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Teenagers and new media technologies: Gratifications obtained as a factor for adoption

AUTHOR(S)
Theodora Dame Adjin-Tettey
Rhodes University
University of Ghana
ORCID: 0000-0002-3160-9607

PUBLISHED ONLINE
Volume 41 (2) December 2022
Pages 34-49
Submitted August 2021
Accepted August 2022

DOI
10.36615/jcsa.v41i2.2239

ISSN
0259-0069

Abstract

Many extensions have been made to the Technology Acceptance Model (TAM), one of the foremost theories which speak to why and how people adopt technologies, including new media technologies, by introducing various constructs. It is contended in this study that an important construct to consider when studying teenagers' use of new media technologies is gratifications obtained (GO). With the aid of the stratified sampling technique, 300 students of two senior high schools in the Greater Accra region of Ghana, representing 10% of the total population, were recruited to take part in a study to explore whether there would be substantial empirical evidence to support the stance that gratifications obtained could potentially account for teenagers' adoption of new media technologies. The minimum and maximum ages of participants were 13 and 19, respectively. The study matched gratifications teenagers sought from the use of new media technologies with gratifications they ultimately obtained and advanced that the ability to adequately satisfy needs sought from new media technologies contributes to teens' use of the technologies. The statistical measures for GO and other constructs in the TAM, Perceived Usefulness (PU) and Perceived Ease of Use (PEOU), were within similar range. It was concluded that although PU and PEOU are strong factors in the adoption of new media technologies, gratifications obtained (GO) is a factor that must also be given ample attention when it comes to teenagers' use of new media technologies. The study recommends that future studies use other statistical tests to measure the association between gratifications obtained and the extent of usage of new media technologies among teenagers.

Keywords

Technology Acceptance Model; Uses and Gratifications Theory; Teenagers; Perceived Usefulness, Appropriation of Technologies; New media Technologies

INTRODUCTION

Internet World Statistics acknowledges Ghana as one of the first countries in Africa to connect to the Internet. Mobitel, in 1992, introduced the first cellular phone service in Ghana (Ghana web, n.d.). The first Internet service operator, Network Computer Systems, came onto the Ghanaian scene in 1993. During that same year, 19,000 Ghanaians acquired mobile phones. In 2012, the International Telecommunications Union (ITU) ranked Ghana as the country with the highest mobile broadband penetration in Africa. Statista.com has pegged Ghana's mobile connection penetration for 2022 at 140 per cent. Markwei and Appiah (2016) assert that patterns of young people's social media usage in Ghana are no different from what is reported in studies of youth in other countries, adding that the few studies that have been conducted among Ghanaian youth show that they are accessing the digital world at an increasing rate. They, however, concluded that more empirical investigations need to be conducted from time to time to establish how the trend evolves. They also mention that the bulk of related literature deals with the views of opinion leaders and ordinary Ghanaians on the undesirable effects of social media on the youth.

This study takes the position that motivations for the use of new media (digital) technologies must be studied within specific contexts and perspectives. Teenagers, for example, must be studied bearing in mind that they are "the most digitally connected generation" of all time (Odgers & Jensen, 2022:143). Their

motivations and gratifications obtained from using the technologies must be understood to appreciate how they relate to the technologies. This, without a doubt, makes a case for a thorough empirical exercise investigating how teenagers are using new media technologies and the incentives driving their usage.

New media technologies have been defined variously by different scholars. Chavis (2022) defines them as applications meant to transfer information through digital techniques, computerised systems or data networks. Such technologies offer the opportunity for on-demand content accessible on any digital device and typically have interactive user feedback and creative participation interface (Socha & Eber-Schmid, 2014). The uniqueness of new media technologies rests in their sharing and interactive features. This includes software, applications and the hardware that house them. New media technologies considered in this study are hardware technologies such as mobile phones/smartphones, personal computers, laptops and tablet computers, as well as their interactive platforms and/or applications such as the Internet, instant messaging, text messaging, video calling, gaming, podcasting, social networking, blogging, photos and video sharing platforms.

A construct that is often cited as accounting for the use of technology is attitude. Attitude reflects an individual's overall feelings towards a specific object (Dolondo, 2014). It has long been identified as a cause of intention (Suki & Suki, 2011), while actual system usage is triggered by the intention to use technology. According to the Technology Acceptance Model (TAM), the attitude of a user of technology can be favourable or unfavourable based on the perceived usefulness (PU) and perceived ease of use (PEOU) of the technology. Other researchers have extended the TAM by including other variables that make people use technology. Taylor and Todd (1995) combined TAM and Theory of Planned Behaviour and came up with the Combined-TAM-TPB (C-TAM-TPB). Venkatesh and Davis (2000) also included the external variable, social influence, as a factor for technology adoption in TAM2. Venkatesh, Morris, Davis and Davis also extended it in 2003 to the Unified Technology Acceptance Model (UTAUT) by integrating eight models and proposing "performance expectancy, effort expectancy, social influence, and facilitating conditions as four key determinants of the intention and behaviour in the use of technology" (Kayanda, Busagala & Tedre, 2020:74).

A favourable attitude, in the context of TAM, means the user has a positive feeling or perception about the usefulness of a technology (that is, how the technology will be able to help the user to be more effective) as well as the ease of use of the technology (that is using technology with less struggle). This descriptive study explores whether teenagers' perceptions about the usefulness and ease of use of new media technologies account for their utilisation. It also takes the stance that another important variable that could account for new media usage among teenagers is gratifications obtained (GO). This is because it is assumed that new media technologies can adequately meet the unique gratification needs of teenagers who are likely to yearn for social communication, bonding/affection and belonging. New media technologies make this possible, barring all physical hindrances. These interactive/participatory technologies tend to be convenient channels to help them meet their unique gratification needs. For this reason, if teen users can realise gratifications sought from using new media technologies, they are likely to turn to them anytime they want that need fulfilled, thereby adopting and even adapting to the technologies. The study, therefore, explores whether there will be substantial empirical evidence to support the stance that gratifications obtained could potentially account for teenagers' adoption of new media technologies.

LITERATURE REVIEW

Various studies on the adoption of new media technologies by teenagers have been reported from around the world, with two main opposing notions (perceptions) about young people's usage/adoption of new media technologies prevailing. Livingstone (2011:3) maintains that one notion sees children as "vulnerable, undergoing a crucial but fragile process of cognitive and social development to which the Internet [and its interactive platforms] tends to pose a risk by introducing potential harms into the social conditions for development, necessitating in turn a protectionist regulatory environment". On this point, reference can be made to Ephraim's (2013) study, which showed that among the negative consequences of social media usage by young people were abuse and cyberbullying. There are also studies that report other adverse effects of new media technologies on young users' academic performance (e.g. Alharahsheh & Obeidat, 2019; Liu, Lou, Liu, Yang, Liu & Jia, 2020; Owusu-Acheaw & Larson, 2015; Santhi & Rajesh, 2020).

The contrary notion, which takes a positive stance, is that children are competent and creative

agents in the use of new media technologies and can positively benefit from using them, but are often underestimated by adults. The consequence has been that "society may even fail to provide a sufficiently rich environment for them" (Livingstone, 2011:3). Rather than banning or restricting young people (teenagers in particular) from using new media technologies, Plockey and Amuda (2013) advocate supporting and encouraging young people to use new media technologies profitably, for instance using new media technologies to improve their reading habits. There is also a widespread assumption that new media technologies are tied to fundamental changes in how young people (teenagers included) are engaging with culture and knowledge (Ito et al. 2008). This has resulted in some (e.g. Chukwuemeka, 2022) having had a cause to be concerned about the adulteration of cultures due to a high exposure to different cultures from different parts of the world, aided by the digital spaces or virtual communities that have been created through new media technologies.

A common trend when it comes to studies on young people's adoption of new media technologies is the use thereof and the effects of these devices on the youth (Ahad, Anshari & Razzaq, 2017). This study does not focus on the effects of new media technologies on its users. It rather turns attention to what accounts for the use of new media technologies by teenagers, and explores whether gratifications obtained (GO) could be a factor for usage. This is because there is a lot of evidence that teenagers are using new media technologies a great deal. Wiest and Eltantawy (2015), for instance, acknowledge that younger people are leading the way in the adoption of new media technologies. The TikTok application is currently the fastest-growing application today, drawing a huge audience of 1.5 billion active users who are mostly tweens and teens (Blotcky, 2021; Weimann & Masri, 2020).

As regards what may account for the dominant use of new media technologies among young people (including teenagers), Lemay, Doleck and Bazelais (2017) found that in terms of Snapchat usage, the role of passion accounted for its acceptance; they suggest that a situated perspective on technology acceptance (TAM) offers a more comprehensive explanation for Snapchat usage. TikTok has been found to enable teens to "network and collaborate with its socio-technical features by creating a Third space for teens to negotiate and articulate their social values and subvert from hegemonic narratives regarding these values" (Burns-Stanning, 2020:1). Košir, Horvat, Aram, Jurinec and Tement (2016) also found that early adolescent adopters of Facebook had a more positive view of themselves in relation to their peers compared to non-users, a finding that shows a positive effect of the use of Facebook on adolescents' social lives, which could account for Facebook usage by this group. Fidan (2019) found in his study that girls used Facebook for educational and informational purposes. Findings also revealed that those who accessed Facebook most often had higher self-promotion tendencies by means of social interaction and communication. This speaks to the extent to which social networking sites allow users to connect and interact with one another, thereby making room for their sociability gratification need to be met (Adjin-Tettey, 2018), as well as using it to enhance their self-image (Krasnova, Veltri, Eling & Buxmann, 2017). These gratifications are uniquely tied to social network usage and once those seeking such gratifications can realise them by using new media technologies, the more likely it is that they will have a positive attitude towards such technologies and consequently use them.

The acceptance of the curved-screen model of the smartphone among young people has also been found to be linked to "the sense of coolness induced by attractiveness, originality, subcultural appeal, and the utility of the curved screen" (Kim, Shin & Park, 2015:528). In their study, utility was not a major factor for smartphone adoption as much as the "smartphones' affectively driven qualities". The authors, therefore, proposed a 'coolness model' which was compared with the original technology acceptance model to corroborate coolness factors as a determinant of usage intention, similar to the widely explored usability factors, perceived ease of use and usefulness of TAM. This study looks into the use of new media technologies among teenagers by combining constructs in the Uses and Gratifications Theory (U and G) and the Technology Acceptance Model (TAM). It attempts to determine whether gratifications obtained (GO) is a viable variable for the acceptance and adoption of new media technologies by teenagers, apart from the usability factors (PEOU and U) of the technologies.

Many studies, including those mentioned above, have provided evidence for various constructs

or variables accounting for new media technology usage. However, a considerable number of these have ignored the aspect of whether gratifications obtained could be linked to new media technology usage and, more importantly so, in the context of teenage users. Most studies have not given attention to theories that could speak to new media technology usage in view of needs that are met by using such technologies. Looking at the fact that new media technologies are largely used for personal and group interactions and also serve as a convergent multifunctional communication medium (audio, visual and text), "with progressively improved features, multiple functions and latest applications" (Ahad et al., 2017:26), integrating a communications theory that tie media usage with gratifications obtained by users can help offer a broader perspective about how technologies are adopted.

The definition of teenagers in this study is consistent with the United Nations Children's Fund's (UNICEF) definition, being persons within the ages of 13 to 19.

THEORETICAL UNDERPINNINGS

Technology acceptance model (TAM)

TAM uses the Theory of Reasoned Action (TRA) as the theoretical base to "predict and explain factors that influence people's decisions to use or not to use technology" (Matyokurehwa, Rudhumbu & Mlambo, 2020:31). Various relationships between significant sets of constructs – Perceived Usefulness (PU) and Perceived Ease of Use (PEOU); user's attitude (A), behavioural intentions (BI) and actual usage (U) of a system or technology – were theorised. Figure 1 below presents the TAM as represented by Davis, Bagozzi and Warshaw (1989:985):

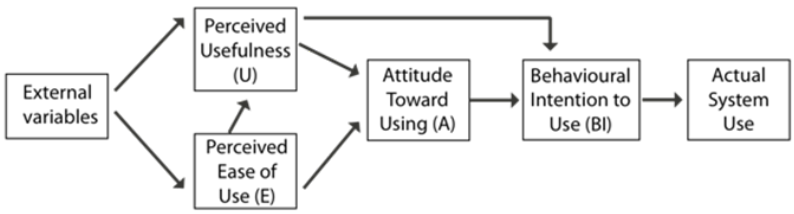

Figure 1: TAM as represented by Davis et al., (1989)

The above figure illustrates the relationships between the proposed constructs in the TAM. External variables relate to system and user characteristics that have an effect on a user's decision to either accept or reject a technology (Lee, 2006), while perceived ease of use is the performance expectancy of the system, that is, the extent to which a person believes the system or technology will be effortless and hassle-free to use (Rivard & Lapointe, 2012; Wen & Kwong, 2010). Attitude is either positive or negative feelings about a technology (Teo, 2013). According to the theory, perceived usefulness and perceived ease of use have an impact on the individual's attitude (A) towards using technology. Attitude consequently influences the individual's behavioural intention (BI) to use the system, while the actual use of the system (U) is a result of BI.

The assumption in TAM that PEOU and PU are factors for the use of a system is one that can be linked to teenagers' use of new media technologies – reason being that when teenagers have a positive perception about the ease of use and usefulness of new media technologies, it will lead to their acceptance and usage of same. This is especially so if technologies could help them meet their gratification needs; that is, if gratifications sought are met while using new media technologies, teens' perception of the technologies will be positive, leading to their adoption of these technologies. For Rauniar, Rawski, Yang and Johnson (2014), the hyper-personal communication affordances of new media technologies are what induced users to have a positive attitude towards such technologies. The Uses and Gratifications theory proffers that gratifications sought from a medium actually drive the usage of that medium. The media under discussion in this study, is new media technologies. It is submitted that if teenage users can meet their unique gratification needs by using new media technologies, they will most likely accept the

technologies into their practices – adopt and adapt the technologies, in other words. This study, therefore, pays attention to gratifications as a factor of new media usage among teenagers, aside from PEOU and U in the TAM. The U and G theory is discussed in more detail below.

Uses and gratifications theory

The Uses and Gratifications Theory explains what may account for the use of media by audience members. The theory is used as the theoretical basis to understand why audiences choose one medium over the other or pay attention to a specific content in one medium over the other. It has been applied to studies related to legacy media and, in contemporary times, digital/online/new media. The theory proposes a psychological origin of needs, which accounts for the attention given to media products, programming or content. The basic assumptions of the theory are that audience members are conscious of their taste and preferences and can recognise and point out their reasons for media use. Media use is, hence, considered goal-directed; media consumption satisfies a wide range of needs which individuals consciously endeavour to fulfil. This theory proposes that motives (goals) and gratifications are the main reasons for media use (Severin & Tankard, 2001).

McQuail (2010) categorised the goals and gratifications for general media use into five categories: escaping from stress; getting informed or educated; identifying with characters in a situation in the media environment (upward comparison); enhancing social interaction, and entertainment. Leung and Wei (2000) found the uses and gratifications for mobile phone users to include the following: mobility, entertainment, affection/sociability, instrumentality, fashion/status, psychological reassurance and immediate access, speaking to the wide-ranging gratifications new media technologies may offer (which I categorise as affective, expressive and psycho-social gratifications), some of which may be absent in legacy media.

The U and G theory has been heavily criticised as ignoring structural power dynamics and social contexts (Bajracharya, 2018). Despite these conceivable limitations, Ruggiero (2000:29) argues that "if we are able to situate a 'modernized' U and G theory within this new media ecology, in an evolving psychological, sociological, and cultural context, we should be able to anticipate a highly serviceable theory for the 21st century", bearing in mind that theoretical and practical questions as to why people adopt media, and what gratifications they receive from them, will likely linger. Further, Ruggiero (2000:29) asserts that any "attempt to speculate on the future direction of mass communication theory must include the uses and gratifications approach." Thus, this study draws from the above arguments to study teenagers' use of new media technologies by linking their usage to their social and psychological origin of needs, the attributes/features of the technologies, as well as the ultimate realisation of the needs sought via the use of new media technologies to establish if these factors account for the heavy usage of the technologies by this group of users.

More so, the U and G theory and TAM were chosen because they were considered complementary in explaining what accounts for new media usage among teenagers. Apart from perceived usefulness and perceived ease of use, the stance taken in this study is that another important and significant variable or construct for new media adoption is gratifications obtained. This is because it is assumed that new media technologies fit well within the socio-cultural practices and tendencies of teenagers, helping them to meet their unique gratification needs. Teenage years is the period when many teens long for and look for ways to discover who they are, and at that point communication and the sense of belongingness become important to them. Social stimulation, which helps them to have a sense of belongingness and to express themselves, becomes vital to the teenager and they are likely to comfortably embrace any technology that makes provision for that (La Ferle, Edwards & Lee, 2000). New media technologies offer teenagers the opportunity to realise their unique gratification needs. This can lead to a positive perception of new media technologies and result in the adoption of the technologies among this group of users.

Drawing from both the TAM model and the U and G theory, it is suggested that, in the adoption of new media technologies by teenagers, apart from POEU and U, the additional strong factor or variable that accounts for usage is gratifications obtained. Empirical data to ascertain the viability of this proposition

was used in this study. Combining theories or different constructs from relevant theories helped offer a more comprehensive explanation for attitudes and tendencies in relation to new media technology usage among specific groups – teenagers, in this context. Zizi Papacharissi puts it this way: "for researchers, social behaviours that traverse and frequently converge a variety of behavioural and performative platforms suggest that we become equally convergent in our application of theory, combining approaches to understand users that are equally multi-purposive in their social orientations" (Papacharissi, 2011:312).

METHOD

Two senior high schools in the Greater Accra region of Ghana – Ideal College (Private) and West Africa Secondary School (Public) – were selected for the study. The selection was based on the proximity of the two schools to the researcher. Besides, the target age group of the study could be found in both schools. Both schools are also coeducational, so they were considered suitable for the study.

Instrumentation

A questionnaire was constructed from scratch, using simple language and avoiding difficult concepts and double negatives, which could be confusing to the survey respondents. Questions were mainly close-ended. Two levels of measurement were used: nominal and ordinal. The nominal measurement mainly centred on the biographical details of respondents. Vagias' (2006) Likert-type scale response anchors guided the ordinal level measurement, which sought to measure respondents' perceptions and attitudes regarding the use of new media technologies, perceptions about usefulness, ease of use and gratifications obtained.

Sample size and sampling

Comrey and Lee (1992) proposed a scale for adequate sample sizes in factor analysis, rating a sample size of 300 as good. Though this study did not undertake any factor analysis, the ratings were considered to be reliable as regards any other quantitative analysis. Therefore, based on this rating, the total sample size settled on was 300, with 150 respondents taken from each school. With the accessible population of both schools being 3040, a sample size of 300 represented close to 10% of the total population. In Ghana, the senior high school system is made up of three levels: forms one, two and three. In each senior high school, 50 students from each of the three forms were drawn to participate in the study to ensure representativeness.

Stratified random sampling was used to select samples. This technique attempts to restrict the possible samples to those which are "less extreme" by ensuring that all parts of the population are represented in the sample to increase the efficiency and decrease error in the estimation (Kumar, 2013). The three forms in each school were the strata from which respondents were randomly selected, in compliance with the sampling approach.

The sampling without replacement method of the simple random sampling technique was applied. Based on the total number of students on the roll, numbers were folded and dropped into a bowl. The researcher randomly selected the determined sample size from each level, and names corresponding to the numbers on the class registers were called out to take part in the study. Where a randomly selected respondent was not present, another number was randomly selected for replacement. Below is a breakdown of respondents by gender.

Table 1: Background of respondents by gender (N=300)

	Frequency	Percent
Female	139	46.3
Male	161	53.7
Total	300	100

Source: Field data

There were more boys than girls. The discrepancy in gender representation was because the researcher randomly selected respondents with less attention to gender representation. This is, however, not a weakness, as it reflected the gender variation of the population of the two schools collectively. According to the registers of the two schools, there were more males than females, with 52% of the population being male and 48% being female.

Age statistics of respondents

Below is an overview of the age distribution of respondents.

Table 2: Age of respondents

Age	Frequency	Percent			
13	23	7.7			
14	53	17.7			
15	21	7.0			
16	40	13.3			
17	48	16.0			
18	58	19.3			
19	57	19.0			
Total	300	100.0			
N	**Min. Age**	**Max. Age**	**Median**	**Std. Deviation**	**Std. Error**
300	13	19	17.00	1.977	.114

Source: Field data

Most of the respondents were 18 years old, next were those who were 19 years old. Fifteen-year-olds were the least represented. The youngest respondents were 13 years of age, whereas the oldest respondents were 19 years. The median age was 17 years.

Ethical compliance

The researcher sought permission from the management of the two schools before conducting the study. Prior to survey administration, respondents were fully briefed on the purpose of the study and assured of anonymity and the confidentiality of the data they would provide. Mbatha (2015) offers that, when using a questionnaire as data collection instrument, respondents must be granted anonymity, so that they will be at ease to provide answers without intimidation, restriction and influence. Besides, no respondent was coerced into participating in the study. They were briefed that they could withdraw from the study at any time with no repercussions.

RESULTS

To establish the extent to which teenagers used new media technologies, respondents were asked to rate how frequently they used the technologies. The table below contains the findings related to the extent to which new media technologies were used by respondents.

Table 3: Extent to which respondents used new media technologies

How regularly (frequently) do you use new media technologies?	N	Percent
Never	32	10.7
Almost never	12	4.0
Sometimes	62	20.7
Almost always	49	16.3
Always	145	48.3
Total	**300**	**100.0**

Source: Field data

Results showed that most respondents used new media technologies on regular basis. The variables indicating a high degree of usage (Always and Almost always) point to the fact that slightly more than six out of ten respondents (64.6%) used new media technologies on a regular basis, whereas two out of ten respondents (20.7%) sometimes used them. Only a little more than one out of ten respondents (14.7%) admitted to never or almost never using new media technologies. This shows that the majority of teenagers used new media technologies on a regular basis, with an even higher percentage admitting to sometimes using them, compared to those who acknowledged never using them. Subsequent results provided a clearer picture of what accounts for the high adoption of new media technologies by teenagers participating in the study.

The table below contains findings related to the new media technologies respondents used on a regular basis.

Table 4: New media technologies used on a regular basis by respondents

New media device(s) used on regular basis	N	Per cent	Per cent of Cases
Personal Computer (PC)	25	6.0%	8.4%
Laptop	73	17.5%	24.4%
Tablet Computer	32	7.7%	10.7%
Mobile Phone (Not Smart)	47	11.3%	15.7%
Smartphone	223	53.6%	74.6%
Gaming devices	14	3.4%	4.7%
Total	**416**	**100.0**	**139.1%**

Source: Field data

Data was gathered by multiple-choice questions, so respondents were at liberty to tick as many answers as applicable. The smartphone was the device respondents admitted to using most frequently

– more than half (53.6%) of respondents. Laptops followed (17.5%), then analog mobile phones (11.3%). Overall, data pointed to the fact that the smartphone was the leading new media technology device respondents used on regular basis.

Respondents' intent to fulfil gratification needs prior to using new media technologies

Respondents were asked if they usually had intentions of fulfilling a need(s) before using new media technologies. Responses provided are summarised in the table below:

Table 5: Respondents' intention to fulfil gratifications prior to using new media technologies

Intention to fulfil gratifications prior to using new media technologies	N	%
Always	73	24.3
Almost Always	57	19
Sometimes	136	45.3
Almost never	13	4.3
Never	21	7.1
Total	**300**	**100**

Source: Field data

Nearly half of the respondents (45.3%) acknowledged that they sometimes had a need in mind to fulfil before using new media technologies, while two out of ten respondents (24.3%) said they always intended to fulfil a need before using new media technologies. Nearly two out of 10 respondents (19%) sometimes had that predisposition. Cumulatively, positive responses (Almost always, Sometimes, Always) were in the lead (88.6%), representing more than 8 out of 10 respondents. The negative responses were Never (7.1%) and Almost never (4.3%), representing 11.4% of the total number of respondents. In summary, the majority of respondents had the intent to satisfy some gratifications or needs before using new media technologies. Fundamentally, this finding points to the fact that there are gratifications that are sought prior to new media technology usage.

Respondents' fulfilment of gratifications sought

With the intent to establish if gratifications sought were obtained, respondents were asked to rate the extent to which gratifications they sought were obtained on a five-point Likert scale. The question specifically read: To what extent do you fulfil the needs you seek from using new media technologies? The results are presented below.

Table 6: Extent to which gratifications sought are obtained

Extent to which gratifications are met	N	%	Min	Max	Mean
Always	69	23	1	5	4.3
Almost Always	67	22.3	1	5	4.5
Sometimes	138	46	1	5	2.1
Almost Never	12	4	1	5	0.25
Never	14	4.7	1	5	0.21
Total	**300**	**100**			

Source: Field data

On the score of whether respondents were able to fulfil gratifications sought after using new media technologies, results showed that most respondents were able to obtain the gratifications they sought by using new media technologies. Generally, the total percentage scores for measures that were unfavourable to gratifications being met (about 9%) were far lower than the scores for those that were positive, with favourable measures being the vast majority – about 91%. The mean scores also confirmed that positive responses regarding the extent to which new media technologies helped teen users obtain the gratifications they sought were more that those who did not have their gratification needs met. It can, therefore, be agreed that teenagers usually obtained the gratifications they sought from new media technologies. A further statistical test was conducted to ascertain whether gratifications sought were obtained, using the Mann-Whitney U test to determine gender rankings or differences. Table five (below) shows the results.

Table 7: Mann-Whitney U test for gratifications sought and obtained

Ranks				
	Gender	**N**	**Mean Rank**	**Sum of Ranks**
Gratification sought and Obtained	Male	161	143.21	23057.50
	Female	139	158.94	22092.50
	Total	300		

Test statistics	
	Gratification sought and Obtained
Mann-Whitney U	10016.500
Wilcoxon W	23057.500
Z	-1.659
Asymp. Sig. (2-tailed)	0.097
a. Grouping Variable: Gender	

Source: Field data

Results showed that there were no considerable differences between gratifications sought and gratifications obtained among males and females ($U = 10016$, $p > 0.05$). Research data, hence, statistically

confirmed a positive link between gratifications sought (GS) and gratifications obtained (GO) across gender. Hence, it can be submitted that respondents were able to realise the gratifications they sought from new media technologies. When gratifications sought are obtained, it can result in a positive attitude towards the technologies, leading to usage.

Attitudes concerning perceived ease of use, usefulness and gratifications obtained using new media technologies

This part of the study measured and compared perceptions related to PEOU and PU. It also measured perceptions about gratifications obtained (GO) which was a chief variable under study.

Table 8: Mean statistics measuring perceptions about PEOU, PU and GO of new media technologies

Rate how you feel generally about new media technologies		**I can confidently say new media technologies satisfy the needs I intend to fulfil with them.**	**I can confidently say new media technologies are generally easy to use.**	**I can confidently say new media technologies are generally useful to me.**
Very negative	Mean	1.67	1.67	1.83
	N	6	6	6
	Std. Deviation	.816	.816	.753
Negative	Mean	2.94	3.76	3.29
	N	17	17	17
	Std. Deviation	1.391	1.300	1.105
Neither positive nor negative	Mean	3.78	3.90	4.01
	N	68	68	68
	Std. Deviation	1.291	1.211	1.203
Positive	Mean	4.28	4.42	4.37
	N	104	104	104
	Std. Deviation	1.127	.982	1.015
Very positive	Mean	4.58	4.70	4.69
	N	105	105	105
	Std. Deviation	.978	.808	.880
Total	Mean	4.14	4.31	4.29
	N	300	300	300
	Std. Deviation	1.252	1.116	1.129

Source: Field data

The table above shows results obtained from the statistical test to measure teenagers' perceptions about the perceived usefulness, perceived ease of use and gratifications obtained in relation to new media technologies. A Likert item scale with a range of values from "very negative to "very positive" were used. Mean values < 4.0 were considered negative, while values >= 4.0 were considered very/highly positive. Thus, the results for the statement: "I can confidently say new media technologies satisfy the needs I intend to fulfil with them", with the mean values = 1.67 and 2.94 represent the negative perceptions about the extent to which new media technologies meet gratification needs. On the other hand, the means 4.28 and 4.58 translate positively on the overall positive attitude towards new media technologies and their applications.

The statement: "I can confidently say new media technologies are generally easy to use" had mean scores of 1.67 and 3.76, which are interpreted as teenagers' negative perceptions towards new media technologies in terms of their usefulness. However, the means 4.42 and 4.70 reflect teenagers' positive attitude towards new media technologies.

Responses to the statement: "I can confidently say new media technologies are generally useful to me" yielded negative means of 1.83 and 3.29, suggesting a negative perception whereas the means 4.37 and 4.69 represent teenagers' positive perception towards the usefulness of new media technologies. Overall, the positive mean scores for all three variables measured (PU, PEOU and GO) were within the same range and showed that the majority of respondents had a positive perception about the PU, PEOU and GO of new media technologies. PU, POEU and GO can therefore potentially account for the frequent patronage of new media technologies by respondents which was reported in table 3.

DISCUSSION OF RESULTS

This study explored whether PU, PEOU and GO can be viable factors accounting for new media adoption by teenagers. The study varied from other scholarly works by paying attention to a construct thought to be a strong factor for new media technology adoption among teenagers which has been hardly investigated. It connects gratifications obtained (a construct from the U and G theory) to new media technology usage among teenagers, apart from PEOU and PU as proposed in the TAM. This is because it was proffered that new media technologies have features that can afford teenagers the opportunity to meet unique gratification needs which are tied to psycho-social desires or longings that are unique to that stage of their development as individuals.

The study has proven that teenagers are to an immense extent taking up new media technologies. Close to half of the respondents admitted to always using new media technologies. The smartphone turned out to be the leading new media technology used. The findings of this study validated what Ahad and Anshari (2017) found. Just like their study, this study has confirmed that teens can be considered the most enthusiastic and extensive users of new media technologies, as revealed by their rapid adoption and frequent usage of the technologies (Ahad & Anshari, 2017). The study also corroborated the findings of Lenhart, Ling, Campbell and Purcell (2010) and Lenhart, Duggan, Perrin, Stepler, Raini and Parker (2015), that teenagers are accessing the Internet through mobile devices rather than through the personal computer (PC), since the smartphone, tablet computer and analog mobile phones showed up as the top-three new media technologies used by teenagers in this study. Respondents who acknowledged using PCs on regular basis were the smallest number.

The majority of respondents also admitted to using new media technologies in order to fulfil specific needs – they had certain gratification needs in mind to fulfil prior to using technologies. Slightly more said they were able to fulfil those needs subsequent to using the technologies. This means that, largely, the gratifications teenage users seek by using new media technologies were realised, signifying a high level of satisfaction attained from using the technologies. This is a firm indication that teen users will continue to patronise new media technologies if they are able to attain the gratifications that they desire from using new media technologies. Patwardhan, Yang and Parwardhan (2011) submit that user satisfaction is vital in understanding audience-media connections. The reason is that satisfaction will likely make a user become fond of a medium or technology and consequently get attached to it. I am convinced

that teenagers' satisfaction (gratifications) derived from using new media technologies translates into a positive attitude towards the technologies, as data shows. Gratifications obtained, therefore, strongly account for the high patronage of new media technologies, as shown in the data analysis. This is because when a medium exceeds the expected gratifications initially sought, it leads to satisfaction and repeated use (Bae, 2018; Palmgreen & Rayburn, 1979).

When PEOU and PU were also measured with mean statistics, positive variables got high/favourable scores, which is an indication that the majority of respondents had a positive perception of the usefulness and ease-of-use of new media technologies. The same applies to gratifications obtained. When technologies are easy to operate, they are likely to be taken up quickly and extensively. Perceived ease of use is a strong factor when individuals are deciding on immediate or future use of technology or any innovation (Lee, Park, Chung & Blakeney 2012; Shen & Chiou, 2010).

But, more noteworthy: though the scores for all three variables (PEOU, PU, GO) were all favourable, the positive perception of usefulness scored slightly higher. This supports the stance of Shaw and Kesharwani (2019:301-302) that "any innovation with high user-friendliness is likely to be adopted by users only if it derives some relative advantage". This alludes to the fact that the user-friendliness of new media technologies alone cannot be a factor for media or technology use; the medium or technology must be beneficial to users by way of satisfying certain needs. In this study it was suggested that the usefulness of the technology also has a relationship with the satisfaction which results from gratifications obtained from the technology. It has also been discovered in several studies, including that of de Melo Pereira, Ramos, Gouvêa and da Costa (2015), Findik-Coşkunçay, Alkiş and Özkan-Yildirim (2018) and Attuquayefio (2019) that satisfaction is decisive for behavioural intention and continuance of the use of a technology or medium. Accordingly, respondents' acknowledgement of being able to gratify needs by using new media technologies provides strong support for their high patronage or adoption of new media technologies.

The fact that gender did not prove to be a defining factor for gratifications obtained from using new media technologies shows that new media technologies adequately satisfy gratifications both genders seek by using them. It can also be inferred that the gratifications obtained from using new media technologies likely cut across genders – both genders sought similar gratifications from new media technologies. Gratifications obtained can therefore not be ignored when considering new media technology adoption among teenagers. This is because findings strongly support teens' positive perception about the usefulness of new media technologies, emanating from their ability to obtain gratifications sought when they use new media technologies, apart from the perceived ease of use of the technologies. Thus, the high adoption rate of new media technologies among teenagers can be effectively linked to the gratifications they seek and obtain from using the technologies.

It is proposed that, among teenagers, apart from PEOU and PU, gratification obtained (GO) influences perceptions of the usefulness of new media technologies and lead to behavioural intention (BI) and, ultimately, the use (U) of the technologies. Therefore, it is submitted that, among teenagers, another potent variable that explains the high adoption of new media technologies is gratifications obtained from using the technologies which has to be further studied in different contexts.

CONCLUSION

This study was theoretically guided to study the factors that influence the adoption of new media technologies among teenagers. It took the stance that the constructs in the Technology Acceptance Model (TAM) may not be adequate to explain why teenagers adopt new media technologies. So, in addition to TAM, the researcher considered another theory that could potentially account for teen's adoption of new media technologies. A variable or construct that has emerged from extensions to the Uses and Gratifications theory, gratifications obtained (GO), was borrowed and, together with constructs in TAM, tested to ascertain if it could explain the reason for new media technology adoption among teenagers. The stance taken was grounded in the observation that new media technologies (which characteristically provide communicative and participatory opportunities) could potentially be tied to satisfying the

unique gratification needs of teenagers who yearn for a sense of belonging and communication at that developmental stage of life. Consequently, if teenagers can meet their unique gratification needs by using new media technologies, they are likely to find the technologies useful and therefore will have a positive perception of and attitude towards them, resulting in high patronage of usage.

When gratifications sought and gratifications obtained were measured, it was realised that most teenagers were able to meet gratifications they sought from using new media technologies. It is therefore concluded that although perceived ease of use has a role to play in the adoption of new media technologies, gratifications obtained is a factor that must also be given attention when studying teenagers' use of new media technologies.

Theoretical and practical contributions of the study

Apart from contributing to empirical literature on new media technology usage among teenagers in the context of Ghana, this study has made both theoretical and practical contributions to the field of knowledge. In terms of theory, this study has extended the Technology Acceptance Model by introducing a potent variable which accounts for use of new media technologies among teenagers – GO.

The evidence provided in this study also shows that teens are using new media technologies to a great extent. There is also evidence that usefulness, which partly emanates from gratifications obtained, is what accounts for their high patronage of the technologies. This information is useful, as application developers who target teenagers have to consciously find out the exact gratification needs teenagers seek from using new media technologies, so that they could factor that into the development of applications and platforms that target teenagers.

The study is also useful for parents and guardians of teenagers. Knowing that teenagers are extensively appropriating new media technologies has to let them pay more attention to how their teens are using the technologies and put in measures that will prevent them from falling prey or victim to the unpleasant experiences and risks that result from using new media technologies, such as cyberbullying and cybercrime.

FUTURE RESEARCH

This was an exploratory study. It is recommended that future studies use other statistical tests to measure the association between gratifications obtained and level of usage of new media technologies among teenagers. Although the study explored whether respondents intended to fulfil certain gratifications by using new media technologies, the exact gratifications were not explored. It is, thus, recommended that future studies look into the exact gratification needs teenagers seek and obtain from using new media technologies.

ACKNOWLEDGEMENTS

This work is based on the research supported in part by the National Research Foundation of South Africa (Grant Number: 118583).

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