

## USER EXPERIENCE EVALUATION ON USE OF COSMETIC BUSINESS TO CONSUMER (B2C) E-COMMERCE SITES

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**Abstract** The development of technology in connectivity makes significant increase of online transactions. The online transaction in cosmetics takes the third place of all online transactions in Indonesia. Many business people dealing in cosmetics to switch to online business, known as electronic commerce (e-commerce). There are 3 types of e-commerce: Business to Consumer (B2C), Business to Business (B2B), and Consumer to Consumer (C2C). E-commerce site B2C type is the biggest e-commerce transaction. The tough competition in Indonesia has made the B2C sites suffer loss in the competition to the C2C sites. Use of a site is closely related to user experience. This research aims to evaluate the user experiences of two B2C sites, i.e. SE and SO as well as the C2C site SH. This research was done by giving scenario Taska in line with the available features. Based on the research, SH was superior compared to SE and SO.

**Keywords:** User experience, Ergonomic Cognitive, E-commerce, Cosmetics, Performance measurement.

### 1. Introduction

Technology is currently undergoing a rapid development globally and significantly affects human activity. Interconnection - networking is a form of technology that simplifies human life through connectivity. A total of 54.6% or 143.26 million Indonesians accesses the Internet in 2017 and the growth is increasing by 7.96% from 2016. The use of the Internet in Indonesia is quite diverse but buying and selling online activities are ranked 5th in internet usage in Indonesia in 2016. The place of sale and purchase online on the site or mobile application is now referred to e-commerce. E-commerce is defined as a business activity, including sales and purchases of products, information, and services made through mobile devices such as mobile phones, laptops, and personal digital assistants [1]. The number of e-commerce users continues to increase and the total number of e-commerce businesses amounts to 26.2 million units by the end of 2016 and is predicted to grow steadily. According to Laudon, the actors who involved in the transaction, there are 3 types of e-commerce: 1) Business to Consumer (B2C), business that conducted between business owner and consumers;

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2) Business to Business (B2B), business that conducted between business owner and other business owner; 3) Consumer to Consumer (C2C), business that conducted between consumer and other consumer, for example consumer from one producer sell the product to other consumers. According to previous studies, e-commerce site B2C type is the biggest e-commerce transaction [2] that serves directly to end customers in the form of products and or services.

E-commerce allows online buying and selling of various products and services. The most categorical of online buying and selling transaction in Indonesia in 2017 is cosmetics. The category of goods purchased online shows that cosmetics is a category to be reckoned with in business. Ministry of Industry, put the cosmetics industry as a mainstay sector in the National Industrial Development Master Plan 2015-2035. Cosmetics industry in the country increased by 153 companies in 2017, therefore nowadays the number reached more than 760 company. The focus of development is through

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online marketing and sales target the Millennials. Among of the many e-commerce sites of the cosmetic field, there are some sites that are more

dominant and popular in the community. W & S Indonesia [3] presents the top 10 ranking e-commerce sites of the most popular cosmetics

**Tabel 1.** Popularity Rating of Cosmetics E-commerce Sites in Indonesia in May 2017

Rangking	E-commerce Sites	E-commerce Sites Type	Popular Brand Index (PBI)
1	SH	C2C	21,7
2	TP	C2C	17,3
3	LZ	C2C	10,5
4	EL	C2C	8,8
5	BLA	C2C	5,8
6	QO	C2C	5,2
7	BL	C2C	4,6
8	BLI	C2C	3,2
9	SE	B2C	2,1
10	SO	B2C	1,9

field in May 2017, that can be seen in Table 1

The Popular Brand Index (PBI) shows the popularity of a site based on the level of sales that is affected by the level of buyer satisfaction when conducting online transactions on the site, visual appeal, quality, brand and product price (W & S Indonesia). The more popular a brand the higher the public awareness against the brand and its impact on the intention to use the site and make transactions (W & S Indonesia). There are only two B2C sites included in the rankings, and both are at rank 9 and 10. In the activity of buying and selling online, the interaction is adopted via an interface and information on the website or mobile application that could affect the sensitivity of the cognitive buyers so as to produce a response to buy the goods. There is a SOR model that is Stimuli - Organism - Response when humans interact with the website interface to do online shopping [4]. The SOR model is different from the SOR model when performing conventional shopping. In a model developed by Huang-Tsei in 2014 proves that the usefulness of a system, in which there are factors of user experience [5].

Based on the theory, there is a hypothesis that the user experience given on the B2C site cosmetics field is not equivalent to the user experience given by C2C cosmetics site. B2C e-commerce field cosmetics should be more aware

and pay special attention to the User Experience (UX) in order to be able compete with increasing satisfaction from users, therefore there is an interest to conduct UX-related studies of the use of e-commerce sites type B2C cosmetic field in Indonesia, which in this study will B2C site evaluation by comparing SE and SO and C2C sites SH and classification attributes on online shopping sites. This study evaluates the comparison of the use of B2C and C2C sites in terms of User Experience [6,7] using the performance metric method, Single Ease Questionnaire (SEQ) questionnaire, Questionnaire for User Interface Satisfaction (QUIS), Post Study System Usability Questionnaire (PSSUQ), Retrospective Think Aloud, and Kano Model. Expected with this research, UX recommendations can be generated to B2C e-commerce sites field cosmetics in Indonesia.

## 2. Methodology and Analysis

Objects of this research are e-commerce sites B2C type of cosmetic field, SE and SO, and e-commerce site C2C type, SH. This research focuses on evaluating user experience from the use of features offered by the three existing sites based on effectivity, efficiency and satisfaction ratings. Respondents of this study are representation of cosmetic buyer consumers

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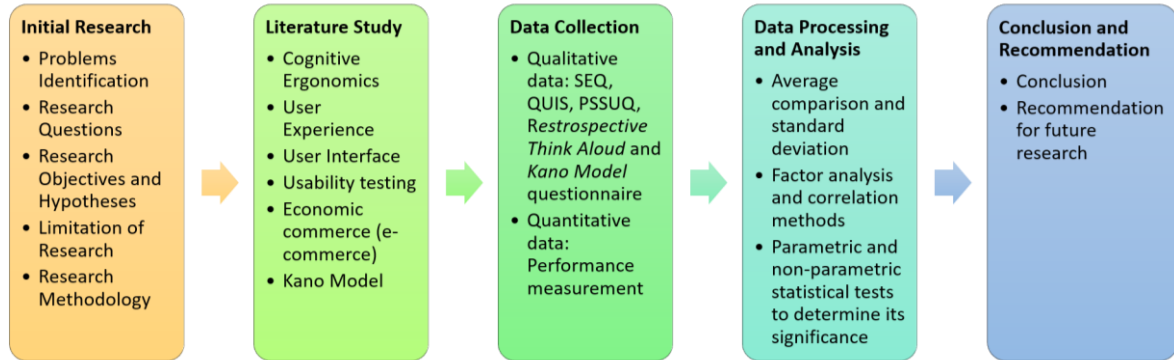
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through e-commerce sites. Therefore, this study used 40 respondents who were all female, aged 18-25 years, and had used the three sites at least one time in the past 6 months and did not have certain preferences. The methodology flow

diagram in this research is shown in figure 1.

**2.1 Methodology**

There are two types of methodology used in this research. Table 2 explains the purpose of each methodology.



**Fig 1** Research Process Diagram

**Tabel 2.** Methods that used in this research

Type of Methodology	Method	Purpose
Quantitative	Performance metrics	To assess the effectivity, efficiency, and error of each site. Data obtained in the form of time on Task, Task success, and efficiency.
Qualitative	Single Ease Question (SEQ)	Questionnaire to assess the difficulty level of Task scenarios that do by respondents in using each site.
	Questionnaire for User Interface Satisfaction (QUIS)	Questionnaire that be used as a problem identification tool, which is divided into 5 parameter categories: overall reaction to time, screen, terminology and system information, learning, dan system capabilities
	Post Study System Usability Questionnaire (PSSUQ)	Satisfaction assessment tool that consist of several statements in the form of approval of existing statements using lickert scale 1-7. Respondents filled out the questionnaire after using each site to give an assessment according to experience.
	Retrospective Think Aloud	Respondents were asked to interact with the object, after completion the respondent was asked to verbalize what were their minds.
	Kano Questionnaire	After compile questions about existing attributes based on literature, online questionnaires were distributed to 40 female respondents aged 18-25 years who were domiciled in Jabodetabek for pilot testing. Then they tested their validity and reliability. After that, an online questionnaire was distributed to 350 respondents to get the number of respondents according to calculations.

**2.2 Results and Discussions**

**2.2.1 Performance Metrics**

The results of the study using performance metrics for task success, the time to complete each task, errors, and efficiency for each task are shown in Table 3, Table 4, Table 5, and Table 6. Thus, ANOVA tests have been carried out and

for tasks 1,2,3 and 4 there are significant differences between B2C SE and SO sites with C2C SH sites. Working on B2C sites is longer and more inefficient compared to C2C sites.

In task 1, Task time data shows the difference in average time. The results of data processing show that SE has a high completion

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of workmanship. This is also supported by the results of the post hoc test, some comparisons showing significant differences between the three sites were not found in the comparison between SO and SH. This is because the Navigation text for "Entrance" is at the top left of the site, where SO, SH, and several other sites

put Navigation for "Entry" to the right of the layer, so many respondents spend their time searching for navigation text "Sign in "on the right side of the page, before finally finding it at the top left.

**Tabel 3.** Time data for completing each task

Task	Site					
	SE		SO		SH	
	Average	Standard Deviation	Average	Standard Deviation	Average	Standard Deviation
1	29.7	4.406	24.3	4.36	23.1	5.03
2	143.95	18.32	188.30	18.78	169.28	18.18
3	136.25	15.89	162.68	20.95	135.90	15.93
4	16.83	5.52	17.38	5.45	16.28	5.49
5	40.93	11.54	48.98	16.22	47.90	15.73

**Tabel 4.** Efficiency data

Task	Site					
	SE		SO		SH	
	Average	Standard Deviation	Average	Standard Deviation	Average	Standard Deviation
1	29.7	4.406	24.3	4.36	23.1	5.03
2	143.95	18.32	188.30	18.78	169.28	18.18
3	136.25	15.89	162.68	20.95	135.90	15.93
4	16.83	5.52	17.38	5.45	16.28	5.49
5	40.93	11.54	48.98	16.22	47.90	15.73

In task 2, based on the data obtained, there is a significant difference between the time to complete the task on each site. The results of data processing show that SO has a high average workmanship completion, followed by SH and SE. This is also supported by the results of the post hoc test, several comparisons showing significant differences between the three sites. A display of categorization of differences between the three sites. Where SH does not have a filter with a brand. This resulted in respondents spending time looking for one by one product from all products contained on the display. In fact, SO during the payment process has a page navigation that leads outside the SO main page and goes to another site, a different domain, resulting in the respondent needing to search -

again navigating the text that brings to the basket page. In this task, SE has the fastest average time because the site has a category of cosmetics, brand filters, and order prices, and the entire payment process is on page SE.

In the third task, there is a significant difference between the time to complete the task on each site. The results of data processing show that SO has a high average workmanship completion, followed by SE and then SH. but after the results of the post hoc test, several comparisons showed that significant differences were not found in SH with SE. In this task, the product is searched through the search feature, so the processing time of SH is much faster than Task 2, even faster than SE. This indicates that SH does not have a problem with navigating to

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make a purchase order. Meanwhile, the two B2C sites still have more navigation and task pages for making orders than the C2C website in this study, SH.

In the fourth task, the results of data processing show that SO has a high average workmanship completion, followed by SE and then SH. But the results of the post hoc test, several comparisons showed that there were no significant differences between SH and SE. on the task to find the order history page, SO has a navigation page that can go to soca.com and then select the "my order" menu, the order history will be displayed, this makes the completion time longer than the other two sites, while SE after clicking the button "My Account" there is a drop down to select the new "My Orders" that navigates to pages with a sequence of spaces. Meanwhile, the SH only needs to click the "My Account" navigation text directly navigate to the page with order information so that the processing time for SH is much faster than the other two sites. This shows why a post-hoc multiple comparison test does not show significant differences from SE and SO.

**Tabel 5.** Data on Task Success

Task	Site		
	SE	SO	SH
	Average	Average	Average
1	100%	100%	100%
2	100%	95%	100%
3	100%	98%	100%
4	100%	100%	100%
5	100%	100%	100%

**Tabel 6.** Error data

Task	Site		
	SE	SO	SH
	Average	Average	Average
1	100%	100%	100%
2	100%	95%	100%
3	100%	98%	100%
4	100%	100%	100%

5	100%	100%	100%
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In the fifth task based on the data obtained, there is no significant difference between the completion time of work on each site. The results of data processing show that SO has a high average workmanship completion, followed by SH, then SE. But the results of the post hoc tests, several comparisons showed no significant differences were not found in SH, SE and SO. The average time to complete the task on SE is faster because the action of entering a product into the wish list basket can be pressed by pressing the heart icon on the entire product page.

**2.2.2 Issue Based Metrics**

QUIS divides supervision into monitoring overall reactions with interfaces, terminology, screens, learning, and existing system capabilities. The higher the QUIS value, the better satisfaction and experience felt by users [8], according to data processing, SH has the highest score, followed by SE and SO. This shows that SH, C2C sites have interfaces that place conciseness and provide ease of use so that it provides comfort. Significant differences appear to be significant differences between the sites of SH and SO, and between SH and SE in the Wilcoxon test. This shows that there are differences between B2C sites and C2C sites in QUISS assessments.

PSSUQ, this questionnaire consists of a statement of satisfaction with site usage after completing an existing Task. The lower the value, the site provides a high level of satisfaction. Based on the results of data processing, the lowest value is owned by SH then followed by SE and SO. Assessment of the three had a significant difference, and a significant difference was a significant difference between SH and SE and SH with SO in the Wilcoxon test. This shows that there are differences between B2C sites and C2C sites in the PSSUQ ranking.

**2.2.3 Retrospective Think Aloud**

Based on the data obtained shows that the

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C2C site, namely SH has a good level of usability and user experience for the user. Therefore, C2C SH sites are not analyzed using Think Aloud's Retrospective method. For B2C sites, namely SE and SO, the RTA method is analyzed by using the Pareto diagram. Based on the results of the Pareto diagram in Figure 2, for the SE site obtained 3 out of 9 problems that become 80% of the causes. The problem that must be solved in accordance with the Pareto concept is the compilation of product summaries in the purchasing basket, making address information that can be used multiple times, and making information or steps for making product orders. Problems with cumulative calculations of

82% overall problems.

Furthermore, based on the results of the Pareto diagram in Figure 3, the SO site gets 4 out of 10 problems that make up 80% of the causes. Problems to be solved in accordance with the Pareto concept are steps / flow of page navigation when making a purchase order, making a purchase order only on the SO site, highlighting the navigation buttons, and displaying product variations in the form of images. The problem with the cumulative calculation is 82.6% of the overall problems.

Tabel 7. QUIZ data

Parameter	Average		
	SE	SO	SH
Overall	6.1375	6.095	6.233
Screen	6.46875	5.3375	6.5625
Terminology	6.091	5.35	7.325
Learnability	6.304	5.604	7.2625

Tabel 8. PSSUQ data

Site	PSSUQ	
	Average	Standard Deviation
SE	45.7	7.56
SO	76.75	11.74
SH	40.92	5.5

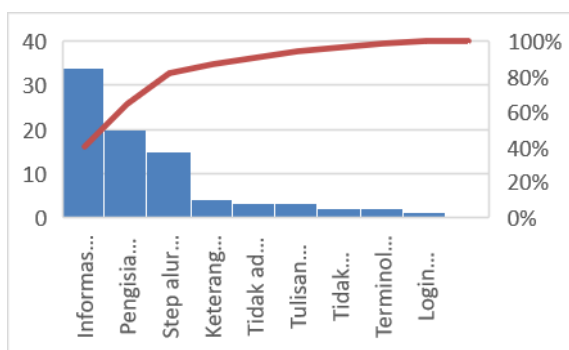


Fig 2 Pareto diagram of RCA results for SE

### 2.2.4 Kano Model

The results of the Kano questionnaire are as follows, each attribute after passing functional

and dysfunctional questions assessed by respondents can then be classified. The following are the results of classifying attributes on online shopping sites.

By knowing the attributes of the interface on a shopping site, two sites can provide a better user experience and Kano results can produce an improvement strategy. The results of the Kano questionnaire Model with attributes consisting of Attractive categories. Attractive categories are categories that have big implications for satisfaction because they give pleasure to users if attributes are improved. Table 7 shows the design recommendations based on Kano data and the status of ownership attributes for both sites.

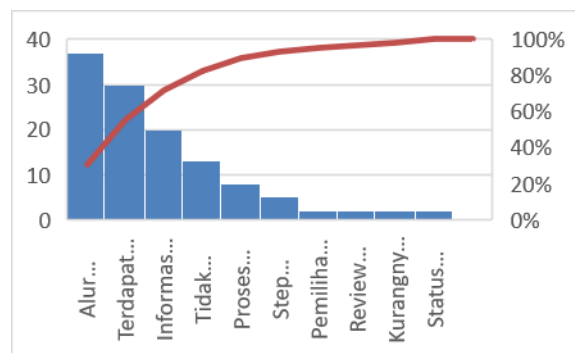


Fig 3 Pareto diagram of RCA results for SO

### 3. Conclusion

Through usability testing with performance metrics, from 5 tasks related to the use of cosmetics where p is not the task 1,2,3,4, the three sites have different average results - the

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**Tabel 9.** Results of Kano Model

Attractive Attributes	Site	
	SE	SO
The page order that makes sense	Not Yet	Not Yet
Product variations shown by the image	Already	Not Yet
Product summary information	Already	Already
Save customer information for future purchases	Not Yet	Already
Comparison with options	Not Yet	Not Yet
Recommendations for similar products	Not Yet	Not Yet
Terminology that has a relationship with the procedure on the navigation key	Not Yet	Not Yet

average time parameter on task, error, and efficiency significant. Where significant differences were found between B2C SE and SO sites with C2C SE sites, with SO the lowest results, followed by SE. The three sites are effective in carrying out the task given, but SH is more efficient than SE and SO. Through satisfaction assessment of the interface and site usage with the SEQ, QUIS, and PSSUQ questionnaires, there were significant differences in rankings between the two B2C, SE and SO sites compared to the C2C SH sites. SO has the lowest interface satisfaction and site usage rating. Based on this it can be concluded that both B2C, SE and SO sites have lower user experience than C2C SH sites.

The results of the RTA data are then processed and analyzed using the Pareto diagram, it is known that the problems experienced by users, which makes SE and SO have a lower level of user experience than the C2C SH site is that there is no product summary when in the purchase basket, user information cannot be used in the next session, and there is no information flow when ordering products in SE, and the navigation flow confuses the page when making a purchase order, the command button is not highlighted properly, and does not display product variations in the form of images on SO.

Based on the processing of the data presented in chapter 3 and the analysis carried out in the previous section of this chapter, the recommendations made for the two sites are the objects in this study, namely SE and

sociola.com. Recouponation for SE and SO is: SE has been better in terms of user experience compared to SO, but still lags behind C2C sites. It is recommended to catch up on the Task and efficiency parameters with the address storage feature so there is no need to re-enter the same information every time you make a new order. SE is advised to provide a summary of products purchased to oppose the appearance of existing shopping promos. SE is advised to give steps or directions during the purchase order process because the navigation page movement process is confusing, so the order making process is easier for the user to remember. SE is highly recommended to add options to compare products so that the products seen can be compared with other products, in terms of price, variety, size, rank without opening a new window.

SE is recommended to add similar product recommendations according to user preferences. SO is still very much behind compared to C2C SH. It is recommended to pursue time on the Task and efficiency parameters by removing the soca.id page in the purchase order process. SO.id is recommended to provide steps when the purchase order is created due to the process of navigating the move and through the pages of many domains, so that the order making process is easier for the user to remember. SO.id is recommended to highlight the navigation buttons to make it easier to find and run the process of making a purchase order. SO.id is recommended to display product variations in the form of images, compared to just writing. SE

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is recommended to add a comparison option so that the products seen can be compared with other products, in terms of price, variety, size, rank without opening a new window. SE is recommended to add similar product recommendations according to user preferences.

Research related to user experience of this site is a very important research and has high potential to be developed. This happens because the development of technology today is beginning to lead to the use of online shopping sites for everyday human activities. Future research can be reviewed in terms of the first time that users make online transactions in buying cosmetics by comparing buyer routines, so they can review their learning abilities. This research is limited to the scope of cognitive ergonomics, so that environmental and physical factors become limitations of the study. Further research is expected to evaluate using other cognitive tools so that the form of recommendations becomes more diverse. In addition, it is also expected to carry out an overall ergonomic evaluation in terms of physical, environmental, and cognitive. Further research can test and evaluate the design of new cosmetic purchase sites. In addition, it is expected that the evaluation of subsequent user experiences can involve more respondents with more diverse samples to represent the population and evaluate in terms of types of experiences such as trust.

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