

The Effectiveness Of “WhatsApp” As An Information System Tool For The Optimization Of Office Resources In Some Polytechnics In Ghana

Ismail Mahamud Zakaria, Iddrisu Ibrahim

Abstract: The primary aim of this study was to investigate whether “WhatsApp”, as information system tool, could be used to optimize office resources and also examine the challenges that confront WhatsApp users. The survey research design was employed to achieve this objective. Findings from the study revealed that, the use of paper, ink and electricity was optimized when WhatsApp was integrated in information system for office operations. The survey results also showed that users of WhatsApp were faced with the problem of poor network stability and purchase of air time was equally difficult for them. The study could have some implication in the area of the sale of smart phones and prices of telecommunication services. Thus, policy makers were recommended to make pragmatic policies to encourage communication service providers come up with more affordable products and services for the Polytechnics. Finally, we suggested that future research should look at other social media like Facebook or Tweeter to dig out other diverse perspectives especially, if the proposed study would cover other Polytechnics and traditional universities.

Keywords: WhatsApp, Information-System, Optimize, Resources, Challenges, Pragmatic, Social-media.

1. INTRODUCTION

In the contemporary information and communication technology era, the social media, with the evolution of the global interconnectivity, has gained a critical position as information generator, holder and disseminator. Emanating from technologically diversified sources such as Wiki, Facebook, Tweeter, YouTube, Instant gram etc., WhatsApp serves as information retrieval point for effective decision making in education, business management and other areas across the social spectrum of life. It is a modern communication tool, especially with its live chat and real time data elicitation among users of the same group for easy exchange of information [1]. It is for this reason, among others, that most organizations, from the smallest to the giant ones, are now innovatively adopting this transformative means to optimize their operations and manage their resources efficiently. Thus, as human institution, Polytechnics in Ghana would also like to actively employ new ways of utilizing WhatsApp Group platform, consciously or unconsciously, to effectively manage their respective institutions to the admiration of their internal and external stakeholders. Within the relatively few years of social media existence, observation is gradually revealing some shortfalls associated with some of the social media tools regarding their ease of use. For instance, the cumbersome privacy configuration of Facebook sometimes makes real time information a bit inaccessible [2].

The huge amount of data (of which substantial portion is made up of users’ opinion) generated as tweets is a challenging phenomenon for Tweeter when it comes to data analysis for pattern discovery. WhatsApp Group, however, is a social media tool that quickly allows people of the same interest group access the needed information easily. Besides, the popularity of WhatsApp is simply overwhelming within the last few years. For instance, WhatsApp has registered over 35 million users over the last two years and as such, rated as the most downloadable application across 127 nations [3]. [4] also observed that about 31 billion messages are sent daily via this platform. But the unanswered question is, can these empirical achievements automatically form basis for WhatsApp to be adopted as an information system tool for maximizing the use of resources in the workplace? Or can its usage be absolutely problem-free? This paper therefore intends to explore the effectiveness (in terms of optimization of resources) and challenges of the WhatsApp Group as an information system tool in the management and administration of Polytechnics in Ghana.

2. HOW WHATSAPP WORKS

WhatsApp is a mobile phone application designed purposely to create and share text, audio and video messages among individuals and groups alike. Some of its features include attachment function, user management tools and web linking capabilities. To use the application, one has to get it installed in a smart phone, establish a user account and get hooked to commercially created network (be it a broadband from a service provider or Wi-Fi connection). A green icon decorated with a telephone receiver found on the hand set, indicates a successful installation of the application. When a connection is established (this is known as “opening data” within the parlance of the users) and the icon is launched, all contacts in the mobile phone with WhatsApp accounts will appear, most often, with the profile pictures and corresponding names of various users. To communicate with a person on this list, you simply need to tap on his name. By this, you

- Ismail M. Zakaria, ICT Department, Wa Polytechnic, Wa Ghana. E-mail: imouktar@yahoo.com
- Iddrisu Ibrahim, ICT Department, Tamale Technical University. E-mail: kunfaoses@gmail.com

are presented with the opportunity to make attachment, record and send audio message or compile and send a text/video messages. There is also a feature of this application known as group (better known as WhatsApp Group) which can be created by any user. WhatsApp Group is a virtual community of users (as peers of some kind) of the same interest and aspiration. The creator automatically becomes the administrator of the group with the privilege of admitting or removing a member without prior approval from any participant. The rest of the members have equal right of receiving a message from a participant. A member can also quit on his own volition.

3. Some Definitions

Information system is the overriding setup of which "WhatsApp" is a component. It is therefore proper and right we briefly delve into the meaning of information system, IS - the broader communication structure of which "WhatsApp" is an interactive part.

3.1 Information System

Information system is an aged-terminology [5] that can be used in different senses though, within the contemporary business organization, the IS concept can be described as: an orderly combination of people, technology resources (hardware, software, data, and telecommunication networks etc.), policies and procedures for receiving, processing, storing, retrieving of data and dissemination of information for decision making in an organization [6]. The phrase "technology resources" in the above definition is an open ended term that can include "WhatsApp" within the context of current organizational setup. A close look at this information system definition, would make one come to the realization that it is made of two issues - technical issue (technology literacy) on one hand and behavioral (people) issue on the other. Thus, an in-depth understanding of these issues will give rise to Management Information System (MIS) which is the study of the behavioral issues and technical issue concerning the development, use and impact of information system as used by management and staff of an organization. In the on-going discussion of technology-based information system, "organization" is made up of people, "management" consists of people and "staff" constitutes people. To this effect, "people" is therefore central in deploying WhatsApp for productivity. To really understand information system, which only provides support and innovation for organization transformation, demands that you first understand organizational structure - people and roles assigned to them. Thus, the following section gives an overview of the Polytechnic structure.

4. The Structure of the Polytechnic

The polytechnic is an academic organization that is managed by a head that is called a Rector with his two lieutenants also known as the Vice Rector and the Registrar respectively. The three personalities invariably form the management of the Polytechnic for day to day administration and supervision. Below the top management level is another layer occupied by Dean of students and Deans of Schools. A school is a group of related academic departments. The student, who is the central pivot of the internal environment of the Polytechnic, belongs to one department or the other at a time. All teaching staff

members (lecturers) are grouped into the academic departments. The registrar, to whom all major communications are directed, is also responsible for presiding over all administrative staff members. An academic department is manned by one lecturer (the senior most among his peers) officially called Head Of Department (HoD for short). Whilst all other lecturers are answerable to him, he also reports to the Dean of the School he belongs to. A student can interact directly with his lecturer, HoD or Dean of students but he often gets in touch with the top management through another channel identified as School Representative Council (SRC). To understand how communication flows among the key entities in the Polytechnic structure, we conceptualized an information system (see figure 1) below.

4.1 PAWC Framework for WhatsApp Communication in the Polytechnic

PAWC as conceptual framework

PAWC is conceptually designed to firmly underpin the study with a vigorous description of WhatsApp Group information system, informally adopted by some of the Polytechnics in the country. The user defined conceptual model, was carefully crafted to explain how people (the key stakeholders) capture data through a number of activities. WhatsApp Group as the core technology would then process this data and output the needed information to the targeted people in a context.

PAWC is an acronym representing People, Activities, WhatsApp and Context

P = People: Management, Lecturers, Students, Administrative staff

A= Activities: Management directives, HoDs assigning duties to lecturers, lecturers giving students information via phone to be put on their WhatsApp platform.

W = stand for WhatsApp (that is the technology involved)

C = Context: means the manner in which the communication takes place. For instance, Common platforms for lecturers, for students, or for administrative staff can have their respective content defined by context. A policy of the institution can affect the mode of communication and can therefore change context.

People deploy Technology to carry out Activities within different Contexts. In the case of the Polytechnic, "people" refers to the Polytechnic management, Deans of Schools, Heads of Departments (HoDs), Lecturers, Administrative staff and the student body. The community of people in the Polytechnic use WhatsApp Group as their technology of choice to undertake activities such as teaching, learning, research, community service, supervision, coordination, monitoring, communication, evaluation, administration etc. WhatsApp Group platforms for every student year group, for lecturers belonging to the same department and for administrative staff sharing common interests and values are the various contexts in which the above mentioned activities take place. This is the brief description of PAWC communication tool underpinning some aspect of the broader information system in the Polytechnics in Ghana. How PAWC captures input, processes it and outputs it is explained in the next section.

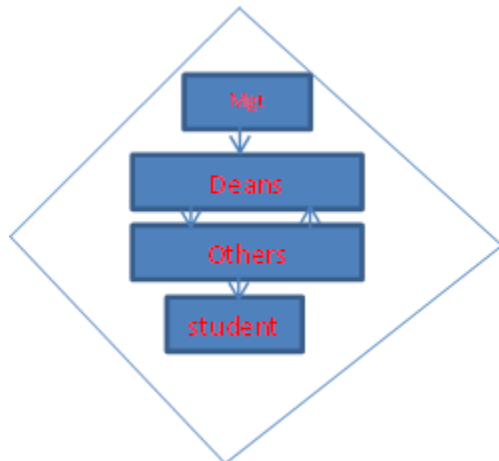
Figure1

Figure1: WhatsApp conceptual channel of communication simplifying the PAWC framework

From figure1 above, management, the only entity charged with the responsibility of day-to-day running of the Polytechnic, has its own WhatsApp platform on which members interact. Management informally uses WhatsApp as information tool to convey and organize meetings. The outcome of this meeting is transformed into directives or policies and communicated to the Deans or HoDs in the form of hard copy memorandum. The HoD would then take it as an input and get it processed by using the mobile phone camera to scan it and add a few lines of text to paraphrase it within a context so as to create a WhatsApp message. This message is then shared to department lecturers on their respective WhatsApp Group platforms. Some lecturers also create a common WhatsApp platform to interact with their students. For instance, these lecturers post tutorials, short assignments, lecture notes and notices concerning lecture schedules to their students on this platform. The students on their part, might post questions like “sir, how do i add two numbers in programming” to their lecturers on the WhatsApp platform. The lecturers would then respond in the same fashion. This is the ideal situation for communicating through the WhatsApp. Department examination officers, likewise, process and share information on their own WhatsApp platform under the leadership of the chief invigilator. The finance department and registry have their own respective WhatsApp groups for communicating administrative and management matters in the same way among members. It is obvious that there is one main source (management) of generating the communication. Then it descends to a broader lower level of Deans and Departments that have many WhatsApp groups. From this level it trickles down to a narrower level (one common WhatsApp platform for all students) where the end recipient of the processed information is the student, giving a communication Kite-like conceptual framework as illustrated above. It must be stated however that, external forces like poor network service, lack of data (airtime) etc. can hamper the smooth production and utilization of this information channel. Assumption: it was assumed that rectangles labelled ‘Mgt’ and “student” are the same in terms of size and each has only one platform. But rectangles labelled “Deans” and “Others” which are of

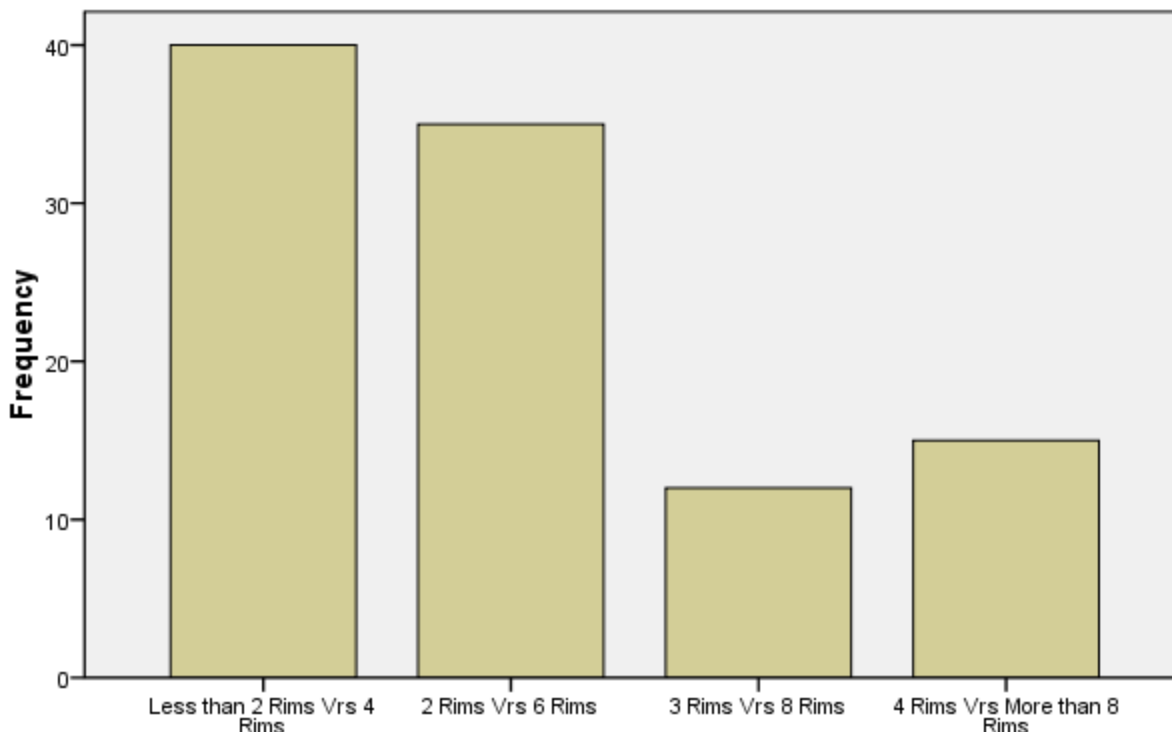
the same size have as many platforms as possible. The others “rectangle” includes Time table committee platform, Industrial Liaison office platform etc. Some of the Deans belong to both the “Deans rectangle” and the “Others rectangle”. Thus, they carry and disseminate information in between the two.

5. Methodology

The study employs an exploratory research design as it was conducted on a small-scale and over a relatively short period of time to examine if office holders can optimize the use of paper by adopting “WhatsApp” (a social media application). The study also intends to explore if there are challenges confronting these users in the use of “WhatsApp”. To achieve this objective, a survey was conducted with a 10-question simply designed questionnaire to solicit information from the Polytechnic communities across the country. Using a Simple Random Sampling method, a sample size of 103 was chosen. Thus, 140 questionnaires were sent to the field but only 108 were completed and retrieved from respondents. The data was subsequently collated by a software package (i.e. Data Analysis Tool) called SPSS, analyzed and interpreted data trends found.

6. Data Analysis and Discussion

PaperConsumption



PaperConsumption

From the above table, as many as 40 respondents (out of 103) indicated that they consumed less than 2 rims of paper in a semester whenever they deployed the WhatsApp communication tool in their office work. They would however, used about 4 rims of paper when they did not deploy the WhatsApp technology. Likewise, 35 office holders confirmed that, using WhatsApp, they consumed exactly 2 rims of paper in a semester and 6 rims if WhatsApp was absent. This means each of the 75 (i.e.

73.5% of the total respondents) office holders used at most 2 rims of paper in a whole semester when WhatsApp was incorporated in their office management and administration. This empirical evidence suggested that deploying WhatsApp for office administration, optimized the consumption of paper to minimize cost of operation. The cumulative benefit, in terms of organizational performance, of this is realized when there are tens of offices in a particular Polytechnic under effective leadership [7].

Table1

InkConsumption

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Less than 0.5 Caterage Vrs 1 Caterage	25	23.1	25.5	25.5
Valid 0.5 Caterage Vrs 2 Caterages	33	30.6	33.7	59.2
Valid 1 Caterage Vrs 3 Caterages	31	28.7	31.6	90.8
Valid 1.5 Caterages Vrs More than 3 Caterages	9	8.3	9.2	100.0
Total	98	90.7	100.0	
Missing System	10	9.3		
Total	108	100.0		

In table1 above, out of a total of 103 respondents, 25 office holders confirmed that instead of consuming up to 1 caterage of ink in semester, the use of WhatsApp had made

it possible for them to rather use less than half a caterage. In fact, about 90% of the officers revealed that the integration of WhatsApp in their information system had

reduced their ink consumption from 3 caterages to 1caterage in a semester. This cogent result implied that, the deployment of WhatsApp in an information system enhances the effective use of resources culminating into

improvement in output and productivity, given that other factors of performance are kept unchanged. [8] argued that such information system success can lead to objective achievement.

Table2**ElectricityConsumption**

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Less than 100 Kwh Vrs 200 Kwh	36	33.3	36.4
	100 Kwh Vrs 240 Kwh	31	28.7	67.7
	120 Kwh Vrs 320 Kwh	13	12.0	80.8
	160 Kwh Vrs More than 320 Kwh	19	17.6	100.0
	Total	99	91.7	100.0
Missing	System	9	8.3	
Total		108	100.0	

From table2 above, 80 officers (i.e. more than 80% of the respondents) evidently stated that, each of them could use a maximum of 120 kwh of electricity when WhatsApp, as information system tool, was incorporated in their office work as against the use of 320 kwh (at most) when WhatsApp was not incorporated in their office administration and management in a semester. This means that colossal difference of 200 kWh of electricity was saved by each of these officers. By logical reasoning, if there were 100 office holders in a Polytechnic, it meant 20, 000 kwh of electricity could be conserved in one semester giving a total of 40, 000kwh of electricity in a year (i.e. two semesters). In other wise, they can save $40,000 / 12 = 3,333.33$ kwh monthly. According to the Public Utility Regulation Commission of Ghana, (PURC Tariffs, 2018), 1kwh = 1.14 Ghana Cedis (i.e. about \$0.24) per month, for non-Residential consumers who consume 600kwh or more in a

month. There is also a fixed service charge of 10.55 Ghana Cedis (\$2.20) every month. Now, given that 1kwh of electricity is \$0.24, it implies that a Polytechnic can save as much as 0.24 multiply by 40,000 (i.e. \$9, 600) in a year. Summing up this figure with the month fixed service charge of \$(2.20 multiply by 12 months) would give \$9,626.4 in a year. To a subvention institution like the Polytechnic, this amount is a huge financial aid to enhance its internal generated fund or to foot other operational expenses. It must be stated however that, these numbers are subject to change according changes in the exchange rate. At the time of this computation, the exchange rate was such that \$1 = ₵4.8 (Bank of Ghana). Secondly, it must be equally noted that Polytechnics do not work constantly throughout the year (due to holidays/vacations). Therefore, the consumption of electricity in some few months would be far lower than many others in the Polytechnics.

Table3**ChallengesConfrontedwihUsingWhatsApp**

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid	ProblemWithStableNetwork	68	63.0	64.2
	PurchaseOfAirTime	32	29.6	94.3
	PerpetualUpdatingWhatsApp	2	1.9	96.2
	NonAvailabilityOfSupportingApps	2	1.9	98.1
	ReadingWhatsAppMsgsIsTimeConsuming	1	.9	99.1
	FeedbackFromParticipantsIsNotEncouraging	1	.9	100.0
	Total	106	98.1	100.0
Missing	System	2	1.9	
Total		108	100.0	

Table 3 displays various challenges that office holders faced when using WhatsApp in their day -to-day office operation. A chunk (i.e. over 90% of the respondents) of these officers emphatically revealed that, they confronted with the problem of “network stability” and financial problem

of “air time purchase” when WhatsApp was incorporated in their sub information systems. Here, the Polytechnic leadership has to device measures to mitigate the effect of these problems, or else if left unattended for considerable length of time it would derail all the benefits of WhatsApp

mentioned above. To this effect, leadership can make a big impact if the problems are viewed as new institutional goals [9].

7. Conclusion

This study explored how WhatsApp, as information system tool, optimized office resources and the challenges confronting the users of this tool. The survey research design was employed to achieve the objective of the study. Findings of the study revealed that, the deployment of WhatsApp in office management optimized the use of paper, ink, and electricity. Results obtained from data analysis also showed that poor "network stability" and inability to "purchase air time" were challenges facing office holders who incorporate the use of WhatsApp in their operations. It was recommended that policy makers should make pragmatic policies that could encourage the communication service providers design more affordable services for the Polytechnics.

8. Limitation and Future Research Direction

The study found out that the respondents were made up of 70.8% male and 29.2% female. This means that if respondents were female dominated the findings of the study could have been probably different. The survey process covered only 3 out of the 10 Polytechnics in the country. The 3 institutions were made up of 2 in the Northern part of the country and the 3rd from the middle belt of Ghana. To this effect, a future research direction can consider majority of the Polytechnics across the country and also look at other social media like Facebook or Tweeter to give diverse perspectives. Other researchers can stretch their study lenses to investigate the cost of mass installation and maintenance of "WhatsApp" for office use.

REFERENCES

- [1]. Aghazamani, A. (2010). How do University Students Spend Their Time on Facebook? An Exploratory Study. *Journal of American Science*, 6, 730-735.
- [2]. Debnath, P., Bandyopadhyay, S., Haque, S. and Roy, S., Short Paper - Social Media Studies Proceedings of the ISCRAM 2016 Conference - Rio de Janeiro, Brazil, May 2016 Tapia, Antunes, Bañuls, Moore and Porto de Albuquerque, eds.
- [3]. Cohavi, A. (2013). How did Whatsapp became the strongest social network? *Calcalist*. Retrieved from <http://www.calcalist.co.il/local/articles/0,7340,L-3593840,00.html>
- [4]. Tzuk, A. (2013). Whatsapp has 350 million active users a month. [in Hebrew] *Calcalist*. Retrieved October 23, 2013 from <http://www.calcalist.co.il/internet/articles/0,7340,L-3615097,00.html>
- [5]. Le Moigne. Jean-Louis ; Vers un système d'information organisationnel, RFG, N°60, 11-12 / 1986, p 20.
- [6]. Reix. R., Les systèmes d'information une réalité vivante ; RFG, N43, 11/12/83.

- [7]. Rai, A., S.S. Lang and R.B. Welker "Assessing the validity of IS success models: An empirical test and theoretical analysis," *Information Systems Research* (13:1), 2002, pp. 50.
- [8]. Detert J.R., Burris E.R., 2007. Leadership behavior employee. *Voice: Is the Door Really Open?* *Academy of Management Journal*, (50), p. 225-241.
- [9]. O'Brien. J., *Les systèmes d'information de gestion*, éd De Boeck Université, 1995.
- [10]. PURC (2018) , PURC Tariff 2018 www.purc.com.gh
- [11]. Bank of Ghana (2018), Daily Interbank FX Rates www.bog.gov.gh
- [12]. Benhur, T. M., Armanu, T., Ghozali M., Djumahir (2014) Effect of Transformational Leadership Style, Information Technology, Organization Culture and Leader Innovation on Leader Performance (Study in Jayapura City Government), ISSN (Print): 2319 - 801X