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Design and Development of Self Check: A Mobile Application for Digital Gadgets Addiction and Countermeasures

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Abstract: Digital gadgets bring a lot of convenience to humans. Unfortunately, with the uncontrolled usage of digital gadgets, more individuals are becoming addicted to it. Being digitally addicted will bring a lot of harmful effects to a specific individual, both physically and mentally. The current addiction diagnosis applications are mostly web-based making it difficult for individuals to track their test history. This project aims to assist individuals who suspect themselves of having symptoms that are prone to fall for digital gadgets addiction – suggesting appropriate countermeasures before becoming too late. A mobile-application known as SELF CHECK was developed based on the user requirements. An evaluation was carried out to test the user satisfaction and convenience of usage with the developed mobile application. The findings showed that most of the participants were satisfied with the mobile application. The study contributes to a better understanding of the system requirements and user interface of a mobile application for digital gadget addiction, as well as a model for developers and researchers to create similar applications or improve the existing applications.

Keywords: Digital Gadgets, Digital Addiction, Mobile Application, Countermeasures and Pandemic COVID-19

1. Introduction

As digital gadget usage increases yearly, digital gadget addiction is becoming a problem for some users. Addicts can come from any walk of life, and as a result, they suffer in the most critical aspects of their daily lives, such as school, family, work, and relationships. Based on research report in [1]

shows that 79.5% use their phone as an alarm clock, 87.8% feel uneasy leaving their phone at home, 55.4% use or look at their phone while driving, 75.4% consider themselves addicted to their phones, 65.6% check their phones up to 160 times per day, 57.4% say they use their phone on dates, 64.2% have texted someone in the same room as them, and 60.6% have upgraded their phone in the last year [2]. From the article, we know that most people need their digital gadgets for multipurpose in their lives, and digital gadgets are becoming inseparable for people nowadays.

This issue became worse when we faced the pandemic of Covid-19. Everything has turned from physical to online. More and more people are addicted to digital gadgets but do not realize it. Many people will think that they are not addicted to digital devices, but unfortunately, they are. They start to be unable to moderate or abstain from technology or a. specific digital medium, have a preoccupation with using technological devices, compulsive technological use or experiencing cravings and urges to use digital devices [3]. Although many people habitually use social media, very few are genuinely addicted. Spending time alone with a smart device rather than communicating with family or friends, for example, or attempting to hide or reduce a phone or computer screen when another person enters the room, are all consequences of digital addiction. Individuals will also become defensive when confronted about their online activities. As a result of their isolation or inability to keep a schedule, they will receive low grades or negative evaluations at work.

Therefore, to help individuals suspected of digital addiction, this project proposed developing a mobile application specifically used to measure the level of addiction of a particular individual. It will give some countermeasures to the specific individuals. The mobile application will have been developed to assist an individual who suspects themselves of having symptoms that are prone to fall for digital gadgets addiction to take appropriate countermeasures before becoming too late. Therefore, to achieve the aim, some objectives are needed, which is to enable an individual to conduct a SELF CHECK on their level of digital gadgets addiction and provide recommendations on appropriate countermeasures that could be taken by an individual based on their level of addiction as a way to control their usage behavior.

2. Materials and Methods

In this project, the methodology had been divided into four phases which is: Requirements Gathering, Analysis and Design, Development, Testing and Design. In phase 1 some research about the topic was carried out through literature reading and survey for existing market digital addiction self-test system. Besides that, in this phase, data collection was done to gather the possible questions to be tested in the application, countermeasures, and the scale used in this project. Meanwhile, phase 2 involved the analysis and design whereby we are required to do some analysis and design of the project such as the analysis of the target group, user and the social benefits that can bring to the society and organization. Besides, in order to ease the development of the application we also designed class diagram and activity diagram as a reference in this phase.

This is followed with phase three on development whereby we had been assigned to develop the mobile application. In order to complete development of the mobile application we implemented the waterfall model as a reference for developer to ease the process of development. The Waterfall model is a sequential development process that flows through all project phases, much like a waterfall, with each phase completely wrapping up before moving on to the next. Each phase in this method must be completed one after the other, with each phase completed before proceeding to the next. Finally phase 4 is testing and evaluation whereby we will evaluate the mobile application by the users. In this phase, the developer will conduct an evaluation using the google form to know the user satisfaction towards the developed mobile application. The survey will be conducted by letting the user test the Digital Addiction Mobile Apps first, followed by the evaluation by the google form prepared by the system developer.

In order to complete the evaluation, there are some procedures for conducting the evaluation. The steps are; (1) Recruit the participants from social media, (2) Distribute the Google Form to the Participants, (3) Invite the participants to join the online meeting platform (Google Meet) for the briefing section. The briefing section will bring a message regarding the section's requirement, project aim and objectives of the evaluation, (4) Participants will be given 10 minutes to download the APK file and test the application, (5) Participants will be given instruction to answer the questionnaire. In this step participants will be given 10 minutes and if they have any inquiries may directly ask the host of the meeting, (6) All the participants finish the application evaluation, they will be requested to take a photo with the tested application for documentation.

3. Results and Discussion

An evaluation was conducted with 40 participants consisting of various respondent backgrounds. The participants were recruited through social media such as Facebook, Instagram, Twitter and WhatsApp. We distributed the Google Form to the participants for an application evaluation, and inside the Google Form, we attached the procedure of downloading the application and the questionnaire. Based on the participants demographic, the highest number of participants are in the age group 19-24 with 29 participants and the lowest number of age group is 30-34 and below 18 with 2 participants only. Besides the total participants that we had collected number of male participants is higher than female participants. Male have 55% or 22 participants while female have 18 participants or 45%. We had the highest number from Chinese participants (27 participants) and the lowest number from Indian participants (4 participants). Basically, we have a number of participants of urban area (27 participants) higher than rural area (13 participants). Last but not least, throughout the evaluation conducted the participants we have, we have participants from various education background such as SPM, Diploma/A-level/Matriculation/STPM, Degree, Master and PhD. Most of our participants are from Degree education background with the highest number 26 participants and the lowest is PhD education background with only 1 participant.

Table 1: Analysis Summary

	Strong Disagree	Disagree	Moderate	Agree	Strongly Agree
User Satisfaction					
The interface was attractive	0	0	2	14	24
The font used were clear and suitable	0	0	3	10	27
The color used was attractive enough	0	0	2	14	24
I was able to navigate to any pages without confusion	0	0	6	10	24
The arrangement of the application layout is neat	0	0	3	10	27
Ease of use					
The application was very easy to use	0	0	2	10	28
The application was easy to be learn to use	0	0	2	11	27
The application was easy to do what the user want to do	0	0	4	10	26
The application has a very clear prompts for input	0	0	4	9	27
Usefulness					
This application can help me know my level of addiction	0	0	1	12	27
The countermeasures given in the application are useful to me	0	0	1	19	20
The function in the application are usefully enough	0	0	3	8	29
I did not meet any difficulty while using the application	0	0	5	7	28

The section on user satisfaction covers the aspects of satisfaction, ease of use and usefulness. There are 24 participants strongly agree that the application has a very attractive interface. Besides, we also found out that most of the fonts used were clear and suitable, as 27 people strongly agree with this statement. Besides that, the color used was attractive enough, and the function of the application was usefully enough. Based on the analysis result from **Table 1**, we know that the participants recruited strongly agree that our application is very easy to use because they had voted strongly agree with the element of ease of use.

Four questions were posted on the application's usability; (i) the application was easy to use, (ii) the application was easy to learn, (iii) the application was easy to do what the user wanted to do, and (iv) the application had clear prompts for input. Majority of the participants voted for strongly agree and agree with the four questions asked. With those results, it can be concluded that the application design is very easy-to-use. In the section on usefulness, we aim to know the application's usefulness. All of the elements have a very high vote for strongly agree. In the question, this application can help me know my level of addiction. About 27 participants who strongly agree that the application helps them to know their level of addiction, and only two moderately agree with the statement. Next, the countermeasure given in the application should be reviewed because 20 participants strongly agree, 19 agree and one moderate. In addition, the participants who strongly agreed with questions three and 4 were 29 and 28, which was the highest among the questions. In conclusion, the application gave a very high satisfaction in terms of user satisfaction, application ease of use and application user usefulness.

3. Conclusion

This article has described the design and development of SELF CHECK, a mobile application for digital gadgets addiction & countermeasures. As an overview of the mobile application, this mobile application aims to assist an individual who suspects themselves of having symptoms that are prone to fall for digital gadgets addiction to take appropriate countermeasures before becoming too late. Hence, the individuals can use the application to test their digital gadgets addiction, and the application back end will auto-generate the countermeasures based on the individual's level of addiction. The result will only be classified into two categories which are addicted and not addicted. Different countermeasures will be given to the particular individuals. In the future, if the developer would like to further develop the application, some of the recommendations and future works could be considered the developer, which is the arrangement of the questions answer should be in one row. This is because normally, when people can't make a decision, the first answer would be their preferences to choose. Moreover, some of the suggestions towards the function 'View History' where there should implement some function to sort the data, for example, sort the data through the level of addiction, name, age, gender and etc.

Acknowledgement

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