

Recommended Products for an Online Shop Among Indonesian Student Users

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Abstract

Electronic commerce is a website category that has tremendous growth. As an impact of the growth is information flooding for users, especially on product category. Therefore, the recommended products for online shops are important. This study aimed to develop recommended products for online shops that may enhance successful transactions in electronic commerce. This study involved 100 students that have been experienced in online transactions using a survey method. Data were analyzed using the Friedman Test and Weight Mean Score to obtain the highest level of product recommendation. The results indicated that fashion and shoes are the most recommended products for online shops in student groups of users.

Keywords: e-commerce; recommended products; fashion and shoes

I. INTRODUCTION

One of the most popular technology is a website which is an information resource of the World Wide Web (WWW). A website is defined as a group of interface and functional attributes that connected to usability, performance, beauty to users, satisfy users' wants, and satisfaction in a competitive market of online and offline sales. A website can be classified into four categories i.e. information, communication, entertainment, and commerce. An entertainment website provides relaxation to users who want to escape from the stressful activities. Information website makes useful information is possible to be delivered more quickly and easily. Communication website is to facilitate communication among people with similar interests while online marketplace for products and services are accommodated by an e-commerce website [1].

The website influences lifestyle and entrenched itself in every walk of life such as sharing thoughts, social networking, playing online games, marketing and even buying and selling [2]. An online transaction namely e-commerce is one example that affects buying and selling behavior. In an online transaction, customers were eased to select products using

electronic catalogs. Moreover, an online transaction is designed to make customer decisions easier and more flexible [3].

E-commerce existed in 1991 since internet technology-supported business transactions [2]. It is a leading terminology in business because it decreases cost and improves the transfer speed of products [4]. Moreover, e-commerce has an added value for sellers as extensive marketing media [5]. However, the rapid development of e-commerce is not comparable with service for users. About 50% of e-commerce users canceled transactions because of difficulties in using the website [5, 6]. An example of a factor that made users confused was a variant of the products.

There several different types of e-commerce i.e. business-to-business (B2B); business-to-consumer (B2C); business-to-government (B2G); consumer-to-consumer (C2C); and mobile commerce (M-Commerce). B2B is defined as e-commerce between a company and other companies. B2C is e-commerce between companies and consumers, while, e-commerce between companies and a public sector is B2G and e-commerce within private individuals or consumers is C2C. The last one is m-commerce which is defined as buying and selling through wireless technology [7].

The components that make an effective website including e-commerce consist of three separate elements i.e. design, content, and construction [8]. This paper proposed to provide content of website with recommended products for online shops to increase successful transaction. It is suggested that an online shop should be a vertical shop i.e. provides only one category of product, for example, a fashion category. This approach makes users, particularly beginner users easier to use the website and proceed to the transactions. However, this method may not have significant effects on users who have familiar with online shopping [9].

II. METHOD

The current study is a part of a study on adaptive e-commerce based on age and gender groups of personalization. The steps of the investigation are including 1) identification of recommended products in an online shop, 2) identification of users shopping patterns, 3) predictive website, and 4) an adaptive e-commerce site. This study is the first step that is aimed to obtain recommended products for an online shop.

This study involved 100 participants that have been experienced in online transactions using a survey method. This survey is an explicit method to collect information about preferable products of users when shopping in an online shop. A structured questionnaire using a Likert scale 1-5 was given to all participants. The questionnaire consists of 16 questions concerning products including fashion, book, electronic, automotive, computer, handphone, and game. An example of the questions: “When I do an online shop, I buy fashion” (answer: 1. strongly disagree 2. disagree 3. abstain 4. agree 5. strongly agree).

Data were analyzed using the Friedman Test and compared using Weight Mean Score method to find the highest average score of a product category. The product category as a

candidate in an online shop such as fashion, bag, shoes, book, notebook, notebook accessories, handphone, handphone accessories, electronic, software, film, and automotive. The output of data analyzed is the rank of a product category. Products that have the highest number are the recommended products that should be provided when developing an online shop.

III. RESULT AND DISCUSSION

This section presents the results obtained from the analysis of the survey methods in the product recommended by users. It provides an overview of the ranks of the product recommended in user testing. As many as 100 students from Universitas Teknologi Yogyakarta and Universitas Negeri Yogyakarta in Yogyakarta, Indonesia participated in the present study by answering a questionnaire that specifically designed for this study. A test for reliability and validity was done to test instruments before the main study. The reliability test showed that Cronbach's Alpha value was 0.658 which indicated that the instruments were reliable (Cronbach's Alpha was higher than 0.60). While, the internal reliability test indicated an Intraclass Correlation Coefficient (ICC) is 0.151 (95% CI: 0.104, 0.212) with p value < 0.01. The validity test was done using bivariate correlation with $r_{table} = 0.1966$. Instrument is considered valid when $r_{value} > r_{table}$. R values in this present study are all above r_{table} . Therefore, the instrument used in this study was considered reliable and valid based on the results of the present study.

A. Analyzed using Friedman Test

The results of data analyzed using Friedman Test is shown below in Table 1.

Table 1. The result of Friedman Test

Number	Name of Product	Mean Rank
1	Fashion	7.37
2	Bag	6.49
3	Shoes	7.39
4	Book	6.82
5	Laptop	5.63
6	Laptop Accessories	7.31
7	Handphone	6.72

8	Handphone Assessories	7.13
9	Electronic	5.09
10	Software	6.17
11	Film	6.27
12	Automotive	5.62

The numbers of mean rank using Friedman Test were ranging from 5.09 (i.e. electronic) to 7.39 (i.e. shoes). Details of ranks of the product category from the highest to the lowest were: shoes, fashion, notebook accessories, handphone accessories, books, handphones, bags, film, software, notebook, automotive, and electronic. The result shows that participants who mostly are students very rarely buy electronic products when shopping online. It is contradicted with shoes and fashion products that have high scores. This fact indicates that most participants would prefer to buy shoes, fashion followed by notebook and handphone accessories when shopping online.

B. Analyzed using Weight Mean Score

The results of data analyzed using Weight Mean Score is shown below in Table 2.

Table 2. The result of Weight Mean Score

Number	Name of Product	Mean Rank
1	Fashion	3.3
2	Bag	2.98
3	Shoes	3.27
4	Book	3.04
5	Laptop	2.65
6	Laptop Assessories	3.24
7	Handphone	2.98
8	Handphone Assessories	3.2
9	Electronic	2.46
10	Software	2.86
11	Film	2.87
12	Automotive	2.64

Weight Mean Score method also gave similar results to the rank of recommended products by the participants as the results of the Friedman test analysis. Weight Mean Score analysis found that fashion, shoes, notebook and handphone accessories were the most recommended products of participants when shopping online.

As shown in Tables 1 and 2, an online shop should be provided by one of those preferable products i.e. fashion or shoes or notebook accessories or handphone

accessories. It is an effort to make easier for users when searching or browsing product in online shops. Therefore, it will increase the chance of transactions. These are also suitable for the characteristics of website that must be: 1) ease of understanding the structure of a website; 2) easy to use; 3) speed with which the users can find what they are looking for; 4) ease of site navigation; 5) the ability of the user to control. When the website has met these characters, it can be defined that the website has a high degree of usability [10].

A vertical website that only sells a specific product, will reduce time consumption for shopping and will affect simple navigation that makes ease use for the users. This approach is a solution for the biggest problem in usability i.e. navigation. The problems are including three specific areas: 1) misleading link; 2) link that was not evident; and 3) weak navigation support problem [11]. A specific product in online shops also helps users making a decision to choose a product as if it has a recommender. Recommender systems provide valuable support for users when searching for products and services that match their preferences [12]. The methods of recommendation were generally divided into three categories i.e. content-based, collaborative filtering, and hybrid method [13].

In the present study, most of the participants were students and the preferable products were shoes and fashion. In other words, students will purchase shoes or fashion when doing online shopping. These results have an advantage for network marketing strategies i.e. product, pricing, promotion, and channel to select a market target that is “students” [14]. The results of this study can also be used as prior knowledge to provide information that is suitable for user needs. Furthermore, several researchers approached to provide information that users need with a personalized website to make a specific recommendation for users [15].

Web Site personalization should indicate the ability to increase the intention of using a website and help users to make a decision

quickly in a “confused” situation [5]. In the business domain, website personalization can be utilized as a direct market based on user's needs [16]. Web Site personalization is related to user preferences to know the interesting fields in product purchases. The preferences of users are identified with user profiles which are a condition for making personalized.

In the past, user profile has been seen as something inherent to the person such as talent, capabilities, and options. However, the users can be identified by groups such as age, profession, gender, and others [17]. Regarding computer science, grouping of users can make shorten time of a user identification based on similarity profiles. While, in the business domain, the grouping of users will expand the market network. Some studies identified that grouping users is more efficient to make a personalization. Table 3 shows the advantages and disadvantages of individual and group of personalization.

Table 3. A comparison of individual and group personalization

Variables	Individual Personalization	Group Personalization
Identity	Talent, capabilities, option, and others	Similarity of age, gender, profession, and others
Requirements Data	Large of data	Small of data
Value of Data	Individual information is not complete	Similarity information from others users
Target	Individual users	Group users

The differences between both personalization methods were data and user targets. It is shown in Table 3, personalization that appropriates for a website was group personalization. Based on the results in the present study students could be made as a group personalization that has preferences in product purchase i.e. fashion or shoes. Recently, user profiling is known as data mining and it will transform into machine learning in the future [15]. Concerning the recommended products the results of the present study supported a previous study that

has reported that fashion is highly-growing in e-commerce [18].

IV. CONCLUSION

This present study focused on finding the recommended products for an online shop. In the future, these recommended products basic to developing an online shop suitable for user's needs. We concluded that:

1. The recommended products for an online shop are shoes and fashion.
2. Regarding the personalization of the website, the results of the present study also found a user group namely students.
3. The appropriate products for the student group of users are shoes or fashion.

V. FUTURE RESEARCH

Future studies need to focus on how to identify users when using a website and to classify the group of users to provide a personalization. It is an important study to provide services that suitable with users need particularly in e-commerce.

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