old) | Percentage | Characteristics (IDR) | Percentage |
|----------------------------|------------|-----------------------|------------|
| Age                        |            |                       |            |
| 17-21                      | 17         | 3,000k-5,000k         | 69         |
| 22-26                      | 20         | >5,000k               | 28         |
| 27-31                      | 44         | 3,000k-5,000k         | 69         |
| ≥32                        | 19         | ≥5,000k               | 28         |
| Gender                     |            |                       |            |
| Male                       | 26         | Housewives            | 8          |
| Female                     | 74         | Employee              | 58         |
|                             |            | Entrepreneur          | 6          |
|                             |            | Student               | 28         |

Generally, from 127 respondents, 74% were female while 26% of the remaining were male. The majority of the respondents or 44% aged between 26-31 years old. Respondents having a monthly income group of less than IDR 3,000,000 comprised the majority income group (69%) and most of the respondents were employees (58%).

3.2. Measure reliability and validity
SEM-PLS was conducted using a maximum likelihood parameter that evaluated the hypothesized conceptual model of this study. As shown in Table 3, loading factor, composite reliability, and AVE were higher than suggested [19] for the proposed structural model.

Table 3. Confirmatory factor model result.

| Construct | Item | Loading factor | Composite Reliability | AVE  |
|-----------|------|----------------|-----------------------|------|
| ATB       | X1.1 | 0.877          | 0.904                 | 0.703|
|           | X1.2 | 0.890          |                       |      |
|           | X1.3 | 0.879          |                       |      |
|           | X1.4 | 0.693          |                       |      |
| SN        | X2.1 | 0.844          | 0.870                 | 0.630|
|           | X2.2 | 0.857          |                       |      |
|           | X2.3 | 0.836          |                       |      |
|           | X2.4 | 0.613          |                       |      |
| PBC       | X3.1 | 0.793          | 0.831                 | 0.555|
|           | X3.2 | 0.757          |                       |      |
|           | X3.3 | 0.805          |                       |      |
|           | X3.4 | 0.608          |                       |      |
| PI        | Y1.1 | 0.869          | 0.865                 | 0.681|
|           | Y1.2 | 0.779          |                       |      |
|           | Y1.3 | 0.826          |                       |      |
| PB        | Y2.1 | 0.905          | 0.901                 | 0.820|
|           | Y2.2 | 0.905          |                       |      |
Discriminant validity helps in determining if two measures that (1) should not be correlated or (2) related are actually not related. Discriminant validity examined by comparing the squared correlation between variance extract and correlation of each latent construct.

Table 4. Discriminant validity of constructs

|    | ATB   | SN    | PBC   | PI    | PB    |
|----|-------|-------|-------|-------|-------|
| ATB | 0.839 | 0.628 | 0.718 | 0.637 | 0.655 |
| SN  | 0.628 | 0.794 | 0.642 | 0.604 | 0.684 |
| PBC | 0.718 | 0.642 | 0.745 | 0.635 | 0.613 |
| PI  | 0.637 | 0.604 | 0.633 | 0.825 | 0.799 |
| PB  | 0.655 | 0.584 | 0.613 | 0.799 | 0.905 |

Referring to Table 4, the AVE square value of all variables has a value greater than the correlation between latent constructs. ATB has a value of 0.839 which is greater than 0.628; 0.718; 0.637 and 0.655. Then SN has the square root value AVE 0.794 which is greater than 0.628; 0.642; 0.604; and 0.584. The square root value of PBC variable is 0.745 which is greater than the correlation between latent constructs that is 0.718; 0.642; 0.633 and 0.613. Furthermore the PI variable has the AVE square root value of 0.0825 which is greater than 0.637; 0.604; 0.633 and 0.799. Finally, PB has a square root value of AVE 0.905 which is greater than 0.655; 0.684; 0.613 and 0.799.

3.3. Model fit evaluation

Model fit evaluation consist of structural model evaluation (inner model fit) and model fit of PLS (outer model fit). The first structural model evaluation is R-Square. The standard values for R-Square and adjusted $R^2$ are less than equal to 0.70 the model is in the strong category, less than is equal to 0.45 in the medium category, and less than equal to 0.25 is classified as weak. R-square value for the PI variable was 0.530 and PB was 0.646 which shows the model is included in the strong category. Table 5 shows that the Adjusted $R^2$ for PI and PB were 0.518 and 0.643, respectively. This means that the model is included in the strong category.

The predictive value of $Q^2$ was more than 0, namely PI and PB were values 0.530 and 0.646. Then it can be concluded that the research model has predictive relevance. FVIF has a standard value of less than 3.30. All VIF full collinearity values in this study have values less than 3.30. This means that the research model is free from collinearity.

Table 5. Fit indices and explanatory power of the structural models

|        | ATB   | SN    | PBC   | PI    | PB    |
|--------|-------|-------|-------|-------|-------|
| R-Square       | 0.530 | 0.646 |
| Adj. $R^2$     | 0.518 | 0.643 |
| $Q^2$          | 0.530 | 0.646 |
| FVIF           | 2.575 | 2.030 | 2.504 | 3.149 | 3.107 |

Outer model fit evaluation is used to find and measure which model matches the original data. There are 6 measures used in this assessment, namely Average Path coefficient (APC), R-Square-Average (ARS), Squared Adjusted Average (AARS), VIF Average Block (AVIF), Average Full Collinearity (AFVIF), Tenenhaus GoF (GoF). The fit model examination results are presented in Table 6.
Table 6. Fit Models of PLS

| Criteria                                      | Standardised value | Value       | Conclusion |
|-----------------------------------------------|--------------------|-------------|------------|
| Average Path Coefficient (APC)                | P-value ≤ 0.05     | 0.408, P<0.001 | Acceptable |
| Average R-Squared (ARS)                       | P-value ≤ 0.05     | 0.588, P<0.001 | Acceptable |
| Avg. Adjusted R-Squared (AARS)                | P-value ≤ 0.05     | 0.581, P<0.001 | Acceptable |
| Avg. Block Variance Inflation Factor (AVIF)   | ≤ 3.3, or ≤ 5 are acceptable | 2.130 | Acceptable |
| Avg. Full Collinearity VIF (AFVIF)            | ≤ 3.3, or ≤ 5 are acceptable | 2.672 | Acceptable |
| Tenenhaus GoF (GoF)                           | ≥0.10, ≥0.25, ≥0.36 (low, med, high) | 0.631 | High, Acceptable |

Generally, all the measurements for model fit evaluation are acceptable. APC, ARS, AARS p-value is <0.05, as recommended as an indication of model fit with a significance level of 5%. Collinearity problems in model measured with AVIF and AFVIF, which have value 2.130 and 2.672 which means the values are quite ideal. GoF measurement value is 0.631 which means that the predictive power in this model classified as high. SPR, RRSCR, SSR, and NLBCDR value are showed greater than 0.7 and less than equals 1. It means that paths in the model are free from causality problem, do not contribute to negative R², and free from statistical suppression.

3.4. Structural model result

Figure 1 showed that all variables have path coefficients and P-values that have a positive and significant effect. ATB has a positive path coefficient of 0.27, with a significant P-value <0.001. SN has a positive path coefficient of 0.30 with a significant P-value <0.001. PBC has a positive path coefficient of 0.26 with a significant P-value <0.001. PI has a positive path coefficient of 0.80 with a significant P-value <0.001. Based on the obtained result, it concluded that ATB, SN and PBC influence PI significantly, and PI influences PB significantly.

According to Figure 1, ATB affect PI significantly in positive way. According to TPB, a positive attitude will have an impact also positive for the interest to make a purchase, in this case if consumers have a positive attitude towards online grocery shopping, then it can affect their interest in shopping for groceries online. The significant influence of attitude on purchase intention means that attitude an important factor that influences consumers to buy groceries online. Based on observations that have been made, consumers feel shopping for vegetables online is a good innovation so they are interested in trying it out. SN has positive and significant effect on PI because the closest person will affect one's intention to do online shopping. It means that the more someone suggests others to shop online then this purchase method will also be popular. Based on the results of statistical analysis PBC path coefficient is known to the PI of 0.17 and P-value of 0.05, indicating that PBC also has a positive and significant effect on PI. These influence of ATB, SN, PBC had similar findings with some previous researches, respectively [11,13].
4. Conclusions

This study has established four causal effects: (1) ATB, (2) SN and (3) PBC have a positive effect on online grocery purchase intention (PI). (4) PI has a positive effect on online grocery purchasing behaviour (PB). A positive attitude will also have a positive impact on the interest to make a purchase. In this case if consumers have a positive attitude in purchasing groceries online, then it can affect their interest in online purchasing.

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