



Meta Analysis of Smartphone Usage for Gratifications

Obtained (2016-2019)

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Abstract

Smartphone is mostly used medium today in all age groups. Current study contributes by analyzing the research methodology in context of smartphone usage studies. The population of the study is the “Uses and Gratifications” researches related to smartphone usage published between 2016 and 2019. The research articles were selected by the key words of “smartphone AND gratifications” on Google Scholar and 25 articles were selected for meta-analysis to explore the objectives of approach to uses and gratifications theory, the sampling procedures, the data collection and analyses in the previous studies. It is found that smartphone is a multidimensional construct and scholars have researched them by using the holistic and the reductionist approaches. 64% studies have been found to utilize the quantitative approaches. Both mediated and offline methods are used for data collection in the previous studies. Most of the studies have used survey method. It is recommended to use the validated scales in the context of Pakistani culture.

Keyword: *Smartphone usage, uses and gratifications theory, meta-analysis, methodology*

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Introduction

In the past few decades, the growing use of smartphones, enabled with multiple features and functions inherited from the previous technologies, have primarily paved the manner in which audience communicate and keep their relationships in the modern world. The smartphone ownership is growing rapidly around the world, but not equally, because in the emerging economies, the technology use is still common among youth and those who are highly qualified (Silver, 2019).

However, according to Pakistan Telecommunication Authority; total broadband, 3G, 4G and landline internet users in Pakistan are seventy million; out of these seventy million, sixty seven million are 3G and 4G subscribers and cellular subscribers in Pakistan have reached one hundred and sixty one million ("Total broadband users in Pakistan hit 70 million," 2019). The mobile social media users in Pakistan were found to be grown by 4 million ("Active Social Media Users in Pakistan grow by 5.7%: Report," 2019).

In fact, smartphone have become ubiquitous and are owned by all. The "generation Y's" tendency to use "mobile Internet services" when having a personal computer available nearby was found to be increased the longer they possess the smartphone (Gafni & Geri, 2013). The online dating applications are also becoming popular among college goers and young and playfulness in found to be the most impactful factor and trust did not have any effect towards utilizing these dating applications (Chakraborty, 2019). "The user value elements for smartphone were found to be convenience, pleasure, money, friendship,

beauty, curiosity, relaxation, comfort, tenderness, privacy , confidence, kinship, happiness, reminiscence, excitement, cleanness, competence, accomplishment, love, sensitivity, cheer, altruism, inner-harmony, trust, freedom, creativity and independence but the former four were found to be the most prominent” (Park & Han, 2013). This means that youth find it convenient to use smartphone. They use it for pleasure seeking and earning money. In addition to this, they use it for friendship seeking.

The contemporary era of smartphones is the one in which “smartphones and social media are enabling the continuous stream of social contact online with the changes in sociality to pervasive and perpetual mediated presence of friends” (Thulin, Vilhelmson, & Schwanen, 2019). The smartphone is changing its character because of the different applications therefore the concept and measures of smartphone require fresh insights. In this capacity, the goals of the study are to analyze the:

- Objectives in the previous researches related to gratifications of smart phone
- Approach to uses and gratifications being used in context of smartphone usage
- Type of research work (e.g. conceptual, method based, meta-analysis)
- Methodological technique (e.g. quantitative, qualitative or mixed methods)
- Selection of population and sample criteria in these studies

- Sampling technique being utilized in the previous research related to smart phone usage
- The data collection methods in the selected studies related to smart phone use
- Statistical techniques being utilized
- The key findings in the previous literature

Theoretical Framework

Uses and Gratifications Theory is being utilized for the synthesis of results. The uses and gratifications approach explains “the way in which individuals use communications, among other resources in their environment, to satisfy their needs and to achieve their goals, and to do so by simply asking them” (Katz, Blumler, & Gurevitch, 1973). The smartphone is one medium which can be used to people for different purposes. It is therefore aimed to include the “Uses and Gratifications Theory” for the analysis of data.

People use smartphones to achieve certain goals and at other times they use them for passing time with the wide variety of functions by finding many applications available on this innovative device (Hiniker, Patel, Kohno, & Kientz, 2016). The respondents were found to be using social networking applications with the help of smartphone (Malik & Shahzad, 2016). The competition, self-monitoring, informational and emotional support were found to be the gratifications for exercise application with the help of smartphone (Fuller, 2016). In another study, consumers were found to be “most tolerant of in-app advertising when it is encountered in apps used or assistance and informational purposes” (Logan, 2016).

The passing time and affection were found to be “predictive constructs for predicting WeChat usage behaviors” (Pang, 2016). The five gratifications of “recordability, networkability, credibility, comprehensibility, and trendiness had significantly predicted user intention to continue using diet/fitness apps” (Lee & Cho, 2016). The cognition and interaction related applications were found to be the primary characteristics of smart phone usage (Ariel, Elishar-Malka, Avidar, & Levy, 2017). The positive relationship was found between a user's smartphone checking habits and exhibitionism (Reid & Thomas, 2017). “The number of mobile communication-related studies have increased over the time, most studies were found to be used the quantitative methods, theories of theoretical models were not frequently used in mobile communication research” (Kim, Kim, Kim, & Wang, 2017).

The Whats App was found to be utilized for the social cognitive needs following with cognitive needs (Khan, 2017). “The app Runtastic was primarily being used for achieving goals and to improve enjoyment or physical activity” (Klenk, Reifegerste, & Renatus, 2017). The highest mean scores in context of smartphone usage were found to be positive anticipation, process use and the social use (Elhai, Hall, Levine, & Dvorak, 2017). All of the respondents were found to be perceiving smartphone “as the most useful communication device as a mean to contact their friends and families” (Ahad & Anshari, 2017). The motivation for use (habitual use to pass time) and two type of use (entertainment and passive social media) were associated with a lower sense of meaningfulness (Lukoff, Yu, Kientz, & Hiniker,

2018). The internet use is being reported to be used with the help of smartphone for news updates instead of accessing radio, television or newspaper directly (Mahmood, Farooq, & Shahzad, 2018). The holistic perspective was being utilized in the previous research for explaining the most common uses of smartpone for social interactions with close friends, including social media platforms such as Facebook and WhatsApp (Chan, 2018). "Using a mobile phone for sociability purposes was associated with decreased loneliness" (Wang, Matz-Costa, Miller, Carr, & Kohlbacher, 2018).

In context of smart-phone based applications usage, the value-oriented individuals evaluated the system more positively and were more willing to participate in the medical volunteer activities (Horstmann, Winter, Rösner, & Krämer, 2018). The factor of playfulness was found to be the most influential factor for using the dating applications with the help of smartphone (Chakraborty, 2019). The social media applications were found to be mostly used with the help of smartphone (Galal, El-Din, & Al-Azrak, 2019). "The five main motivational categories of knowledge acquisition and learning; expression of self and others; interaction, engagement and enjoyment; convenience; and the annoyance were found in context of smartphone use" (Florenthal, 2019).

Methodology

The population for the study is the articles with the words uses and gratification (motives) and smartphone (N=25). By using sampling technique the studies being published between 2016 and 2019 are selected by the key words of "smartphone AND

gratifications” on Google Scholar by customizing the search between 2016-2019. The unit of analysis is the whole article. The variables for the study are, objectives of the study, approach to Uses and Gratifications theory (UGT), methodological approach, population and sample, sampling technique, data collection method, statistical technique, key findings. The study utilizes the method of meta-analysis. The data is presented in the form of table for the accuracy of results. By using the quantitative approach, the frequencies are utilized for the analysis.

Results and Discussion

Table 01: Meta Analysis of Smartphone Usage for Gratifications Obtained (N=25)

Study	Objectives	Approach to UGT	Methodological Approach	Population and Sample	Sampling Technique	Data Collection Method	Statistical tests	Key Findings
(Hiniker et al., 2016)	“Exploration of active use of smartphone application through experience of individuals.”	Instrumental (to achieve a specific goal) and ritualistic use of smartphone (To browse, explore or pass the time)	Quantitative	43 Android smartphone users over the age of 18 with mean age of 35	Experience	Google Analytics Events	Exploratory with frequencies, percent and Chi-square test of independence	“The smartphone applications like browsing, games and social media are being utilized for ritualistic purposes.”
(Mistar & Embi, 2016)	“The use of whatsapp app as a learning tool and how it could help the	Attitude, usefulness and behavioral intention towards smartp	Quantitative	200 Malaysian students	Not mentioned	Offline survey	Descriptive	“The use of Whats App is significant in helping the students learn

	student s to enhance their language learning.”	hone usage						g the language better and enhancing their proficiency in using the English language.”
(Malik & Shahza d, 2016)	“The usage patterns of smartphone like frequency of use, features / application and the motive of social relations.”	Mentioned but not clearly linked to variables	Quantitative	800 university students at BA/BS and Master Level	Cluster and purposive	Offline Survey	Exploratory with percentage and Chi-square	“The use of social networking applications like WhatsApp and Facebook and use of smartphone for the social interaction motives.”
(Fuller, 2016)	“The motives for the use of exercise applications with the help of smartphone.”	emotional social support / informational social support / peers goal achievement, competition VG, competition, self-monitoring	Quantitative	393 smartphone users with an average age of 19 who had used fitness applications	Convenience and purposive	Offline survey	Confirmatory factor analysis with AMOS 22	“The goal of personal achievement was prominent.”
(Logan, 2016)	“Tolerance for smartphone applications in	Explored the use of smartphone applications	Triangulation	25 students between the ages of	Sampling technique not discussed	Qualitative focus group and quantitative	Confirmatory factor analysis with the help	“The consumers are most tolerant to in-

	context of advertising.”	ions for the gratifications of connectedness, relationship strengthening, self-esteem, escape/boredom relief and mood evaluation.		18 and 24 for focus group		ative survey	of AMOS 21	app advertising when it is encountered in apps used for assistance and informational purposes.”
Pang (2016)	“Why and how young adults adopt WeChat mobile app in China?”	Pass time, affection, sociability, fashion	Quantitative	170 young adults in China between the ages of 18 and 30	Convenience and snowball	Online survey	Confirmatory factor analysis, least square regression analyses and discriminant analysis	“Passtime and affection as predictors of We chat usage behaviors.”
(Lee & Cho, 2016)	“How the gratifications obtained from the use of diet and fitness apps may motivate users to continue their use of these apps?”	Recordability, networkability, credibility of information, accuracy of information, comprehensibility of information, entertainment, trends	Quantitative	142 emerging adults with an average age of 23	Purposive sampling method	Online survey	Hierarchical analysis	“The recordability, networkability, credibility, comprehensibility, and trends significantly predicted user intention to continue using diet/fitness apps.”
Ariel et al., (2017)	“Smart phone usage among	Cognitive, affective,	Triangulation	550 young Israeli Adults	Not mentioned	Online survey and offline	Confirmatory factor analysis	“Cognition and interaction-

	young adults.”	personal, integrative, social integrative and diversion		aged 21-31 and 60 undergraduate students		intensive interviews in office and local cafes	t test, Pearson correlations, linear regressions	related applications were found to be primarily characteristics of smartphone usage.”
Reid & Thomas (2017)	“Daily smartphone usage and checking habits of undergraduate students.”	cognitive, hedonistic, integrative, social integrative, mobile convenience	Triangulation	43 undergraduate students aged 18-30	Not mentioned	Smartphone data tracking Online survey and interview	t-tests, Pearson’s correlations	“Smartphone usage for Social integrative and convenience related gratification.”
(Kim et al., 2017)	“The trends and patterns of mobile communication research across 10 communication journals between 1999 and 2014.”	Specific purposes of mobile use, social or political issues, individuals’ everyday life, health related issues, and other.	Quantitative	131 research articles related to mobile communication from 1999 to 2014	Not mentioned	Online search of articles through meta-analysis	Descriptive statistics of frequency and percentage; Chi-square test of independence	“The scholarly attention to multidimensional mobile attributes (i.e. SNSs, entertainment, news/information seeking, the Internet, camera, email, and other mobile applications) has increased from 2008 to 2014.”

(Klenk et al., 2017)	“To identify gender-specific gratifications and determinants of fitness app usage in combination with fitness-related Facebook groups.”	Enjoyment, goals, comparison, companionship,	Triangulation	171 Runtastic app users aged 17- 66 and 31 mobile experience sample	Snowball sampling and mobile experience sampling methods	Facebook survey	Multiple regressions	“The mobile app Runtastic was primarily used for achieving goals and to improve enjoyment for physical activity.”
(Khan, 2017)	“The gratifications through Whats' App application.”	Cognitive needs, affective needs and tension release d needs	Quantitative	400 undergradu ate and graduat e student s univers ity student s in Pakista n	Purposive sampling	Offline survey	Descriptive statistics of frequency and percent age	“University student s used Whats' App to gratify their social cognitive needs.”
(Elhai et al., 2017)	“To underst and the role of content consumption versus social smartp hone use in relation to specific proble matic smartp hone behaviors..”	Process (news consumption, entertain ment) and social (e.g., communication , social network ing)	Quantitative	309 participants with average age of 33 years	Not mentioned	Online survey (Psych Data web survey)	Bivariate correlation, Regression analyse s	“Positive anticipation proble m behaviors were related to process and social usage.”
(Ahad & Anshari, 2017)	“The extent to which	Uses and Gratifications	Qualitative	143 Bruneni an Youth	Not mentioned	Focus group and intensiv	Interpretive constructionist	“To important factors

	smart phones were used and their implications for youth in a society that is bounded within the Malay Islamic Monarchy concept	but not operationalized at the beginning of the study		aged 13-19			interview		for smart phone ownership among youth include safety and emergency purposes and communication with friends and family.
(Lukoff et al., 2018)	"Why is that certain smart phone use feels so meaningless?"	U &G motivations: Instrumental (To achieve a specific goal) and habitual (To browse, explore or pass time); U&G types (productivity, information, communication, entertainment, social media, not sure.	Triangulation	45 American adults aged 18-50 with average age of 28	Experience sampling method	Online Survey and interview	Descriptive with frequency and percentage and linear regressions	"One motivation of use (habitual use to pass time) and two types of use (entertainment and passive social media) were associated with a lower sense of meaningfulness."	
(Reid, 2018)	Approaches to U&G	Process and social	-	-	-	-	-	-	
(Mahmood et	"The smart phone	Internet, radio, newspaper	Quantitative	100 college	Cluster sampling	Offline survey	Chi-square	"The significant	

al., 2018)	usage and its impact on the traditional media."	per use with the help of smartphone		students	technique			relationship of gender and smartphone use instead of using traditional media
(Chan, 2018)	"The relationships among different smartphone uses (i.e. voice, email, Facebook, WhatsApp), perceived relationship quality and subjective well-being (SWB)."	Communication (email, mobile voice, mobile Facebook, Whhats App and SMS) and Network Composition (number of close friends, number of Facebook Friends, Whats App groups)	Quantitative	925 local Cantonese speaking aged 18-70	Random sampling technique with most recent birthday sampling technique	Computer assisted telephone interviewing	ANOVA tests	Whats app was the most frequent form of communication for the 18-34 and 35-54 cohorts, even exceeding Face to Face and second most popular channel for the 55-70 plus cohort."
(Wang et al., 2018)	"If uses and gratifications of mobile phone are associated with loneliness and whether there is a mediation effect	Pass time, sociability, reassurance and instrumentality	Quantitative	1318 mobile phone users of middle age (40-64)and older adults (older than 65)	Probability sampling	Mailed survey	Ordinary least square regressions and mediation analysis	"Using mobile phone for sociability purposes was associated with increased loneliness."

	through face-to-face social interaction."							
(Avidar, Ariel, & Elishar-Malka, 2018)	"The role of Whats App in the lives of its users during Operation Protective Edge, primarily with regard to the emergence of its most unexpected function as a source of news consumption and dissemination."	News consumption	Quantitative	500 Israeli smartphone users aged 16-75	Not mentioned	Offline Survey	Descriptive and correlations	"Young people had used Whats' App as a leading source of news consumption and dissemination during wartime, rendering it a substitute for other, more traditional news media, while their older counterparts considered the application to be a complementary news platform only."
(Horstmann et al., 2018)	"To examine prerequisites for the use of a smartphone-based application	Volunteering (undertaking, enhancement, protective, social, career)	Quantitative	128 participants with average age of 27	Not mentioned	Online survey	Correlations and regressions	"The value-oriented individuals evaluated the system more positive

		ion by medical ly trained volunte ers."						ly and were more willing to particip ate. Career-orient ed motivat ion and technic al expertis e had a particul ar influen ce."
(Chakraborty, 2019)	"The factors influencing the use of online dating apps."	Perceived playfulness, trust, perceived delight attitude, word-of-mouth	Quantitative	296 college goers and young professionals aged 18-30	Simple random sampling	Offline survey	Multiple regressions	"Playfulness was found to be the most prominent factor."
(Galal et al., 2019)	"The motives of the Egyptians for using the news Appson smartph ones to access news, as well as their reading habits and their preferred type of news."	Behavioral, cognitive and emotional effects	Quantitative	416 Egyptians aged 18-50 years	Convenience sampling	Offline survey	Descriptive statistics	"The ease of news and the ability to follow news anywhere were the main reasons among the respondents for using their smartph ones in followi ng the news through news apps."

(Florenthal, 2019)	"The students' motivation to use a mobile polling application in the classroom."	Not defined at the start of the study	Qualitative	39 students with an average age of 23	Not defined	Online Survey	Thematic analysis	"Main motivational categories were found: (a) knowledge acquisition and learning; (b) expression of self and others; (c) interaction, engagement and enjoyment; (d) convenience; and (e) annoyance."
(Elishar-Malka, Ariel, & Avidar, 2019)	"The millennials' perceptions of smartphone usages, as well as their personal experiences with smartphones and the role of smartphones in their lives."	Not defined at the start of the study	Qualitative	60 undergraduate students born between 1981 and 2000	Not defined	Intensive interviews	Grounded Theory and thematic analysis	"The smartphones were found to be an indispensable medium among young adults, used due to practicality, as well as to emotional reasons; inner as well as external impulses."

The current study finds that the research related to the uses and gratifications of smartphone is focusing not only on the medium of smartphone but it is also focusing on smartphone usage in holistic and reductionist frameworks. The holistic studies focus on the whole smartphone usage and its applications and use the descriptive statistics. However, the reductionist approached focus only on the one aspect of smartphone use like focus on the specific applications life health fitness applications or dating applications. In the previous research (Kim et al., 2017) most of the studies were found to explore and explain the “utilization and users’ patterns of mobile communication, the influence of mobile-media on everyday-life; and it was found in the previous research that majority of studies in the past had utilized quantitative methods such as survey; and the theories as well as the theoretical models were not frequently used in mobile communication research.” The current research shares same findings with this previous research by Kim et al. (2017). It is evident that the studies now are using both the quantitative and qualitative methods with the help of google analytics or by using the data of mobile phone with the help of applications available online and by taking the consent of users which is a valid method when compared with the online or offline surveys. But such methodology is still rare all around the globe and still the survey method with the quantitative approach is considered by the scholars. Better and improved measures are required for smartphone usage by using the reductionist approaches by focusing on the specific applications of smartphone usage with the quantitative and the qualitative methods. In the previous research, the smartphone

usage is categorized into the gratifications of process or social. Process use is nonsocial and includes information-seeking, entertainment, and productivity tasks where as social use includes behaviour with social engagement features, such as social media applications or messaging (Reid, 2018). This framework can be utilized for the analysis of specific applications of smartphone use.

Table 2: Methodological Approach in Selected Studies (N=25)

Methodological Approach	F	%
Quantitative	16	64
Qualitative	3	12
Triangulation	5	20
None	1	4

It is evident in Table 1 that majority of the studies have used the quantitative approach to design the research and few studies have used the qualitative methodology, however, there is also drifting trend of using the triangulation approach in which both the quantitative and qualitative approaches are used.

Table 3: Sampling Technique in Selected Studies (N=25)

Sampling Technique	f	%
Not Applicable	1	4
Not Mentioned	10	40
Non-Probability Sampling Technique	11	44
Probability Sampling Technique	3	12

Table 3 demonstrates that most of the studies do not clearly explain the sampling techniques. Majority of studies have utilized the non-probability sampling techniques and only 3 studies are found which had used the probability sampling techniques.

Table 4: Mediated versus Online Methods in Selected Studies (N=25)

Mediated Versus Online Methods	F	%
Mediated	12	48
Offline	11	44
None	1	4

It is evident from Table 4 that both online and offline methods are preferred for data collection in context of research about uses and gratifications of smartphone use.

Table 5: Survey versus Other Methods in Selected Studies (N=25)

Survey Versus Other Methods	F	%
Not Applicable	1	4
Other Methods	4	16
Survey Method	20	80

It is evident from Table 5 that most of the studies have used the survey method.

Table 6: Analysis Techniques in Selected Studies (N=25)

Analysis Technique	F	%
Descriptive Statistics	3	12
Descriptive And Inferential Statistics	5	20
Inferential Statistics	13	52
Thematic Analysis	3	12
Not Applicable	1	4

It is clear from Table 6 that most of the studies have utilized the inferential statistics. These include the exploratory and confirmatory factor analyses techniques, correlations, t-tests, chi-square and ANOVA.

Conclusion and Recommendations

The current study has contributed by analyzing the literature related to uses and gratifications of smartphone use by analyzing

the recent literature from 2016 to 2019. It is found that smartphone is a multidimensional construct. The previous studies have tried to capture this multidimensionality, however, the specific applications are now analyzed by using the uses and gratifications approach. There is a growing trend of quantitative approaches to analyze the smartphone usage behavior. The mostly used method is the survey method for collection of data. Online and offline methods are being used for conducting this survey. The sampling procedures are not carefully handled in majority of studies. There is growing trend of using inferential statistics. The novice researchers should focus on using both the qualitative and the quantitative approaches because it will increase the validity of research. However, quantitative designs are also useful if new scales are extended, made and are then validated in context of different cultures. The studies related to uses and gratifications of smartphone are limited in context of Pakistan so future researchers should focus on this aspect.

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Journal of Media Studies 35(2)

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