Determinants of Information and Communication Technology Adoption by Religious Organizations: A Case of National Council of Churches of Kenya (NCCK) Member Churches in Nairobi

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Abstract

The adoption of Information and Communications Technologies (ICT) have drastically changed the way people work, relate and communicate in the world today. The religious institution plays a key role in shaping the conduct of people and how they relate with one another. Likewise, technology changes how people relate to each other. As such, adoption of technology in religion is critical if the organization is to reach the surging numbers already hooked to various ICT platforms. This study was necessitated by the fact that technology itself is not value-free. It is presented to religious societies wrapped with cultural values that compliment, challenge or even repel religious attitudes. Hence, the purpose of this study was to investigate the factors determining adoption of ICT by religious organizations with a focus on National Council of Churches of Kenya (NCCK) member churches in Nairobi. The specific objectives of this study were; to establish the congregation characteristics, leadership perception, size of membership and how ethical considerations affect adoption of ICT. Applying the Technology Acceptance Model, the study carried out a cross sectional survey in which various churches were studied. The sample size was 27 NCCK member churches and the target population was 324 church leaders. Simple random sampling was used to give each element of the target population an equal chance of being selected. The data was analyzed using a computerized statistical software and results presented in percentages and frequencies through tables and figures. The researcher conducted a multiple regression analysis to determine the relationship between the independent variable and dependent

variable. The study found that the attributes of congregation, leadership perception of ICT, size of church membership and ICT adoption are positively and significantly related, whereas ethical considerations and ICT adoption are positively but insignificantly related. Based on the study findings, it was concluded that these factors influence the adoption of ICT in religious organizations. The researcher recommends that church leaders should take cognizance of their congregation characteristics and develop ICT programmes which serve them best. In addition, the church leadership should take deliberate efforts to change their perceptions on ICT owing to benefits that it may present. These findings may be relevant to both new and existing religious organizations. It will also make pertinent contribution to the existing literature and inspire stakeholders of various faith based organizations to come up with policies and strategies on how to adopt ICT.

Keywords: *congregations' attributes, Leadership perception of ICTs, Size of membership, Ethical considerations, Adoption of ICTs, and NCCK member churches in Nairobi.*

1.1 INTRODUCTION

We live in a scientific technological culture where discoveries in various fields have brought about a new understanding of the world. For some decades, technology related research has grown to include focus on collaborative practices outside the workplace including the homestead, museums and even outdoors (Grinter *et al*., 2011). This shift reflects the transformation of Information and Communications Technologies (ICTs) from workplace machines to systems that support an increased diversity of activities that take place in a multitude of domains. This swing has included religious practice, and the use of technologies within it (Wyche *et al*., 2008). However, most of this research focuses on how technology infuses the practices of members of the public as opposed to how ICTs are being appropriated by religious institutions.

Today's religiously oriented use of ICTs is grounded in a history of technology adoption (Hoover *et al*., 2004). Historians have shown that American evangelical Protestants were early enthusiastic adopters of communications technologies such as the printing press and telegraph because they saw those systems as opportunities to grow their faith by spreading the word broadly (Morgan 2009; Noll 2002). This evidence has led some scholars to argue that religion was central in the development of the modern mass communications culture. Evangelicals, who have historically been keen to get out their message via whatever communication conduit available, were the first organized religious groups to embrace the web, and non-traditional or sidelined religious movements made early moves online to get their version of "the word" out (Paul, 2011). In contrast, Islam and Catholicism, which both place an emphasis on shared place in their rituals and view the technology as a mode of logic that could take them in its value direction, have been the most hesitant. As such, ICTs have been a hard to sale phenomenon to these organizations for decades.

New Internet-based technologies have helped quickly transition information consumers from broadcast media, where content is dictated by central creators, to social media, where content can be controlled and customized to complement unique demands of each user (McCully, 2012). At

the same time, content delivery has been transformed into interactive experiences where audiences are no longer passive consumers, but active creators. This is as is the case in most religious organizations. Each individual now has the ability to personalize media experience and contribute to broader conversations across multiple media platforms from televisions to personal computers and mobile devices. Although Kenya continues to struggle with third-world challenges—overwhelming poverty, malnutrition and disease, and the fourth largest AIDS epidemic in the world, the nation is a trailblazer when it comes to technology. Because of its current growth, Kenya is now a country trending toward two extremes: the rural and the urban. Much of Kenyan life is now shaped by this dichotomy, and access to technology is one of the dividing lines (Reach, 2015).

In a recent study conducted by OneHope, in partnership with Scripture Union of Kenya, findings exposed this rural-urban technology gap in children and youth ministry as well. Over 350 churches and para-church organizations were surveyed to find out the role technology plays in both the content and delivery of their ministry efforts to reach the next generation across Kenya. The results found that as church size and population density increased, the value placed on technology as a means of communication increased as well. Additionally, the survey looked at which of three technologies are believed to be most accessible to youth in their areas of ministry: cell phones, smartphones, and the internet. Cell phones were by far more accessible than the others, and access to all of these technologies increased with both church size and population density. The survey found that church use of technology and youth access to technology in Kenya trended together. Similarly, technology's access by youth and use by the church generally increased with population and church size (Kahuthia Nancy, *et al.,* 2015). In this project therefore, the intention is to carry out an assessment of determinants of ICT adoption and the trend within NCCK member churches in Nairobi County. Specifically, the project seeks to research on the forces that influence ICT adoption in religious organizations and the role it plays in church management, worship, pastoral care and outreach.

1.2 Statement of the Problem

Information Communications Technologies have drastically changed the way people relate and communicate in the world today. Nonetheless, these changes have been experienced acutely by most of religious organizations (McCuly, 2012). Many churches place emphasis on shared place in their rituals and perceive technology as a mode of logic that could take them on their core values. As such, ICTs have been a hard to sale phenomenon to these organizations for decades. As a matter of fact, it has been observed that where technology develops exponentially, religion remains fixed on abstract principles and infallible truths (Delio, 2012). Likewise, it has pointed out that technology is neither good nor bad. Hence, the value of technology is the value we assign it to it (Delio, 2014). Whereas some religious organizations have embraced ICT for enhanced service delivery, others have increasingly weakened for failure of using the same (Thuma, 2011). This notwithstanding, some religious groups have embraced ICT for the wrong reasons. It is used as a tool that provokes religious extremism. It is affecting religious practices and ethics in the form of hate speech, spread of misconceptions regarding religious notions, extremist views and brain washing through media (Bushra & Rehman, 2015). It is from these perspective that this study

sought to find out various factors responsible for the adoption of ICTs in NCCK member churches within Nairobi County.

1.3 Objectives of the Study

The general objective of the study was to assess factors affecting the adoption of information communication technologies in NCCK member churches within Nairobi.

The specific objectives were as follows;

    i.   To assess how congregations attributes influence adoption of ICTs in NCCK member churches within Nairobi.

    ii.   To establish whether the leadership perception of ICTs affect its adoption within NCCK member churches in Nairobi.

    iii.   To ascertain the impact of size of membership on adoption of ICTs within NCCK member churches in Nairobi.

    iv.   To evaluate how ethical considerations affect adoption of ICTs among NCCK member churches in Nairobi.

2.0 LITERATURE REVIEW

2.1 Theoretical Framework

2.1.1 Technology Acceptance Model (TAM)

Technology acceptance model (TAM) refers to the model developed by Davis (1989), to measure user acceptance of new technologies. The model uses two specific variables; perceived usefulness (PU) and perceived ease of use (PEOU) which are hypothesized to be fundamental determinants of user acceptance. These two are the most important factors in explaining individual users adoption intentions and actual usage. Perceived Usefulness (PU), refers to the degree to which a person believes that using a particular system would enhance his or her job performance. Perceived ease of use (PEOU), is defined as the degree to which a person believes that using a particular system would be free of effort. TAM has been extensively tested and validated and is a widely accepted model which can be modified or extended using other theories or constructs (Masinge, 2010). Perceived Risk (PR) is the uncertainty about the outcome of the use of the technology. In this study perceived risk will refer to four facets of risk including performance (growth) risk, security or privacy risk, time risk and financial risk.

2.1.2 Theory of Diffusion of innovations

Diffusion of innovations is a theory that seeks to explain how, why, and at what rate new ideas and technology spread through cultures. Rogers (2003), popularized the theory in his book *Diffusion of Innovations*; the book was first published in 1962, and is now in its fifth edition (2003). Rogers argues that diffusion is the process by which an innovation is communicated through certain channels over time among the participants in a social system. The origins of the diffusion of innovations theory are varied and span multiple disciplines. Rogers (2003) proposes that four main elements influence the spread of a new idea: the innovation itself, communication

channels, time, and a social system. This process relies heavily on human capital. The innovation must be widely adopted in order to self-sustain. Within the rate of adoption, there is a point at which an innovation reaches critical mass. The categories of adopters are: innovators, early adopters, early majority, late majority, and laggards. Diffusion manifests itself in different ways in various cultures and fields and is highly subject to the type of adopters and innovation-decision process.

Therefore, both theories (TAM and diffusion of innovation) were deemed relevant for this study due to their related tenets. The objective was to assess the factors that necessitate ICT adoption within churches in Nairobi an aspect that the tenets of these theories would attempt to explain.

2.2 Empirical Literature

The use of technology is now a congregational necessity that comes with significant ministerial advantages (Thumma, 2011). A church institution that does not strategically employ these technologies is likely to be perceived as out of sync with the contemporary world. More importantly, the intentional use of these technologies has become a valuable tool for church ministries to expand their ability to do more with fewer resources. Today's religiously oriented use of ICTs is grounded in a history of technology adoption. Historians have shown that American evangelical Protestants were early enthusiastic adopters of communications technologies such as the printing press and telegraph because they saw those systems as opportunities to grow their faith by spreading the word broadly (Noll, 2002). This evidence has led some scholars to argue that religion was central in the development of the modern mass communications culture within the U.S.

One adoption context that scholars point to when discussing the growth of religious faiths in the United States is the Constitutional separation of Church and State, which placed an emphasis on recruiting individuals and competing against other faiths. Some suggest that this fueled the development of technologically enabled practices focused on growth and sustainability (Noll 2002). This history suggests some of the reasons why religious institutions might seek to adopt ICTs. However, this same history also suggests that the adoption of technologies for religious purposes has not been smooth. For example, the use of television and radio led to concerns that religion would become entertainment (Schultze, 2002). Mega churches are typically defined as Protestant Christian churches with 2000 or more laity (members of the church who do not belong to the clergy) (Thumma &Travis, 2007).

Therefore, the use of technology is effectively a congregational necessity that comes with significant ministerial advantages. A church institution that does not strategically employ these technologies is likely to be perceived as out of sync with the contemporary world. More importantly, the intentional use of these technologies has become a valuable tool for church ministries to expand their ability to do more with fewer resources. Additionally, technologically-powered projection screens in worship and member databases which organize information are increasingly present in Churches today. All Saints Cathedral in Nairobi uses a customized software for managing membership and tithing in order to deal with the over 6,000 worshippers. The

software sorts individual members' accounts and manages tithes and it sends statements through their emails. Other than that, recorded summons are made available to the congregation immediately at the end of each service.

Debates have however arisen over the present and future use of technology in the church. Some appreciated the strategically positioned flat screen-monitors displaying live audio-visual material; hymns, readings and pronouncements inside the church. Opponents to the use of technology in church argue that technology such as live-streaming of church services may discourage people from going to church, preferring instead to watch mass from the comfort of their homes. Consequently, it is important to educate the masses on the moral and ethical aspects on the use of both traditional and new media. Hence, Church being the agents of evangelization and educators cannot lag behind. It must embrace ICTs and educate the youth on the responsible use of new media and technology in general.

The size of a congregation is the primary factor in its level of technology use (SurveyFACT, 2010). Likewise, the wealthier the congregation, at any size, the more likely it is to be employing technology. Membership dynamics also play a role in widening this gap. After controlling for the strong influence of size, the age, gender, and education of the membership, senior leadership affect a congregation's embrace of technology (Thuma, 2011). Additionally, among Protestant Christian groups, theological differences also play a role in distinguishing between more and less tech-adept faith communities. These variables that enhance or hinder robust tech use in congregations become even more apparent when all the technological measures are clustered together in a three-point scale of no or marginal tech use, modest use and major use of the Internet and computer-aided technologies.

Another, challenge is in the form of technical help. Unlike corporations who have dedicated staff, and more like home users (Poole *et al*., 2009).The church leaders rely on members of their congregations who have appropriate knowledge. This is mainly in small churches who cannot afford to sustain permanent employees, with sufficient ICT skills. Hence, the choice to use technology determines who can volunteer, while at the same time ministers responsible for making the decision about ICT use, had to weigh the consequences of marginalizing committed volunteers and potentially risking their departure from the community, against engaging other laity to new members through its use. Each encounter with technology has to be weighed by the church leaders in this light. This poses a dilemma and a great challenge towards adoption of ICTs. Historians have argued that creating an engaging and rewarding worship experience has always been important. As such, Church leader's rationale for using ICTs (multimedia presentation systems) in the sermon is partially focused on the ability of ICTs to engage their laity, to help them learn the lesson being presented. In this sense the use of ICTs, can be seen as being just another in a series of techniques used to create a worship experience that would help the laity learn. For example, use of images and video footage being akin to using other technologies. Therefore, ICTs are not just a matter of what is seen, it is used to create what the congregation senses, (feels and smell as well). Thus these

technologies (audio visuals and other mediums) are utilized to bring in the other senses in a worship experience.

2.3 Conceptual Framework

The following conceptual framework has been derived from the theoretical review carried out above.
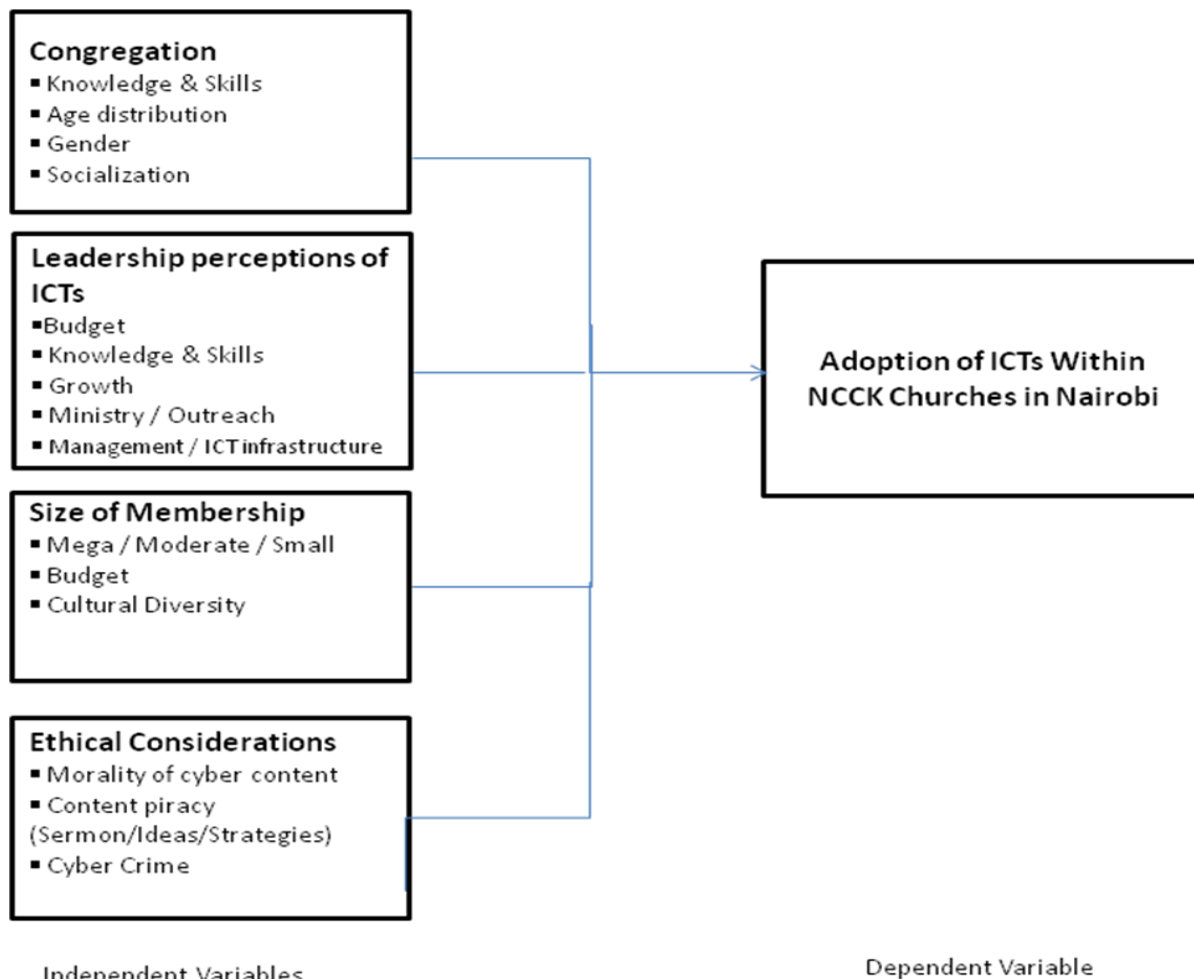

Figure 1: Technology Adoption Framework

Source: Author (2016)

The conceptual framework above presumed that the attributes of the congregation (for example, knowledge and skills, socialization), leadership perception of ICT (perceived benefits, ease of use, size of congregation, as well as ethical concerns would determine ICT adoption within churches in Nairobi.

3.0 RESEARCH METHODOLOGY

The study adopted a descriptive survey that used both qualitative and quantitative methods. The population for this study comprised churches within Nairobi County and the target population are NCCK member churches. Church leaders (Priests/Pastor/Minister/Bishop, chairman and treasurer of local church council) were the respondents since they are the ultimate decision makers. The focus was on the church leadership because they occupy a unique and important place in the appropriation and rejection of ICTs (Grinter *et al*, 2012). The accessible population in this study was 27 NCCK member churches. Each church has at least 4 local churches within Nairobi County bringing the total to 108. The study used a sample size of 30% (33 local churches). Twenty seven (27) local churches constituted 1 randomly selected church from each NCCK member church, while the remainder (6) were randomly selected from the remaining list. Consequently, data was collected from 3 respondents (presiding priest/pastor/bishop, Chairman and the Treasurer of the local church council). Therefore, from a target population of 324 a sample size of 99 respondents was drawn. The researcher opted to use questionnaire for data collection because of its effectiveness in eliciting the respondent's feelings, beliefs and experiences (Gay, 1992). A pilot test was carried by administering at least ten (10) questionnaires to ensure validity of the tool. The questionnaire responses were input into statistical package for social sciences (SPSS) and Cronbach's alpha coefficient generated to assess reliability. The closer Cronbach's alpha coefficient is to 1, the higher the internal consistency reliability (Sekaran, 2003). In general terms a Cronbach alpha of 0.8 is good, 0.7 is an acceptable range while 0.6 and below, is poor.

Table 1: Reliability Tests

Number	Variable	Cronbach's Alpha	No. of Items	Comments
1.	Congregations	0.709	5	Reliable
2	Leadership perception	0.761	5	Reliable
3.	Size of church membership	0.859	5	Reliable
4.	Ethical considerations	0.797	5	Reliable
5.	ICT Adoption	0.822	6	Reliable

Source: Author (2016)

The cronbach alpha for the variables congregation, leadership perception, size of church membership, ethical considerations and ICT adoption was 0.709, 0.761, 0.859, 0.798 and 0.822 respectively which is above the threshold of 0.7. Therefore, that section of the questionnaire relating to the entire construct was reliable. Data was analyzed using descriptive and inferential statistics. These included averages, percentages, frequencies and totals. Likewise, the four objectives were analyzed in the same manner. When the data was thus summarized the researcher identified the existing relationships and made generalizations from the data that affect the entire population. The statistics were used to give an informed true data characteristics. Finally, the researcher conducted a multiple linear regression analysis to determine the relationship between the independent variables and the dependent variable. The adopted model was as follows;

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \varepsilon$$

Where,

Y = ICT Adoption

X1 = Congregation attributes

X2= Leadership perception

X3= Size of Church membership

X4= Ethical considerations

ε=Error term

4.0 DATA ANALYSIS

4.1 Sample Characteristics
The number of questionnaires that were administered were 99 out of which a total of 88 questionnaires were properly filled and returned. Whereas some of the respondents returned the questionnaires half-filled others refused to return them completely despite spirited follow up. The response rate result is shown in Table 2.

Table 2: Response Rate

Response	Frequency	Percent
Returned	88	88.89%
Unreturned	11	11.11%
Total	**99**	**100%**

Source: Author (2016)

The response rate was 88.89 percent. This represented an overall success according to Kothari (2004) a response rate of above 50 percent is adequate for a descriptive study. Cooper and Schindler (2003) also argues that a response rate exceeding 30 percent of the total sample size provides enough data that can be used to generalize the characteristics of a study problem as expressed by the opinions of few respondents in the target population. Based on these assertions the response rate of 88.89 percent was adequate for the study.

4.2 Descriptive statistics

4.2.1 Influence of congregation attributes on the adoption of ICTs
Respondents were asked to indicate their level of agreement on the statements relating to congregation influence on ICT adoption. Table 3 indicates the results.

Table 3: Congregations attributes

Statements	Strongly disagree	Disagree	Neutral	Agree	Strongly Agree	Mean	Std. Dev.
There is limited ICT skills and competence among congregants	0.00%	47.70%	31.80%	20.50%	0.00%	2.73	0.784
Members use various electronic payment systems to give and support church functions	8.00%	33.00%	33.00%	22.70%	3.40%	2.81	0.993
Our members appreciate and support ICT projects in the church	0.00%	4.50%	22.70%	46.60%	26.10%	3.94	0.822
Our church membership is largely women and youth who are technologically compliant	2.30%	14.80%	8.00%	69.30%	5.70%	3.61	0.89
Our church members lack financial resources to fund ICT projects	19.30%	40.90%	23.90%	10.20%	5.70%	2.42	1.09
Average						**3.10**	**0.92**

Source: Author (2016)

Results in table 3 revealed that majority of the respondents who were 47.7 percent disagreed with the statement that there is limited ICT skills and competence among congregants. The results also revealed that majority of the respondents who were 41 percent disagreed with the statement that members use various electronic payment systems to give and support church functions. Also results revealed that majority of the respondents who were 72.7 percent agreed with the statement that our members appreciate and support ICT projects in the church. Results further revealed 75 percent agreed with the statement that our church membership is largely women and youth who are technologically compliant. Further, 60.2 percent of the respondents disagreed with the statement that our church members lack financial resources to fund ICT projects.

Using a five point scale Likert mean, the overall mean of the responses was 3.10 which indicates that majority of the respondents agreed to the statement of the questionnaire. Additionally, the standard deviation of 0.92 indicates that the responses were varied. The results herein imply that congregation attributes influence adoption of ICTs.

4.2.2 Influence of Leadership Perception of ICTs on its Adoption

Respondents were also asked to indicate their level of agreement on statements on leadership perception of ICT. Results are indicated in table 4.

Table 4: Leadership Perception of ICTs

Statements	Strongly disagree	Disagree	Neutral	Agree	Strongly Agree	Mean	Std. Dev.
Our church has an established leadership and administrative structure with various ICT platforms for reaching out to the congregants	1.00%	5.80%	11.40%	62.50%	19.30%	3.94	0.76
Our leaders are visionary and appreciate the role of ICTs in church growth and development	3.40%	2.30%	12.60%	51.10%	29.50%	4.08	0.75
There is proper planning in our church, where ICTs have a budget line	3.00%	4.50%	20.90%	51.10%	20.50%	3.88	0.79
The church leaders have sufficient ICT knowledge and skills	11.40%	26.10%	35.20%	17.00%	10.20%	2.89	1.14
Members of our church are not allowed to participate in decision making.	33.00%	52.30%	2.30%	5.70%	6.80%	2.01	1.10
Average						**3.36**	**0.91**

Source: Author (2016)

Results in table 4.4 shows that 81.8 percent of the respondents agreed with the statement that our church has an established leadership and administrative structure with various ICT platforms for reaching out to the congregants. Likewise, 80.6 percent agreed with the statement that our leaders are visionary and appreciate the role of ICTs in church growth and development. Further, 71.6 percent agreed with the statement that there is proper planning in our church, where ICTs have a budget line. 37.5 percent disagreed with the statement that the church leaders have sufficient ICT knowledge and skills. Finally, 85.3 percent of the respondents disagreed with the statement that members of our church are not allowed to participate in decision making.

Using a five point scale Likert mean, the overall mean of the responses was 3.36 which indicates that majority of the respondents agreed to the statements of the questionnaire. Additionally, the standard deviation of 0.91 indicates that the responses were varied. The results herein imply that leadership perception of ICTs influence adoption of ICTs in NCCK member churches within Nairobi.

4.2.3 Impact of size of the church membership on ICT adoption

Respondents were further asked to indicate their level of agreement on statements regarding size of church membership. Table 5 indicates the results.

Table 5: Size of Church Membership

Statements	Strongly disagree	Disagree	Neutral	Agree	Strongly Agree	Mean	Std. Dev.
Church services cannot be conducted without various ICT and audio visual systems due to the size of membership and the facility	17.00%	27.30%	20.50%	26.10%	9.10%	2.83	1.252
The church utilizes email, SMS, web and social media platforms to reach out to its large body of members	9.10%	35.20%	12.50%	25.00%	18.20%	3.08	1.306
The congregation adequately funds all ICT projects within the church	2.30%	15.90%	25.00%	29.50%	27.30%	3.64	1.116
My church has electronic screens and ICT systems to enable congregants to easily follow sermons	6.80%	35.20%	4.50%	46.60%	6.80%	3.11	1.169
The church membership has adequate pool of volunteers on ICTs skills and resources	17.00%	48.90%	6.80%	11.40%	15.90%	2.6	1.335
Average						**3.05**	**1.24**

Source: Author (2016)

Results in table 5 revealed that 44.3 percent of the respondents disagreed whereas 35.2 percent agreed with the statement that church services cannot be conducted without various ICT and audio visual systems due to the size of membership and the facility. Likewise, 44.3 percent of the respondents disagreed while 43.2 percent agreed with the statement that the church utilizes email, SMS, web and social media platforms to reach out to its large body of members. Also the results revealed that 56.8 percent of the respondents agreed while 18.2 percent disagreed with the statement that the congregation adequately funds all ICT projects within the church. In addition, 53.4 percent agreed while 42 percent disagreed with the statement that my church has electronic screens and ICT systems to enable congregants to easily follow sermons. Further, results revealed that 65.9 percent of the respondents disagreed while 27.3 percent agree with the statement that the church membership has adequate pool of volunteers on ICT skills and resources.

Using a five point scale Likert mean, the overall mean of the responses was 3.05 which indicate that majority of the respondents agreed to the statement of the questionnaire. Additionally, the standard deviation of 1.24 indicates that the responses were varied. The results herein imply that size of church membership influence adoption of ICTs in NCCK member churches within Nairobi. The data therefore tends to affirm Thumma and Travis (2007) assertion that megachurches have been aggressive adopters of ICTs.

4.2.4 Effects of Ethical Considerations on the Adoption of ICTs
Further, respondents were asked to indicate their level of agreement on statements on ethical considerations. Results are presented in Table 6.

Table 6: Ethical Considerations

Statements	Strongly disagree	Disagree	Neutral	Agree	Strongly Agree	Mean	Std. Dev.
There is lack of ownership and water-tight controls for guiding information dissemination over various ICT platforms	10.20%	47.70%	20.50%	15.90%	5.70%	2.59	1.06
There is danger of content piracy on various ICT resources and innovations	14.80%	12.50%	11.40%	52.30%	9.10%	3.28	1.24
Cybercrimes and related ICT security risks are key concerns	2.40%	22.40%	28.20%	40.00%	7.10%	3.27	0.97
Morality of cyber content is a key determinant where anything can be posted	2.30%	35.20%	12.50%	40.90%	9.10%	3.19	1.09
Value preservation is at risk since some religious rituals cannot be replaced by ICT (for example Holy communion, Baptism, Worship experience)	4.50%	23.90%	9.10%	37.50%	25.00%	3.55	1.23
Average						**3.18**	**1.12**

Source: (Author, 2016)

Table 6 above shows that 57.9 percent of the respondents disagreed whereas 21.6 percent agree with the statement that there is lack of ownership and water-tight controls for guiding information dissemination over various ICT platforms. The results also revealed that 61.4 percent of the respondents agreed while 27.3 percent disagree with the statement that there is danger of content piracy on various ICT resources and innovations. Likewise, the results show 47.1 percent of the respondents agreed while 24.8 percent disagree with the statement that cybercrimes and related

ICT security risks are key concerns. 50 percent of the respondents agreed whereas 37.5 percent disagree with the statement that morality of cyber content is a key determinant where anything can be posted. Finally, the results shows that 62.5 percent of the respondents agreed while 28.4 percent disagreed with the statement that value preservation is at risk since some religious rituals cannot be replaced by ICT (for example, Holy Communion, Baptism, Worship experience).

Using a five point scale Likert mean, the overall mean of the responses was 3.18 which indicates that majority of the respondents agreed to the statement of the questionnaire. Additionally, the standard deviation of 1.12 indicates that the responses were varied. The results herein imply that ethical considerations influence adoption of ICTs in NCCK member churches within Nairobi.

4.2.5 ICT Adoption within Churches in Nairobi
Respondents were asked to indicate their level of agreement on statements on adoption of ICT within churches in Nairobi. Table 7 presents the results.

Table 7: ICT Adoption within Churches in Nairobi

Statements	Strongly disagree	Disagree	Neutral	Agree	Strongly Agree	Mean	Std. Dev.
Our Church has put in place ICT systems and resources to enhance its operation, growth and development	0.00%	8.00%	15.90%	62.50%	13.60%	3.82	0.77
Our tech-savvy congregation has greatlyre-engineered our ICT platforms	0.00%	9.10%	20.50%	53.40%	17.00%	3.78	0.84
The ICT skills and competence of our church leadership is satisfactory	4.50%	50.00%	18.20%	13.60%	13.60%	2.82	1.16
Our church has an enviable position in the society as compared to others largely due to its ICT advances and development	0.00%	15.90%	26.10%	46.60%	11.40%	3.53	0.90
Our church has track record of impacting positive character through ICTs in comparison to other churches	0.00%	15.90%	40.90%	37.50%	5.70%	3.33	0.81
Our church has experienced growth in numbers and other dimensions as a result of using ICTs.	0.00%	6.80%	30.70%	30.70%	31.80%	3.88	0.95
Average						**3.53**	**0.90**

Source: (Author, 2016)

Results in Table 7 indicate that 76.1 percent of the respondents agreed while 8 percent disagreed with the statement that our Church has put in place ICT systems and resources to enhance its operation, growth and development. The results also shows that majority of the respondents 70.4 percent agreed while 9.1 percent disagreed with the statement that our tech-savvy congregation has greatly re-engineered our ICT platforms. Likewise, the results reveals that 54.5 percent of the respondents disagreed whereas 27.2 percent agreed with the statement that The ICT skills and competence of our church leadership is satisfactory. Furthermore, 58 percent of the respondents agreed while 15.9 percent disagreed with the statement that our church has an enviable position in the society as compared to others largely due to its ICT advances and development. In addition, 43.2 percent of the respondents agreed while 15.9 percent disagreed with the statement that our church has track record of impacting positive character through ICTs in comparison to other churches. The results also revealed that majority of the respondents who were 62.50% agreed while 6.8 percent disagreed with the statement that our church has experienced growth in numbers and other dimensions as a result of using ICTs. Using a five point scale Likert mean, the overall mean of the responses was 3.53which indicates that majority of the respondents agreed to the statement of the questionnaire. Additionally, the standard deviation of 0.90 indicates that the responses were varied.

4.3 Correlation Analysis

Correlation analysis was conducted between the independent variables; attributes of the congregation, leadership perception on ICT, size of church membership and ethical considerations and adoption of ICT. (Dependent variable). Results are presented in Table 8.

Table 8: Correlation Coefficients

		ICT Adoption	Congregation	Leadership Perception	Size of Membership	Ethical Considerations
ICT Adoption	Pearson Correlation	1.000				
	Sig. (2-tailed)					
Congregation attributes	Pearson Correlation	.528**	1.000			
	Sig. (2-tailed)	0.000				
Leadership Perception	Pearson Correlation	.767**		1.000		
	Sig. (2-tailed)	0.000				
Size of Membership	Pearson Correlation	.822**			1.000	
	Sig. (2-tailed)	0.000				
Ethical Considerations	Pearson Correlation	.437**				1.000
	Sig. (2-tailed)	0.000				
** Correlation is significant at the 0.01 level (2-tailed).						

Source: (Author, 2016)

Results in Table 8 indicated that there was a positive and a significant association between congregation attributes and ICT adoption (r=0.528, p=0.000). The results are consistent with those of (Consolata, 2013) who found out that religious practice is now faced with a rather sophisticated and technologically savvy congregation where the traditional approach to matters religion is no longer effective. The results also indicated that there was a positive and significant association between leadership perception of ICTs and ICT adoption(r =0.767, p=0.000). Historians have shown that American evangelical Protestants were early enthusiastic adopters of communications technologies such as the printing press and telegraph because they saw those systems as opportunities to grow their faith by spreading the word broadly (Noll, 2002).

Results further indicated that there was a positive and significant association between size of membership and ICT adoption(r= 0.822, p=0.00). Thumma and Travis (2007), stated that one means by which mega churches cope with their size has been to use ICTs, to create and coordinate the entire community, smaller groups, and deal with the challenge of broadcasting sermons not just to the people in the vast sanctuary of the main campus building, but also to those who attend in physically remote satellite campuses. And the data shows that mega churches have been very aggressive adopters of ICTs. Likewise, the results shows that there was a positive and significant association between ethical considerations and ICT adoption(r= 0.437, p=0.000). This affirms the observation that that where technology develops exponentially, religion remains fixed on abstract principles and infallible truths (Delio, 2012). Increasingly, this view is changing and the conservative religious groups are slowly adopting ICTs. This has been driven more by the importance of the web in everyday life, from banking, shopping to socializing (Paul, 2011).

4.4 Regression Analysis

Regression analysis was conducted between the independent variables; congregation attributes, leadership perception on ICT, size of church membership and ethical considerations and adoption of ICT. (Dependent variable).

Table 9: Model of Fitness

Indicators	Coefficients
R	.876a
R Square	**0.768**
Adjusted R Square	0.756
Std. Error of the Estimate	0.32741

Source: Author (2016)

Results in table 9 show that coefficient of determination (R square) was found to be 76.8 percent. This means that the independent variables congregation attributes, leadership perception, size of church membership and ethical considerations explain 76.8% of variations in the dependent variable which is ICT adoption

Table 10: Analysis of Variance

	Sum of Squares	df	Mean Square	F	Sig.
Regression	29.374	4	7.344	68.507	**0.000**
Residual	8.897	83	0.107		
Total	38.271	87			

Source: Author (2016)

Table 10 provides the results on the analysis of the variance (ANOVA). The results indicate that the overall model was statistically significant. Further, the results imply that the independent variables are good predictors of ICT adoption. This was supported by an F statistic of 68.507 and

the reported p value (0.000) which was less than the conventional probability of 0.05 significance level.

Table 11: Regression of Coefficients

Variables	B	Std. Error	t	Sig.
(Constant)	0.625	0.249	2.513	0.014
Congregation attributes	0.154	0.056	2.732	0.008
Leadership Perception	0.399	0.083	4.836	0.000
Size of Membership	0.309	0.056	5.516	0.000
Ethical Considerations	0.041	0.048	0.858	0.393

Source: Author (2016)

Regression of coefficients results in table 11 shows that congregation attributes and ICT adoption are positively and significant related (β=0.154, p=0.008). This points to Bolu (2011) findings that in a world where every day we become more interconnected, the global visibility of churches is clearly linked to the modern congregant. This is also in tandem with Consolata (2013) observation that, religious practice is now faced with a rather sophisticated and technologically savvy congregation where the traditional approach to matters religion is no longer effective. The results further indicates that leadership perception and ICT adoption are positively and significant related (β=0.399, p=0.000). Thuma (2011), had similar result where he noted that senior leadership affect a congregation's embrace of technology. It is also observed that, when it comes to the adoption of technology, church ministers will ultimately see ICTs being largely accepted in the worship experience, but with a vocal minority expressing concerns (Noll, 2002).

It was further established that size of church membership and ICT adoption were positively and significantly related (β=0.309, p=0.000). This finding is in tandem with SurveyFACT (2010) findings that, the size of a congregation is the primary factor in its level of technology adoption and use. While some congregation do respond to these multi-sensory ICT experiences favorably others may not. However, there has been a key recurring concern that ICTs are turning worship into entertainment an aspect that can slow its adoption. Ethical considerations and ICT adoption were found to be positively but insignificantly related (β =0.041, p=0.393).Debates have arisen over the present and future use of technology in the church. Opponents to the use of technology in church argue that technology such as live-streaming of church services may discourage people from going to church, preferring instead to watch mass from the comfort of their homes, hence affecting critical religious rituals such as holy communion.

Thus from the above, the optimal model for the study is as follows;

ICT Adoption of NCCK Member Churches in Nairobi = 0.625 + 0.154X_1 + 0.399X_2 + 0.309X_3 + 0.041X_4.

Where,

X_1 = Congregation attributes

X_2 = Leadership perception

X_3 = Size of Church membership

X_4 = Ethical considerations

5.0 CONCLUSION

The study sought to answer a number of research questions so as to meet set objectives. It attempted to find out how congregation attributes, leadership perception, size of church membership, and ethical considerations influence the adoption of ICTs in NCCK member churches within Nairobi. The results revealed that the size of church membership was the major determinant for ICT adoption. Other determinants were leadership perception, congregation attributes and ethical consideration.

Based on the study findings, it is concluded that Churches with large number of members use technological resources to efficiently manage and run their institutions. Likewise, leadership perception of ICTs affect its adoption in churches. Church leaders who are visionary and appreciate the role of ICT have adopted ICTs to better manage, reach out and grow their ministries. All NCCK churches under study were found to have some form of ICT tools and infrastructure. Some of them had audio-visual equipment, financial management systems, and communications tools and resources such as email, website, and telephone among others.

6.0 RECOMMENDATIONS

From the findings of the study it is recommended church leaders should increasingly embrace and enhance their ICT skills. Likewise they should develop programmes that will help their institutions to consider how ICT can be used to grow faith, develop relationships, manage the church and respond to religious knowledge, which support the pursuit of spiritual wellness and the cultivation of lifelong biblical learning.

The study also recommends churches to identify appropriate technologies that better serve their congregants. This should be within and beyond the confines of the church premises by embracing online resources. The Church should endeavor to adopt potent ICTs tools and platforms with an objective of dealing with the vices that ICT presents to the society. In addition, there is need for church leaders to identify Virtual learning programs and open access initiatives which allow Bible knowledge to spread beyond physical boundaries, thus, enhancing the church's important role in raising new generation of people with good character.

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