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A Proposal: Human Factors Related to the User Acceptance Behavior in Adapting to New Technologies or New User Experience

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A B S T R A C T

We are aware of the tremendous growth of new mobile phones released in the market every year. The increase in the users' needs with respect to the new devices is not to be ignored as well. Each product has so many brands with n-number of models and versions.The way the users choose to buy these products is perplexing. For example,decision made to buy a new mobile or change to new brand or even continuing the same brand is not an easy task. The user acceptance for any new behavior is very complex. This paper explores all the possible human factors connected to either pleasant or unpleasant user experiences. Various researchstudies discovered that loyalty of the users for a particular brand plays an important role for the success of the product. Long-term usage of the product by a user would have a negative impact, as the user is not willing to switch to other brands and this has a positive impact on the companies. User memory, expectations and experiences are closely knit to understand the user acceptance for choosing a product. A positive emotion such as pleasant user experience is significant because users recommend the products to others based on these emotional experiences. Age plays an important role with respect to user experience. Old age users were not enthusiastic in going for a change as they preferred to continue with the same technology. Cultural aspects of users are interesting to know in understanding the product purchases. There was biased information regarding user's visual attractiveness and long-term usage memory. Certain studies explored UX curve and user burden scale that was used to analyze user experiences. It was interesting to know sensory characteristics formed a base for both pleasant and unpleasant user experiences. This research will help companies of mobile devices in identifying the various factors (both positive and negative) related to user experiences and behavior. Future research will be conducted in the areas of short-term user experience and in areas where illiteracy prevail. This study will help the companies to improve their product better based on customer satisfaction.

Keywords:Human Computer Interaction, User Experience, User Withdrawal, Long-Term User Experience, Short-term User Experience

1. Introduction

Experience is always anongoing process, it is never constant as it can change any minute (Nicolas et al., 2011). As far as user experience is concerned interaction is the one relationship that unites the user and the device the user is using. Every person living on this earth is one or the other way continuously interacting with his basic products every day. For example mobile phones, laptop, watches etc. Explaining in simple terms interactions between the user and product are the characteristics of "User Experience". User experience's powerful and quintessential component is product usability (Park et al., 2013). User experience is related to each person's own personal experiences based on the environment, way of living related to that person(Nicolas et al., 2011). User experience highlights on all aspects of product use such as expectations and experiences (Touch et al., 2013). Human factors such as emotions are a major influence on user experiences of the product and the product's success (Kujala & Miron-Shatz, 2013). How the user interactswith these devices lead to these emotional factors. These factors are an important and interesting area because user with negative impact of using a device will be subjected to emotional burden (Suh et al., 2016).

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2. Significance

User experience is a major important factor in forming success for a company to sell their products (Kujala & Miron-Shatz, 2013; Brown et al., 2019). Good user experience forms the crux in making the users loyal to that company's products. Users would in fact go to an extent of recommending the product to their family, friends and relatives. This kind of user behavior is because they are loyal to that brand. This forms an additional benefit in increasing their customers yet keeping their old customers intact.The bond between the user and product develops over a period of time. The role of emotions which include both positive and negative come into limelight, as they have been using this product for prolonged time. Among the pleasant and unpleasant experiences enjoyment is one of the various aspects of user experience (Park et al., 2013). In any industry the main reason for concentrating on user experience is to increase customer satisfaction and loyalty (Kujala et al., 2011; Jonnalagadda et al., 2022).This can be achieved only by providing utility, easy to use product, which provides pleasure to the user while using the product.

3. Problem and Research Questions

Problem Statement

The purpose of this study is to understand and explore the human factors related to the user's acceptance symptoms to adapt to new technologies or new user experience. The new technologies referred here range from mobile phones, smart phones, laptops, and wearable gadgets so on, which are in high demand(Singh et al., 2022; Sprague-Jones et al., 2020). The problem areas explored in this paper are user experience, short- and long-term user experience, human factors related to user experiences, and user interaction with the products.How would a user decide to buy a new one or change to new or even stay with the same brand and version is just perplexed? In this research the main focus is on finding the known and unknown factors of the user's behavior who are currently using the mobile devices. These users either want to switch to new technology or they want to stay with the same one. Users who have never used mobile devices but are willing to buy one(Rodriguez et al., 2012; Sarmiento et al., 2020). Various emotional factors that lead the users in making these decisions are explored as well. We are aware of the tremendous growth of new mobile phones released in the market every year. The increase in the user's needs with respect to the new devices is not to be ignored as well(Kwon et al., 2021). Are the companies releasing new products in the market able to sustain in attracting the customers? Retaining these customers in long run is an important area to be explored(Reddy et al., 2022).

A real time experience in which every person would have encountered in their lifetime of using any product is further explained.For instance, an android mobile device is used for almost seven years. Now because their friends recommend and hype about iPhone they switch to iPhone. As they had used android phone for so long, coping with this new phone is impossible(Reddy et al., 2022b). Due to frustration, they change back to android phone. There could be many emotional factors that could have led this person to take such a decision.For example prolonged use of one product became a habitual behavior for that person. Here frustration is referred to as emotional user burden the user faced.

Research questions

1. Based on what factors (related to users) are mobile devices companies satisfying or attracting new customer? And vice versa
2. What are the trigger points of the user's behavior to adapt to new mobile devices or products or technologies?
3. Has user's habitual behavior of using these devices for many years obliged these users to not change the product they are using?
4. Does comfort zone play a pivotal role for user's adapting and not adapting to new technologies?
5. What is the role of human "memory intrusion" when using these devices?

4. Review of Literature

Human factors

Mental factor is one of the important human factors that forms a relationship in securing the cognizance of an object (Nicolas et al.,2011). Types of interaction such as quality of interaction, physical interaction, and so on also plays a major role in knowing the effect of user experience (Nicolas et al., 2011). The study emphasizes that user circumstances play a major role of user experiences.

User satisfaction, recommendation, and loyalty

User satisfaction and users recommending the product (mobile device) to their friends is based on the improvement of the product's attractiveness (Kujala et al., 2011). In long term user experiences of mobile phones showed competing factors of the users affected, improved and degenerated. Knowing the factors that trigger the user in being loyal and recommending the product plays a pivotal role for the company's benefits.

Based on user's need, fulfillment, emotions, quality, both positive and negative user experiences were reported for smart phones usage (Touch et al, 2013). In many studies conducted many users reported attractiveness to be the main personal factor buy new products mainly mobile phones (Kujala et al., 2011). In contrast another study showed no relationship between product attractiveness and re-buying. As mentioned by the research study user loyalty surfaces to negative aspects of the product.Hence the users still continue to use, buy, or recommend the products to others.

A study revealed about a customer who owned fifteen mobile phones of which only one was from another brand and rest belonged to same brand. In such cases trying to make this user buy a mobile from new brand would be impossible. Users are generally loyal to local brands and their user experiences are based on the brands' previous models as well. Few studies explained how user experiences are affected based on factors such as user's previous experience, characteristics and various stages of changes in their environment (Park et al., 2013). The UX curve helped in capturing the long term user loyalty for a generation of products the user was buying (Kujala et al., 2011).

Emotions and User burden

Based on the scale of users experiencing frustration, emotion is calculated.User burden along with mental, physical, and other factors lead to various user experiences (Suh et al., 2016). Users tend to highly approximate their experiences based on their emotions because human memory is very vague in capturing the exact data of the experience for over a period of time (Kujala & Miron-Shatz, 2015).User burden is based on many basic factors which creates a fright for a common user.For example, customers have purchased a product for the first time based on user reviews or recommendations.Although the cost is way higher, after using it they are not happy and comfortable to use the product. They cannot stop using as they have paid high price to purchase the product which creates an unnecessary user burden to use the product (Suh et al., 2016). Certain studies focused on collecting user experience information based on memory rather than emotions (Kujala & Miron-Shatz 2013). Emotion attached towards a product usually does not form during the initial phases of user interaction rather it accumulates over time.

Long term usage

In order to mesmerize the users to continue using their product for longer period of time, it has become a demanding criteria for designing teams in companies selling electronic products ranging from mobile phones, laptops, wearable gadgets etc. (Karapanos et al., 2010). Long term user experience has a major impact on the users compared to short term experiences. The bond between the product and user eventually grows over time (Kujalaet al., 2011). Exploring about long term experience is very interesting as it portrays about user's evolution about their interaction of the product. They first purchase their general emotion, will be curious, gradually either they are overly attached, or detached as the days passed by. The hedonic aspects of user experience can only be measured when the user is using a product for prolonged duration, due to which a study conducted on users using the product for three to twelve months gave a detailed analysis of long-term user experience. Even though the user struggled to use the product initially, gradually over time they got accustomed to it as they started learning to use the product. User experience ameliorating is directly linked to attractiveness of mobile devices. Researchers mainly used UX curve methodology in studying the user experiences. This allowed the user to provide feedbacks of the products used which in turn will help companies to improve their product's user experience. UX curve study mainly focuses on main factors of user experience such as attractiveness, usage, utility, and ease of use. UX curve method helped in representing important individual experiences that have an impact of user's viewpoint for a product and quality of long-term user experience.

Prolonged use of an application by a user has a completely different impact on the user experience compared to the initial experiences of an application.Yet the researchers conveyed that collecting the accurate information from users using an application for longer period of time is not possible. The reason being user might not remember his complete history of user experience (Novick et al., 2012). Another interesting finding is that long term user experience from users can be gathered as they are using the application for longer time.In contrast long term user experience information cannot be collected for new products because the user has not yet had a prolonged experience.

A fascinating fact which explains the way users prolonged use of the product has a positive impact on ease of use and comfort of the product.However, this has a negative impact on the outer appearance of the product.For example, using the product for so long the exterior will be subjected to wear and tear which is not appealing. In such cases user is forced to buy new product even though he is emotionally attached to previous product (Fenko et al., 2010). The primary intention for using any product becomes the first priority of any user who has been using a device for prolonged time. User expectations progress overtime in customers who are long term users for a particular product (Kujala et al., 2015).

Memory Intrusion

Memory plays a foundation is evaluating long term user experiences which may lead to partisanship (Kujala et al, 2011). While collecting information from user experiences there are chances of getting predilection information because human memory behaves like this naturally when it tries to recall information from past (Kujala et al., 2011). User's try to recollect their user experiences from their memory based on the emotional experiences (Karapanos et al., 2010). The user makes a decision about buying, recommending, continue using the product based on the memory recall of their transient experience of incidents related to a product as a whole (Kujala & Miron-Shatz, 2013).

There is a strong bondage between memory, user expectations and user experience (Kujala & Miron-Shatz, 2015). Memory interpretation is based on initial expectation, if user expectation and user experience is in synchronization then user is satisfied and vice versa.

Culture

Collecting information about user experiences of user from different cultural background is arduous, because each culture has certain set of rules, traditional values, different attitudes etc. (Park et al., 2013). Western culture gives more emphasis on visual mode of a product whereas countries with non-literate societies give more importance to audio mode of a product.Hence the product design in western markets is given the highest concentration (Fenko et al., 2010). Based on specific cultures technologies are selected and included, hence user experiences in few of such area are not given much importance (Karapanos, 2013). In order to attract the customers globally and to balance the user experiences based on cultures.Companies consider cultural issues even before developing a product (Roto et al., 2009). In non-Western cultures users buy the products spontaneously just because they are in higher status of the society. Owning such products is a sense of pride, instantaneous gratification, and self-esteem.It is clear that in such cases, actual user experience with the product is not even considered when such users buy the product (Kacen & Lee, 2002).

Age

Younger generations are more likely to buy new products and would give accurate information about user experience than older individuals. There are many factors such as memory, enthusiasm in learning and using new products (Novick et al., 2012). Older age people give importance to visual communication when interacting with a product. They feel comfortable and happy to communicate with others through video conferencing compared to emailing or texting. Prolonged use of certain functionally of the device forms a habitual bondage between the older people which is very difficult to change (Sayago et al., 2011).

Sensory dominance

Sensory dominance acts as a backbone for a company's product design.Sensory characteristics would interfere with the user even before the user touches the product because user judges the product visually. Next the sensory characteristics would change over time based on user's interaction.

Designing the product keeping all the sensory characteristics is important because the user should not encounter unpleasant sensory characteristic during different stages of interaction. This would lead the user to abandon the product (Fenko et al., 2010).

5. Future Work

There is scope for more research in finding the ways in which companies are marketingtheir product, to collect information regarding user experiences. This area would be very interesting to explore as it would strongly help companies (both already existing and yet to come in market) gather information before designing their products. There are many research studies conducted only on products which are ranking among top five. For example, most of the research conducted is on iPhone from year 2009 till 2016. Everyone would agree that iPhone is the preferred product for most of the users based on various reasons. Is it not important to gather user experiences about other branded mobile devices? Considering only those devices which rise up in the market and ignoring those that drowned in the market is not a good research strategy. The user experiences statistics which are gathered during the research for brands which drowned or sustained in the market would give treasure of information for future mobile brands to thrive in the market. There is tremendous opportunity to deepen the research about user experience in countries where illiteracy is high. For example, Afghanistan, China, Africa etc. In order for the companies to conquer their customers in these regions would be challenging. Conducting short term user experience research will help in learning about the newer generation of user's perceptive of buying new products and switching quickly to new one in a matter of few days. Human computer interaction for users with disabilities.For example, their user experiences with new technologies and changes they would like to see in future technologies is an interesting area.

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