DEFINISI DAN KONSEP PENGALAMAN PENGGUNA (*UX*): SOROTAN LITERATUR

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Abstrak

Kefahaman berkenaan konsep pengalaman pengguna (*UX*) adalah berbeza bagi setiap individu bergantung kepada latar belakang seseorang dan daripada industri mana mereka dikaitkan. ia juga dipengaruhi oleh latar belakang dan minat pengkaji itu sendiri. Kepelbagaian versi berkenaan konsep *UX* ini akan mengelirukan pembaca yang kurang berpengalaman. Selain itu, sehingga kini sesetengah pengkaji bersetuju bahawa *UX* dan Kebolehgunaan (*Usability*) tidak mempunyai perbezaan asas yang jelas terutamanya dalam kaedah pengukurannya. Oleh yang demikian, tujuan penulisan ini adalah untuk mengkaji dan mendedahkan definisi dan konsep *UX* secara komprehensif. Penulisan ini bermula dengan mengenalpasti elemen-elemen *UX* yang ditemui di dalam penulisan kajian-kajian terdahulu dan seterusnya mengetengahkan perbezaan di antara konsep *UX* dan Kebolehgunaan (*Usability*). Berdasarkan kajian literatur, penulisan ini mencadangkan bahawa pengukuran *UX* boleh dibuat berdasarkan elemen-elemen *UX* seperti Kebolehgunaan (*Usability*), Nilai (*Value*) dan Relevan, Kebolehcapaian (*Accessibility*), Kemudah gunaan (*Ease of Use*), Kualiti *Hedonic* dan *Pragmatic*, dan Daya Tarikan/ Estetik. Kesimpulannya, *UX* merupakan lanjutan daripada konsep Kebolehgunaan (*Usability*) yang melangkaui Keberkesanan (*Effectiveness*), Kecekapan (*Efficiency*) dan Kepuasan (*Satisfaction*). Oleh yang demikian, *UX* adalah sesuatu yang berkaitan dengan persepsi manusia yang mana bertindak balas terhadap produk, sistem atau servis apabila pengguna mengambil bahagian atau menggunakannya.

Kata Kunci: Pengalaman Penggunan (UX), Kebolehgunaan, Keberkesanan, Kepuasan dan Kebolehcapaian.

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DEFINITIONS AND CONCEPTS OF USER EXPERIENCE (UX): A LITERATURE REVIEW

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Abstract

Different people have different understandings of the User Experience (UX) concepts depending on the background of the people and from which industries they are associated to. It is also influenced by the background and interest of the researchers itself. This various versions of UX concept could confuse naïve readers. Moreover, some researchers also agreed that there is vague differences between UX and Usability particularly in their method of measurements.. Therefore, the objective of this paper is to investigate and synthesis on the definition and concepts of UX comprehensively. This paper begins with the identification of the commonly mentioned elements of UX elements in the published research papers and then followed by the differences between the concepts of UX and Usability.. Based on the literature investigation this paper proposes that UX evaluation should consider the UX elements that include Usability, Value and Relevance, Accessibility, Ease of use, Hedonic and Pragmatic Quality, and Visual attractiveness/ Aesthetic. In additional, UX aspect is an extension to the usability concept which is beyond the Effectiveness, Efficiency and Satisfaction. As a conclusion, UX is something to do with human perceptions which responses towards the product, system or service when they have participated with or used it.

Keywords: *UX definition, usability definition, UX elements, usability, user experience.*

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1.0 Introduction

Over the past decade most researchers in User Experience (UX) have emphasized the concepts, perspective and definition of UX. The term is very subjective, situated, holistic and dynamic (Kuliga et al., 2015). This is because the term of UX itself had several definitions even in UX community. There is no concrete agreement of the experts towards the definition and the concept of the UX. The understanding of UX concepts of each people are differently depends on the background of the people and from which industries they are associated to and also affected by the background and interest of the researchers itself (Zarour & Alharbi, 2017). The concepts of UX is widely used throughout various industries such as computer science, visual design, software design, apps design, website design, marketing and communication, and many more. However, there is still wide gap between industrial practitioner and academics in their understanding of what UX actually is (Hassenzahl, 2008). Furthermore, according to Zarour & Alharbi (2017), the various concepts and terms of UX could be confusing for naïve readers. This view was supported by (Mahlke, 2005) who writes that UX term is "partially confusing and does not have a clear framework that consider the different result of the investigation". Moreover, Some researchers also agreed that UX and Usability does not have clear fundamental different especially in measurements at this particular time (Bevan, 2010). Nevertheless, all these notions are categorized under big umbrella of User Experience (UX) because of no proper guideline of differentiate of Usability and UX specifically. However, nowadays the UX concept become very popular and the usability itself have tendency to move to UX. Hence, even the former "Usability Professionals Association" (UPA) had been refined to " User Experience Professional Association" (UXPA) (Rusu et al., 2017), Therefore, the objective of this paper is to investigates the definition of UX and exposes the comprehensive concepts of UX along with relation to usability. This paper begins by identified the potential UX elements through existing research papers and then clearly highlighted the different between the UX and the usability concepts.

2.0 Definition

In literature, the definition of UX has been proposed based on the researcher's background and interest. Therefore, there is no common definition of UX that has been agreed upon that can be used. In human-computer interaction (HCI), user experience (UX) was explained as an interplay of individual perception, emotion, cognition, motivation and action (interaction with place, time, people, and objects) (Kuliga et al., 2015). While, according to Pietroni et al., (2016), UX is useful to understand how individuals find value in what they are playing with, using, or experiencing. The application should be credible (well realistic visualization likes real life), desirable (the visual and design elements used should evoke emotion and appreciation of the user), useful and usable. Furthermore, Simonsen (2018) defines UX as the set of emotional, evaluative perception and responses of the user whiles interacting with user interface (UI) given. Additionally, according to his study, the key components of UX should contains practicality of achieving the intended goals, look and feel, the perception and feeling towards the design. All the above definition similarly to definition gave by ISO 9241-210 which concludes that UX as a human's perceptions and responses result from anticipates or use towards the products, system or services (Han et al., 2017). However, there is an argument as noted by Rusu et al., (2017), UX is consider as an extension of the usability concepts that measuring effectiveness, efficiency and satisfaction. Moreover, this view was supported by Park, et al.,(2011) who writes that user experience (UX) covering the

concepts of usability and effective usage. In additional, they were proposed the definition of UX should consists of three UX elements: usability, affect and user value. Hence, it is in line with the most view of the researchers regarding of subjectivity of UX. However, the used definition requires more explanation according to possible elements that could affect user experience (Zarour & Alharbi, 2017). UX measures generally coupled with usability (Kiourt et al., 2015; Kiourt et al., 2016), and according to Zarour & Alharbi, (2017) UX can be understood and conceptualized through three different ways as discussed and illustrated below.

- Usability consists of three attributes such as efficiency, effectiveness, and satisfaction, and UX can be perceived as a description of satisfaction component of usability. Satisfaction attributes refers to something related to pleasure, trust, fun, enjoyment and other similar attributes. Therefore, UX is the extended attributes to usability and UX also can be considered as an elaboration of usability (refer to Figure 1).

- UX can also be viewed as a different concept than usability. Usability emphasizes the form of measures objectively, while UX emphasizes measures subjectively (refer Figure 2). The obvious different of usability and UX is measurement methods, moreover usability does not measure all characteristics of UX (Rusu et al. 2017)

- UX is the umbrella term for user's perception including usability (refer to Figure 3), although measuring methods are differently, this is according to ISO9241-210 definition which only focus on the perceptions of the user either measured objectively or subjectively.

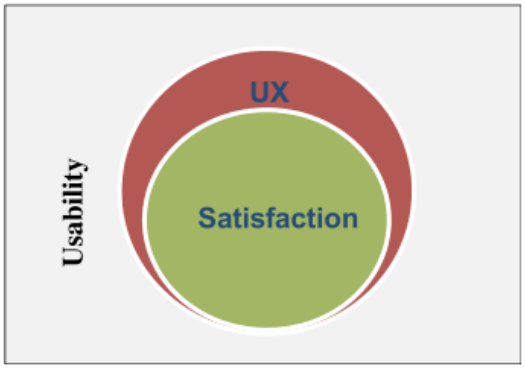

Figure1: User Experience is elaboration of usability

(Source: Zarour & Alharbi, 2017)

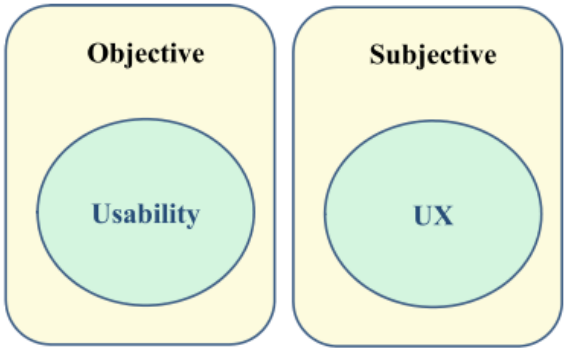

Figure 2: Usability for objective and UX for subjective

(Source: Zarour & Alharbi, 2017)

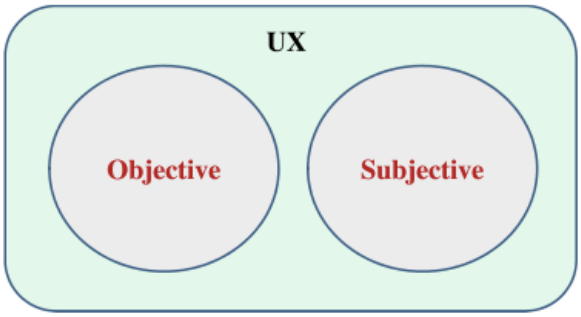

Figure 3: UX as an umbrella for user perceptions including usability.

(Source: Zarour & Alharbi, 2017)

3.0 User Experience (UX) Elements

User experience (UX) is a concept that consist of whole various elements that being integrated to understand the comprehensive user experience, behaviors and feedback towards the products, services, applications, system, software and others. Many researcher has proposed conceptual framework or model in order to help defining the objectives and scopes of user experience efforts together with their meaningful measurement. Guo (2012) identifies Value, Usability, Adoptability and Desirability as the major elements that affect the user experience towards product. In his study, for the purpose of attempting to achieve conceptual simplicity, he was reduced few elements of user experience in order to conceptualizing the four constituent elements that could be the most fundamental elements of UX, which is all the elements selected are not completely orthogonal to one another. The others elements such as credibility, accessibility, and findability proposed by Peter Morville's user experience honeycomb model were subcategories into the major elements. Quiñones, Rusu, & Rusu, (2018) also point out the same argument with Morville and Guo, they were emphasized that usable, desirable, findable, credible, accessible and value as the UX elements. On the other hand, Mahlke (2005) claims user experience as encompassing of all relevant elements on interaction with a product from user perspective. In his investigation, four experience dimensions were highlighted; perceived usefulness, ease of

use, hedonic quality and visual attractiveness. All these elements were presenting the cognitive part of user experience in basic user experience process and also could affect to consequences of experience such as user behavior, emotion and judgements. In the same vein, Cawthon & Moere (2006), in their study claims that user experience would affected by the element of aesthetic in visual information. They believe that too high level of esthetic might contribute to negative connation towards the user. The collective summary of structure of the User Experience elements had being identified according to the pervious scholar investigation is listed as follows:

3.1 Usability

According to ISO 9241-11 standard, Usability definition is focus on mission and goals, application or system efficiency, satisfaction and includes the cognitive information processing (Mahlke, 2005). At the same time, ISO standard was proposed the usability attributes or elements should consists of effectiveness, efficiency and satisfaction. Moreover, according to Al-Aidaroos (2017) usability is means empowering the user in order to ensure they are able to accomplish the task quickly and easily. It also contributed to affect part of the user experience by meeting their needs. Furthermore, according to Schaik's investigation that the usability of application influences satisfaction which leads to higher level of loyalty and trust (Schaik 2016). Furthermore, a research shows that usability is functional that consist efficiency and effectiveness in interaction along with emphasizes satisfaction and user pleasant (Kuliga et al., 2015). While, Quiñones et al.,(2018) defines that usability is "capability of being used" and should consist learnability, efficiency, memorability, errors and satisfaction as usability attributes. Usability also can be evaluated through usability inspections or usability tests for instance Heuristic evaluation. In additional, they believe usability is part of User Experience (UX) that includes all users' emotions, preferences, perceptions, responses, behavior, belief, and accomplishment that occurred before, during and after a product usage. Refer to the overall previous academics' investigation, usability can be summarized as a component that could influences part of user experience towards application. Nevertheless, the usability should consider 1) effectiveness, 2) efficiency, 3) satisfaction as main usability attributes and 1) learnability and 2) memorability as secondary usability attributes under cognitive information in order to achieve proper and functional usability.

According to Mohammadi (2015) Effectiveness attributes consists of error, usefulness, reliability, and simplicity. While, Molina et al, (2014) stated that effectiveness consists of utility, accuracy and intuitiveness. Moreover, according to Negahban & Chung (2014), the systems that learnable, understandable, memorable and intuitive are consider in the group of simplicity sub-attributes of usability. and according to Shuib et al., (2015), reliability sub-attributes in usability means accuracy. In the meantime, according to Motamedi & Choe (2015) safety, flexibility and accessibility are grouped under Efficiency attribute. Where, efficiency attribute in usability means ease of use (Salazar, Lacerda, Nunes, & Gresse von Wangenheim, 2013) while, flexibility sub-attribute means consistency, adaptability and compatibility (Motamedi & Choe, 2015). And accessibility sub-attributes means operability (Youngblood & Youngblood, 2013). Then, according to Li et al. (2013)

mentioned that Satisfaction attribute refers to user's comfortable feeling, while using the products. Satisfaction also can be described as acceptability sub-attributes which is related to user acceptance of the product (Choe & Schumacher, 2015). In additional, satisfaction attributes consist of attractiveness, playfulness, aesthetic which linked to degree of user feeling while anticipated with that products (Silvennoinen et al.,, 2014). Figure 3 shows the summary of the usability attributes expansion as discussed above.

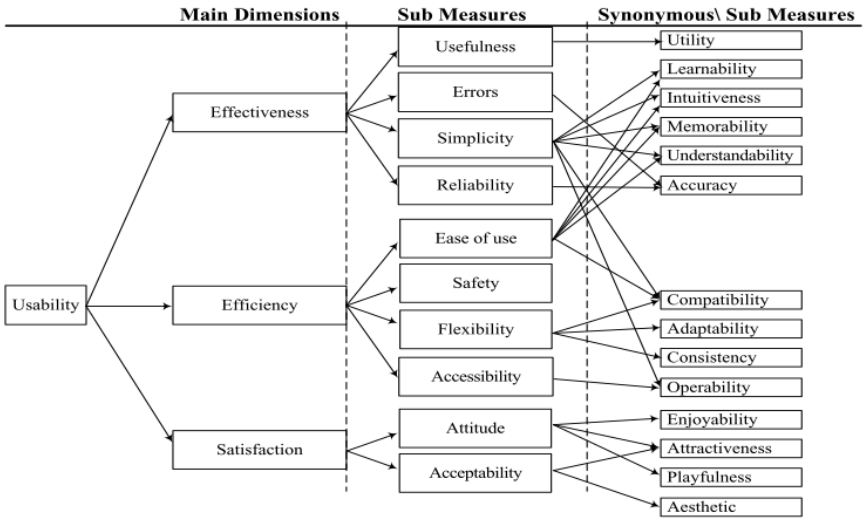

Figure 3: Summary of Usability Measures

(Source: Al-Aidaroos, 2017)

3.2 Value and Relevance

It is important to give a priority to certain features or task when dealing with design and development of the user interface application that contain a wide variety of features. Those features must be designed according to its value and relevance (Al-Aidaroos, 2017). The value can be achieved when the real user's need and necessary utilities can be provided. While, Relevance can be achieved when the application or system able to provide relevant contents and functions towards the user needs. Moreover according to Guo (2012), values is a part of the user experience elements like usability and desirability, however value core point is focused on product functionality and features. In additional, research shows that values are affecting user experience directly. For instance, a product which does not contain values of fulfilling user need does not provide significant user experience regardless of how good it been designed. Furthermore, a good product features are able to support user need and satisfying will consider valuable.

3.3 Accessibility

Accessibility is to ensure the user with all abilities to understand, use and engage with the application, product or system. The design should be useable to all users irrespective of their abilities, situation, or context (Kaur, 2018). Furthermore, according to Web Accessibility Initiative (WAI) that accessibility focuses on people with disabilities. Accessibility is required in order to improve the usability for every user, especially for person in limiting situations. For instance, sufficient contrast for people using the web on mobile device in bright or in dark room. Some people with age functional limitation are not identified as disable. while, accessibility consider these situations too (Youngblood & Youngblood, 2013).

3.4 Perceived usefulness

Usefulness is the user perception towards the product utilizing and the ability to improve and enhance user performance (Al-Aidaroos, 2017). Additionally, usefulness is one of the sub usability attributes under effectiveness attribute. Beside the functionality and technical specification, usefulness is one of the criteria to influences the user to purchase the application even if the price slightly higher compared to other because of the ease of use and user-friendly (Johnson, 2011). Furthermore, According to Partala & Saari (2015) that user experience (UX) is significantly influences by usefulness of the products which is the fulfilment of psychological needs. Moreover in the TAM (Technology Acceptance Model), usefulness of the application also able to determined usage behavioural intention of the user, which is a user believe that particular system or products able to enhance their job performance, less effort and ease-of-use (Partala & Saari, 2015). The usefulness of the User experience can be evaluated using a questionnaire in measuring overall satisfaction, loyalty, willingness to recommend to other (Kujala, et al., 2011)

3.5 Ease of Use

Ease of use is defining as every function in system developed should be easy to learn and used by users (Rahim et al, 2016). While, according to Kujala et. al. (2011) ease of use is defined as a product that is easy and effortless to use. Ease of use was investigated in order to measure dimensions of the user experience in particular application (Kujala et al., 2011). Moreover, according to a research, Ease of use able to improves over time when the uses become familiar with the product and learn how to handle it. In additional, ease of use is making the users to keep interest and not losing the initial novelty towards the products. Hence, this scenario could avoid deterioration of user experience towards the products. Guo, (2012) had mentioned that ease of use is one of the element of UX that encompass under the usability. In the same vein, Al-Aidaroos, (2017) points out that ease of use is part of the usability sub attributes under the efficiency attributes.

3.6 Hedonic and Pragmatic Quality

Hedonic is defined as something related to the human feeling of pleasure. Hedonic is not only rely on the characteristics of individual but also influences by other experiential aspects, for examples individual expectations and previous experiences towards the similar product (Aizpurua et al, 2016). According to Hassenzahl (2008) Hedonic quality should be divided into three (3) attributes: original, innovative and exciting. While, Pragmatic is referring to ability to solve the problem in a sensible way or practical way, rather than by using abstract methods or theory. Where, Aizpurua et al., (2016) divided pragmatic quality into five attributes; simple, practical, direct, clean and manageable. In additional, Hedonic quality refer to the product ability to support the achievement of task goals, such as being competent, being related to other, and being specials. Hedonic quality contributes directly to the core of the user experience and plays an essential role in creating loyalty (Kujala et al., 2011). In contrast, Pragmatic quality is related to a product utility and usability. Moreover, pragmatic quality indirectly able to makes the task given more easy and likely. Based on previous research, hedonic quality and Pragmatic quality are the significant element that effect the UX beside Accessibility, Aesthetic and other UX elements (Aizpurua et al., 2016).

3.7 Visual attractiveness/ Aesthetic

Aesthetic refers to the sense of visual appearance or sense of beauty and the feeling of the user when they are engage or using the products. (Zarour & Alharbi, 2017) and according to (Pietroni et al., 2018) aesthetic is the combination material, colors and shape of the product particularly in cultural artefact. They also believe the aesthetic value in the real or virtual museum could support the visitors in their understanding of cultural contents. Moreover, Aizpurua et al., (2016) also mentioned that aesthetics value of product could affect the user experience (UX) plus from their investigation they found a relationship between aesthetics and accessibility. In additional, based on few studies shows there is influence of user perceived visual aesthetics/ attractiveness on usefulness and ease of use towards the products. (Mahlke, 2005). The importance of the aesthetic elements for user experience was investigated by Mahlke (2005) and found two aesthetic attributes that could be relevant to the product contents; Classical and Expressive aesthetics.

4.0 Methodology

The methodology of the research could come in various way, moreover according to Wee & Banister (2016), methodology was not explicitly used in literature review articles and sometime the method section in review papers are very short or not being presented at all. However, for this investigation, narrative review technique was been selected to become the approach of the research method. The methodology of the investigation was started with the issues and objective of the research which had been explained in the introduction section. The literature review articles were collected through online databases for instance Scopus, Google scholar and Web of Science. In additional, the searching of the articles from the online databases should be according to the specific keywords (e.g.: user experience, usability). Then, All the potential articles were analyzed in order to identified the user experience definitions and concepts. Although, some articles obtained through

snowballing technique which able to expand the articles searching. However, most of the articles were demonstrates the different range of the knowledge about the user experience definition and concepts. The different concepts of the user experience were collected and criticized in Sections 2 and 3. All the elements of the user experience were derived from various concepts suggested by multiple scholars.

5.0 Discussion

Usability and especially UX are well established concepts, but still under review. There are well known and widely used usability evaluation methods, but UX evaluation is still a challenging task (Rusu et al., 2017). UX seems constantly used in industries. However there still wide gap of definition and concept of the UX usage (Hassenzahl, 2008). Furthermore according to Zarour & Alharbi (2017) and Mahlke (2005) UX and Usability differences are still does not clear and confusing. Moreover, the usage of UX and usability concept sometime is equated with one another (Hassenzahl, 2008). According to (Rusu et al., (2017) UX evaluation is more complicated and challenging than evaluating usability. UX evaluation is more subjective, situated, holistic and dynamic (Kuliga et al, 2015). Hence, UX especially human emotion were neglected by developer of application and they are more focused on usability attributes and only aim to enhance the efficiency of application without take into consideration of the user emotion (Lankes et al, 2010). All the above mentioned should not become the reasons why the human emotion aspect should be neglected when designing an application. According to Pucillo & Cascini, (2014) Bill Gates was highlighted the importance of “happiness of the customers” and “learning from mistakes” in designing a product. Its shows how importance the user experience in other words user emotion impact toward the product development. Rusu et al., (2017), and Park, et al. (2011) agreed that usability is a subset or part of UX, in order hands usability evaluation methods are also able to evaluate some of the UX elements. However, it was argued by Väänänen-Vainio-Mattila et al (2015), they stated that UX attributes beyond the usability and should be focus on experience that captivates the user attentions. Furthermore, they point out that UX dimension need to be evaluated using specific methods then usability. In the same vein, Chapman et al, (2016) also mentioned that Usability is an important elements of UX, however it’s not enough to measure UX aspect by rely on usability itself. Rusu et al., (2017) suggested that in order to investigates the UX aspects, usability can be used to measure UX but must be together with specific domain of characteristics of UX and the specific domain of UX should be considered when selecting the evaluation methods. Hence, according to Pucillo & Cascini (2014) the evaluation of complexity user experiences can be measured through evaluative constructs, such as usability, emotion, aesthetics, and pleasure. While, according to literature study. this paper proposed the evaluation of UX aspect should consider of UX element such as usability, value and relevance, accessibility, ease of use, Hedonic and Pragmatic Quality, and Visual attractiveness/ Aesthetic.

6.0 Conclusion

As a conclusion, UX is an extension to the usability concept which is beyond the effectiveness, efficiency and satisfaction. According to ISO 9241-210 standard, User Experience (UX) is something to do with human perception and responses towards the product, system or service when they get anticipated or used it. ISO 9241-210 standard

stated that UX includes all the user emotions, preferences, perception, belief, physical and psychological responses, behaviour, and performance that occurred before, during and after anticipated with the products, system or service (Quiñones et al., 2018). In addition, UX is a consequence of behaviour, attitudes, skills and personality and capable of use towards system performance, presentation functionality, and capabilities of interactive system.

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