STRUCTURAL APPROACH TO SMARTPHONE USAGE INTENSITY AND BEHAVIORS

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Abstract

The usage of smartphone phone has grown drastically in the last few years and the way its growing it can be assumed that it will become one of the most used products at mass level. It is noted that there is high concentration of smartphone phone with high penetration of it in some areas of the world. Smartphones are enhanced devices having high end converging features whose interactive features and characteristics promote people to have higher usage, thus there has been little information and empirically evident research in relation to behaviors and their relationship with smartphone usage intensity, therefore this study focuses around to identify which behavior further intensify the smartphone usage.The questionnaire was made on google docs and adminstered online through social media amongst the smartphone users. Sample size of 400 was selected for this study. The developed model was tested through Structural Equation Modeling (SEM) on AMOS. Initially, all the variables went through individual factor loadings and then after it overall model was tested. The final analysis was drawn after model fitting and from the regression weights produced after model run. Out of six behavior types it was found that smartphone usage is further intensified because of habitual behavior along with voluntary behavior.

Keywords: Structural Approach, Smartphone Usage Intensity, Smartphone Usage Behavior, Structural Equation Modeling

INTRODUCTION

The usage of mobile phone has grown drastically in the last few years and the way its growing there is no doubt it will become one of the most used products. It is noted that there is high concentration of mobile phone with high penetration of it in some areas of the world. Out of the entire world population 70 percent of them possess at least one mobile phone. The statistics further say that in United States especially a kid has a mobile phone rather than a book. 73 percent of the kids have books while 85 percent of the kids have a mobile phone (Osman et al., 2012).

Without a doubt, Pakistan is one of the countries with one of the highest consumption of telecommunication. The usage of mobile phone in Pakistan has gained a momentum never experienced before. The intensity of this can be analyzed by knowing that worldwide Pakistan ranks 7th and 2th in Asia in terms of growth of mobile phone in which 67 percent of the Pakistani population posses a mobile and 23 percent posses a smartphone (Kausar et al., 2014). Smartphones are enhanced devices having high end converging features whose interactive features and characteristics promote people to have a higher usage intensity, thus there has been little information and empirically evident researched in relation to behaviors on what is observed and what is in actual regarding the usage of the smartphones (Lee et al., 2014); therefore this study focuses around the smartphone usage behavior in Pakistan. Thus the aim of the this study is to identify which behavior is increasing the intensity of smartphone usage in a non-western

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environment like Pakistan. There are six behaviors upon which smartphone usage study is undertaken which were chosen from a study of cellphone and was reapplied under the context of smartphone. The behaviors taken from that study are habitual, mandatory, dependent, addictive, compulsive, voluntary (Hooper & Zhou, 2007).

LITERATURE OVERVIEW

Product Usage

Usage of product refers to the factors and aspects under which a consumer preferences regarding attributes are impacted and a product under specific use are impacted **(**Green et al., 2005). Usage is defined as all those factors in a time, situation, observation and instance which necessarily don't happen because of a knowledge of personal and stimulus attributes but happens because of a certain behavior (Belk, 1975). Usage is actually influence by customer/user situations such physical surroundings, social surroundings, task definitions, temporal perspectives and antecendent states (Galvao & Sato, 2004).

Behavior

The activity of human that is observable is essentially called behavior and every behavior is actually an act that is based on certain distinctions (Bergner, 2011). Overwhelming evidence shows that behavior is actually determined and resulted because of a reference point (Apesteguia & Ballester, 2009). Thus behavioristic approach to study is basically the examination of the object output and its relationship to the certain input enforced by that output. The output here means any change that is seen or experienced in the surrounding which actually works both ways, as an influencer and as an output (Wiener et al., 1943).

Addictive Behavior

Addictive behavior is a craving, lack of control trigger and a dysfunctional emotional response that causes interpersonal problems and without treatment can cause death before time or cause disability (Medicine, 2011). Behavioral addictions especially non drug addictive behaviors are highly increasing and being documented, which includes activities such as eating, exercising, shopping and gambling. The symptoms that generates this behavior are craving and the inability to control and tolerate the want of something (Olsen, 2011).Being addictive also causes problems in having the ability to use free-will (free choice), as in whether to stop or keep on doing something at "will", which causes loss of control and actually leads to adverse consequences. In short it becomes highly difficult for a person to actually be able to understand and know that there is a behavioral disorder which is not allowing the person to be aware of its own behavior malfunctions and leading to certain aspects from which there can be point of no return - such as impairment of life roles, getting into criminality if taken away the tool that causes addiction, causing emotional trauma and loss of money (Sussman et al., 2011).

Compulsive Behavior

Consumer compulsive behavior is a very crucial area of consumer behavior research and always an interesting aspect to inquire and study. The high importance of compulsive behavior study is that it explains the nature of consumer behavior (Shoham et al.,2015). Compulsive behavior is also a component of obsessive-compulsive disorder (OCD) which is a disabling and chronic condition that affects many people around the globe (Kaur et al., 2023). Compulsive behavior is a growing factor in consumer societies and has been identified as a repititive action that has little or short term rewards plus it causes not to stop at appropriate times due to recurent impulsiveness (López & Villardefrancos,

2014).Compulsivity can also be explained as a leading trait behavior (i.e. impulsive without foresight) which causes to do things that may or may not be fit to the required situation, but still doing it without having any relationship to the overall goal of the work done and doing so can lead to unwanted consequences (Dalley et al., 2011). Compulsive behavior can also be described as a certain kind of tendency that are not a result of conscious effort (innate) and become fixed because of some uncontrollable or unaware stimuli at the time of activity. Therefore, it is also said that compulsive behavior is an activity that makes the person so much engaged into performing that activity that results in insensitivity to the outcome even if there is no overall goal or even if there is no reward (Godier & Park, 2014).

Dependent Behavior

Being determined controlled, influenced by something else or relying on something else and not stopping because of engagement in an activity due to some external reason. Dependent behavior is often understood as addiction however several researches also disagree with it and define it as a social norm (Hooper & Zhou, 2007) Dependency is taken as something normal, often necessary social condition, but conventional approach to measurement of dependency is taken as something individual rather than social in relation to the behavior of it at a particular situation (Fine & Glendinning, 2005). Dependent behavior occurs when you depend over other elements, meaning dependency on others that cause personal distress and functional (Faith, 2009).It is not necessary that dependent behavior seems inappropriate because a person with dependent behavior can look to be a very content and peaceful individual, but can have troublesom issues of having a feeling of getting abondoned by others therefore they usually try to prevent those dependency caused by other elements (Farnsworth & Elwood, 2023). There has been little work done over dependent behavior over object usage.

Habitual Behavior

Habitual behavior is a repeating activity of a person with little importance to the valuable goal or outcome of it, as the behavior is directly under a certain context, like doing the same thing at a particular situation, place, instance, event and location (Wood & Neal, 2009). Habitual behavior research is very necessary because 45 percent of the people do things again and again under a certain context, which means it's a central part of daily life (Wood, 2002) or can also be said that people's daily life has some substantial habitual aspects (Adriaanse et al., 2011).From the psychological perspective habitual behavior is seen negatively as it provides no reasonable mechanism to answer the persistence of a certain behavior under a context. It is to note that habitual behavior is although persistent, repetitive but not all repetitive and persistent behaviors are habitual, since there is a context involved (Kurz et al., 2015). Habitual behavior reflects repetitive cognitions and motivations with some associations. These associations have cues with automatic triggers and are often independent of personal norms and personal intentions (Wood et al., 2005).

Voluntary Behavior (Intentional)

For explanation voluntary behavior can be taken as a wink which is done intentionally in comparison to blink that occurs as a normal mechanism of the body. According to Aristotle voluntary behavior is a self-motion that happens because of purposive combination of aspects therefore it can be said that voluntary behavior is committed because of a purpose and reason at an appropriate time, need or want (Juarrero, 2002). Aristotle further says that voluntary behavior are basically bound actions (done with choice at the

time when they are done) rather than unbound (without a natural choice at the time when they are done) and that is what makes the behavior intentional (decision to do something).Voluntary behavior might be planned and it might not be planned, but it may be well thought even if it was done within a short period of time (Rayfield, 1972). Therefore such a behavior should not be taken under the umbrella of addiction, compulsion or dependent behavior since it is a reasoned behavior caused by a number of accepted motivations, which is taken as a positive thing since it involves intention (Hooper & Zhou, 2007). In other words voluntary behavior is the occurance of a choice that is committed due to a certain reward without any external compulsion (solely done with intrinsic motivation), meaning no interference or enforcement from any external person or medium (Ampt, 2003).

Mandatory Behavior (Compulsory)

Mandatory behavior is a behavior that is required to be performed mainly due to some official requirements or parental pressure which can lead to consequences if not performed (Hooper & Zhou, 2007). Mandatory behavior is a compulsory behavior done because of the external circumstances where the person has no choice, for example the person is moving because he was pushed and enforced. Many times it is done because of some kind of rule or compulsion from the place or situation the person is in. According to Socrates when the agent's soul is not involved and the concept of free is lost, then occurs mandatory behavior (Juarrero, 2002).Mandatory behavior can also be understood by looking at the scenario of students where many attend the schools because of compulsory attendance, where many dropouts remain at school because of compulsory attendance (Angrist et al., 1991). At the same time it is also said that too much compulsion can cause rebellion and can be harmful, therefore mandatory behavior in selective aspects can be constructive but universal compulsion can have consequences that can outgrow its benefits (West, 2003).

Conceptual Framework

Based on the overview of the literature and objectives of the study a conceptual framework is designed in Figure 1. The conceptual framework has a dependent variable (smartphone usage intensity) and independent variables (behavior types) followed by discussions on the relationships that formulated the conceptual framework.

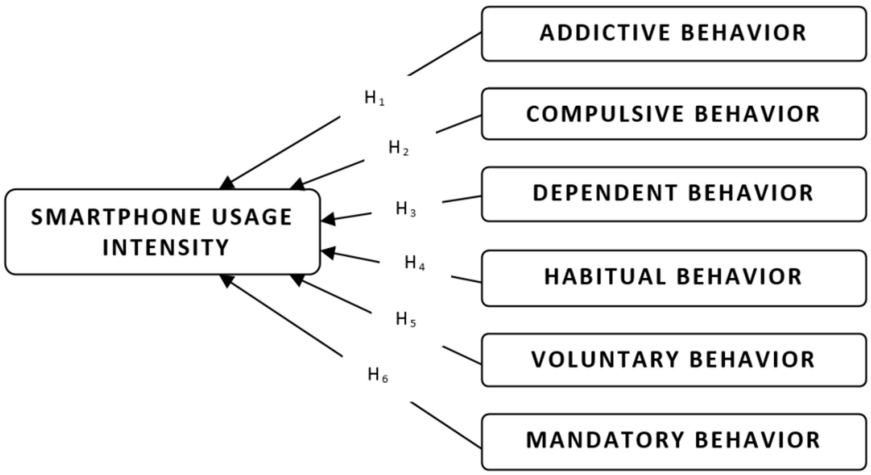

Figure 1: Conceptual Framework

Smartphone Usage Intensity

Smartphones are a high end computing and communication device with stylized interface that have come to use excessively in recent years (Osman et al., 2012). Smartphones have integrated highly into the lives of users which also develops a curiosity to know about the users and their smartphone usage habits and it was predicted that around 2015 the mobile phone (now smartphone) service usage will be equal to the search engine usage on internet (Soikkeli et al., 2013). Mobile phone usage has been studied previously declaring that it enhances self-esteem (Hooper & Zhou, 2007), but smartphone usage intensity has not been studied in terms of behavior influence. It is important to study the cause of smartphone usage intensity because of its ever growing intensive as well as extensive use in terms of interaction that ranges from 10 to 200 times per day (a mean length that falls in the range of 10 to 250 seconds). 93 percent of smartphone usage is done at home and 87 percent of the smartphone usage is on the go, 72 percent of smartphone usage is at work. Despite this there is not much work done that explores the behavior that influences such smartphone usage intensity (Lapointe et al., 2013).

Smartphone Usage Intensity and Addictive Behavior

Before proceeding further it is important to understand that addictive behavior is caused when a habit turns into obligation, and it is found that almost all the entities can turn into addiction (Jones, 2014). The ubitiquous smartphone use is now being described as addictive (Tossell et al., 2015); there it can be claimed that smartphone is also an entity that can turn into addiction. It is observed that people check their smartphones whenever possible, such as while eating, socializing with family, socializing with friends, or whenever possible, many times using it with no purpose and without resisting it (Hooper & Zhou, 2007). A major requirement is that there should be an understanding of how this usage is being affected while being lonely or while using it for the purpose of self-esteem. Studies show that mobile phone has been banned in certain circumstances and instances but still users don't stop themselves from using it, such behaviors were called addiction like behaviors (Takao et al., 2009). Previously mobile phone addiction has been studied in terms of characteristics and experiential factors of the phone only (Park & Lee, 2011), but not from the addictive behavior itself that whether it is increasing the smartphone usage intensity or not. Based on the above discussion and objective of the study following research hypothesis have been formulated;

H1: Smartphone usage intensity is influenced by addictive behavior.

Smartphone Usage Intensity and Compulsive Behavior

The growing smartphone necessity in lives of people has caused side effects along with the obvious benefits. A study has shown that compulsive behavior and technological stress are highly positive along with social anxiety, loss of control and materialism (Lee et al., 2014). Further studies show that the currrent of consumerization of technology, high computation and capabilities of smartphone have caused its use to be more personal, pervasive and compulsive (Bernroider et al., 2014). Because of the high capability of smartphones people have started to use it most of the times, such compulsive behavior may cause a block in human relationships, because compulsiveness might be giving satisfaction to the smartphone users (Kim et al., 2011), for example one of the studies have shown that compulsive cellphone use can cause motor vehicle crash incidents (O'Connor et al., 2014). Similarly it is also said that compulsive use is basically problematic use as its outcomes are mostly negative, such as bullying, risky driving and some health problems. It should also be noted that compulsive use is different from frequency of use, the frequency of use becomes a problem when challenging to use it becomes an issue of defence

behavior for the person and feeling frustrated when the compulsive behavior does not occur (Landman et al., 2015). Based on the above discussion and objective of the study following research hypothesis have been formulated;

H2: Smartphone usage intensity is influenced by compulsive behavior.

Smartphone Usage Intensity and Dependent Behavior

Much research has been conducted on the anxiety part of mobile phone usage but hardly any research has been conducted on the dependency caused by mobile phone usage, even though pre-occupied anxiety caused by non-fulfillment of mobile use habit is one of the factors that cause dependency on mobile phone (Yang & Lay, 2011). According to an interesting research, dependency on mobile phone has been replaced by dependency on time, space and social relations. The same research also finds that 37 percent of the students said that they would have difficulties in living life without cellphone after using it once as they will start depending on it (Gavrilas & Kotsis, 2023). Not only this, researchers have also found that there is a relationship between loneliness and mobile phone dependence and have also claimed that it leads to addiction (Ezoe & Toda, 2013) and sometimes insecurity if there is absence of the cellphone, which can also be a fear of social isolation – a criteria that meets substance abuse and dependency disorder (Taneja, 2014). This happens when people start using mobile phone continuously and if they don't use it they feel disconnected and socially isolated (Hooper & Zhou, 2007), but on the other hand there is also said that smartphone has itself been used as a tool to avoid people when not wanting to induldge with them in a conversation (Nakamura, 2015), therefore it is necessary to find out the dependent behavior in terms of smartphone usage. Based on the above discussion and objective of the study following research hypothesis have been formulated;

H3: Smartphone usage intensity is influenced by dependent behavior.

Smartphone Usage Intensity and Habitual Behavior

As previously discussed in literature overview habitual behavior is what people do again and again under a certain context and turn it into a central part of daily life (Wood, 2002). Similarly smartphone use has become more pervasive because of habitual aspects, this is also called habit forming or checking habits, meaning doing things with the mobile device other than needed that causes an increase in the overall use of the phone. One of the examples of habitual behavior according to literature is that half of the mobile phone owning individuals has the tendency to check their mobile phone at least once an hour (Mutsvairo et al., 2023). The interesting part is that habit is seen from the annoyance perspective rather than addiction perspective when it comes to smartphone usage (Oulasvirta et al ., 2012). Since habits are reasoned actions therefore it is said when voluntary behavior becomes a routine it turns into a habitual behavior (Hooper & Zhou, 2007), for example in countries like Finland and Norway their habitual behavior is not to talk anything until and unless there is something meaningful to share or convey, meaning their habitual behavior is to use the mobile phone whenever they have something meaningful to share (Geser, 2004). It is worth noting that when instrumentality crosses a certain threshold it becomes a "dangerous instrumentality", a doctrine and concept which signifies extraordinary negativity, such as abnormal, bizzare, dangerous by reason and intent, exessive and unusual (Jain, 2014). Based on the above discussion and objective of the study following research hypothesis have been formulated;

H4: Smartphone usage intensity is influenced by habitual behavior.

Smartphone Usage Intensity and Voluntary Behavior

From a theory of planned behavior perspective mobile phone use has involvement of intentions along with involvement of behavior (Walsh & White, 2007), and as discussed in literature voluntary behavior is intentional behavior (Juarrero, 2002). An example of this can be found in a study in which it is told that people intentionally beep (miscall and cut right before the other person picks) so that a message is conveyed to the other person in order to call back or pay attention to something, such as attention seeking (Donner, 2007). This means people use their mobile phone at choice and will, along with a reason to use it when they want to without any obligation (Hooper & Zhou, 2007). According to one study mobile phone have given freedom and independence to people, especially those having dissabilities which empower them to become accessible whenever and wherever they want to (Kane et al., 2009). Similarly other users have enliven their lives by feeling empowered to make choices and have also found a sense of individual freedom by having no constraints in physical and spatial immobility and having social connectedness without travelling or being a a particlar place (Mahmood et al., 2013). As a device mobile phone has provided freedom in the sense of making their own choices in terms of communication, at the same time also blurring the line between public and personal life (Nurullah, 2009). Based on the above discussion and objective of the study following research hypothesis have been formulated;

H5: Smartphone usage intensity is influenced by voluntary behavior.

Smartphone Usage intensity and Mandatory Behavior

Instrumentality, accessibility, mobility and immediacy of the mobile phone have become strong indicators and obligatory reasons for using cellphone and because of this the world has automatically become very fast and using a cellphone has become mandatory due to its instrumental existence (Leung & Wei, 2000). This have caused excessive use of mobile phone amongst modern people which have also made mobile phone a compulsory tool to be kept when being at work or anywhere out of home (Yang & Lay, 2011). Especially in the business world where keeping a mobile phone has become compulsory for job related reasons rather than social reasons, similar case can be found in terms of emergencies where families want their relatives to use the mobile phone as a must, therefore it has now become a mandatory aspect to use a mobile phone in order to keep in touch and updated with the management of the place where one works or with the family when required (Hooper & Zhou, 2007). There is an overwhelming compulsion on smartphone users to get distracted and check their endless stream of messeges and look after the information conveyed through it without missing it (Potts, 2015). Based on the above discussion and objective of the study following research hypothesis have been formulated;

H6: Smartphone usage intensity is influenced by mandatory behavior.

METHODOLOGY

The sample size for this research study is four hundred respondents, this sample size is appropriate for a population of more than two million (Sekaran & Bougie, 2009). Furthermore this sample size is more than enough for SEM (Anderson & Gerbing, 1988). The questionnaire was taken from the study by Hooper and Zhou (2007) and also permission was taken from one of the researcher of the study for the use the questionnaire and scale as per the requirement of the research conducted. Therefore a pilot test was conducted before the main survey in which 15 questionnaires were circulated to check the flow and understanding of questions. The pilot test was performed because of the modification in the items to make it more suitable for the research. The respondents from the pilot test were not part of the main survey. The

response rate for the main survey was 97%. The sampling technique used for this research was convenient sampling to facilitate the researcher (Greener, 2008; Marshall, 1996).

Measures

Addictive Behavior Scale. The scale for addictive behavior was based on six items which was taken from the study of mobile phone by Hooper and Zhou (2007). Permission was taken from the one of the researchers of that study for modification of items and variables as per the requirements for the study to be carried out. The rating of the statements was established on a scale of one (very high disagreement) to seven (very high agreement).

Compulsive Behavior Scale. For compulsive behavior the study of Hooper and Zhou (2007) was used consisting of four items. Permission for the modification of term from mobile phone to smartphone and other aspects, such as item dropping, item modification and addition was taken from one of the researchers of the same study. The scale for compulsive behavior had a range starting from one (very high disagreement) to seven (very high agreement).

Dependent Behavior Scale. The scale of dependent behavior had a range of one to seven in which one is very high disagreement and seven is very high disagreement, and the items for the scale was taken from the study of Hooper and Zhou (2007). Total number of items for dependent behavior scale were increased to nine after taking permission from one of the researcher of the same study.

Habitual Behavior scale. Habitual behavior scale consisted of six items with a range starting from one (very high disagreement) to seven (very high agreement), which was taken from the study of Hooper and Zhou (2007). The items were modified a little as the previous study was based on mobile phone rather than smartphone. The permission was taken from one of the researcher of the study.

Voluntary Behavior scale. In this study the scale for voluntary behavior consisted of seven items with a range starting from one (very high disagreement) to seven (very high agreement), which was taken from the study of Hooper and Zhou (2007). The items were modified as per the requirement of the research.

Mandatory Behavior scale. Similarly like other variables, the scale was taken from the previous study on mobile phones by Hooper and Zhou (2007) that had a range starting from one (very high disagreement) to seven (very high agreement). The items for the mandatory behavior scale were six and were modified as per the requirements of the research.

Smartphone Usage Intensity Scale. The entire scale that ranged from one (very high disagreement) to seven (very high agreement) was developed for the smartphone usage intensity variable since the previous study by Hooper and Zhou (2007) was of different scope and nature. One reason being that the previos study was regarding mobil phone and second reason being that it did not study the impact of behaviors on the intensity of the smartphone usage. The scale was developed by the help of the literature survey based on product usage, time of use, frequency of use, features for use, up to date user. Therefore, as previously mentioned in methodology the entire questionnaire was filtered through a pilot test with 15 respondents, which were not included in the main survey.

Procedure

Questionnaire based on 7-point Likert scale was used for this research. All the respondents filled the questionnaire voluntarily. An allowance was also given to the people for filling the questionnaire. The criteria set by the researcher were that the respondent must be a user of smartphone.

RESULTS

Structural Equation Modeling (SEM) was carried out for this study in two stages (Anderson & Gerbing, 1988). The stage includes the exploratory factor analysis (EFA), detection of outliers, data normality, data validity, confirmatory factor analysis (CFA) and the test of entire SEM model (Hair et al., 2009). All the constructs initially were subjected to CFA. The constructs included smartphone usage intensity, addictive behavior, compulsive behavior, dependent behavior, habitual behavior, voluntary behavior and mandatory behavior.

Bivariate Correlation

Correlation was carried out to check whether all the variables were separate and distinct concepts or not. The summarized results of the bivariate analysis are present in Table 1 which shows that none of the inter-item correlation is greater than 0.90 (Kline, 2005) thus indicating that all the variables used in this research study are separate and distinct and Multi-collinearity issues do not exist.

Table 1
Correlation

Constructs	Habitual	Usage	Mandatory	Dependent	Compulsive	Addictive	Voluntary
Habitual	1.00						
Usage	0.34	1.00					
Mandatory	0.23	0.29	1.00				
Dependent	0.54	0.32	0.39	1.00			
Compulsive	0.53	0.2	0.32	0.52	1.00		
Addictive	0.63	0.25	0.32	0.6	0.75	1.00	
Voluntary	0.30	0.36	0.52	0.57	0.46	0.42	1.00

Validity of the Constructs

Convergent Validity

Factor loadings are at least 0.40 and indexes for goodness of fit are also within the prescribed limit, meaning that the convergent validity requirements have been met (Hsieh & Hiang, 2004; Shammout, 2007).

Discriminant Validity

Discriminant validity tells the uniqueness of the variables (Dirgiatmo, 2023). Discriminant validity was established through correlation of the constructs on one to one basis. The results of discriminant validity present in Table 2 show that the highest correlations were between addictive behavior and compulsive behavior. Furthermore, the pair of the correlation is within the prescribed limit (Leech et al., 2023).

Table 2
Discriminant validity

Constructs	Habitual	Usage	Mandatory	Dependent	Compulsive	Addictive	Voluntary
Habitual	1.47						
Usage	0.12	1.06					
Mandatory	0.05	0.08	1.19				
Dependent	0.29	0.10	0.15	1.34			
Compulsive	0.28	0.04	0.10	0.27	1.45		
Addictive	0.40	0.06	0.10	0.36	0.56	1.52	

Voluntary	0.09	0.13	0.27	0.32	0.21	0.18	1.07

Confirmatory Factor Analysis (CFA)

One of the most important accepted test for measuring the factors and items/indicators is confirmatory factor analysis, CFA (Hair et al., 2009). The results of the confirmatory factor analysis (CFA) for seven constructs are presented in Table 3.

Table 3

Confirmatory Factor Analysis

Constructs	χ^2	χ^2/df	DOF(p)	CFI	GFI	AGFI	IFI	RMSEA (A)	PCLOSE
Habitual	7.152	1.788	4(0.128)	0.997	0.993	0.974	0.997	0.043	0.517
Usage	1.890	1.890	1(0.169)	0.998	0.998	0.978	0.998	0.046	0.374
Mandatory	3.396	1.698	2(0.183)	0.995	0.996	0.980	0.995	0.040	0.478
Dependent	7.039	3.519	2(0.030)	0.994	0.992	0.960	0.994	0.077	0.176
Compulsive	9.009	4.505	2(0.011)	0.983	0.989	0.946	0.983	0.091	0.097
Addictive	2.226	1.113	2(0.329)	1.000	0.997	0.987	1.000	0.016	0.634
Voluntary	1.752	0.876	2(0.416)	1.000	0.998	0.990	1.001	0.000	0.706
Criteria	Low	< 5.0	n/a	> 0.95	> 0.9	> 0.50	> 0.95	< 0.05	>0.50

Note. GFI = Goodness of Fit Index; AGFI = Adjusted of Good Fit Index; CFI = Comparative Fit Index; IFI= Incremental Fixed Index; RMSEA = Root Mean Square Error of Approximation. χ^2 should be low. χ^2/df < 5.0. GFA > .90. AGFI > .90. CFI > .90.

All the Fit indexes for each of the exogenous model are within/close to the prescribed limit (See Table 3). Compulsive behavior however is dropped for the overall model testing because of a very low fit in terms of RMSEA=0.091>0.50, not meeting the criteria and also PCLOSE=0.097<0.50, not meeting the criteria. However, the index of PNFI is lower than the minimum criteria of 0.50. Since the rest of the indices were within the prescribed limit and two stage SEM analyses is being carried therefore it was assumed that it will cross the prescribed at the final stage of testing the overall model (& (Anderson & Gerbing, 1988) which it has but after dropping of one variable that is compulsive behavior as it improved the PNFI, which supported our decision of dropping it after individual factor loading which was not good. PNFI at the final stage is PNFI= 0.734>0.50 (refer to the overall results in table 4 and Figure 2).

Overall Structural Equation Model (SEM)

After checking individual factor loading of exogenous models, the model of compulsive behavior was dropped for the overall model run, as it did not fit the required indices. The five exogenous models which include addictive behavior, dependent behavior, voluntary behavior, habitual behavior, mandatory behavior and one exogenous model which is smartphone usage intensity are shown in Table 4, following with the diagrammatic representation of the SEM model in Figure 2 in a comprised form which has CFA results:

Table 4

Overall Model Fit

	χ^2	χ^2/df	DOF(p)	CFI	GFI	AGFI	IFI	RMSEA (A)	PCLOSE
Overall	99.32	1.602	62(0.002)	0.979	0.969	0.947	0.980	0.038	0.936
Criteria	Low	< 5.0	n/a	> 0.95	> 0.9	> 0.50	> 0.95	< 0.05	>0.50

Note. GFI = Goodness of Fit Index; AGFI = Adjusted of Good Fit Index; CFI = Comparative Fit Index; IFI= Incremental Fixed Index; RMSEA = Root Mean Square Error of Approximation. χ^2 should be low. $\chi^2/df < 5.0$. GFA > .90. AGFI > .90. CFI > .90.

The overall SEM model comprise of five exogenous models addictive behavior, dependent behavior, habitual behavior, voluntary behavior, mandatory behavior and one endogenous model smartphone usage intensity. The CFA result of each exogenous model has been shown in earlier section, the overall final model is depicted in Figure 2 with results in table 4. The CMIN/df (Relative χ 2 /df) was 1.602< 5, which is a good fit. The Root Mean Square Error of Approximation (RMSEA) = 0.038 < 0.05 and PCLOSE=0.936>0.50 which meets absolute fit measure criteria. The Comparative Fit Index (CFI) = 0.979> 0.90, Incremental fixed index (IFI) = 0.98>0.95 and Goodness of Fit Index (GFI) = 0.969 > 0.900 meet Relative Fit Measures. Parsimony Normed Fit Index (PNFI) = 0.645>0.50 meets the criteria too. Thus the CFA results confirm that the overall hypothesized model is a good fit.

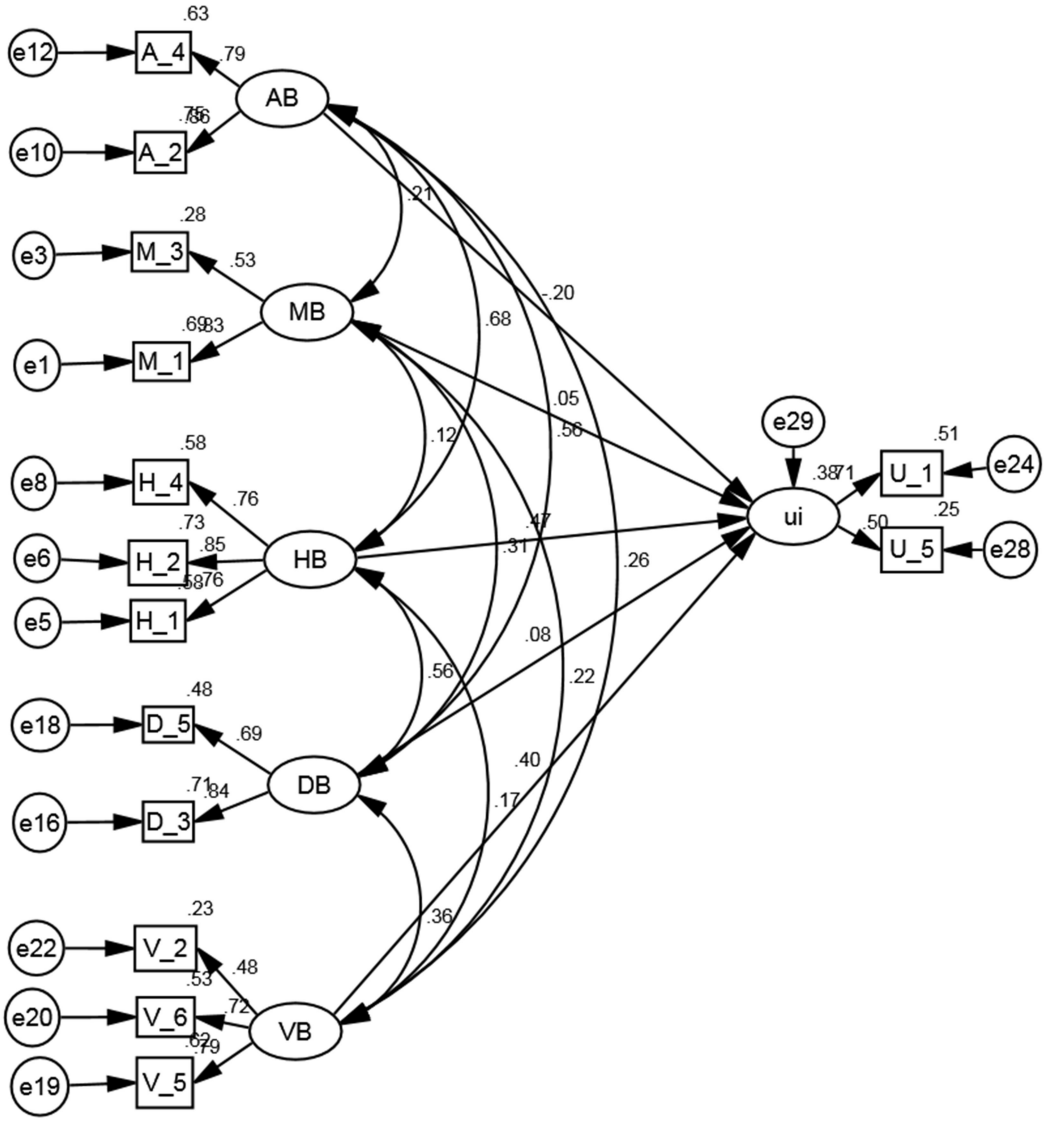

Figure 2: SEM Model

DISCUSSION AND CONCLUSION

The output of the SEM under the context of regression weight is depicted in a summarized manner in table 5.

Table 5
SEM Output

Variables	Relationship		SRW	SE	CR	P
Addictive	→	UI	-0.199	.068	-1.837	.066
Mandatory	→	UI	0.049	.050	.636	.525
Habitual	→	UI	0.471	.079	4.233	.000
Dependent	→	UI	0.078	.000	.000	.000
Voluntary	→	UI	0.397	.083	4.844	.000

Table 5 shows that Habitual Behavior (SRW=0.471, P=0.00) is the strongest predictor for the intensified smartphone usage, followed by Voluntary behavior (SRW=0.397, P=0.00) and then Dependent Behavior (SRW=0.078, P=0.00). While the relationship of Addictive behavior (SRW=-0.199, P=0.066) and Mandatory behavior (SRW=0.049, P=0.525) with Smartphone Usage intensity was rejected. The hypothesized results show that the findings of the relationship of Habitual Behavior (SRW=0.47, P=0.00), Voluntary Behavior (SRW=0.39, P=0.00) and Dependent Behavior (SRW=0.078, P=0.00) with Smartphone Usage Intensity are consistent with the earlier literature while on the other hand the relationship of two variables, Addictive behavior (SRW=-0.199, P=0.066) and Mandatory behavior (SRW=0.049, P=0.525), with smartphone usage intensity were found inconsistent with the literature. Previously this study was conducted merely on the behaviors exhibited after the usage of mobile phone (Hooper & Zhou, 2007), but hardly any research can be found on which behavior further intensifies the smartphone usage. According to the findings there is significant relationship of certain behaviors in intensifying the usage of the smartphone among users. However the findings give a different and interesting perspective, it suggests that smartphone usage gets more intensified if the smartphone users are habitual, but it can also be interpreted that it is because of their voluntary behavior of the smartphone, which is the second leading factor in intensifying the smartphone usage.

According to the findings it can now be said in correspondence to the previous literature that smartphone usage is intensified by habitual behavior because it makes people use it repetitively under some given situational context which eventually turns out to be a major part of their life (Wood ,2002), and when it turns out to be a major part of life, then it means the person becomes dependent upon it, which also according to our study is found to be significant (SRW=0.078, P=0.00) and consistent with the literature which claims that dependency on mobile phone has replaced the dependency on time, space and social relations and that once people start using it they will become dependent on it (Turkle, 2023). Therefore it verifies to the relationship we discussed in our hypothesis before, that the smartphone use has become pervasive because of habitual behavior as it increases the overall use of the smartphone. But since according to the results the relationship of addictive behavior in intensifying the smartphone usage is not accepted (SRW=-0.199, P=0.066), then it can be said that smartphone usage behavior is not yet falling under the domain of addiction and still relies on voluntary behavior, which according to our study is found to be significant with a good impact (SRW=0.397, P=0.00). This further means that smartphone usage is intensified through reasoned actions, and the reason for this statement is supported through the literature which says that when the voluntary behavior becomes routine it turns into a habitual behavior (Hooper & Zhou, 2007). And by no means habitual behavior can be taken as negative, for example for

example in countries like Finland and Norway their habitual behavior is not to talk anything until and unless there is something meaningful to share or convey, meaning their habitual behavior is to use the mobile phone whenever they have something meaningful to share (Geser, 2004).With the discussions made it can be concluded especially with the support of our findings that habitual behavior (SRW=0.471, P=0.00) is the major factor in intensifying smartphone usage which according to our study is backed by voluntary behavior (SRW=0.397, P=0.00).The justification is found in the previous studies in which habitual behavior is considered a reasoned action done on routine. Eventually it makes the use of smartphone grow further because when something because habitual, the person also becomes dependent upon it, which is found significant in our study as well (SRW=0.078, P=0.00). It's the integration of the three major behaviors, habitual, voluntary and dependent behavior which intensifies the smartphone usage.

Implications and Future Research

The implications for marketers are to work on the features that lead to habitual behavior and work to keep the intensity of smartphone usage limited to voluntary behavior. It is worth noting that there is a very thin line between habitual and addictive behavior, even though our findings have rejected the relationship of smartphone usage and addictive behavior, but still marketers need to keep in view that the usage of smartphone should only be surrounded more with voluntary behaviors, as it allows the customer to be more rational while using the smartphone. Marketers would think that habitual behavior would increase their sales, but they should also note that rationality starts decreasing once habitual behavior crosses threshold (dangerous instrumentality), also it decrease the customer use of smartphone to certain features only, thus ignoring other features, as he does not find those particular features worthy enough to satisfy the habitual desires.

The research was conducted with certain categories of behaviors mentioned in the previous study and was focused towards a certain type of users. The future study can expand the demographics with addition of more constructs (categories). Also the smartphone usage intensity was only measured from the perspective of behaviors; the future studies can be conducted upon how certain features intensify the usage of smartphone. There is one more factor that is left to be studied in this research is the application and analysis of "dangerous instrumentality", which was mentioned only once under the context of behaviors but was not measured because it did not cater the scope of the study. Even though, dangerous instrumentality is a major link between marketers, society and customers. "Dangerous instrumentality", is a doctrine and concept which signifies extraordinary negativity, such as abnormal, bizzare, dangerous by reason and intent, exessive and unusual (Jain, 2014) and also signifies a crossing of threshold. Thus not taking care of it can not only have personal consequences, but also related to environment and society.

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