Evaluating The User Experience of A Muslimah Fashion E-Commerce Website Using Heuristic Evaluation Method

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Abstract

As the buying and selling of Muslimah fashion products online become increasingly popular, the players in this E-commerce industry need to aim to make the online shopping experience even more seamless. Despite that, there is still a lack of understanding concerning the importance of user experience and its potential impact on the user satisfaction, conversion rates and ongoing revenues. The preliminary study's result has confirmed that customer facing bad user experience while browsing E-commerce muslimah fashion site. This majorly due to the bad design interface, hardly understood information about the product as well as receiving lack of service from the E-commerce Muslimah fashion site in Malaysia. An instrument was proposed to evaluate the E-commerce Muslimah fashion site in Malaysia and the Ten General Principle in Interaction Design by Nielsen's has been used as the foundation in developing the propose instrument. The instrument was validated based on the comments and suggestions from the Face validation and Content Validity Index (CVI). A Heuristic Evaluation was used as the inspection method to evaluate the user experience of E-commerce Muslimah fashion site in Malaysia with three experts and Usability Percentage has been used to evaluate the result. Findings of the value for the Content Validity Index is 0.91. Meanwhile, the mean of the Usability Percentage values is 83.31%. The findings show that the propose instrument is a valid inspection method for evaluating the user experience of Muslimah Fashion E-commerce website in Malaysia.

Keywords: *User Experience, Heuristic Evaluation, E-commerce, Muslimah Fashion, Human Computer Interaction*

1. Introduction

The E-commerce market in Malaysia is growing at a fast rate, as both government and private sectors are heavily investing in the digital trade [1]. One of the leading E-commerce sites in Malaysia such as 11street, had compiled the top three on the most purchased categories of products according to their findings which are fashion and beauty, electronics, and followed by sports and hobbies [2]. This certainly proves that fashion and beauty is the most dominant category of purchasing through online stores in Malaysia.

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When it comes to fashion, we certainly could not deny the unexpected rise of the local Muslimah fashion brands four to five years back in Malaysia. Badarudin [3] remarks the establishment of Naelofar Hijab and the launch of Naelofar online store in 2014 were catalysts to the industry E-commerce hijab in Malaysia today. Since there are many Muslimah fashion E-commerce websites that produce similar products nowadays, it is important for them to remain competitive. Thus price is no longer the only defining factor, it is definitely more about the user experience (UX).

On average, visitors would only spend 15 seconds on most of the websites they visit hence, it is crucial to present a captivating website that is capable of grabbing the user's attention and making the viewers stay longer [4]. Despite the importance of user experience in the creation of a top quality website, there are still a lack of understanding about the implementation of it in the real development of Muslimah fashion E-commerce website in Malaysia. This can be proven by the preliminary survey conducted in 2018 with 24 female respondents of Muslimah fashion E-commerce website's user in Malaysia.

The purpose of this preliminary study was to investigate user's experience in using Muslimah fashion e-commerce site as well as their preferences and whether there are issues arise considering the use of them. The questions are divided into two sections which are demographic and online shopping habit. The respondents are required to evaluate the e-commerce Muslimah fashion site that they frequently browsed.

The result shows that 54.2% respondents experience facing bad issues while browsing Muslimah fashion E-commerce website and 58.4% prefer in-store purchasing of Muslimah apparel instead of online. This majorly due to the bad design interface, hardly understood information about the product as well as receiving lack of service from the E-commerce Muslimah fashion site in Malaysia. Based on the result, it clearly shows that there are plenty areas of improvement needed in creating a meaningful user experience in Muslimah fashion E-commerce site.

User experience (UX) can be described as "the feelings users have while interacting with a company, its services, and its product" [5]. Similar opinion from [6], claims that the users will surely leave either a positive or negative emotions towards a brand while engaging with any interactive environment. Thus, the main attention of UX is not only on the functions, but also on the applications, interaction with the product itself by taking the consideration of human emotions and experiences.

Often UX is confused with usability, which explains the degree of how the product is easy to use in achieving the goal. The current ISO standard [7] on human-centered design depicts that all aspects of User Experience (UX) when interacting with the product is also includes all aspects of usability. Meaning, the usability is actually one of the important element of user experience. Meanwhile, [8] described that UX has evolved to accommodate more than usability, and it is important to pay

attention to all aspects of user experience to deliver successful products to the market.

Heuristic evaluation is one of the inspection method that has been widely used since it first establishment by Nielsen and Molich in 1990. The most common application of this heuristics evaluation is on the prospect of evaluating the usability. In this cost effective evaluation method, a usability expert evaluates how a product measures up to a list of UX best practices [9] which are also known as "heuristics" [10].

2. Related Works

Over the years, most of the studies on heuristics are completely focused merely on the evaluation of usability thus this create a research gap as heuristics evaluation of UX have not yet been considered in depth. Only for the past few years, some researchers have started to analyze this matter, yet there are still specific aspects and context that have not being covered. Thus, a literature review has been conducted to further developed these established heuristics and merge them together to get the most relevant result which matched the context being examined for this article. However, the process of the searching of the previous studies on the heuristic lists for Muslimah fashion E-commerce websites is especially challenging as there are not many available study on Muslimah fashion domain specifically in E-commerce.

Table 1 provided the main characteristics for choosing the most suitable studies that can be used as the basis of the development of new heuristics which includes the characteristics in User Experience, Heuristic Evaluation, E-commerce and Muslimah Fashion. Whereas User Interface and Usability are also included to complete the UX dimensions.

Table 1. Comparisons of Heuristics Sets by Previous Work

Characteristics / Author	User Interface	User Experience	Usability	Heuristic Evaluation	E-commerce	Muslimah Fashion	Total
Shneiderman [11]	/	x	/	x	x	x	2
Nielsen et al. [12]	/	x	/	/	x	x	3
Tognazzini [13]	/	x	/	/	x	x	3
Weinschenk et al. [14]	/	x	/	/	x	x	3
Väänänen-Vainio-Mattila et. al. [15]	/	/	/	/	x	x	4
Pierotti [16]	/	x	/	/	x	x	3
Bonastre et al. [17]	/	/	/	/	/	x	5
Granollers [18]	/	x	/	/	x	x	3

It is discovered that out of eight studies included, [17] achieves the highest total number of characteristics followed by [15]. Whereas, [11] gains the least value of characteristics out of all. This is because Shneiderman's intention was not to create heuristics for the Heuristic Evaluation but rather to enhance the usability. At the same time, he admits that [11] s' principles have their limitations and must be

interpreted, refined, and extended in accordance to different environment and scope of research. Due to that, [11] has been discarded from the selecting process. Between [17] and [15], this research decided to choose [17] instead as it compiles much more complete set of user experience characteristics and precisely focused on E-commerce scope.

[12] and [13] are the most well-known heuristics which have been used by many researchers and being extended to a more specific scope of their studies. Since both studies have been proven to be reliable and have unquestionable quality, this study decided to choose both as references in the initial development of instrument but further refining process is needed. Nevertheless, since [18] has created a new heuristic list by combining the heuristics of [12] and [13], this somehow helps in saving the time to refine both [12] and [13] heuristics.

Other than the three studies previously mentioned, there are another two studies that have equal number of characteristics, they are [16] and [14]. First of all, the heuristics checklist created by [16] are not that much difference with [12]. The additional heuristics included by [16] are also not much relatable with the scope of this research. Hence, this study decided not to choose [16] for the initial instrument development. Yet, the rating method used in [16]'s Usability checklist will be adopted in the Heuristic Evaluation of this study as it is precise and simple to understand.

Meanwhile, [14] has unique characteristics that specify on the user's social customs such as culture propriety. This heuristic might be helpful in covering the specific aspects and a context of user experience that has not yet being covered by any previous studies, which is the Muslimah Fashion.

Therefore, this research has decided to choose five previous studies which include [12], [13], [14], [17] and [18], out of eight previous studies that have been presented in Table 1 for the initial development of the instrument. None the less, further clean-up and selecting process is needed in order to create a greater relevance instrument which can evaluate specific aspects and matched the context being examined.

The significance of this study is to improve the user experience (UX) in existing and a new Muslimah Fashion E-commerce site in Malaysia through the most used evaluation method which is the Heuristic Evaluation (HE). It can be applied during any phase of the development process of the site. This study proposed a heuristic set as an UX practice and standards that are supposed to serve the user interface or UX designers and evaluators.

3. Research Method

At the beginning of this study, an operational framework was developed to provide an overview of the process taken along the journey in development of instrument. The following Figure 1 further illustrates the process.

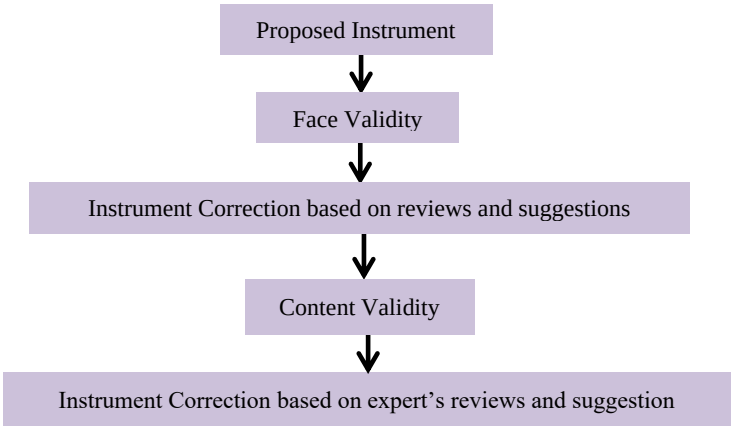

Figure 1 Development of Instrument

3.1. Proposed Instrument

As discussed in the related works section, this research has decided to adopt several Heuristic Evaluation list by some of the well-known early heuristics to support and used as the base of creating a new research instrument. They are [12], [13] and [14]. At the same time, the new research instrument is also based on the analysis of studies in similar scope of research such as [17] and [18]. The processes followed for deciding the proposed heuristics were as follows:

1) Revision of the chosen list. The first step is to study precisely on the heuristics of all the chosen studies from [12], [13], [14], [17] and [18]'s heuristic list. The revision has been done in terms of understanding the deep meaning of each principle.

2) Identified and discard the incompatible heuristics. Identified some heuristics from [12], [13], [14], [17] and [18]'s heuristic list that are not compatible with the Malaysia E-commerce Muslimah fashion site domain and discard them from the list. For instance, the heuristic of "Are there Intelligent Agents that can assist the customer?" from [17] heuristics is considered as incompatible heuristic to be included as it is Malaysia's norm to not have the Intelligent Agent in any E-commerce website but instead the use of Chatbot is much more suitable as it has been utilized in most of the E-commerce in Malaysia.

3) Integrate heuristics with the subject domain. The Heuristics list from previous studies are not specifically introduced to integrate with Malaysia E-commerce Muslimah fashion site domain, thus additional definition appears to be needed to support the subject domain. For example, from [17] heuristics, the description of the heuristic of "Is there enough information that relates to products or services?" is being given an example of the scarf to integrate more with the subject domain.

Table 2 shows 20 heuristics which were being listed as initial propose instrument and each heuristic is then being represented into unique elements. Out of 20

heuristics listed, five heuristics were added include Visibility of Tools & Elements, Curiosity, Comprehensiveness, Trustworthy and Recognition and engagement.

Table 2 Initial proposed heuristic

Item	Heuristics	Source
1	Visibility of Tools & Elements	-
2	Connection between the system and the real world, metaphor usage and human objects	[18]
3	User control and freedom	[12]
4	Curiosity	-
5	Cultural & Religious Propriety	[14]
6	Aesthetic	[12], [13], [14], [18]
7	Accuracy	[14]
8	Comprehensiveness	-
9	Trustworthy	-
10	Preventing errors	[18]
11	Recognition and engagement	-
12	Simplicity	[13]
13	Flexibility & Efficiency of Use	[12]
14	Save the state & protect the work	[18]
15	Help users recognize, diagnose and recover from errors	[12]
16	Consistency & Standards	[18]
17	Colour & Readability	[18]
18	Visibility of System Status	[12]
19	Latency reduction	[13]
20	Help & Documentation	[12]

However, since this study specifically cover the aspect of e-commerce website, it is vital to understand the customer's requirement and the steps that they will take to complete the whole buying process which also known as the stages of buying process. The stages of buying process were first introduced by [32] and was later expanded by [33] and amended by [17]. The initial proposed heuristics are organized in the following seven stages of buying processes inspired by [17]. These stages include Need Recognition and Problem Awareness, Information Search, Evaluation of alternatives, Purchase Decision, Purchase, Post purchase Decision and Factors that affect UX during the whole purchase process. Table 3 shows the example of initial proposed heuristics represented into unique elements and seven stages of buying processes.

Table 3 Initial proposed heuristics represented into unique elements and stages of buying processes

Stage	Element	Heuristics
Stage 1 : Needs & Problem Recognition	Navigation Tools	Visibility of Tools & Elements
		Connection between the system and the real world, metaphor usage and human objects
		User control and freedom
	Content marketing : Awareness	Curiosity
		Cultural & Religious Propriety
	Stimulating the desire to purchase	Aesthetic
		Curiosity
Stage 2 :	Search Tools	Visibility of Tools & Elements

Information Search		User control and freedom
		Accuracy
	Information Integrity	Comprehensiveness
		Accuracy
		Flexibility & Efficiency of Use
		Trustworthy
	Interactive Viewing	Aesthetic
		Connection between the system and the real world, metaphor usage and human objects
		Cultural & Religious Propriety
Stage 3 : Evaluation Of Alternatives	Content marketing : Evaluation	Trustworthy
	Evaluation Information	Trustworthy
	Evaluation Tool	User control and freedom
Stage 4 : Purchase Decision	Purchase Decision elements	Visibility of Tools & Elements
		Flexibility & Efficiency of Use
		User control and freedom
	Purchase Decision Information	Trustworthy
		Preventing errors
	Content marketing : Conversion	Recognition and engagement
Stage 5 : Purchase	Purchase elements	Visibility of Tools & Elements
		Simplicity
		Connection between the system and the real world, metaphor usage and human objects
		Trustworthy
	Purchase Information	Comprehensiveness
		Trustworthy
	Purchasing process	Simplicity
		Comprehensiveness
		Flexibility & Efficiency of Use
Stage 6 : Post Purchase Evaluation	Post Purchasing process	Save the state & protect the work
		User control and freedom
		Help users recognize, diagnose and recover from errors
	Content Marketing : Build Engagement	Recognition & Engagement
Stage 7 : Factors That Affect The User Experience During The Whole Buying Process	User Interface & Interaction	Consistency & Standards
		Colour & Readability
		User control and freedom
		Visibility of System Status
		Latency reduction
		Recognition & Engagement
	Help & Support Tool	Help & Documentation
		Connection between the system and the real world, metaphor usage and human objects
	Trust Building	Trustworthy

3.2. Face Validity

A face validity method was conducted to get the lay experts' (fellow researchers) comments and feedbacks of whether these instrument are relevant in terms of feasibility, readability, consistency of style and formatting, and the clarity of the language used [19] [20] [21]. The face validity form contains 76 interrogative questions to represent the heuristics based on each element.

In face validity assessment, five respondents were identified and invited to review the instrument which comprises of two academicians and three lay experts.

However, only three respondents manage to complete the face validity assessment and return them back. There are the three lay experts which comprises of three fellow researchers from UTM KL age 20-25 years old. Lay experts are the potential research subjects which help in specifying whether an item is valid to be used in the real main study or not. The other two respondents which are academicians do not manage to complete the face validity assessment due to the time constraints. However, both of them still give their comments and suggestions based on the overall view of the propose heuristics.

Based on the comments and suggestions given, several amendments on the instrument need to be made in order to produce a more valid instrument before conducting a content validity assessment by the expert. Hence, the processes of amending the heuristics are as follows:

a. **Identify and analyze the comments and suggestions.** The problems stated by the evaluators have been further investigate after the face validity session. Some experts have given detail comments and suggestions on the heuristics principles that need to be improved in terms of feasibility, readability, consistency of style and formatting, and the clarity of the language used. There are Recognition and Engagement, Visibility of Tools & Elements, Help and Documentation, and Trustworthy.

b. **Revise, compare & integrate the less compatible heuristics.** Most evaluators commented on the lengthy list of heuristics which can affect the reliability of the Heuristic Evaluation result as some of the respondents cannot manage to complete the face validity test. After revise, compare and integrate the less compatible heuristics, a new list of heuristic as shown in Table 4 has been produced. The new list of heuristics had been minimized from 20 heuristics to 10 heuristics and at the same time, the number of questions had been deducted from 76 questions to 43 questions representing each heuristic. On top of that, as suggested by the respondents, the stages of buying process have been excluded from the heuristic list and were recommended to be included during the run through process in the Heuristic Evaluation.

Table 4 List of changes in heuristic lists after face validity analysis

No	Before Change	No	After Change
1	Visibility of Tools & Elements	1	Visibility of E-commerce Tools & Elements
2	Connection between the system and the real world, metaphor usage and human objects	2	Connection between the system and the real world, metaphor usage and human objects
3	User control and freedom	3	User control and freedom
4	Cultural & Religious Propriety	4	Cultural & Religious Propriety
5	Aesthetic	5	Aesthetic design
6	Accuracy	6	Accurate, minimalist & comprehensive
7	Comprehensiveness		
8	Simplicity		
9	Help users recognize, diagnose and recover from errors	7	Help prevent and recover from errors
10	Preventing errors		
11	Trustworthy	8	Trustworthy
12	Recognition and engagement	9	Recognition and engagement

13	Flexibility & Efficiency of Use	10	Flexibility & Efficiency of Use
14	Save the state & protect the work		(Not Applicable)
15	Consistency & Standards		(Not Applicable)
16	Colour & Readability		(Not Applicable)
17	Visibility of System Status		(Not Applicable)
18	Latency reduction		(Not Applicable)
19	Help & Documentation		(Not Applicable)
20	Curiosity		(Not Applicable)

3.3. Content Validity

This content validity is to validate the proposed instrument with expert reviewers in the field of content validation before being evaluated by the ideally a Heuristic Evaluation expert. The expert should have a deep understanding of the chosen set of heuristics to ensure that it can be applied during the real development process of E-commerce Muslimah fashion site in Malaysia.

In this content validity process, five panel of experts were identified and invited to review the instrument. However, only three experts manage to answer the content validation assessment completely. Specific guidelines, used for selection and inclusion of the experts included:

a. Experienced academicians in informatics field (more than 10 years).
b. Familiarity in the field of content validation.

In order to determine the relevancy of the instrument, the content validity results were measured by content validity index (CVI) method. CVI is calculated by tallying the result of the expert review [22]. There are two methods of CVI that have been used which are item-level CVI (I-CVI) and scale-level CVI (S-CVI). I-CVI method involves the content validity of individual items while the S-CVI involves the content validity of the overall scale.

In terms of the quantity of expert needed to measure the CVI, [23] advised a minimum use of three experts and indicated that more than 10 evaluators were probably unnecessary. At the same time, it is generally agreed that three and two responses from experts for both the qualitative and quantitative rounds respectively are valid for content validity [24][25][26][27][28].

The panels of content validity experts were asked to rate each scale item in terms of its relevance to the underlying instrument. A Likert-type scale used to determine the relevancy of the items are 1 = Not relevant, 2 = Somewhat relevant, 3 = Quite relevant but needs minor revision, and 4 = Highly relevant as advocated by [29].

Lynn [23] also developed criteria for item acceptability that incorporated the standard error of the proportion. She recommended that for five or fewer experts panel, all must agree on the content validity for their rating to be considered a reasonable representation of the universe of possible ratings. In other words, the I-CVI should be 1.00 when there are five or fewer judges.

Then, for each item, the I-CVI is computed as the number of experts giving a rating of either 3 or 4 (3 = Quite relevant but needs minor revision, and 4 = Highly

relevant), divided by the total number of experts. For example, an item that was rated as quite or highly relevant by two out of three panels would have an I-CVI of 0.666. Table 5 shows the experts' rating that did not meet the content validity indices (I-CVI).

Table 5 Items that did not meet the content validity indices (I-CVI)

Item No	Expert 1	Expert 2	Expert 3	No. of Agreement	CV1
2.2	1	3	3	2	0.666
4.1	2	3	4	2	0.666
5.1	4	2	3	2	0.666
5.3	2	3	4	2	0.666
6.1	3	1	3	2	0.666
6.3	3	1	4	2	0.666
7.3	2	4	4	2	0.666
7.4	2	4	4	2	0.666
7.5	3	2	4	2	0.666
8.1	4	2	4	2	0.666
8.2	3	2	4	2	0.666
9.5	4	4	2	2	0.666
10.1	4	2	3	2	0.666
10.2	4	2	4	2	0.666
10.3	3	2	4	2	0.666
Total I-CVI					38.99
Average I-CVI (38.99/43)					**0.91**

According to [34], if the value of I-CVI is greater than 0.79, the item is relevant, between 0.70 and 0.79, the item needs revisions, and if the value is below 0.70 the item is eliminated (Zamanzadeh et al., 2015). The overall result shows that the value of the averages item-level CVIs (S-CVI/Ave) is 0.91 which is greater than 0.79. This apparently means that the items are relevant with the objective of the research. However, few amendments and corrections still in need especially the items that did not meet the content validity indices (I-CVI). This is to ensure this heuristic list valid to be used in the data collection. For that reason, out of 76 questions, 37 questions were rephrased and four more questions were added which make the total of 47 questions. The result after the restructured and rephrased is shown in Table 6 which then used for the real data collection (heuristic evaluation).

Table 6 The final heuristic lists

Visibility of E-commerce Tools & Elements				
Item	**Component**	**Yes**	**No**	**N/A**
1.1	Provide a search feature to locate products and information.	o	o	o
1.2	Clearly display the "call to action buttons". (Buttons like "Add to Cart" or "Buy now" should be large, highlighted by colour and linked to the order confirmation page)	o	o	o
1.3	Provide a shopping cart which is accessible from all the pages.	o	o	o
1.4	Provide tools to ease the comparison between different products.	o	o	o
Match between the system and the real world				
2.1	A clear user-logical hierarchy of categories to classify products.	o	o	o
2.2	Reveal products in real-world settings. (The product should be based on the real environment)	o	o	o
2.3	The checkout process should be divided into logical steps.	o	o	o

2.4	The design of the icons correspond to everyday objects.	o	o	o
2.5	Every icon do the action that the user expect.	o	o	o
2.6	Use phrases and concepts familiar to the user.	o	o	o
User control and freedom				
3.1	The user can filter a great variety of criteria (features, categories, etc.) whether in search feature or category page.	o	o	o
3.2	The user can move easily throughout the different sections.	o	o	o
3.3	The user can refine the search results.	o	o	o
3.4	The user can manage their order(s) from the customer's account.	o	o	o
3.5	The user can give product reviews and ratings.	o	o	o
3.6	The user allow to ask question about the products.	o	o	o
Cultural & Sharia-Compliant Propriety				
4.1	Display the products through a model who covering the aurat according to sharia-compliant.	o	o	o
4.2	The image of the product portray moderately in terms of the posing style.	o	o	o
4.3	Share content on the Muslimah fashion-inspiration according to cultural custom and sharia-compliant. (Could be in the form of ie: blog, social media updates, infographic, videos, e-books)	o	o	o
Aesthetic & minimalist design				
5.1	Include multimedia resources to draw customer's attention.	o	o	o
5.2	Include several large, high-quality images to explain the products.	o	o	o
5.3	Use suitable choice of colour, font and background image which adequate enough in terms of size, colours and readability.	o	o	o
5.4	The text is well organized, with short sentences and quick to interpret.	o	o	o
Accurate & comprehensive				
6.1	The search feature give the answer accurately.	o	o	o
6.2	Provide all necessary and accurate information about the product. (This includes detailed descriptions of the features. For example, in the case of a scarf this would be the name, material, colours, size, description and images)	o	o	o
6.3	The user informed about the product availability.	o	o	o
6.4	If registration is required, the process is short, simple and only demand essential information.	o	o	o
6.5	Provide several alternatives for the delivery of the order.	o	o	o
6.6	Provide several options on payment method.	o	o	o
Trustworthy				
7.1	Provide Privacy Policy if personal information is required by the website.	o	o	o
7.2	Provide shipping, return or exchange Policy as clear as possible.	o	o	o
7.3	Inform the level of security when paying by online banking or credit card. (Eg: show security logo)	o	o	o
7.4	Provide different options for customers to contact the company.	o	o	o
7.5	Responsive towards users' comments and concerns in comment or review section.	o	o	o
7.6	The content must regularly updated.	o	o	o
Help prevent and recover from errors				
8.1	Provide important pre-purchase information (Eg: the external charges (tax & shipping costs), delivery estimation dates, before the order is approved by the user)	o	o	o
8.2	Provide setting for the user to return defective item. (In condition of return & refund policy)	o	o	o
8.3	The user can modify any information filled in the order/checkout process, before confirming transaction.	o	o	o
8.4	Give reminders on required section or not letting the user to proceed to the next section if the required form/ section is not completely filled.	o	o	o
Recognition and engagement				
9.1	Send a confirmation email after the customer's order.	o	o	o

	(The email should summarize the order and thank the customer. This generates a positive opinion from customer service)			
9.2	Provide option to subscribe / unsubscribe to newsletter.	o	o	o
9.3	Personalize any type of contact with the customer. (For example, mentioning user's name once login to the account or include the customer's name when the system send an email)	o	o	o
9.4	Provide special offer or treatment towards member. (Eg : Reward points, Discount voucher)	o	o	o
9.5	Provide Chat bots that assist the customer.	o	o	o
Flexibility and Efficiency of use				
10.1	Provide FAQ section that covers common customer question.	o	o	o
10.2	Provide wish list feature to increase customer satisfaction.	o	o	o
10.3	Provide one-click shopping. (By offering one-click shopping, it does not require the customers to input their payment and shipping information for every single order they make. Allow them to store their preferences, so that it's easier for them to buy with a single click)	o	o	o

3.4. Data Collection

This research implements quantitative research methodology by conducting heuristics evaluation method in order to collect the data. For the purpose of this study, www.hijriahome.com was used as the case study to complete this Heuristic Evaluation.

In this data collection, three evaluators are invited to inspect this Heuristic Evaluation as suggested by [30]. The evaluators are equipped with valuable experience in doing evaluation with heuristics, two with more than 10 years of experience, and another one with more than five years of experience in the field of Human Computer Interaction (HCI), user interaction (UI) and user experience (UX). All of them are senior lecturers from different universities in Malaysia, two of them are from International Islamic University Malaysia (IIUM) Gombak and another one is from Universiti Teknologi Mara (UiTM) Shah Alam.

The Heuristic Evaluation is divided into three different phases as stated below:

a. **First phase:** The evaluators will use the website freely to gain a feel for the methods of interaction and the scope.
b. **Second phase:** The evaluators will accomplish several usability tasks according to the consumer buying processes.
c. **Third phase:** The evaluators will carry out another run-through, whilst applying the chosen heuristics to the elements identified during the second phase. The evaluators would focus on individual elements and look at how well they fit in the overall design. At the end, they need to evaluate each heuristic component and leave comments if any.

In this Data Collection, the rating scale was inspired by [18] which includes a 3-option rating scale: "Yes", "No" and "Not available". The scale is formulated in the way that when the answer is "Yes: it means that the feature represents a good usability, whereas "No" means the feature does not represent a good usability and "Not available" means the feature is not applied in this

case. In order to ease the analysis of the resulted score, a numeric value to each possible answer has been assigned. Thus, “Yes” is weighted with 1 point, “No” with 0.5 points. “Not applicable” weighted 0 point. Table 7 demonstrates an example of calculating the total points of the heuristic questions.

Table 7 Calculation of heuristics questions points

Visibility of E-commerce Tools & Elements			
Item	**Component**	**Rating**	**Point**
1.1	Provide a search feature to locate products and information.	No	0.5
1.2	Clearly display the "call to action buttons”. *(Buttons like "Add to Cart" or "Buy now" should be large, highlighted by colour and linked to the order confirmation page)*	Yes	1
1.3	Provide a shopping cart which is accessible from all the pages.	No	0.5
1.4	Provide tools to ease the comparison between different products.	Yes	1
	Total	3.0	

Despite using the qualitative Severity Ratings method introduced by [12] that have been widely used by other related studies, this research decided to use this 3-option rating scale because based on the experience from previous validity evaluation, the evaluators find it exhausting when they must choose from a long list of values. This resulting to unreliable answers as the evaluators reach the last principles.

Table 8 shows the final score of each heuristic principle evaluated by the panel of experts. The total of each score are then being used to calculate the Usability Percentage. Usability Percentage is a quantitative method of analyzing usability introduced by [18] to give the orientation on the level of usability of the website. However, for the purpose of this study, in spite of evaluating the level of usability, this research is focusing on evaluating the level of user experience instead.

Table 8 Usability Percentage Analysis of Heuristic Evaluation

Heuristics	**Evaluator 1**	**Evaluator 2**	**Evaluator 3**
Visibility of E-commerce Tools & Elements	3	3	3
Match between the system and the real world	6	5	6
User control and freedom	5.5	5	5
Cultural & Sharia-Compliant Propriety	2	3	2.5
Aesthetic & minimalist design	3.5	3.5	4
Accurate & comprehensive	4.5	2.5	5
Trustworthy	6	3.5	4.5
Help prevent and recover from errors	4	2.5	4
Recognition and engagement	4	3	4.5
Flexibility and Efficiency of use	2	2.5	2.5
Total Average (Total points / Total No. of questions)	0.88	0.728	0.891

Usability Percentage (UP)	88%	72.8%	89.13%

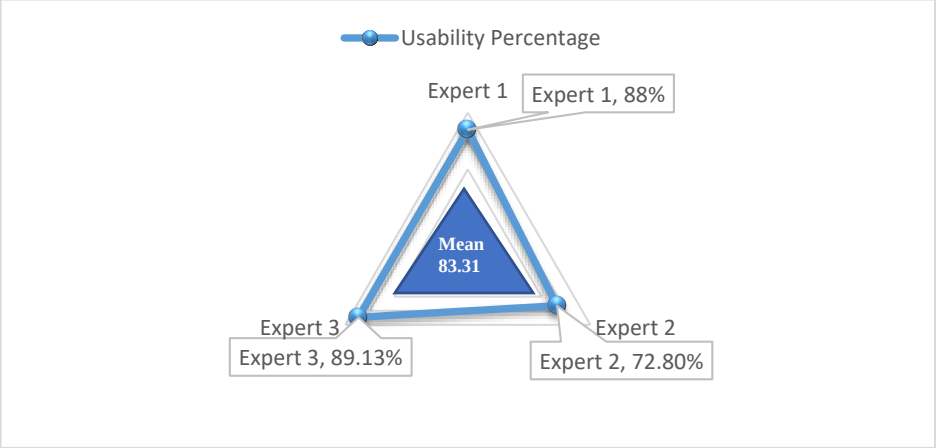

Figure 2 Usability Percentage

Based on Table 8, Usability Percentage regain from each expert are 88%, 72.8% and 89.13%. Figure 2 summarizes all the evaluations and the mean of all the evaluations is 83.31%. According to [18], the mean value of 77.5% could be consider a reasonably good user experience level. Thus, the value of 83.31% regain in this study could also be consider as a good user experience level as it is greater than 77.5%. However, in order to validate the overall heuristic principle, the comments and suggestions from the panel experts need to take in consideration as well.

4. Results and Discussion

The heuristic principles list was developed through several processes of validation as presented in Table 6. The total of 10 heuristics have been finalized as the proposed instrument for this research and valid to be used as the evaluation method for the user experience on Muslimah fashion E-commerce website in Malaysia which relies on the basis of:

1) Adopting from the most well-list, Nielsen's heuristics
2) Several validation assessments by the experts
3) Comments and suggestions given by the evaluators who took part in the data collection

For the purpose of this research, the questions were majorly adopted from the two studies which are [17] and [18]. After several validations with the expert, it is convincing that the questions cover all the aspects to carry out a real data collection. Certainly, there is still a room for improvement, but it is a well-balanced list, with an appropriate number of questions for each principle.

The rating scale used for this data collection has been inspired by the work introduced by [16], the rating scale used is based on the 3-option rating scale: "Yes", "No" and "Not available". Although it is a good to have larger scales as evaluators can give more precise score, but experiencing from the content

validity and face validity assessment, as the evaluation advances, the evaluators tend to give less precise answer approaching the last principles. Thereby, it is a great decision of using the three-option rating scale as it is not only helping the evaluators giving a precise score but it also a determinant for the score method that have been used for the analysis for this Data Collection.

Finally, about the evaluation method that had been introduced by [18] named Usability Percentage is considered as global usability evaluation point of view. However, they do mention that "this value must not be taken strictly as a full usability meaning, but as an orientation". Since it is a newly introduced methodology for evaluating usability, it is still finding the specific strengths and weaknesses which will make the system better and more useful [18] thus it has not been tested by other studies yet on the aspect of efficiency. In spite of that, this study still chooses to use this methodology as the main objective of this research is not to inspect the usability of the website but more to validate the proposed instrument. Thereby, the Usability Percentage method can be considered as a reasonable method to be used in this data collection.

5. Conclusion

After completing the data collection, this research receives many suggestions of improvement for future works by the expert evaluators. It is recommended that further research be undertaken in several areas.

First and foremost, most of the evaluators give their suggestions of improvement on the "Cultural & Shariah-Compliant" principle from the proposed heuristic list from Table 6. They suggested to add more items under this principle and give an idea to relate with the Maqasid Syariah as well. At the same time, it is also suggested to conduct a content validity test with the expertise in Islamic Knowledge. As this principle is related to the Islamic Law, it is necessary to validate the content with someone who is knowledgeable in this area to avoid any misconception or misuse of Islamic term.

Further investigations are also needed in the analysis method that had been used for this data collection which is Usability Percentage. As the data collection is using a case study of a website that had already been published to test the validity of the Heuristic Evaluation, there will be no issue. However, if a real heuristic evaluation is going to be conducted on a real process of developing a website, there is a need to consider the qualitative method such as severity rating in analyzing the usability or user experience issues. Nevertheless, it is all depends on the scope of the research itself in order to determine the most efficient method to be used.

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