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SURVEY ARTICLE

Sociodemographic Factors and Adoption of Social Media as a Management Tool by Managers and Administrators in Selected Non-Governmental Organizations in Kigali, Rwanda

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ABSTRACT

Social media use has gained prominence in the public as well as in the work environment as a way of quickly and widely sharing information and its crucial role in management has been elevated even more by the covid-19 pandemic which has severely limited human physical interaction. This study was carried out to explore the sociodemographic factors and adoption of social media as a management tool among managers and administrators in selected Non-Governmental Organizations in Kigali Rwanda. The study focused on the popular social media applications that can be of use in management namely, Facebook, Twitter, WhatsApp, video-conferencing applications, and YouTube. The study employed a descriptive cross-sectional design with an online survey questionnaire administered to a sample size of 217 respondents purposively sampled from six selected NGOs in Kigali Rwanda. Findings indicated that the overall social media adoption was quite high with WhatsApp being the most popular app. Several respondents' characteristics such as age, education and job level showed statistically significant association with adoption of particular social media applications. Findings, however, revealed no structured approach to social media use in most of the surveyed NGOs. The study concluded that the overall adoption rate of social media was quite high but with a huge disparity in usage rates of specific social media applications and that certain sociodemographic factors such as education level and training appeared as strong predictors of social media adoption. This study recommended therefore, that NGOs should determine the applications that support their business model and provide comprehensive policies and support to encourage the employees to adopt the chosen social media applications in their managerial functions. The policy makers should also promote the modifiable sociodemographic factors that influence social media adoption such as education level and training.

Keywords: Non-Governmental Organizations, Social media applications, Social media adoption.

1 Introduction

The growth of information and communication technology (ICT) coupled with the increase in access to internet have considerably altered processes involved in online interaction by the public (Mainka et al., 2014). Among the ICTs is social media which features quite prominently. Social Media is the virtual space where individuals with a common interest come together to share views, comments, and opinions, and currently there are approximately 2.5 billion people using social media (Clement, 2019). There exist numerous opportunities generated via social media use including affording a unique communication prospect for organizations' engagement with their target clients and creating effective dialogue. The current covid-19 pandemic has also severely limited human face-to-face interactions thus making use of social media even more crucial in conducting the functions of organizations.

The main features in the definition of social media include participation, candidness, and conversation. Other features are connectedness as well as engagement. In this regard, Benkler (2006) opined that social media allows the public to bring forth their opinions in the absence of political and monetary controlling and corrupting influences, as it usually happens in traditional media. As a result, social media and other

contemporary technologies are thus redefining the practice and understanding associated with participatory engagement and are contributing to improving the structure of interaction and communication (Freeman, 2016).

The public sector has not been left behind in adopting these novel communication channels and has increasingly adopted social media for many reasons. One key reason is overcoming the barriers to effective communication frequently encountered in public institutions (Hofmann et al., 2013). Bertot et al. (2012) and Picazo et al. (2012) are some of the researchers who have observed that social media adoption can improve communication, public engagement, openness, democracy, confidence, and the inculcation of good practices in the public sector. However, to be able to conduct an effective analysis, social media tools cannot be appraised in general terms. Social media consists of different tools and applications for example Facebook, Twitter, WhatsApp, Skype, and YouTube among others and specific tools are chosen according to the users' desires, preferences, lifestyles, and other varied factors.

With the arrival of information technology, Non-Governmental Organizations (NGOs) have over the years adopted a blend of technologies for different functions such as social networking and advocacy (Nah and Saxton, 2012), internet publishing and information dissemination (Jain, 2018) and advocacy, mobilization of support, and raising funds (Rudasill, 2006). In all these technologies, social media is a significant technology that takes into consideration an increasing scope of interaction and a simple pathway for users to create and consume various contents.

Owing to the implementation of new technologies in people's daily life, and more importantly as a result smartphone integration, social media has become a part and parcel in how companies interact with their clients although social media was at the onset conceived as a tool for communication, content sharing and lessening the physical distance between peers (Mangold & Faulds, 2009). Presently, social media is one of the key tools for boosting individual contact, client-business contact as well as business-to-business contact by improving information pathways and relationships. Considering these benefits of social media to meeting business objectives, a well-crafted social media approach can help optimize business processes, improve internal communication, encourage product innovation, promote individual growth, and generally improve the internal workings in companies (Looy, 2016). As such, it is obvious that diligent social media management and management of business processes are closely interrelated disciplines which ultimately help businesses succeed in achieving client satisfaction, promoting allegiance, encouraging engagement, and resulting in increased sales (Prodanova & Looy, 2019). As a result of its utility to companies and clients, social media has without doubt prompted considerable research interest because it is seen as an alternative media that brings with it a lot of benefits and has the prospect of being connected non-stop and universally, unrestricted by geographical location (Graham, 2005; Lee & Lee, 2010). According to Andriole (2010), organizations are ever more recognizing that social media is a very effective platform for improved communication with clients and is an invaluable tool for attaining competitive advantages as well as overall business performance.

As can be seen, quite a volume of evidence exists on the general populace and commercial businesses regarding the utility of social media. However, there is scarce evidence on the relevance of social media to NGOs and especially its relevance as a management tool for administrators and managers in these organizations. Although, there are numerous benefits of social media tools in enhancing information sharing among and within organizations, especially in the current unprecedented situation posed by the covid-19 pandemic which has severely curtailed the traditional face-to-face interaction, their adoption rate especially as a management tool has not been very substantial and has been insufficiently investigated. The adoption of social media tools by organizations in Rwanda and other developing countries has been even less apparent (BusinessTech, 2019). The question why some managers and administrators adopt social media applications as a management tool and others, especially in developing countries do not, is a significant issue that needs to be examined. This issue is significant particularly in the case of inter and intra-organizational relationships because of the intense attention social media attracted since its inception at the start of the 21st century from youth, scholars, profit and non-profit organizations and governments globally

(The Global Digital Report, 2019). Unfortunately, social media adoption concentration in most developing countries, including Rwanda, is low (Internet World Stat, 2016). Similarly, just a handful of studies (Walters et al., 2009; Bortree & Seltzer, 2009; Greenberg & MacAulay, 2009) mainly in the developed nations have examined any aspect of NGOs adoption of social media and its usage.

To hasten up social media adoption and reap its many benefits among managers and administrators in NGOs, it is important to consider sociodemographic factors such as age, education level, job level, and other contextual factors and their influence on social media adoption. This understanding can be a starting point in trying to modify the modifiable sociodemographic factors such as education level and training, therefore enhancing and promoting the use of social media in organizations and, hence reaping the many associated benefits. The aim of this study was therefore, to explore the sociodemographic factors and social media adoption among managers and administrators in selected NGOs in Kigali.

2 Methodology

2.1 Research Design

A descriptive cross-sectional survey was conducted to acquire a snapshot of the sociodemographic factors and adoption of social media among administrators and managers in selected NGOs in Kigali Rwanda. A survey permits a researcher to gather data from a large population that would not be observed directly. Thus, the survey method was utilized to collect data at one point in time and to have broader perspective through a larger sample than what is usually obtainable via in-depth interviews (Bhattacherjee, 2012).

2.2 Target Population

The study targeted managers and administrators in six selected large NGOs in Rwanda covering the three broad areas of NGO operations namely education, community development and health care to make a total of six NGOs. To be selected an NGO required to have at least 50 administrators and managers all operating from the same premises in the context of IT infrastructure to minimize any bias. The combined total number of managers from these six selected NGOs according to the lists submitted by the key contacts was approximately 544 which comprised the target population. There was no official statistics for the number of managers and administrators for the NGOs, so the researcher used the lists from the key contacts to approximate the target population.

2.3 Sampling Strategies

The sample size was determined using the Cochran (1977) sample size calculation formula. This is because the population of administrators and managers in NGOs in Rwanda is not known.

$$\eta_0 = \frac{Z^2 pq}{e^2}$$

Where:

Z is the confidence level (1.96)

e is the margin of error (0.05),

p is the (estimated) proportion of social media adoption in Africa (0.17),

q is 1 – p.

So $1.96^2(0.17)(0.83)/0.05^2 = 217$

The study employed a cluster sampling technique. After obtaining the list of NGOs from the Rwanda directory of NGOs operating in Kigali, the NGOs were categorized into three clusters namely, educational organizations, health care organizations and community development organizations. Two NGOs that met the inclusion criteria for each cluster were selected from each cluster and a key contact approached to assent to the study and provide a list and mailing details for managers and administrators in each respective NGO. The survey was issued online to over 500 potential respondents, using a survey software tool from Office 365 (www.office.com).

2.4 Data Collection Methods

The study utilized two data collection instruments namely questionnaire (Appendix III) and interview guide (Appendix IV). An online structured survey questionnaire was created using a software tool from Office 365 (www.office.com) for data collection. The questionnaire targeted administrators and managers in the selected NGOs and its design was guided by prior IT adoption literature (Aghaunor & Fotoh, 2006; Arpaci et al., 2012; Chong et al., 2015; Hoffmann et al., 2014). The questionnaire items from the previous studies were modified and adapted to make them relevant to the current study. Section A of the questionnaire dealt with the demographic components and section B collected data on sociodemographic characteristics related to social media adoption while section C collected data on adoption rate of social media tools. The interview guide targeted the key contacts from each of the six selected NGOs and collected data on social media-related infrastructure, social media policies and challenges related to social media in the selected NGOs.
The researcher scheduled an appointment with the key contact from each of the selected NGOs. After an explanation and assent, the researcher conducted interviews with each of the key contacts using the interview guide. The key contacts then provided the researcher with a list of managers and administrators and their online contact details to be able to be issued with the questionnaire. The questionnaire was issued online to over 500 potential respondents. Invitations were sent to all potential participants with detailed explanation of the research and a hyperlink to the online questionnaire. Online survey is now considered an essential tool for modern research (Manfreda et al., 2008) not least because it is a fast, simple, and non-expensive method of gathering data (Dutot & Bergeron, 2016), while shortening the collection period. This applied more so during this current covid-19 pandemic where social distancing rules needed to be observed. In total, 217 questionnaires representing 100% of the targeted sample were returned online within the set data collection period of two months. Once this target was achieved data collection was terminated. The fool-proof design of the online survey instrument meant that all questionnaires returned were complete and with no errors.

2.5 Reliability and validity

Reliability of the data collection instrument was ensured by using a structured questionnaire with predetermined fields for filling in data. Additionally, the data collection instruments were only used after approval by the assigned supervisors. Additionally, factor analysis was conducted to assess the construct validity of the questionnaire. Kaiser-Meyer-Olkin's (KMO) degree of sampling adequacy and Bartlett's measure of Sphericity was used to assess the suitability of the collected data. Validity of the data collection instrument was ensured by testing the questionnaire via a pilot study targeting managers and administrators from an NGO not included in the sample. Thereafter the questionnaire was modified to ensure that it collected data it is intended to collect.

2.6 Data analysis Procedure

Quantitative data was imported into IBM.SPSS Statistics for windows, version 21.0 from the online questionnaire and then analysed. Frequencies were generated to quantify the respondent characteristics and the adoption rate of the social media applications that were being investigated. Chi-square inferential test was performed to assess any significant associations between selected respondent characteristics and the adoption of specific social media applications. A ρ value < 0.05 was deemed significant and a ρ value < 0.01 highly significant. Odds ratio was computed for the variables that were highly significant to determine the likelihood of respondents possessing those particular characteristics and adoption of particular social media tools. Qualitative data from interview with key informants was analysed through content analysis.

3 Results

3.1 Demographic Profile of Respondents

The demographic characteristics included age, educational level, gender, marital status nationality, residence, and religion. The results of these variables are presented in Table 1.

Table 1: *Demographic Profile of respondents (n = 217)*

Characteristic	Frequency	%
Gender		
Female	87	40.1
Male	130	59.9
Age of respondents		
<20 years	2	0.9
20-39 years	175	80.6
40-59 years	38	17.5
≥60 years	2	0.9
Academic Qualification		
Post-graduate	115	53.0
Undergraduate	98	45.2
Others	4	1.8
Nationality		
Rwandan	185	85.3
Kenyan	16	7.4
Ugandan	6	2.8
Others	10	4.4
Residence		
Kicukiro District	77	35.5
Gasabo District	65	30.0
Nyarugenge District	20	16.3
Others	55	25.3
Marital Status		
Married	131	60.4
Single	84	38.7
Divorced	2	0.9
Religion		
Catholic	74	34.1
Protestant	113	52.1
Muslim	6	2.8
None	14	6.5
Others	10	4.5

Table 1 shows that 59.9% of the respondents were males and that 80.6% were aged between 20-49 years with only 1.8% falling below 20 years or above 60 years. Those with postgraduate qualifications were 53% and those with undergraduate qualifications were 45.2%. The majority (85.3%) were Rwandans with 74.7% residing within Kigali. The married respondents represented 60.4% with many reporting to be protestants at 52.1% and Catholics at 34.1%. 6.5% reported to be unaffiliated to any religion. This implies that majority of the decision makers in Kigali NGOs are males who are highly educated. By being highly educated, it is likely that they were more aware of advancements in the technological domain and therefore more likely to be using modern technology. That majority of the respondents were between 20-39 years reflects this as the median age group when employees are elevated to management levels in organizations. The data on nationality and religion reflects the country demographic patterns according the 2014/2015 RDHS (NISR, 2016).

3.2 Sociodemographic Characteristics Related to Social media adoption

The sociodemographic characteristics that were assessed included profession, job-related characteristics, academic-related characteristics, possession of formal IT skills and internet access.

Table 2: *Academic and Job-Related Characteristics of Respondents (n = 217)*

Characteristic	Frequency	%
Job Level		
Top management	30	13.8
Middle management	166	76.5
Other	21	9.7
Institution of Study		
Public	97	44.7
Private	112	51.6
Faith-Based	6	2.8
Others	2	0.9
Study Institution Location		
Rwanda	147	67.7
East Africa	46	21.2
Africa	6	2.8
Others	18	8.3

Table 2 shows that majority of the respondents (76.5%) were middle level managers and 13.8% were top level managers. 51.6% of the respondents attained their highest academic qualification from a private learning institution and 44.7% attained their highest qualification from a public institution with majority (67.7%) getting their highest academic qualifications in institutions located in Rwanda. 21.2% of the respondents reported attaining their qualification from east African institutions located outside Rwanda and a further 8.3% attained their qualifications outside Africa. This implies a ratio of three middle level managers to one top level manager in the selected NGOs and more than one third of the managers and administrators attained their highest qualifications in Rwanda.

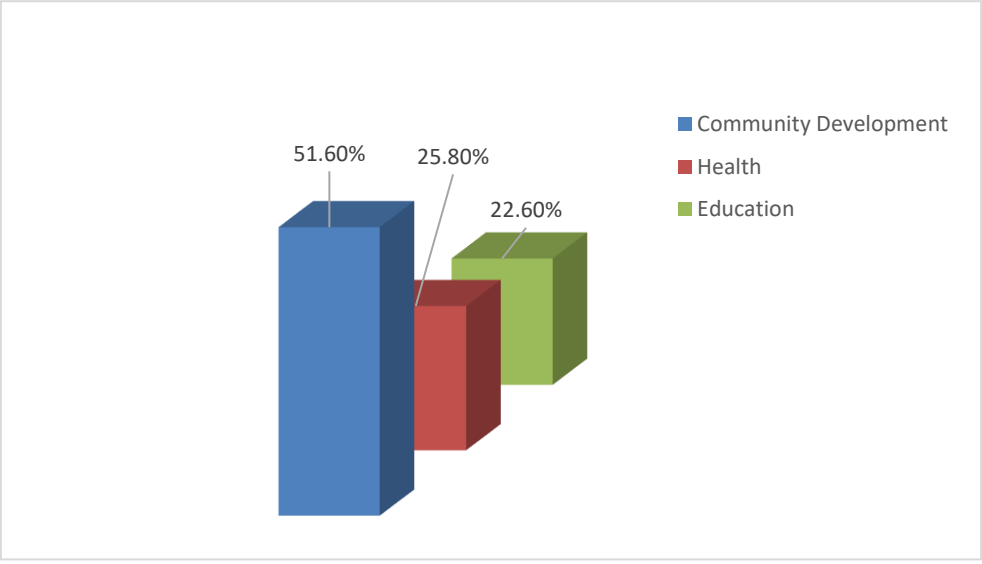

Figure 1: *Respondents NGO Category*

Figure 1 reveals that majority of the respondents at 51.6% worked at community development NGOs, 25.8% at health care related NGOs and 22.6 at educational NGOs. This matches the proportion of NGOs in Kigali when categorized according to the main areas of operation.

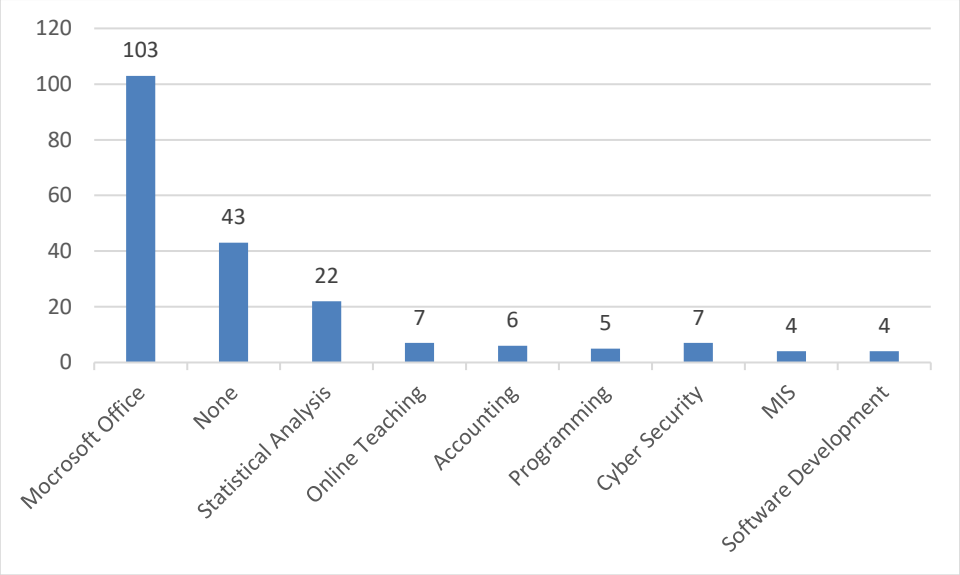

Figure 2: *Formal IT Skills by Respondents*

Respondents were asked to list any IT skills they were formally trained on. Figure 2 shows that 43 out of the 217 respondents reported having no formal IT training. Almost half of the respondents (103) reported having been formally trained on skills related to Microsoft office and 22 possessed training on statistical analysis. Small numbers reported training in other IT skills such as online teaching (7), accounting (6), programming (5), cyber security (4), MIS (4), and software development/installation (4). The respondents could list more than one skill therefore the figures were not computed as a percentage. This implies that majority of the respondents possessed formal IT skills. Possession of IT skills is likely to positively influence adoption of innovations and technologies such as social media applications.

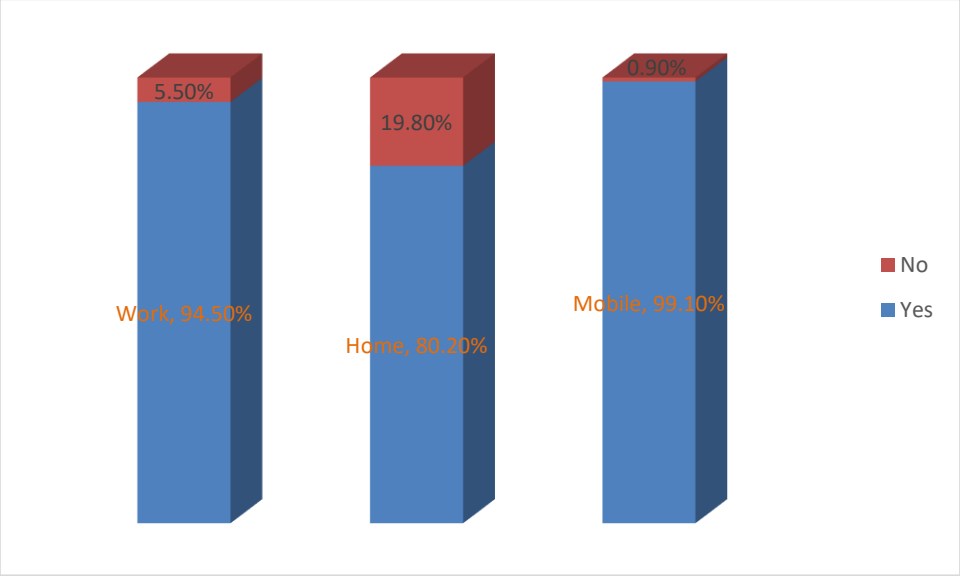

Figure 3: *Internet Access by Respondents*

Figure 3 shows that internet access by the respondents was quite high. Most of the respondents had internet access at work, home and on their mobile devices. 99.1% had access to internet via their mobile devices, 94.5% at work and 80.2% at home. Internet access is a pre-requisite to use of most social media applications and this implies that internet infrastructure is quite good in Rwanda and was therefore not a hinderance to individuals in adoption and use of social media applications.

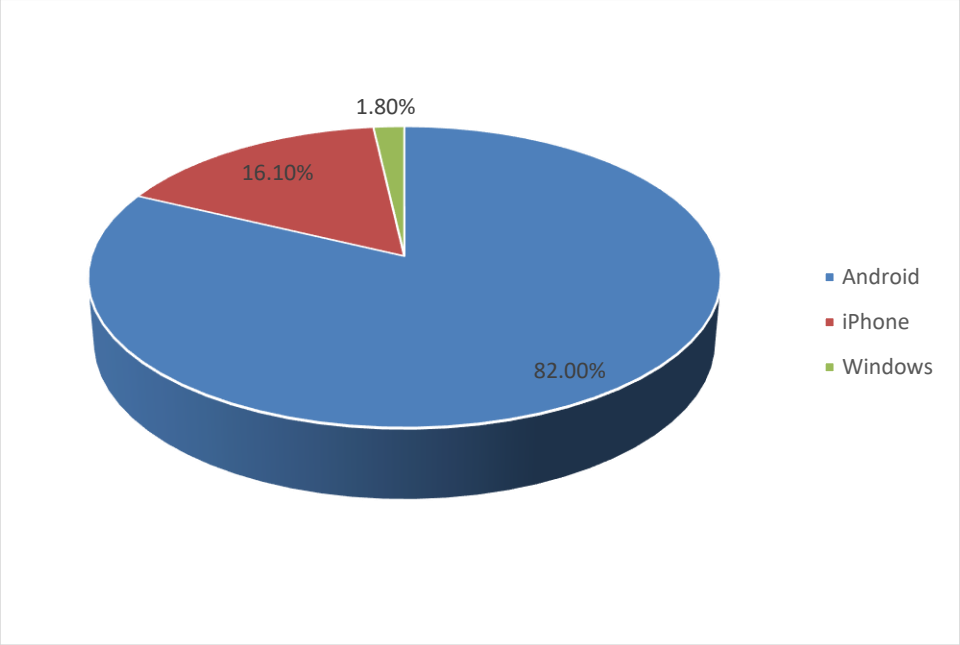

Figure 4: *Favorite Smartphone Type by Respondents*

Figure 4 shows that android was the most the most popular platform for the respondents' smartphones at 82% while 16.1% preferred iPhone and only 1.8% preferred windows as the platform for their smartphones. The type of smartphone platform could have implications on the compatibility of particular applications, however, all the social media applications that were investigated in this study are compatible to android, iPhone and windows platforms.

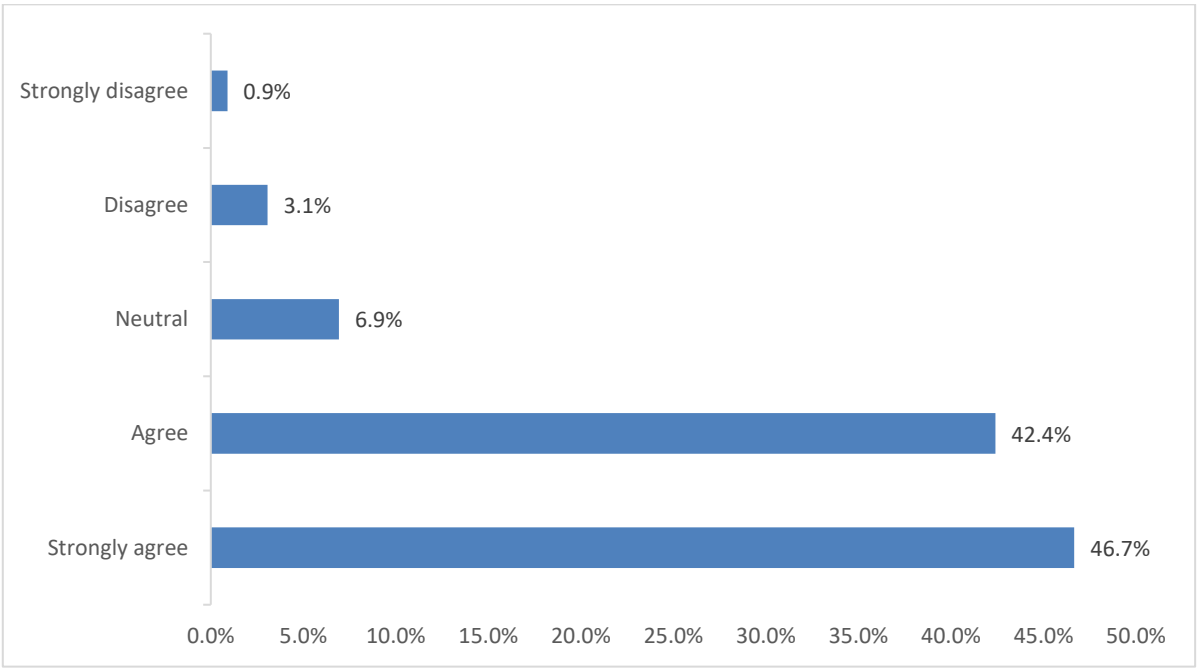

Figure 5: *Perceived Usefulness*

Figure 5 shows that a vast majority perceived social media to be useful in their management and administrative functions at 89.1%. Only 4% perceived social media not to be useful. When an individual believes that using a certain innovation such as social medial would boost performance of their job, then their likelihood of adopting that technology is increased.

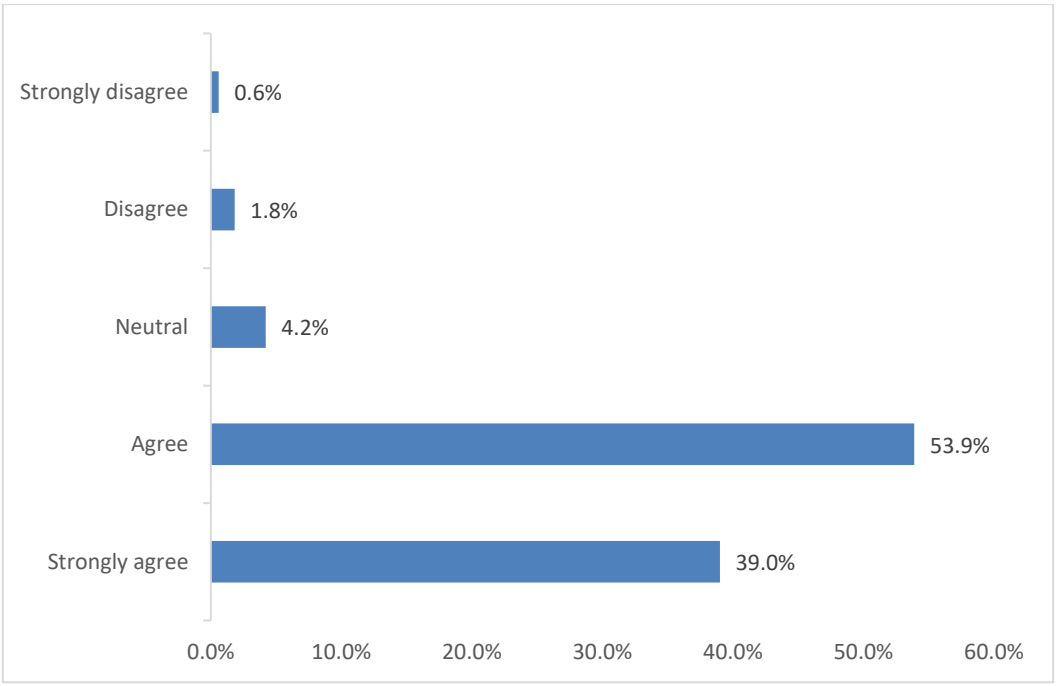

Figure 6: *Perceived ease of use*

Figure 6 indicates that 82.9% of the respondents perceived social media to be easy to use with only 2.4% being of the contrary opinion. When an individual believes that adopting a certain innovation such as social medial would require minimal effort on their part, then their likelihood of adopting that particular technology is higher than if they believed that a lot of effort would be required.

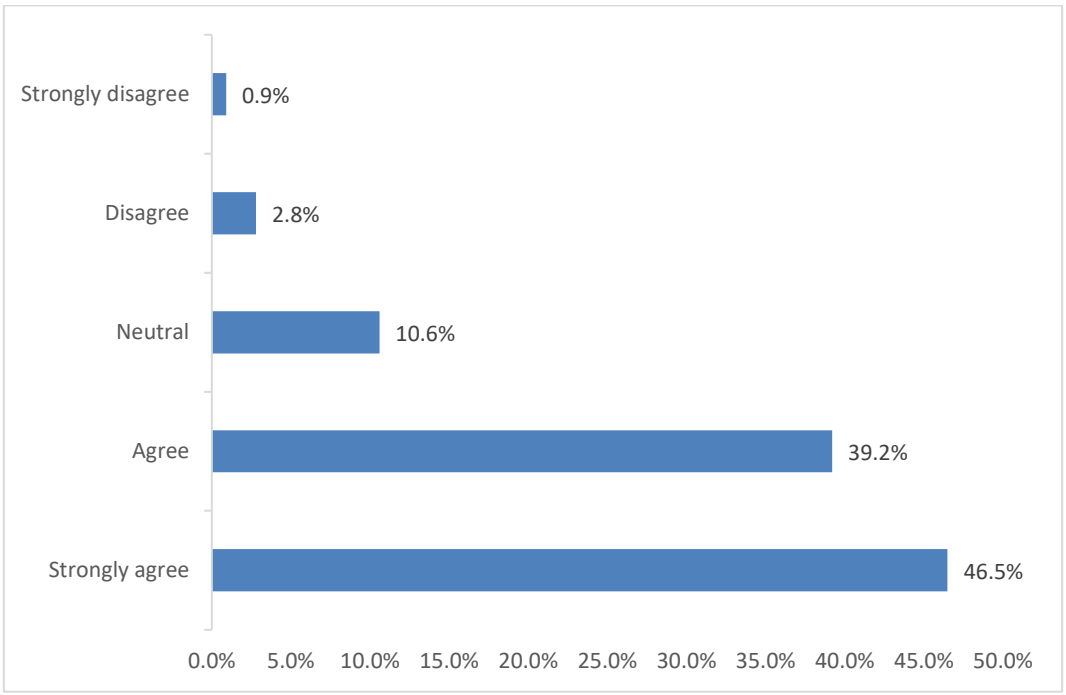

Figure 7: *Perceived trust*

Figure 7 reveals that many respondents (85.7%) trusted social media with only 3.7% indicating that they did not trust social media. A further 10.6% were neutral on the issue of trust of social media. The higher the trust an individual places on a new innovation, the higher the likelihood of adopting or using that particular innovation and this applies to social media tools.

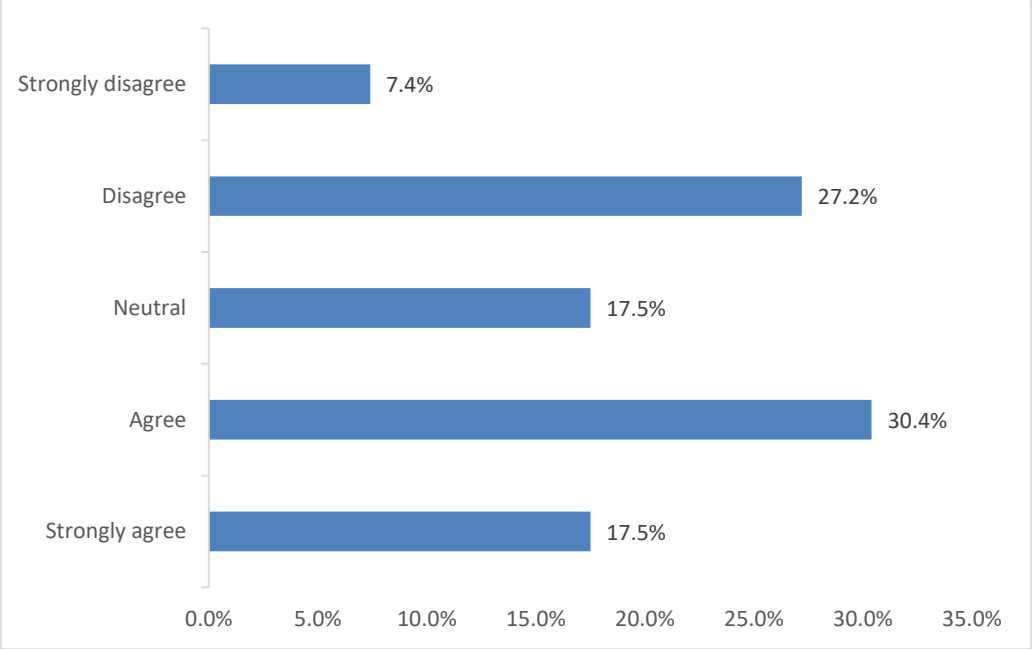

Figure 8: *Perceived Cost*

Figure 8 shows that 47.9% of the respondents perceived social media to be costly to use. 17.5% were neutral on the issue with 34.6% not perceiving social media to be costly. When an individual believes that a lot of financial investment is required to be able to use a certain innovation, then the likelihood of opting to use that particular innovation is diminished.

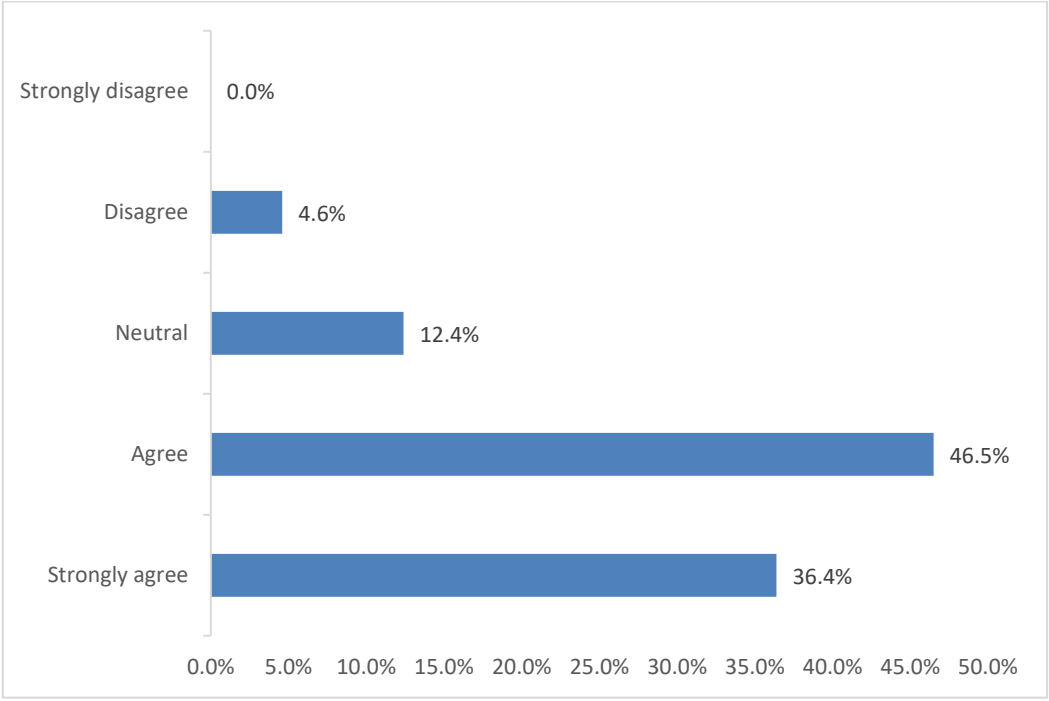

Figure 9*: Attitude towards Social Media*

Figure 9 indicates that 82.9% of the respondents had a positive attitude towards social media. They agreed that they would recommend social media as a management tool. Only 4.6% had a negative attitude towards social media with 12.4% being neutral. Attitudes and perception influence adoption and use of technology and innovation with positive attitudes leading to higher likelihood of adopting the technology or innovation.

3.3 Adoption Rate of Social Media Adoption Among Administrators and Managers in Selected Non-Governmental Organizations in Kigali Rwanda

The overall adoption of social media by managers and administrators at selected NGOs in Kigali was arrived at by computing the frequency of use of at least one of the social media applications under investigation. The results on these variables are presented in Table 3.

Table 3: *Overall Rate of Social Media Adoption Among Administrators and Managers in Selected Non-Governmental Organizations in Kigali Rwanda (n = 217)*

Use of Social Media	Frequency (%)	Cumulative Frequency (%)
>Once Per Day	169 (77.9)	169 (77.9)
At Least Once Per Day	34 (15.7)	203 (93.6)
At Least Once Per Week	10 (4.6)	213 (98.2)
At Least Once Month	2 (0.9)	215 (99.1)
At least once every few months	2 (0.9)	217 (100)

Table 3 indicates that overall social media adoption was quite high among managers and administrators in the selected Kigali NGOs. All the respondents (100%) used at least one of the social media applications at least once every few months with 99.1% using any one of the social media applications at least once a month. 98.2% reported using any one of the social media applications at least weekly, 93.6% daily and 77.9% were using any one of the applications more than once every day.

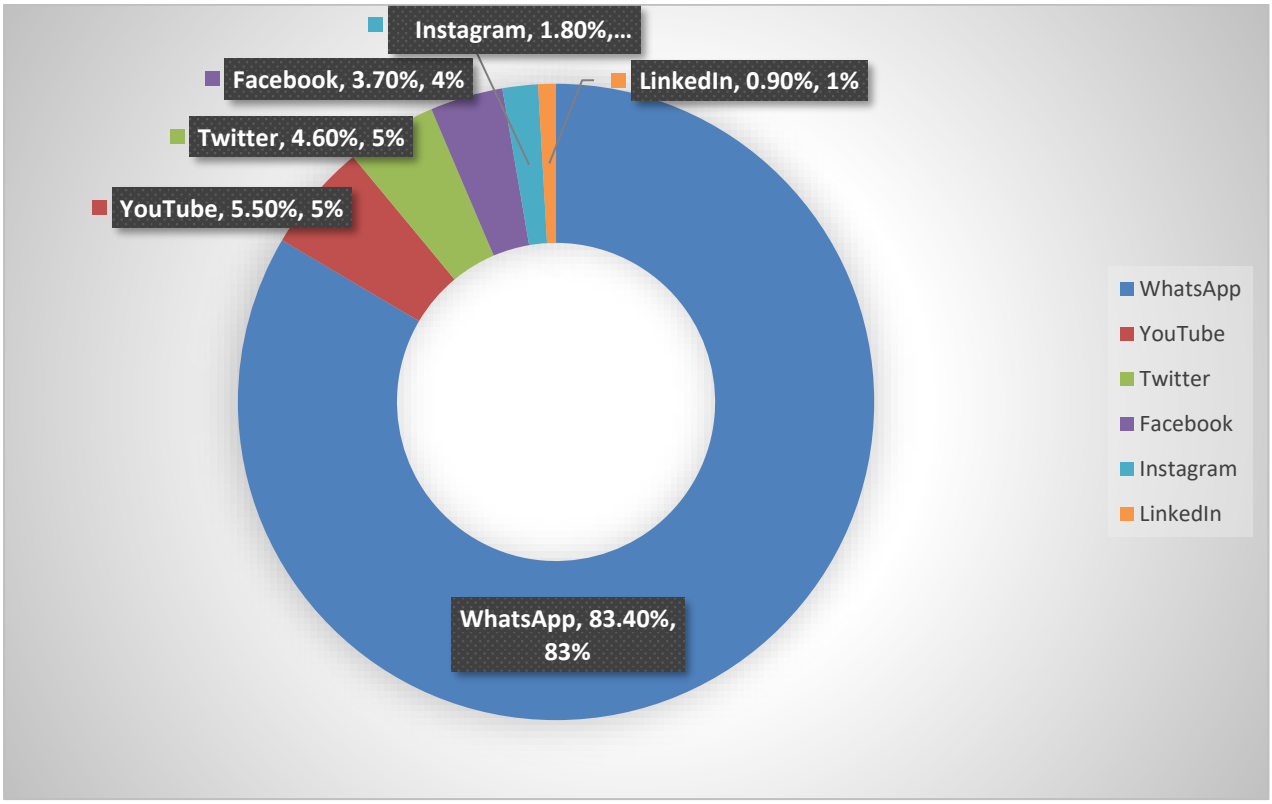

Figure 10: *Favorite Social Media App by Respondents*

The pie chart on figure 10 shows that WhatsApp was the most favorite social media app by 83.4% of the respondents. In second place was YouTube at 5.5% followed by Twitter (4.6%) and Facebook (3.7%). Only 1.8% and 0.9% respectively reported Instagram and LinkedIn as their favorite social media app. No respondent (0%) indicated video-conferencing applications such as Skype, Zoom or Microsoft Teams as their favorite app.

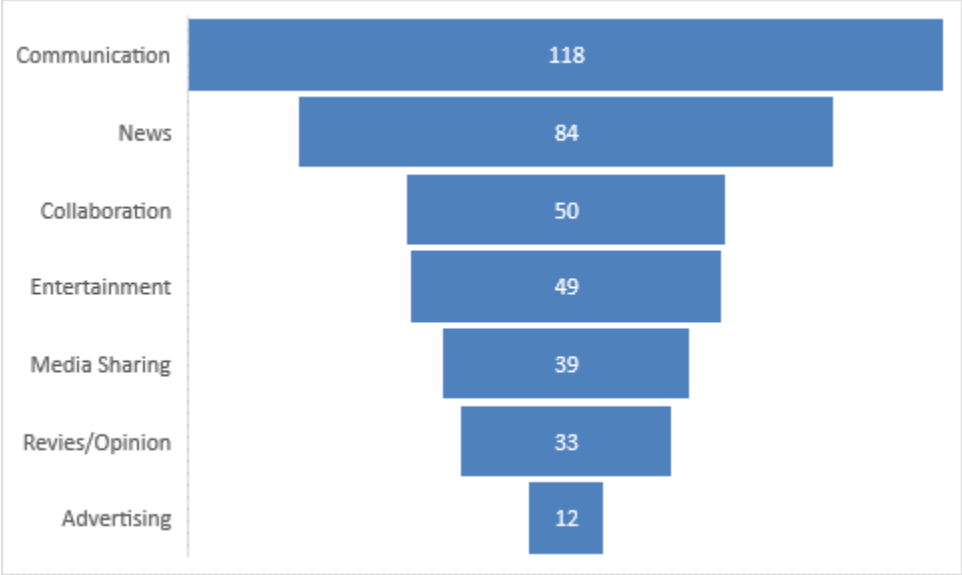

Figure 11: *Main Use of Favorite Social Media App by Respondents*

Figure 11 shows the responses when respondents were asked to list the use of their favorite social media app. Communication was the main use by being cited 118 times. News was cited 84 times, collaboration 50 times and entertainment 49 times. Other cited uses were media sharing (39), reviews/opinion (33) and advertising (12). Respondents could make more than one choice therefore the computation was not pegged at 100%.

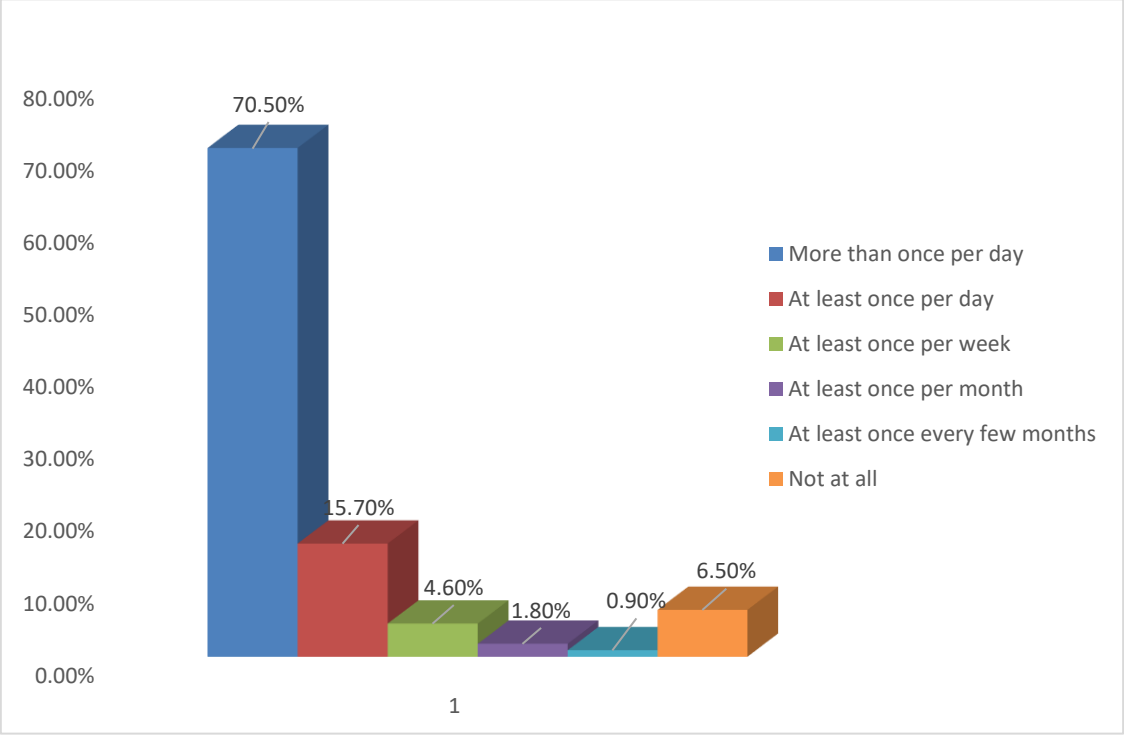

Figure 12: *WhatsApp Adoption Rate by Respondents*

Figure 12 reveals WhatsApp was a very popular app with most respondents (70.5%) reporting using WhatsApp in their administrative and management functions more than once daily and a cumulative percentage of 86.2 using the app at least once daily. Only 6.5% reported not using this app at all in their administrative and management functions.

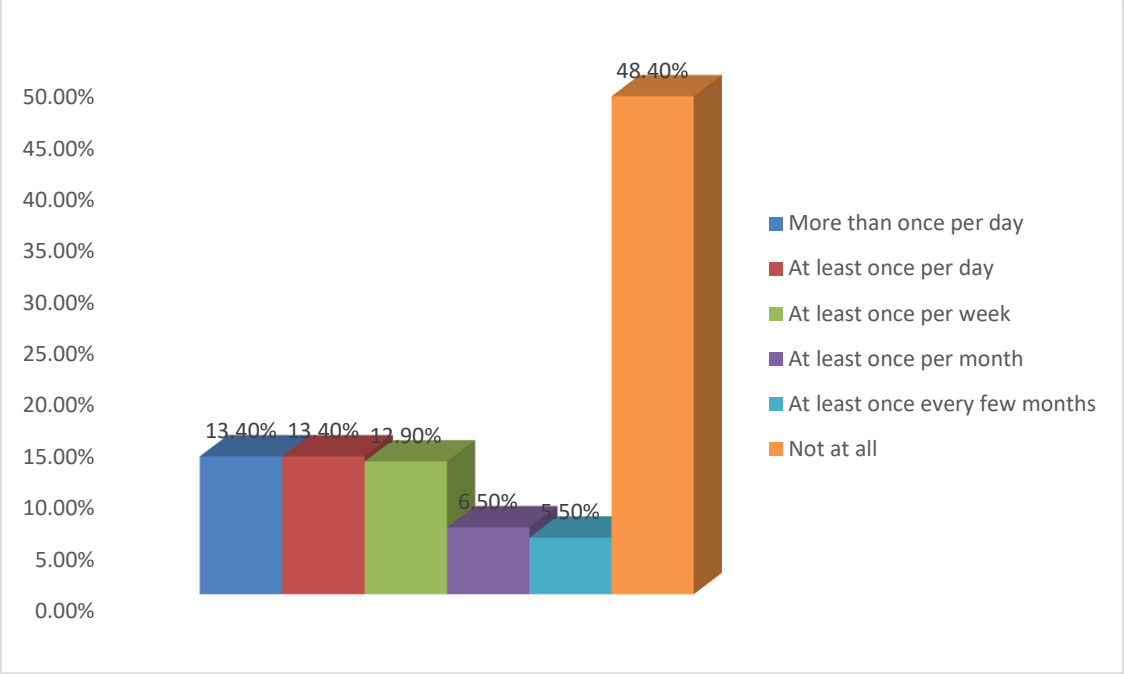

Figure 13: *Twitter Adoption Rate by Respondents*

Figure 13 indicates that Twitter was not a very popular app by respondents in their management functions with a sizeable proportion of 48.4% reporting not using the app at all. Only 13.4% of the respondents reported using Twitter more than once daily and the cumulative figure of administrators and managers using Twitter in their functions at least once a week was 39.3%.

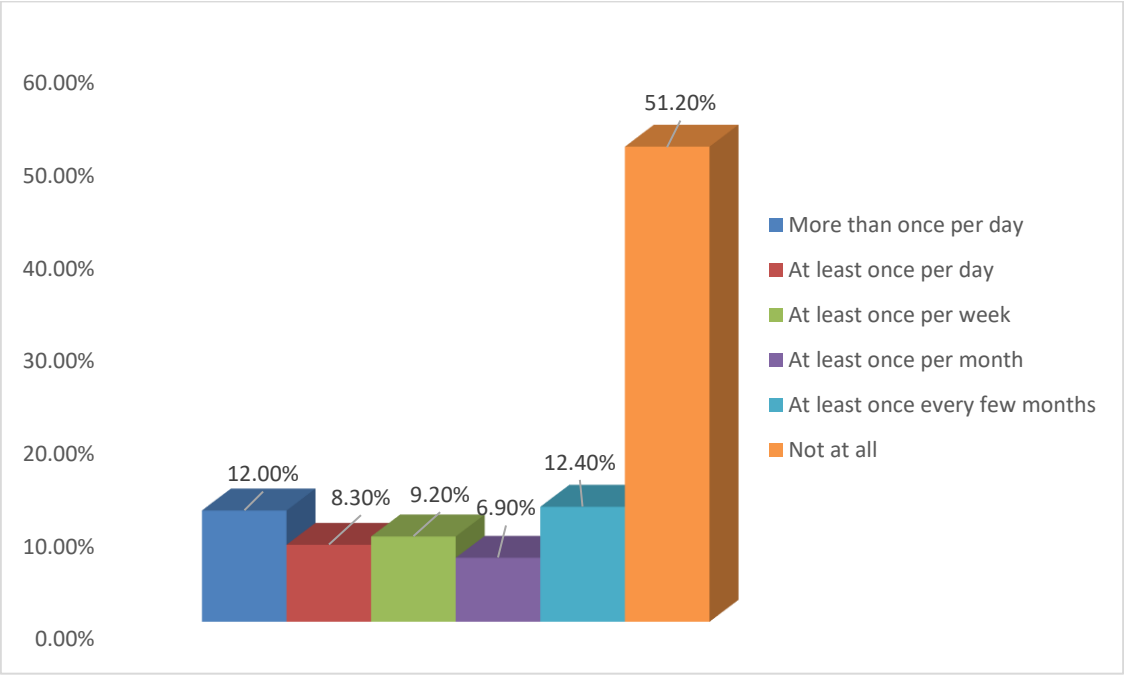

Figure 14: *Facebook Adoption Rate by Respondents*

Figure 14 shows that Facebook was also not very popular among the respondents with a majority (51.2%) not using the app at all in their managerial and administrative functions. Only 12% reporting utilizing Facebook more than once daily. The weekly use was also poor, with only a cumulative 29.5% using the app at least once weekly.

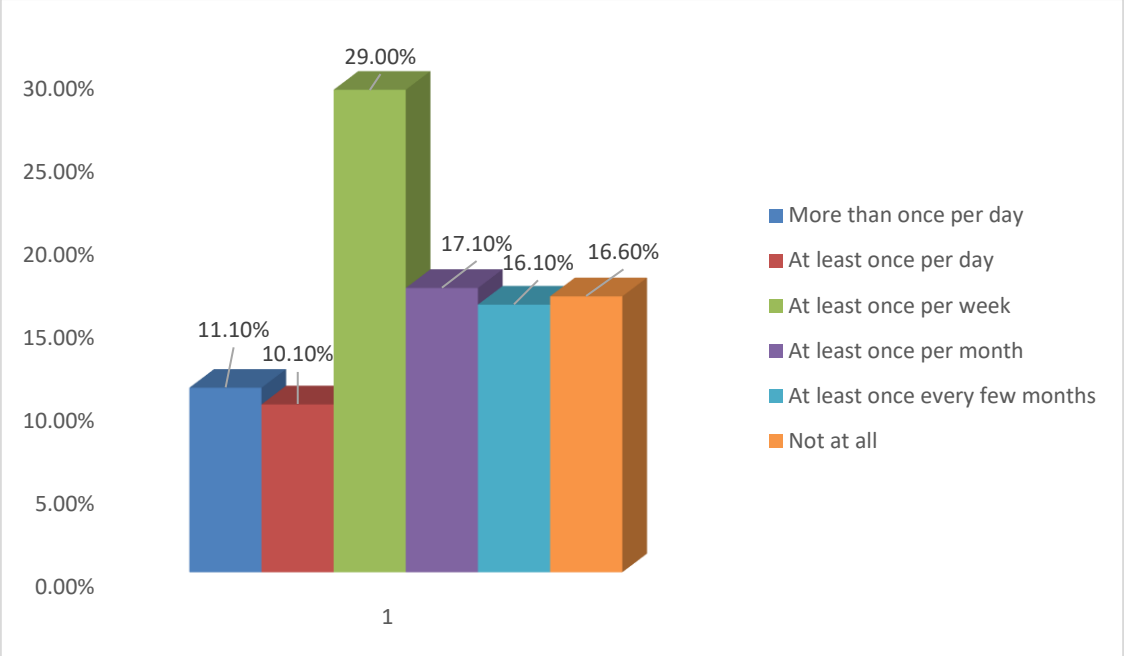

Figure 15: *Video-Conferencing Adoption rate by Respondents*

Figure 15 shows that use of video-conferencing applications were fairy popular with managers and administrators in their functions. 50.2% reported using these applications at least once weekly. In fact, quite a big proportion of the respondents (67.3%) reported using such applications at least once monthly. Only 16.6% of the respondents reported not using these applications at all.

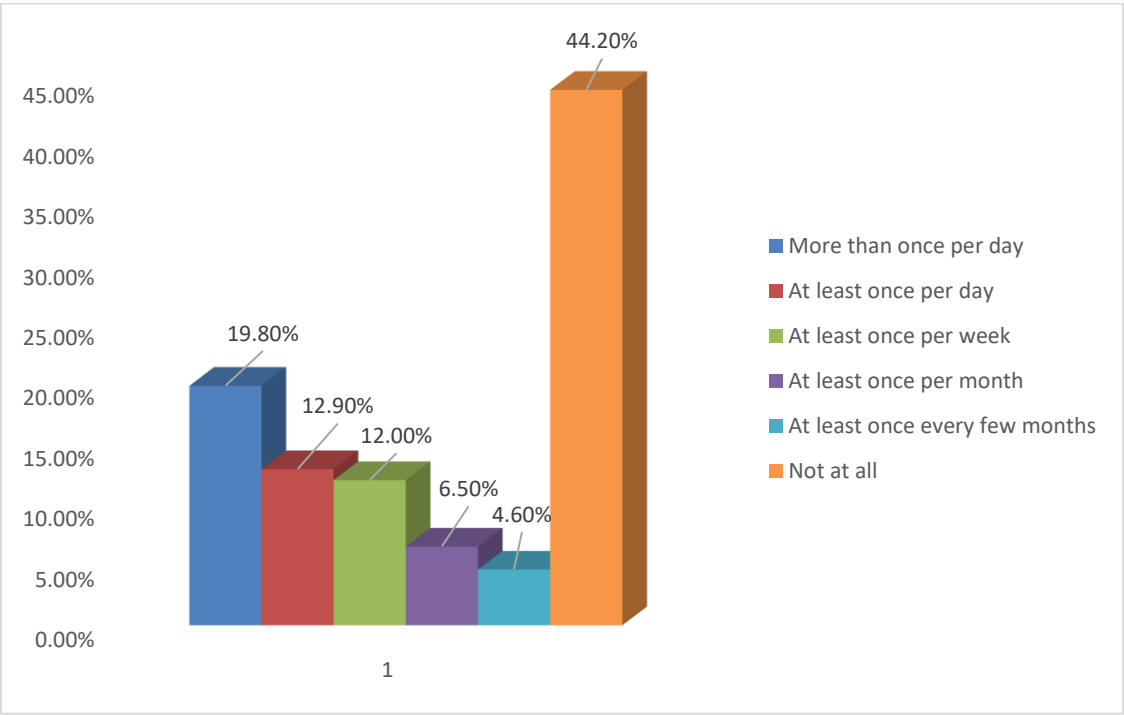

Figure 16: *YouTube Adoption Rate by Respondents*

Figure 16 shows that adoption of YouTube as a management tool by respondents was fair with 44.7% reporting using the app at least once weekly. More than half of the respondents (51.2%) reported using the applications at least once monthly although a sizeable proportion of the respondents (44.2%) reported not using YouTube at all in their managerial or administrative functions.

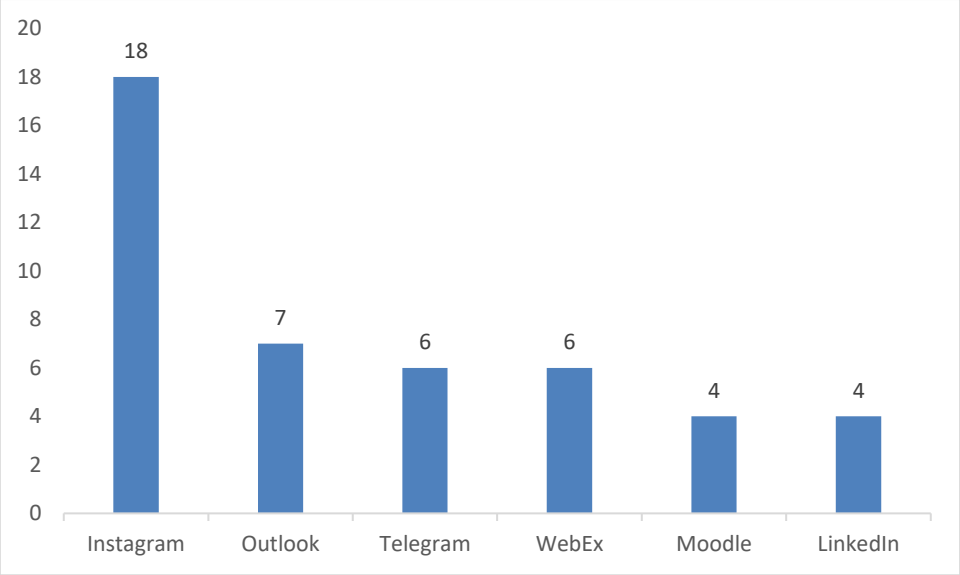

Figure 17: *Other Social media Applications Used by Respondents*

Respondents were required to list other applications they used besides WhatsApp, Twitter, Facebook, YouTube and video-conferencing applications. As shown on figure 17, those applications in order of preference were Instagram (18 respondents), Outlook (7), Telegram (6), WebEx (6), Moodle (4), and LinkedIn (4). A big number of respondents (148) indicated that they used no other social media app besides WhatsApp, Twitter, Facebook, YouTube, and video-conferencing applications.

4.2.3 Relationship Between Selected Sociodemographic Characteristics and Social Media Adoption Among Administrators and Managers in Selected Non-Governmental Organizations in Kigali Rwanda

The selected sociodemographic characteristics that were assessed in relationship to adoption of social media adoption by computing Chi square statistic at ϱ value < 0.05 and ϱ value < 0.01 were age, nationality, residence, marital status, religion, job type, job level, academic qualification, type of higher learning attended, and the type of smartphone platform used by the respondents.

3.4 Relationship Between Selected Sociodemographic Characteristics and Social Media Adoption Among Administrators and Managers in Selected Non-Governmental Organizations in Kigali Rwanda

Before establishing the relationships, Kaiser-Meyer-Olkin's (KMO) Measure of Sampling Adequacy and Bartlett's Test of Sphericity were used to evaluate the suitability of the respondent data for factor analysis. According to Williams et al. (2012) for data to be suitable for factor analysis, the recommended value for KMO is < 0.50 and the Bartlett's Test of Sphericity should be significant (ϱ < 0.50). The KMO index and the Bartlett's Test of Sphericity for this study data (Table 4) reveal that the survey data was suitable for factor analysis

Table 4: *KMO and Bartlett's Test*

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.625
Bartlett's Test of Sphericity	Approx. Chi-Square	857.356
	df	190
	Sig.	.000

Table 5: *Relationship Between Selected Sociodemographic Characteristics and YouTube Adoption Among Administrators and Managers in Selected Non-Governmental Organizations in Kigali Rwanda (n = 217)*

Variables	YouTube		χ2 value	df	ρ value
	Non-users	Users			
Nationality			10.066	3	0.018
Rwandan	78	107			
Kenyan	12	4			
Ugandan	4	2			
Others	2	8			
Residence			9.855	3	0.020
Gasabo	27	38			
Kicukiro	41	36			
Nyarugenge	12	8			
Others	16	39			
College type			16.836	2	0.001
Private	35	77			
Public	55	42			
Others	6	2			

Results on table 5 indicate that nationality (ρ value < 0.018) and residence (ρ value < 0.020) were both significantly associated with adoption of YouTube as a management tool by the respondents. The type of institution where highest academic qualification was attained by respondents was highly significant (ρ value < 0.001). By computing the odds ratio [(77/35)/42/35) it is seen that respondents who had attained their highest qualification from a private institution were 2.84 times more likely to use YouTube compared to those who had attained their qualifications in a public institution. Respondents who were Rwandans [107/78)/(14/18)] were 1.76 times more likely than respondents from other nationalities to adopt YouTube as a management tool. And respondents from outside Kigali [39/16/82/80)] were 2.37 times more likely to adopt YouTube as a management tool compared from respondents hailing from Kigali.

Table 6: *Relationship Between Selected Sociodemographic Characteristics and Twitter Adoption Among Administrators and Managers in Selected Non-Governmental Organizations in Kigali Rwanda (n = 217)*

Variables	Twitter		χ2 value	df	ρ value
	Non-users	Users			
Age			12.502	5	0.029
<20 years	0	2			
20-29 years	24	22			
30-39 years	69	60			
40-49 years	12	20			
50-59 years	0	6			
>60 years	0	2			
Religion			11.154	4	0.025
Catholic	29	45			
Protestant	62	51			
Muslim	2	4			
None	4	10			
Others	8	2			

The findings on table 6 show that age (ϱ value < 0.029) and religion (ϱ value < 0.025 were significantly associated with adoption of Twitter as a management tool by the respondents. Odds ratio [(28/12)/(84/93)] imply that respondents aged 40 years and above were 2.59 times more likely to use Twitter compared to younger respondents and that non-religious respondents [(10/4)/102/101)] were 2.48 more likely to use Twitter than those respondents who professed a religion.

Table 7: *Relationship Between Selected Sociodemographic Characteristics and Facebook Adoption Among Administrators and Managers in Selected Non-Governmental Organizations in Kigali Rwanda (n = 217)*

Variables	Facebook		χ2 value	df	ϱ value
	Non-users	Users			
Age			20.077	5	0.001
<20 years	2	0			
20-29 years	28	18			
30-39 years	65	64			
40-49 years	8	24			
50-59 years	6	0			
>60 years	2	0			
Nationality			10.611	3	0.014
Rwandan	87	98			
Kenyan	14	2			
Ugandan	4	2			
Others	6	4			
Religion			13.444	4	0.009
Catholic	37	37			
Protestant	56	57			
Muslim	0	6			
Others	6	4			
College type			10.011	2	0.007
Private	50	62			
Public	53	44			
Others	8	0			
Smartphone type			6.202	2	0.045
Android	89	89			
iPhone	22	13			
Others	0	4			

Table 7 shows that nationality (ϱ value < 0.014) and choice of smartphone platform (ϱ value < 0.045) were significantly associated with the adoption of Facebook by respondents as a management tool. Age (ϱ value < 0.001), religion (ϱ value < 0.009) and type of institution where highest academic qualification was attained (ϱ value < 0.007) were all highly significantly associated with Facebook adoption at ϱ values of <0.01. By computing the odds ratio [(62/50)/44/53)] it is seen that respondents who had attained their highest qualification from a private institution were 1.50 times more likely to use Facebook compared to those who had attained their qualifications in a public institution. The odds ratio computation for age [(24/8)/18/28)] showed that respondents aged 40-49 years were 4.69 times more likely than younger respondents and [(24/8)/(0/80] 3.00 times more likely than older respondents to use Facebook in their managerial functions. Rwandans [(98/87)/(8/24) were 3.42 times more likely to be users of Facebook compared to other

nationalities and android users [(89/89)/17/22)] were 1.39 more times likely to use Facebook than users of other smartphone platforms.

Table 8: *Relationship Between Selected Sociodemographic Characteristics and Video-conferencing Adoption Among Administrators and Managers in Selected Non-Governmental Organizations in Kigali Rwanda (n = 217)*

Variables	Video-conferencing applications		χ2 value	df	ϱ value
	Non-users	Users			
Job level			9.257	2	0.010
Top level	2	28			
Middle level	26	140			
Others	8	13			
Education level			8.806	2	0.012
Postgraduate	12	103			
Undergraduate	22	76			
Others	2	2			
College location			6.866	2	0.032
Rwanda	30	117			
East Africa	6	39			
Others	0	25			

Table 8 indicates that highest academic qualification (ϱ value < 0.012) and location of the institution where respondent attained the qualification (ϱ value < 0.032) were all significantly associated with adoption of video-conferencing applications as a management tool by the respondents. Job level (ϱ value < 0.010) was highly significantly associated with use of video-conferencing applications. When odds ratio was computed [(28/2)/140/26)] it is seen that top level managers were 2.60 times more likely than middle level managers to adopt these applications in their administrative and managerial functions. Respondents with postgraduate qualifications [(103/12)/76/22)] were 2.49 times more likely to use video-conferencing applications compared to respondents with undergraduate qualifications. Odds ratio imply that respondents who attained their highest academic qualifications outside east Africa [(25/0)/156/36)] were 5.78 times more likely to adopt video-conferencing applications than those who attained their highest academic qualifications inside East Africa.

Table 9: *Relationship Between Selected Sociodemographic Characteristics and WhatsApp Adoption Among Administrators and Managers in Selected Non-Governmental Organizations in Kigali Rwanda (n = 217)*

Variables	**WhatsApp**		**X-square value**	**df**	**ϱ value**
	Non-users	**Users**			
Residence			**9.095**	**3**	**0.028**
Kicukiro	**6**	**71**			
Gasabo	**8**	**57**			
Nyarugenge	**0**	**20**			
Others	**0**	**55**			

Table 9 shows that residence (ϱ value < 0.028) was significantly associated with adoption rate of WhatsApp as a management tool by the respondents. Odds ratio computation implies that respondents from outside Kigali [(55/0)/(148/14)] were 5.20 times more likely use WhatsApp in management compared to respondents from within Kigali.

3.5 Qualitative Data

The study sought to find out the social media infrastructure, social media policies and challenges in relation to social media adoption by interviewing a key informant from each of the six selected NGOs. Based on the responses from key informants on IT infrastructure, all the six selected NGOs provided computers and internet access to employees in their workplaces although many reported slow and unstable connections. Three key informants reported that some social media sites were firewalled and could not be accessed through the workplace network. Only one NGO provided a facility for home and mobile internet access to employees and even this was limited to a few top management personnel. One NGO had required employees to install a video-conferencing app called Zoom when the covid-19 lockdown commenced. It should be noted that Zoom is a free open access app requiring no licensing and therefore, may not represent a significant investment in terms of social media infrastructure.

None but one of the six key informants reported the presence of a policy, strategy or guideline specifically guiding employees on social media use at their workplaces. Employees chose if to use and what specific social media app to use and there was no awareness created on the utility of social media in general or on any specific social media app. The one key informant who reported some form of strategy being present at his workplace indicated that employees had been required to install a video-conferencing app called Zoom. This was done as a result of the lockdown occasioned by the covid-19 pandemic. These findings imply that social media has not been embraced by NGOs as a management tool and that social media adoption seems to be largely an individual decision.

Different challenges were cited by different key informants representing specific NGOs and most of them were group specific. A summary of the major challenges social media-related identified were lack of specific social media policies, data security concerns, lack of top management support, slow internet connection and lack of awareness about benefits of specific social media applications in management.

4 Discussion

The respondents with postgraduate qualifications were slightly more than those with undergraduate qualifications and cross-tabulation as shown in table 8 indicated that higher levels of education would be linked to higher levels of social media use. However, as most participants were very highly educated, this may account for fewer direct effects. The link between education and technology adoption is, however, not very surprising and is consistent with prior research. Cicek and Ozcan (2013) noted individuals with less education were less likely to use computers and the Internet. The study also revealed that many respondents had some formal IT training. Possession of IT skills is likely to positively influence adoption of innovations and technologies such as social media applications.

Results on table 1 show that majority of the respondents were middle level managers with postgraduate qualifications attained from private learning institutions in Rwanda. This reflects the Rwandan education terrain whereby there is only one public university with the rest being private. This additionally, shows that the majority of decision makers in NGOs in Rwanda are highly educated with most having studied in Rwandan institutions of higher learning. By being highly educated, it is likely that they could be more aware of advancements in the technological domain. Results show that internet access by the respondents was quite good.

Results show that internet access by the respondents was quite good. Most of the respondents had internet access at work, home and on their mobile devices as shown in fig 3. This shows that the technology infrastructure in Rwanda is quite good. Android was the most the most popular platform for the respondents' smartphones at 82%. 16.1% preferred iPhone and only 1.8% preferred windows as the platform for their smartphones. This finding correlates with market survey findings that indicate that android phones are the predominant devices used in most countries with only the USA being dominated by iPhone devices (The Digital Report, 2019).

Results show that a vast majority perceived social media to be useful (89.1%), easy to use (82.9%) and trustworthy (85.7%). These findings are not surprising given that our perceptions often influence our

attitudes and the high overall extent use of social media use in the current study supports this assertion. Findings indicate that 82.9% of the respondents had a positive attitude towards social media. They agreed that they would recommend social media as a management tool. Only 4.6% had a negative attitude towards social media with 12.4% being neutral. This is not surprising given that previous research has established a link between attitudes toward technology and technology use (Czaja et al., 2006). Interestingly, previous research noted that greater levels of comfort and interest in technology led to greater computer use adoption of technology (Umemuro, 2004).

Findings indicate that the overall social media adoption rate was surprisingly quite high among managers and administrators in Kigali NGOs with 100% of the respondents using at least one of the social media applications at least once every few months and 93.6% using any one of the applications at least once daily. These findings concur with DataReportal (2020) analysis which shows that the use social media has grown tremendously over the past one year with more than three adults in four using social media and the proportion increasing among educated adults, as is the case with the target population for the current study. The ongoing covid-19 pandemic, which has resulted in minimal human physical interaction has also accelerated the use of social media and made more and more people perceive social media to be beneficial. The technology adoption model (Davis, 1989, Davis et al., 1989) postulates that perceived usefulness is of particular significance in determining user intent of adopting a new technology.

Results show that WhatsApp was the most favorite social media app. In second place was YouTube followed by Twitter and Facebook. Only few reported Instagram and LinkedIn as their favorite social media app. The respondents' preferences of social media applications reflects both national and regional user adoption patterns (The Digital Report, 2019). This is however, in contrast to a study examining the demographic features of Turkish social media users which found that Twitter was the most popular app (Cicek & Ozcan, 2013). This can be explained by the different socioeconomic dimensions between a Euro-Asia country such as Turkey and Rwanda which is a developing country. These dimensions could have an impact on technology use in terms of access and choice.

Findings reveal WhatsApp was a very popular app with the majority of respondents (86.2%) reporting using WhatsApp in their administrative and management functions at least once daily. This was followed by Facebook, YouTube, Twitter, and video-conferencing applications in that order. This popularity of WhatsApp is in concurrence with a global study into consumer attitudes, media habits and expectations during the Covid-19 pandemic which revealed that WhatsApp is the social media app experiencing the greatest gains in usage as people look to stay connected with a growth of over 50% over the past few months since the pandemic was declared (Kantar, 2020).

The results indicate that nationality, residence, and the type of institution where highest academic qualification was attained by respondents were significantly associated with YouTube adoption with respondents who had attained their highest qualification from a private institution being more likely to use YouTube compared to those who had attained their qualifications in a public institution or other types such as faith-based institutions. Similarly, age and religion were significantly associated with adoption of Twitter as a management tool by the respondents.

Nationality, choice of smartphone platform, age, religion, and type of institution where highest academic qualification was attained were all significantly associated with Facebook adoption with the likelihood of adopting Facebook as a management seeming to increase with age while Muslims were more likely to use Facebook and respondents from private institutions were more likely to use Facebook in management. Highest academic qualification, location of the institution where respondent attained the qualification and job level were significantly associated with use of video-conferencing applications with top level managers more likely to adopt these applications in their administrative and managerial functions.

Finally, results showed that residence was significantly associated with adoption rate of WhatsApp as a management tool by the respondents. These types of similar and contrasting associations have been reported by several other researchers. For instance, Cicek & Ozcan (2013), found that there was no significant difference in the usage of Facebook or YouTube and education qualification although the people

who had a higher education level preferred to use Twitter. There was however, found a significant difference in Turkish social media users between the usage of social media applications in terms of marital status (Cicek & Ozcan, 2013).

Several researchers have come up with findings, that suggest some older adults appear quite willing and interested in adopting technology (Demiris et al., 2004; Heinz, 2013; McMellon & Schiffman, 2002). Yet other findings have shown resistance and some apprehension related to technology adoption among this age group (Morrell et al., 2000). In terms of religion, although the current study found that Muslims were more likely to use Facebook than other religions, the small population of Muslims among the respondents at only 2.8% perhaps makes this finding inconclusive.

5 Conclusions

This study aim was to explore the sociodemographic characteristics and adoption of social media among administrators and managers in selected NGOS in Kigali Rwanda. From the findings the study concludes that the overall adoption of social media as a management tool by administrators and managers in NGOs in Kigali is quite high although there is a large disparity when it comes to adoption of specific social media applications. The large disparity in adoption of specific social media applications even in employees from the same organization shows lack of an organized approach to social media use in terms of policies and guidelines within the selected NGOs. It is therefore, suggested that NGO policy makers should determine the applications that support their business model and provide comprehensive policies and support to encourage the employees to adopt and use the chosen social media applications. The study also concluded that there are certain respondent characteristics that are strong predictors of social media adoption. Among those predictors were demographic characteristics such as nationality, residence, religion, and age as well as job related characteristics such as academic qualifications and job level. The high utilization of social media among managers and administrators in NGOs in Kigali Rwanda creates potential opportunities to more formally utilize this as a management tool especially in promoting information sharing and bridging the gap brought about by limited face-to-face interaction due to the current covid-19 pandemic. The prevailing covid-19 pandemic has severely limited human physical interaction. Therefore, it is suggested that the leadership of NGOs will need to develop strategies that will allow the organizations to take advantage of social media as a means of bridging that gap.

6 Declarations

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6.2 Competing Interests

There was no potential conflict of interest with respect to the research, authorship, and/or publication of this article.

6.3 Informed Consent

Informed consent has been taken from the participants.

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