

CASE STUDY

E-commerce and related factors on the performance of small and medium scale industries

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ABSTRACT

This study aims to analyze 1) the development of demand for craft small and medium scale industries products through the use of e-commerce; the effect of e-commerce utilization, macroeconomic conditions, prices, 2) the intensity of promotion on product demand, 3) the effect of e-commerce utilization, macroeconomic conditions, prices, promotion intensity, and product demand for performance; and 4) the role of product demand in mediating the effect of e-commerce utilization, macroeconomic conditions, prices, and the intensity of promotion on performance. The results of the study show that the product demand variable gives a value of 0.371 while, influence of the business performance variable gives a value of 0.486. The results of the study show that the development of demand for handicraft products in Denpasar through low e-commerce utilization, craft small and medium scale industries that utilize e-commerce demand more products than those who do not utilize, macroeconomic conditions have a positive and significant effect on product demand, the price has a negative effect and significant to product demand, while promotion intensity has a positive but not significant effect on product demand. Crafting small and medium scale industries that utilize e-commerce have better performance than those that do not use, macroeconomic conditions, prices, and product demand have a positive and significant effect on performance. Promotion intensity has a positive but not significant effect on performance. Product demand variables mediate the effect of e-commerce utilization variables, perceptions of macroeconomic conditions, and price variables on the performance variables of small and medium scale industries.

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INTRODUCTION

The use of information technology (IT) in business activities is an innovative way of doing company activities to enter the market in cyberspace called electronic business and electronic commerce (e-business and e-commerce) (Wang *et al.*, 2002; Tamimi *et al.*, 2005). "E-commerce" and "e-business"

are application forms of the Internet economy. Both notions are to be classified as micro-economic concepts (Fitcher, 2001). There are accelerating trends for the implementation of electronic commerce (e-commerce) as an extra marketing channel for selling products globally via the access of the Internet (Abukhader *et al.*, 2003). As one of those hot issues of information technology, E-commerce (or called sometimes E-business) has increasing trends as an extra trading channel of transactions among

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the industries (B2B), and between the consumers and the total business sector (B2C) (Abouzeedan et al., 2003). The benefits derived from the use of IT are considered unable to encourage small and medium scale industries (SMIs) to adopt IT, as evidenced by the low level of adoption of e-commerce by SMEs (MacGregor and Vrazalic, 2007). The utilization of information technology in Small and Medium Enterprises/Industries in Denpasar City is still limited due to lack of ability in mastering information technology (Triandini and Atmojo, 2014). Denpasar City has SMIs spread across four sub-districts, while the types of SMIs in Denpasar City are drinking water industry, footwear industry, woven industry, goods industry, textile industry, food industry, herbal medicine industry, craft industry, tea and coffee processing industry, the printing industry, and the equipment industry. Table 1 shows the number of SMIs in Denpasar.

E-commerce can provide different opportunities for SMIs and help SMIs relate to the use of information technology (Al-Qirim, 2007). The rate of population growth in Indonesia which always increases from year to year will likely have an impact on the number of demands for goods and services that will also increase. The large population can be a very potential market if it

can be reached by SMIs. According to Govindaraju and Chandra, (2011), the use of e-commerce by small and medium enterprises in Indonesia is still at the lowest level. Based on Fig. 1, the value of sales using ecommerce in Indonesia increases from year to year until 2017 reaches USD 7 billion. This potential needs to be utilized by SMIs to use e-commerce. According to Nuryanti,, (2013), the obstacle that usually occurs is the reluctance to optimize the use of e-commerce in their business.

Macro-economic conditions provide a reflection of the overall economic situation and can affect the performance of a business. Macroeconomic conditions, especially economic growth, have an impact on the performance of each business because it can affect business revenue. In understanding macroeconomic conditions, an SMIs owner needs a learning process and experience. According to Atkinson, (2010) perception is the study of how one integrates sensations into an object, and how one subsequently uses those percepts to recognize the world. Retailers not just learn from their own experience, they may also learn from their local environment (Boschma and Weltevreden, 2008). Kreitner and Kinicki, (2001) stated that one’s perception would influence their behavior and decisions. Therefore, to be able to

Table 1. Number of SMIs in Denpasar City year 2016 (DBICDY, 2016)

No.	Districts	Number of SMIs (unit)
1	West Denpasar	1.539
2	South Denpasar	1.156
3	East Denpasar	658
4	North Denpasar	775
Total		4.128



Fig. 1. Sales Using ecommerce in Indonesia (GER, 2017)

survive in the midst of competition, the owners of SMIs in Denpasar City in running their business and determining the decisions in running their business are determined how their perceptions are about macroeconomic conditions. The owner of SMIs craft in Denpasar City has the responsibility of influencing its employees in carrying out their duties so that it needs to begin with an increase in positive perceptions of these entrepreneurs regarding Indonesia’s macro-economic conditions. Price and Internet usage significantly affect the initial willingness of consumers to e-shop over the Internet (Liao and Cheung, 2001). The SMIs craft owners in Denpasar City must pay attention to the quality of the products produced by setting the right and competitive prices and must be able to create products that are in line with consumer expectations because it can encourage effective demand which ultimately can increase the acceptance of SMIs itself. Consumers can identify the important attributes of a search goods based on an information search over the internet (Cao, 2012). If a handicraft product is promoted, it does not rule out the possibility that the product will encourage consumers to make a purchase. Besides that promotion is able to stimulate demand for a product (Dheany, 2012). With this promotion, consumers are expected to try the product and encourage existing consumers to buy products more often so that a repeat purchase and a company’s product sales volume will increase. This study has been carried out in Central Java in 2012, study on store consumer for bottled water.

MATERIALS AND METHODS

This study aims to analyze the development of demand for SMIs craft products in Denpasar through e-commerce and the effect of e-commerce utilization, perception of macroeconomic conditions, prices, and promotion intensity on SMIs craft business performance in Denpasar with product demand as an intervening variable. Table 2 shows the number types of SMIs craft in Denpasar.

This study establishes a tolerance threshold of 10 percent (%) sampling error, meaning that the accuracy of sampling is 90 percent. If calculated by the Slovin formula the number of samples in this study are as Eq. 1

$$n = \frac{N}{1 + Ne^2} \tag{1}$$

$$= \frac{317}{1 + 317 (0.1)^2} = 76,019 = 76$$

- Information:
 n = number of samples
 N = population
 e = error tolerance limit (error tolerance)

The size of the sample in each type of craft distributed proportionally is taken in the manner as presented in Table 3.

Based on Fig. 2, a structural equation can be made for path analysis as Eqs. 2 and 3.

$$Y1 = \beta1 X1 + \beta2 X2 + \beta3 X3 + \beta4 X4 + \epsilon1 \tag{2}$$

$$Y2 = \beta5X1 + \beta6 X2 + \beta7 X3 + \beta8 X4 + \beta9Y1 + \epsilon2 \tag{3}$$

Table 2 . Types of small and medium industries (SMIs) crafts in Denpasar Year 2016 (DBICDY, 2016)

No.	Types of SMIs	Number of SMIs (units)
1	Carved handicraft industry of wood except the mebeller	124
2	Handicraft industry that are not classified as wood carvings	193
Total		317

Table 3. Sample number determination

No	Types of SMIs	Population	Proportion n = 76	Sample
1	Carved handicraft industry of wood except the mebeller	124	76/317 *124	30
2	Handicraft industry that are not classified as wood carvings	193	76/317 * 193	46
Total		317		76

This study specifically wants to test the hypothesis of mediated relationships known as path analysis. In this study there is intervening variable namely product demand.

RESULTS AND DISCUSSION

The results of testing the effect of e-commerce utilization variables, macroeconomic conditions, prices, promotion intensity on product demand variables are presented based on the structural as Eq. 4.

$$Y_1 = 0,391 X_1 + 0,256X_2 - 0,185 X_3 + 0,101X_4 \quad (4)$$

Calculation of standard error values as Eq. 5.

$$Pei = \sqrt{1-0,371} = 0,793 \quad (5)$$

The results of testing the effect of e-commerce utilization variables, perception of macroeconomic conditions, prices, intensity of promotion, and product demand for business performance are presented based on Eq. 6.

$$Y_2 = 0,228 X_1 + 0,269 X_2 + 0,181X_3 + 0,065 X_4 + 0,253Y_1 \quad (6)$$

Calculation of standard error values as Eq. 7.

$$Pei = \sqrt{1-0,486} = 0,717 \quad (7)$$

Model validity

Based on Table 4 this study contained two dependent variables, product demand (Y1) and business performance (Y2). Against the two dependent variables, the product demand variable (Y1) gives a value of 0.371 that number means that the influence of the independent variables on the dependent variable is 37.1 percent. While the business performance variable (Y2) gives a value of 0.486 that number means that the influence of the independent variable on the dependent variable is 48.6 percent. The coefficient of determination of the total structural equation of this research model with Eq. 8.

$$R^2_m = 1 - (0,793)^2 (0,717)^2 \quad (8)$$

$$R^2_{m=} = 1 - (0,629) (0,514)$$

$$R^2_m = 1 - 0,323$$

$$R^2_m = 0,677$$

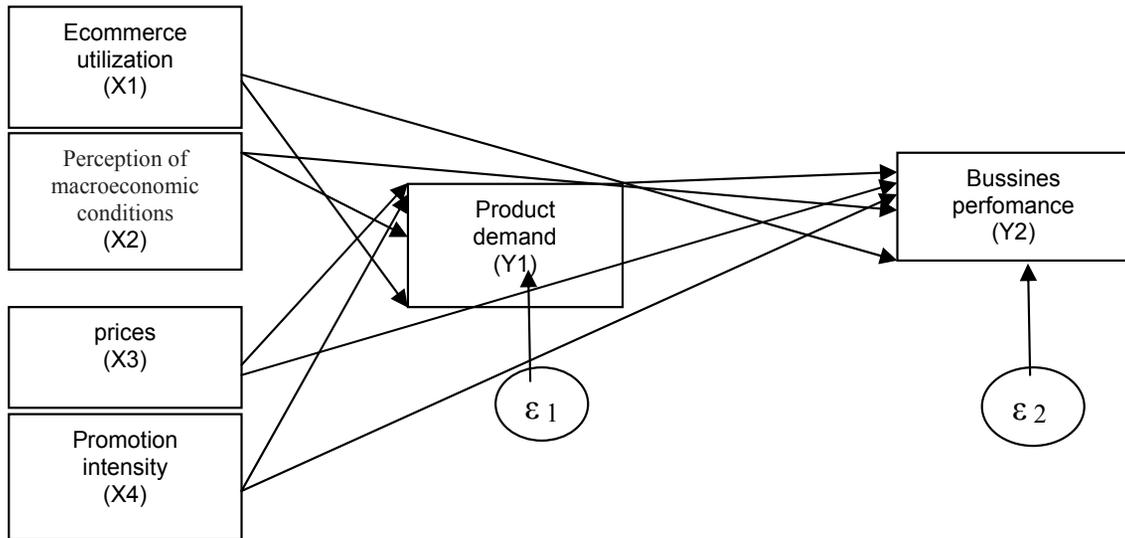


Fig. 2. Flow chart of the study concept

Table 4. Model validity evaluation results

No	Dependent variables	Independent variables	R Square
1	Product demand (Y1)	X1, X2, X3,X4	0,371
2	business performance (Y2)	X1, X2, X3,X4 Y1	0,486

Table 5. Path coefficient

Variable Relationship	Coefficient	Standardt Error	P-value	Explanation
X1 -> Y1	0,391	0,639	0,008	Significant
X2 -> Y1	0,256	0,105	0,020	Significant
X3 -> Y1	-0,185	0,139	0,061	Significant
X4 -> Y1	0,101	0,235	0,485	Non Significant
X1 -> Y2	0,228	0,604	0,099	Significant
X2 -> Y2	0,269	0,098	0,010	Significant
X3 -> Y2	0,181	0,128	0,050	Significant
X4 -> Y2	0,065	0,212	0,623	Non Significant
Y1 -> Y2	0,253	0,107	0,022	Significant

Direct effect

In accordance with [Weltevreden and Rietbergen, \(2009\)](#) retailers at city district centres should take a more proactive stance towards e-commerce. The utilization of e-commerce has a positive and significant effect on product demand. It means that more often the SMIs craft owners using e-commerce, the demand for products will increase. Perceptions of SMIs craft owners on macroeconomic conditions have a positive and significant effect on product demand. It means that the better perception of the SMIs owners of macroeconomic conditions will affect their attitudes and behavior in running their business so that it can ultimately affect the increase in product demand. Prices have a significant effect in accordance with the law of request on product demand. It means that the higher the price setting of the product will cause the low demand for craft products in the SMIs craft in Denpasar. Promotion intensity has a positive and not significant effect on product demand. This means that if there is an increase in the intensity of promotion, it is not certain that this will increase the demand for products. The utilization of e-commerce has a positive and significant effect on business performance, it means that the higher utilization of e-commerce by SMIs crafts will lead to increased business performance. Perceptions of macroeconomic conditions have a positive and significant effect on business performance. It means that the better and more positive the perception of the owners regarding macroeconomic conditions will influence their attitudes and behavior in carrying out their business so that it can ultimately affect the success of their business with increased business performance. Prices have a positive and significant

effect on business performance. It means that the more competitive prices will have an impact on the better business performance. Promotion intensity has a positive and not significant effect on business performance. It means that if there is an increase in the intensity of promotion, it is not certain that this will improve business performance. Product demand has a positive and significant impact on business performance. It means that if there is an increase in product demand, it will improve business performance. Direct effect between construct variables can be seen from the processed data with the path coefficients value shown in [Table 5](#).

Indirect effect

The formula for searching the indirect effects of e-commerce utilization, perception of macroeconomic conditions, prices, and the intensity of promotion of business performance by mediating product demand are as [Eq. 9](#).

$$PTL(X-Y2) = P1 \times P2 \tag{9}$$

Information:

PTL (X-Y2) is an indirect effect of variable X on variable Y2

P1 is the direct effect of variable X on Y1

P2 is the effect of Y1 on Y2

E-shopping activities have a strong correlation with geographic distributions like distance and time to shopping areas ([Tehrani, et al., 2010](#)). A consumer may prefer to use the internet rather than physically travel to multiple dealerships ([Dholakia, et al. 2010](#)). The impact of ecommerce use on urban pollution is to air pollution control because by using ecommerce for shopping, pollution from the transportation used to reach shopping malls or retail store can be

avoided. Reduction in air pollutants occur when traditional shopping is replaced with E-shopping (Tehrani et al., 2005). The survivability of business may very well be dependent how well they can balance profit against reducing carbon emissions (Keshnee, 2008). There is potential to reduce the environmental implications of the trade by the shift from the conventional commerce to ecommerce (Li, 2000). Based on the results of calculations, it is known that the value of direct effect (X1 to Y2) is 0.288 and the indirect effect (X1 through Y1 to Y2) is 0.099 which means that the value of the direct effect is greater than the value of the indirect effect. These results indicate that the direct use of e-commerce has a significant effect on business performance. Indirect effect based on the results of calculations, it is known that the value of direct influence (X2 to Y2) is 0.269 and indirect effect (X2 through Y1 to Y2) is 0.065 which means that the value of direct effect is greater than the value of indirect effect. These results indicate that the perception of macroeconomic conditions directly has a significant effect on business performance. Based on the results of calculations, it is known that the value of direct effect (X3 to Y2) is 0.181 and the indirect effect (X3 through Y1 to Y2) is -0.047, which means that the value of the direct effect is greater than the value of the indirect effect. These results indicate that prices directly have a significant effect on business performance. Based on the results of the calculation, it is known that the value of direct effect (X4 to Y2) is 0.065 and the indirect effect (X4 through Y1 to Y2) is 0.025 which means that the value of direct influence is greater than the value of the indirect effect. This result shows that directly the promotion intensity has an effect on business performance but not significant.

CONCLUSION

1) The development of demand for SMIs craft products in Denpasar through e-commerce utilization is low. This is due to the not yet optimal e-commerce program of Denpasar Government and SMIs craft in Denpasar still unable to switch from conventional sales systems.

2) SMIs craft that utilize e-commerce demand more products than those that do not use e-commerce. Perception of macroeconomic conditions has a positive and significant effect on product demand in craft SMIs in Denpasar City. Price has a negative and significant effect on product demand, while promotion intensity has a positive but not significant effect on product demand in craft SMIs

3) SMIs Craft that utilize e-commerce have better performance than those that do not utilize e-commerce. Perceptions of macroeconomic conditions, prices, and product demand have a positive and significant effect on the performance of SMIs craft. Promotion intensity has a positive but not significant effect on the performance of SMIs craft in Denpasar.

4) Product demand mediates e-commerce utilization, perceptions of macroeconomic conditions, and prices on the performance of SMIs craft in Denpasar, but does not mediate the intensity of promotions.

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CONFLICT OF INTEREST

The author declares that there is no conflict of interests regarding the publication of this manuscript. In addition, the ethical issues, including plagiarism, informed consent, misconduct, data fabrication and/or falsification, double publication and/or submission, and redundancy have been completely observed by the authors.

ABBREVIATIONS

SMIs	Small and medium scale industries
X1	Ecommerce utilization
X2	Macro-economic conditions
X3	Price
X4	Promotion intensity
Y1	Product demand
Y2	Business performance
%	Percentage

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