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Evaluating Technology Adoption among Christians Organisations as a Medium of Worshipping during Lock down in Developing Countries

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Abstract

The outbreak of COVID-19 marked a turning point for mankind. All aspects of human life were affected to some extent, including religious services. It changed the way in which many religions had been practicing their rituals for centuries. It accelerated the recent tendency to use more technological resources and an evident change towards digitalisation, since there were restrictions or closure of places of worship. This affected the churches' financial positions due to reduced church attendance. However, there were still some churches that had reservations about the use of technology in worship. Hence, this research moved in to establish the actual challenges for this refusal to adopt technology. Further, given the fact that there was very little research that had been done on post-Covid pandemic, there was therefore a literature and research gap which the study aimed to bridge. Specifically, the study sought to evaluate the factors that influenced the adoption of technology as means of worship during covid-19 lock down by SDA Christians in Zambia. The study utilized survey research with closed-ended researcher administered questionnaire. A total of 382 questionnaires were administered with a response rate of 79%. The data collected was analyzed using descriptive analysis and inferential statistics (Pearson Correlation Coefficient). Pearson Correlation Coefficient was used to determine the relationships between the variables. The hypotheses were accepted as they showed p-values less than 0.005. It was therefore established that performance expectancy, effort expectancy and social influence have an effect on the intention of use and actual use of technology as a medium of worship among Christians. Based on the above findings, the church leadership and other stakeholders must take into account the

above factors when introducing technology so that church members are able to participate in church programs. This will help boost the necessary source of funds in terms of tithes and offerings which is membership attendance and also leverage on technology as channel members can use for returning tithes and offerings.

Keywords

Technology Adoption, Religious Practices, Technological Solutions, UTAUT, Worship

1. Introduction

This article is organized as follows: It starts with abstract, introduction of the actual study, then statement of the problem. This is followed by the theoretical framework which looks at various theories involving technology adoption. Different literature is reviewed concerning the subject matter. Research methodologies involving research design, population of study, sample size and research model are discussed here. Results are then presented and discussed. Conclusions Technology adoption plays a critical role in shaping our modern world. The advancement and adoption of technology varies from different religions and demographics (Janzen, 2019). It's therefore crucial to understand the factors which influence the adoption of technology, its widespread use and benefit.

The factors influencing the adoption of technology are multifaceted and interconnected. Several key elements contribute to the acceptance and integration of technology into societies and organizations. These factors can vary depending on individual perspectives, cultural con-texts, economic conditions, and technological characteristics. By examining these factors, researchers, policymakers and businesses can develop strategies to enhance the adoption of technology.

The outbreak of COVID-19 marked a turning point for mankind. All aspects of human life were affected to some extent, including religious services (Campbell, 2010a). It changed the way in which many religions had been practicing their rituals for centuries. It accelerated the recent tendency to use more technological resources and an evident change towards digitalisation (Campbell, 2010a; Campbell, 2010b; Migliori et al., 2020) stated that one of the characteristics shared by the majority of religious events is the gathering of people to carry out their communal religious or spiritual practices, usually in enclosed spaces and, on many occasions, with a lot of physical contact, such as warm greetings, kisses and hugs. These kinds of religious gatherings can be a vector for the transmission of viruses in a similar way as any other event involves gathering in groups. On the other hand, closing or restricting access to places of worship might have negative consequences since it leads to the isolation of individuals and groups (Migliori et al., 2020). Campbell & Sheldon (2021) traces the history of different

religious groups' responses to pandemics (including COVID-19). One of the major differences between the COVID-19 pandemic and former ones is that it has become relatively easy to move from face to face to virtual services (Wildman et al., 2020). A logical step taken by some Christian churches because of the pandemic, was to simply move worship online and use creativity to cope with the problems and situations faced by both parishioners and religious personnel (Åhman & Thorén, 2021; Migliori et al., 2020; Campbell & Sheldon, 2021; Pillay, 2020; Vander Weele, 2020). This can be viewed as the next step in an already-established trend: since the arrival of the Internet, digitalization has been introduced into religious practices, although clearly the arrival of the pandemic has abruptly accelerated it.

1.1. Statement of the Problem

At the height of the covid-19 pandemic, as in the case of Zambian government through the ministry of Health stopped people from having big gatherings like church meetings, weddings and funerals so there was need to find alternative means of being in contact with congregants in the case of churches. Adoption of technology as a means of worship, such as using digital platforms for religious services, virtual gatherings, or online religious education became a major means for churches despite there being some resistance in some sections of religions (Cardoza, 2019). Hence, this research would like to establish the actual challenges for this refusal to adopt technology so that church attendance which is the main source of income through tithes and offerings is not affected. Further, given the fact that there is very little research that has been done on post-Covid pandemic, there is therefore a literature and research gap which this study will aim to bridge.

1.2. Conceptual Framework

In this study, a conceptual framework was developed showing a relationship between dependent variables and independent variables. The UTAUT model has variables which can be used in evaluating the factors which affect the adoption of technology as a medium of worship among Christians.

1.2.1. Theoretical Framework

Technology adoption is one of the mature areas of research in information systems (Soneka & Phiri, 2019). Several researchers have put across various theories explaining reasons why they decided to use a particular theory for research in a particular phenomenon.

Some of these theories are:

1) Theory of Reasoned Action (Ben-Lulu, 2021) has its roots in social psychology setting. The theory proposes three general constructs, namely "behavioural intention (BI), attitude (A), and subjective norm (SN)". According to TRA behavioural intention of a person depends on his attitude and subjective

norms. Mathematically, it can be interpreted that behavioural intention is the summation of attitude and subjective norms. Moreover, intention of a person likely to convert to action if there is the intention to behave in a specific manner is strong enough.

2) Theory of planned behaviour (TPB): Developments were made on the TRA as theorized by Ajzen & Fishbein (1975). He proposed TPB which developed on the relationship between attitude and behaviour in human actions by introducing a new factor: perceived behavioural control which can be used to predict behaviour. Perceived behavioural control is explained as the behaviour that influences intention. It is a factor that is present in the theory of planned behaviour and not in the theory of reasoned action; this is the point of contrast for the two theories.

3) Technology Acceptance Model (TAM): This model focuses on the attitudes and perceptions of individuals toward technology adoption. It suggests that perceived usefulness and perceived ease of use are the key factors that determine the intention to use a technology. It was developed from the theory of reasoned action and so adapted some of its principles to the context of user acceptance of a system (Sakala & Phiri, 2019).

Other theories are an extensively used model in IB adoption studies, Perceived Characteristics of Innovation (PCI), Decomposed Theory of Planned Behaviour (DTPB), Theory of Perceived Risk (TPR), Theory of Innovation Resistance (TIR) and the Unified Theory of Acceptance and Use of Technology (UTAUT) (Daka & Phiri, 2019).

1.2.2. UTAUT Model

Although there are other models of technology acceptance, the theoretical framework of this research is the UTAUT. The UTAUT was developed by Venkatesh et al. after they identified four key factors, namely, 1) performance expectancy, 2) effort expectancy, 3) social influence, 4) facilitating conditions, and user acceptance of technology innovation. According to Venkatesh et al. (2003), Performance Expectancy (PE) illustrates how the individual believes using technology will improve their performance. Effort Expectancy (EE) signifies the level of ease for individuals to operate the technical application. As the ease of technology increases, the users will increase their adoption rates. Social Influence (SI) examines how users' relatives and his communities can influence their new technological innovation adoption rate. Finally, Facilitating Conditions (FC) investigates how the availability of technical infrastructure and technical support can influence users' adoption rates. The benefits of UTAUT for technology adoption are comprehensive. It investigates different technology adoption dimensions for analyzing product design, customers' demand and capacity, influential social factors, and physical infrastructure. This information guides developers to tailor their products and services to fit their customer demand and capacity and accept their market. Much empirical research has based on and recommended the

UTAUT model to investigate the techno-logical readiness and acceptability of new technologies across disciplines, such as healthcare, banking, entrepreneurial innovation. The application of the UTAUT model is also seen in religious technology adoption research. For example, Baazeem (2020) employs UTAUT and performs partial least square structural equation modeling (PLS-SEM) to find the relationship between internet users' religiosity on social media and technology adoption in Saudi Arabia (Baazeem, 2020). Since the model has high predictability of technological user's behavioral intention and can explain technology acceptance for new technological innovation in the religious and educational context, we have adopted UTAUT in this study under four factors: performance expectancy, effort expectancy, social influence, facilitating conditions. UTAUT also highlights four moderator variables: 1) age, 2) experience, 3) gender, and 4) voluntariness of use, which have been empirically proven to moderate the intensity of technology adoption (see **Figure 1** below).

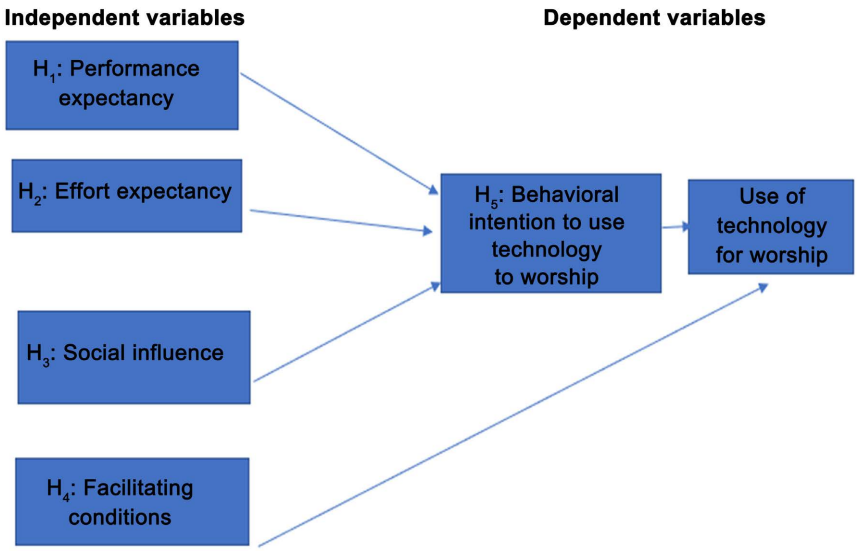

Figure 1. Author model based on UTAUT model, Venkatesh et al., 2003.

2. Literature Review

This chapter will introduce and review literature on the Covid-19 Pandemic as well as the use of Technology in churches taking a holistic approach where the advantage and disadvantages are discussed. It also reviews lessons learnt from the Jehovah's witnesses on the use of ICT during the Covid pandemic as well as the theoretical and conceptual framework.

Covid-19 pandemic developed on a global scale, and one of the fundamental methods of limiting the expansion or spread of Covid-19 is social distancing. This means quarantine and a radical change in contacts between people, which goes towards virtualization and online contacts. For religions in general, and Christian denominations in particular which are based on religious communities, meant that pandemics are a particular challenge for the identity and life of these

communities. Various governments around the world brought in different measures to restrict people meeting in large numbers. Pastors needed to provide spiritual food in the form of preaching and teaching the word of God during the lockdown, decided to adopt innovative methods (technology) such as using social media platforms to reach their congregants. These include WhatsApp, Facebook, Instagram, and Telegram amongst others.

Information and Communication Technology (ICT), is the application of computers and telecommunications equipment to store, retrieve, transmit and manipulate data. The term is commonly used as a synonym for computers and computer networks. However, it also encompasses other information distribution technologies such as television and telephones (Pillay, 2020). ICT is a powerful collection of elements which include computer hardware, software, telecommunication networks, workstations, robotics and smart chips. Since we live in information society, everyone is expected to be ICT literate. The ICT literacy entails: awareness, knowledge and interaction. This implies that in the study of computers, one will become aware of their importance and good in our society. Additionally, one will learn what computers are and how they work and learning to use a computer to perform some basic tasks or applications.

Factors that lead to choosing of ICT in church are that ICT is preferred for use in many churches due to its speed. This is because through ICT information can reach the audience within a short duration of time. In addition, ICT platforms are accessible to everyone who is on the web (Pillay, 2020). Further, ICT tools have the ability to store and retrieve information. They are convenient, easy to use, affordable and enjoyable to use and finally help reduce use of papers.

ICT platforms used in church. Today, social networking websites have emerged and can be tapped to provide fast, powerful and interactive communication. In order to capture the potential of ICT in fulfilling the great commission, there is need for Christians and the church to embrace and use ICT (Pillay, 2020).

The popular examples of ICT platforms used in the church today by churches and organisations such as the Jehovah's witnesses includes: Facebook, Twitter, Instagram, You Tube, Email, Blog, Skype, Zoom, Google Plus and WhatsApp. These platforms are majorly used to Bullet announcements, post sermons, Hymns, Bible studies, Sunday school lessons, counseling lessons among others. The main purpose of the ICT platforms is to establish and maintain relationships, connect and stay connected to the congregants and attract new converts. However, churches that have embraced the aforementioned platforms are underutilizing them. Majority are only using them to post church's location and brochures (Pillay, 2020).

Different ICT tools are used in varies contexts including: education, health care, business sectors, churches among others. ICT tools have great potential to enhancing transmission of the Gospel and creation of Christian wisdom in the new information age (Cardoza, 2019). The advent of the internet has led to congregations using computer technologies to enhance and promote their ministries

such as worship, fellowship, pastoral care, education, mission evangelism. Technology has played a significant role in the spread of Christianity throughout history (Cardoza, 2019).

Accordingly, there is a changing worshiping experience with the emergence of ICT. Various ICT tools are used in church during worship to provide visual sermon outlines, display songs and music and show illustrative video clips. The preacher can make teaching and preaching easy by providing visual sermon outlines on a projector through a computer. This may help the people to follow and internalize the message being delivered and it helps to connect with the congregation wherever they may be (Cardoza, 2019). In addition, ICT is used in churches to enable children to take part in an interactive encounter within realities of Biblical teachings and play games that enhance biblical literacy. ICT is majorly used during worship to make the ministry more effective, attractive and applicable to the lives of the congregants, especially the young who are quiet familiar with ICT. It is through the web that people find personal, social and religious information. As a result of these, religious institutions have devoted more resources in order to improve their presence in the web.

ICT has filtered through the society. It has become a tool to aid humans in almost any task in the contemporary church. There are three main uses for ICT in the Church currently: presentation, multimedia and communication. Presentation involves displaying songs, sermon or notices in church service. In addition, multimedia refers to all other uses of audio, video, or other media that is produced through ICT. These may be used to add to the worship experience, to show video clips or to record parts of meetings. ICT is used by some churches and other Christian institutions.

A similar study was undertaken by Hemant Patel in relation to factors influencing technology adoption in India. The finding of the research was that the growth of e-commerce has provided an opportunity to understand why people participate in e-commerce activities and adopt information technology. Researchers from various disciplines analyzed the reasons from different perspectives supported by theories such as; diffusion of innovation, theory of reasoned action (TRA), and theory of planned behavior (TPB). Various models were designed and validated to explain the factors responsible for technology adoption of e-commerce. The purpose of this study was to review the literature on technology adoption and to critique a number of key models that are frequently applied by researchers in their efforts to examine the factors that predict the adoption of technologies.

In the same vein, another study was undertaken by Edwin Kipyego in Kenya in relation to factors influencing the adoption of Greenhouse technology among small holder tomato farmers in Nakuru County in Kenya. The findings of the research were that the technology has been proved profitable and also economically viable but the adoption in Nakuru County has however been low. Results indicated that access to extension services, access to credit, membership to far-

mers' group and farm income significantly determined adoption of greenhouse technology.

Another study was undertaken by James Musonda in relation to the factors influencing the adoption of electronic medical records technology in public institutions in Zambia.

The study adopted a cross sectional survey design with a target population of 200 respondents. Using the Krejcie and Morgan table to determine the sample size, 127 respondents were sampled for this study. To achieve a desired representation, simple random sampling was used. A questionnaire with a 5-point Likert scale was constructed and used. The data obtained was analysed by descriptive statistics using SPSS Version 20.0 and the findings was appropriated to the research questions. Qualitative data was analysed by inferential methods and presented descriptively. Both content and construct validity were used to ensure validity of the research instrument's while reliability was determined by using the Cronbach-Alpha Coefficient. Pilot testing to pre-test and validate the research instruments was done prior to the main study. Computed MLR results showed that the four factors studied accounted for 28.5% of variance with adoption of EMR. The study recommended that health facilities should increase infrastructure and resources that support EMR use, employees should be supported for further training on EMR operation and suppliers should regularly support and training health staff on how to use EMR usage.

Adoption of technology has driven a lot of research studies worldwide. For example, Kang et al. (2019) explored how adults use information technology in their spiritual and religious lives. The study concluded that the use of technology in spiritual growth is paramount in understanding the scriptures very well. It's also suggested that some Christians use technological applications which helps them to watch sermons online, subscribe to religious groups, listen to religious podcasts and keeping up with church events. Additionally, it is believed that assisting older folks in assessing church and bible related applications is tedious compared to the youth who are technologically savvy. Kathambi et al. (2021) assessed technological advancement in churches and concluded that excessive use of social media has influenced the adoption of church members using bible apps in churches. The author further argues that members as consumers want comfort as a form of lifestyle hence, carrying a bulky book as the traditional bible is obsolete. This can be observed in that many Christians nowadays may opt to carry a smart phone to church than carry a traditional bible. He further affirms that the use of information technology tools can strengthen or weaken the faith one has in God if it is not managed well. These concerns are shared by Kathambi et al. (2021) who makes a similar argument that information technology can be detrimental despite its huge potential.

The ability to have ease of access as well as online conversation with friends and families makes technology a preferred choice over the traditional bible. Other authors also feel that the use of technology is a lazy approach to spiritual-

ity hence a Christian ought to possess a traditional bible as a way of righteousness and upholding virtues of Christ. Despite these differences, there are some glittering qualities attached to the use of technological applications as it influences reading easily as well as ease of access (Kathambi et al., 2021).

Some arguments are made for and against the use of ICT in churches. However, ICT must be applied in wisdom to solve problems in the church. Accordingly, there is a worrying trend amongst some churches, where ICT is seen as a necessity for successful ministry. There are claims that digital technologies have nothing to do with the explosive growth or decline of churches in Latin America. There is a strong lesson that growth of the church is based on something more than adding technology. On the other hand, there are still churches that see ICT as being inherently bad. This can come from confusion over the role of technology. Technology tends to create human hearts and minds bent on control when worship should instead place the focus on the divine. However, ICT can be made to serve humans in their worship in a similar way that music technology has aided corporate worship in many religions. ICT is over analyzed so that excuses are found not to use it. Although some very good questions are raised, it appears that presentations in worship have improved worship in many churches. According to Jewell (Kathambi et al., 2021), balance is needed in the arguments about the use of ICT in churches. Additionally, there is lack of awareness of the possibilities of using ICT in some churches. Many books are still being written to persuade churches of the benefits of using ICT. Churches now have access to much greater experience of the benefits and practical problems of using ICT, but not all are giving proper thought to how ICT could be used. This may be due to a lack of resources or commitment to ICT.

Much of the literature reviewed brought out the challenges faced in technology adoption but do not bring out solutions to these challenges faced. This research therefore fills up this gap by proposing a modified model as a solution to these challenges.

3. Research Methodology

The Introduction

This chapter discusses the research methodology that will used to evaluate the factors that influence the adoption of technology as means of worship during covid-19 lock down by SDA Christians in Woodlands Conference of SDA church. It presents the research approach, research design, and study population, sample size, sampling techniques, data collection/instruments, data analysis and ethical considerations.

Research Design

A quantitative and qualitative research approach was used in this study. These types of approach are preferred because they are used to quantify attitudes, opinions, behaviour, and other defined variables and generalize results from a larger sample population. In particular, it usually involves collecting and converting

data into numerical form so that statistical calculations can be made and conclusion drawn.

A researcher can select the appropriate research methodology for their research based on the nature of the study, the standards of the field, and practical considerations. A research design refers to the overall mission, vision, and direction of the study that a researcher chooses to integrate various research components in a logical and consistent manner, ensuring that the identified research problem is addressed in an effective manner. It also includes the design plan for data collection, assigning numbers to examining, cleaning, manipulating, and modeling data to represent quantities.

Research methodology is determined before research conduction. Correct choice of research methodology helps in determining the success and overall quality of any research study and its documentation (Creswell, 2012).

Based on the nature of the research, norms of research area, and practicalities a researcher can choose the best research methodology for their research.

Qualitative research design utilizes data that cannot be quantified numerically. In other words, qualitative research focuses on words, descriptions, concepts, beliefs, ideas, and other such intangibles. Quantitative research design utilizes numeric and statistical data. It measures variables and verifies existing theories or hypotheses.

Mixed methods-based research attempts to bring both, qualitative and quantitative research. It uses qualitative research to explore a situation and develop a potential model of understanding, which is also called a conceptual framework, and then uses quantitative methods to test that model empirically. This study will adopt a mixed methods research design. The main reason for selecting this design is that mixed methods can help the researcher gain a more complete picture than a standalone quantitative or qualitative study, as it integrates benefits of both methods.

Population of the Study

Population is the entire aggregation of items from which samples can be drawn for a study (Opoku-A, 2009). The study population comprised of five SDA districts in Woodlands Conference. A study population is a group of people, objects, persons or items from that samples are extracted for analysis and from which the researcher wishes to make the inference. In this study, the population will be grouped based on five SDA districts which will be purposely sampled in Woodlands Conference which has a total population of 124 churches and 58,818 members.

Sample Size

Kothari (2004) defines a sample size as the number of items to be selected from the universe to constitute the sample and this explains how many sampling units should be surveyed and interviewed. In this study, a sample of 382 church members will be considered that will comprise of pastors, pastoral staff, support staff, volunteers, and peers.

The sample size for this study will be determined using the Cochran's formula.

$$n_o = Z^2 pq/e^2$$

e—is the desired level of precision (i.e. margin of error);

p—is the (estimated) proportion of the population;

q—is $1 - p$;

z—value as tabulated below.

$e = 0.05$;

$p = 0.5$;

$z = 95\% = 1.96$;

$(1.96)^2(0.5)(0.5)/(0.05)^2 = 384$.

A random sample of 382 people in our target population should be enough to give us the confidence levels we need. Therefore, the sample size calculated was 382 as shown below:

$$n = n_o/1 + (n_o/N)$$

n = sample size;

N = Population size − 58,818;

384/(1 + (384/58,818));

384/1.006528614;

= 381.5092732

= 382 Sample size.

Data Collection Tools

In this study, semi-structured (open) questionnaire will be administered to the respondents. The questionnaire was designed in five parts: the first part being the demographic information of respondents, the second part being the technological usage and experience of respondents, part three looked at the technology adoption factors, part four looked at the actual use of technology for worship and finally part five was the interview guide.

3.1. Research Model

In conducting this study, a conceptual framework developed shows the relationship between the independent variables and dependent variable. The UTAUT Model has variables that will be adopted with identifying factors that influence technology adoption as a medium of worship among Christians.

3.2. Research Hypothesis

H_1—performance expectancy influences the usage of technology in worship in the SDA church

H_0—performance expectancy doesn't influence the usage of technology in worship in the SDA church

H_2—effort expectancy influences the use of technology in worship in the SDA church

H_0—effort expectancy doesn't influence the use of technology in worship in

the SDA church

H_3—social influence has a positive influence in the usage of technology in worship in the SDA church

H_0—social influence has no influence on the usage of technology in worship in the SDA church

H_4—facilitating conditions have influence on the usage of technology in worship in the SDA church

H_0—facilitating conditions have no influence on the usage of technology in worship in the SDA church

H_5—behavioural intention has influence on the use technology in worship in the SDA church

H_0—behavioural intention has no influence on the use technology in worship in the SDA church

See Figure 2 for research hypothesis.

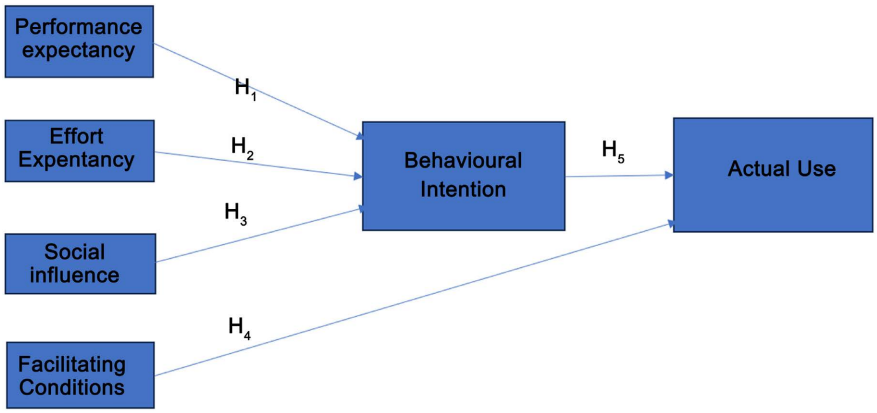

Figure 2. Research model.

4. Results and Discussion

4.1. Introduction

This chapter describes and analyses the information generated from the data that was obtained from the administration of the questionnaires. The results will be presented using determined and suitable data analysis instruments and in this regard the study has made use of descriptive statistics which is presented in frequency distribution tables showing absolute and relative values. While 382 questionnaires were distributed to five selected church districts of Woodlands Conference of the SDA church, only 304 questionnaires were successfully collected, representing 79% response rate.

4.2. Descriptive Statistics

The main objective of our analysis is to provide or find out answers to the research questions as to determine the level of technology usage among SDA church members during the Covid-19 lock down in Lusaka; what factors influ-

enced the adoption of technology by churches during covid-19 locked down in Lusaka; and what model can be used as solution to the challenges that affect technology adoption as a Medium for worshipping so that church attendance is not greatly affected.

4.3. Demographic Data

The presentation of the data from the questionnaire administered to respondents began with the identification of the respondents in terms of their gender, age, marital status, educational level and employment status.

4.3.1. Gender

As shown in Figure 3, results show that 61.2% of the respondents on gender were male while 38.8% were female.

4.3.2. Age

Figure 4 results show that 11 respondents were 20 years and below representing 3.6%, and 56 respondents representing 18.4% were aged between 21 - 30. Further, 102 respondents representing 33.6% were aged between 31 - 40 and 94 respondents representing 30.9% were aged between 41 - 50, 36 respondents representing 11.8% were aged between 51 - 60, with 5 respondents representing 1.6% being aged 60 and above.

4.3.3. Employment Status

Results from Figure 5, shows that 49 respondents representing 16.1% were not working, 194 respondents representing 63.8% were salaried, 51 respondents representing 16.8% were self-employed with 10 respondents representing 3.3% being pensioneers.

4.4. Knowledge & Usage of ICTs

Given the challenges that came along with covid-19, the study embarked on establishing whether people/church members were able to use internet for purposes of worship while sited in the confines of their homes. However, before establishing their level of usage, it was cardinal to determine their knowledge levels.

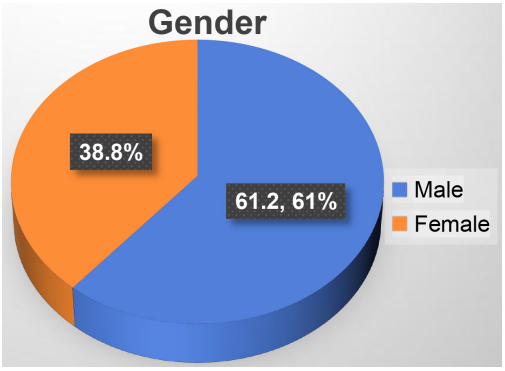

Figure 3. Gender (Source: Author, 2023).

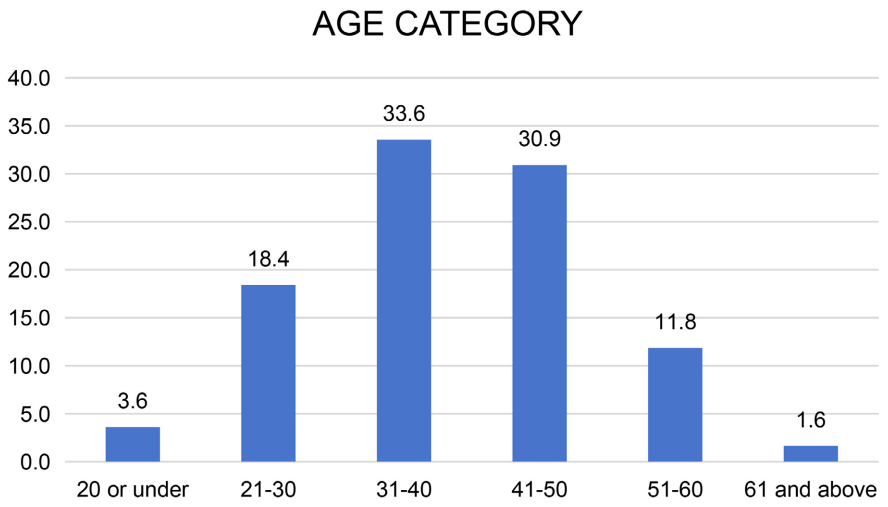

Figure 4. Age (source: Author, 2023).

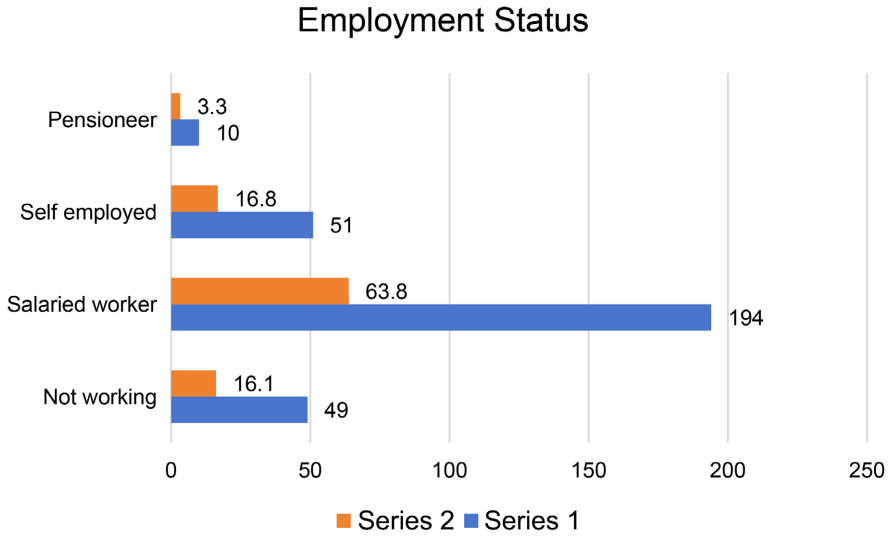

Figure 5. Employment status (source: Author, 2023).

Table 1 shows the knowledge status of the respondents about ICTs. From the results, it shows that only 2.3% had poor knowledge of ICTs.

4.5. Descriptive Statistics for Factors That Influence Behavioral Intention to Use Technology as Means of Worship

The main aim of the research was to evaluate the factors that affect the adoption of technology as means of worship among Christians. The ratings by respondents were done on a Likert Scale of 1 to 5 where: 5 represented Strongly Agree; 4—Agree; 3—Neutral; 2—Disagree; and 1—Strongly Disagree. The results were then tabulated.

The mean of 4.0230 indicates that the respondents agreed to the statement that technology would be useful during worship. Further, the mean of 3.3717 indicates that the respondents also agreed that by using technology they would be

Table 1. Knowledge about ICTs.

	Frequency	Percent	Cumulative Percent
Poor	7	2.3	2.3
Moderate	84	27.6	29.9
Good	137	45.1	75.0
Very good	76	25.0	100.0
Total	304	100.0	

able to worship in the comfort of their homes. The mean of 3.5757 indicates the respondents' agreement that worship would be made easier. However, the average mean of 3.0921 indicates that the respondents were neutral (neither agreed nor disagreed) that worship would be more meaningful by using technology. The average mean score of 3.5156 indicates that the respondents agreed with the variables of performance expectancy. See Table 2.

Descriptive statistics on effort expectancy from respondents; the mean of 3.7664 indicates that the respondents agreed to the statement interaction with internet and other ICTs was clear and that it could easily be understood. Further, the mean of 3.4638 indicates that the respondents also agreed that it was easy to become skillful at using ICTs in church for the purpose of worship. The mean of 4.0625 indicates the respondents' agreement that it was easy to use ICTs. Furthermore, the average mean of 4.0592 indicates that the respondents were in agreement that learning to use ICTs was easy. The average mean score of 3.8380 indicates that the respondents agreed with the variables of effort expectancy. See Table 3.

A data mean of 4.0033 in Table 5 below indicates that the respondents agreed with the statement that the church needed to consider adopting and use of ICTs since times have changed. Further, a mean of 4.0987 indicates an agreement that social media and or ICTs are now acceptable officially in all spheres of life. However, a mean of 2.9967 indicates that the respondents were neutral concerning the statement that the use of ICTs was prestigious. The average mean score of 3.6996 indicates that the respondents agreed with the variables of social influence. See Table 4.

Table 5 shows Descriptive statistics on facilitating conditions from respondents; the mean of 2.7862 indicates that the respondents disagreed to the statement that the church did not have the necessary resources to use ICT in worshipping and meetings during Covid-19 lock down. Further, the mean of 2.3882 indicates that the respondents also disagreed that the church policy did not create an enabling environment for the use of ICTs during lock down. The mean of 3.0691 indicates that the respondents were neutral as to if Church members were willing to use ICTs during the lock down and that there was no infrastructure in place. Furthermore, the average mean of 2.9737 indicates that the respondents were neutral that the cost of ICTs was very prohibitive. The average

Table 2. Descriptive statistics for performance expectance influence on technology adoption.

No.	Statement	Frequency Rating					Mean	Std. Deviation
		1	2	3	4	5		
1	I think that technology is useful during my worship	11	14	49	113	117	4.0230	1.02902
2	I think using technology would make me worship in the comfort of my home	35	45	55	110	59	3.3717	1.27037
3	I think that by using technology my worship would be made easier	17	38	60	131	58	3.5757	1.10244
4	I think by using technology my worship would be more meaningful	36	63	78	91	36	3.0921	1.20426
	Average mean score	24.8	40	60.5	111.3	67.5	3.5156	1.15152

Table 3. Descriptive statistics for effort expectancy influence on technology adoption.

No.	Statement	Frequency Rating					Mean	Std. Deviation
		1	2	3	4	5		
1	I think that interaction with internet and other ICTs is clear and easily understandable	5	27	68	138	66	3.7664	0.94471
2	I think it's easy to become skillful at using ICTs in church	18	43	82	102	59	3.4638	1.13102
3	I find ICTs easy to use	2	8	57	139	98	4.0625	0.82015
4	I think that learning to use ICTs is easy for me	3	7	50	153	91	4.0592	0.80209
	Average mean score	7	21.3	64.3	133	78.5	3.8380	0.9245

Table 4. Descriptive statistics for social influence (or aspects) influence on technology adoption.

No.	Statement	Frequency Rating					Mean	Std. Deviation
		1	2	3	4	5		
1	Times have changed so the church should consider ICT adoption and use	11	13	48	124	108	4.0033	1.00657
2	Social media and or ICT are now acceptable officially in all spheres of life	6	9	37	149	103	4.0987	0.86562
3	Use of ICTs is prestigious	38	58	100	83	25	2.9967	1.13887
	Average mean score	18.3	26.7	61.7	118.7	78.7	3.6996	1.00369

Table 5. Descriptive statistics for facilitating conditions influence on technology adoption.

No.	Statement	Frequency Rating					Mean	Std. Deviation
		1	2	3	4	5		
1	The church did not have the necessary resources to use ICT in worshipping and meetings during covid-19 lock down	50	68	101	67	18	2.7862	1.13902
2	The church policy did not create an enabling environment for the use of ICTs during lock down	74	101	79	37	13	2.3882	1.10832

Continued

3	Church members were willing to use ICTs during the lock down but there was no infrastructure in place	47	58	59	107	33	3.0691	1.26328
4	The cost of ICTs was very prohibitive	42	76	86	67	32	2.9737	1.70399
	Average mean score	53.3	75.8	81.3	69.5	24	2.8043	1.30365

mean score of 2.8043 indicates that the respondents disagreed with the variables of facilitating conditions.

Descriptive statistics on effort expectancy from respondents; the mean of 4.1447 indicates that the respondents agreed that the church would be better prepared in future lock downs. Further, the mean of 3.9375 indicates that the respondents also agreed that the church members expressed willingness to use ICTs during the lock down. The mean of 3.8849 indicates the respondents' agreement that the church leadership needs to have a change in policy so that ICT becomes a part of the church program. The average mean score of 3.9890 indicates that the respondents agreed with the variables of behavioral intention. See **Table 6**.

4.6. Bivariate Analysis

According to Sarangam (2021), bivariate analysis is a type of statistical analysis in which two variables are observed with each other. One of the variables is dependent and the other is independent. Variables are indicated by X and Y. In this research, bivariate analysis was done in order to establish the relationship between Technology acceptance variables and Behavioral Intention. Pearson Correlation Coefficient (r) was used to establish the relationship between Technology acceptance variables and Behavioral Intention by ranking the two (02) variables using ordinal scale. This was done in order to know whether there was a relationship between the independent variables and the dependent variable before addressing the main objective of this research.

Pearson correlation runs to determine the impact of performance expectancy on the behavioral intention to use technology from respondents. The results revealed that there was a weak positive correlation between performance expectancy and behavioral intention to use technology as means of worship ($r = 0.189$, $p = 0.001$). Since $p < 0.005$, it means that there is a statistically significant correlation between performance expectancy and behavioral intention to use technology as means for worship. See **Table 7**.

Pearson correlation runs to determine the impact of effort expectancy on the behavioral intention to use technology from respondents. The results revealed that there was a strong positive correlation between effort expectancy and behavioral intention to use technology as means of worship ($r = 0.293$, $p = 0.000$). Since $p < 0.005$, it means that there is a statistically significant correlation between effort expectancy and behavioral intention to use technology as means for worship. This is shown in **Table 8**.

Table 6. Descriptive statistics for behavioral intention influence on technology adoption.

No.	Statement	Frequency Rating						
		1	2	3	4	5	Mean	Std. Deviation
1	The church will be better prepared in future lock downs	1	16	30	148	109	4.1447	0.82380
2	The church members expressed willingness to use ICTs during the lock down	8	11	50	158	77	3.9375	0.89334
3	The church leadership needs to have a change in policy so that ICT become a part of the church program	9	20	56	131	88	3.8849	0.99665
	Average mean score	6	15.7	45.3	145.7	91.3	3.9890	0.90460

Table 7. Pearson correlation coefficient between performance expectancy and behavioral intentions.

		Performance Expectancy	Behavioral Intentions
Performance Expectancy	Pearson Correlation	1	0.189**
	Sig. (2-tailed)		0.001
	N	304	304
Behavioral Intentions	Pearson Correlation	0.189**	1
	Sig. (2-tailed)	0.001	
	N	304	304

**. Correlation is significant at the 0.01 level (2-tailed).

Table 8. Pearson correlation coefficient between effort expectancy and behavioral intentions.

		Effort Expectancy	Behavioural Intentions
Effort Expectancy	Pearson Correlation	1	0.293**
	Sig. (2-tailed)		0.000
	N	304	304
Behavioural Intentions	Pearson Correlation	0.293**	1
	Sig. (2-tailed)	0.000	
	N	304	304

**. Correlation is significant at the 0.01 level (2-tailed).

Table 9 shows results of Pearson correlation run to determine the impact of social influence on the behavioral intention to use technology from respondents. The results revealed that there was a strong positive correlation between social influence and behavioral intention to use technology as means of worship ($r = 0.319$, $p = 0.000$). Since $p < 0.005$, it means that there is a statistically significant correlation between social influence and behavioral intention to use technology as means for worship.

Pearson correlation runs to determine the impact of facilitating conditions on the behavioral intention to use technology from respondents. The results revealed that there was a weak positive correlation between facilitating conditions

and behavioral intention to use technology as means of worship (r = 0.035, p = 0.547). Since $p > 0.005$, it means that there is no statistically significant correlation between facilitating conditions and behavioral intention to use technology as means for worship. These results are shown in Table 10 below.

Pearson correlation runs to determine the impact of behavioral intention on the Actual use of technology from respondents. The results revealed that there was a strong positive correlation between behavioral intention and actual use of technology as means of worship (r = 0.083, p = 0.001). Since $p < 0.005$, it means that there is a statistically significant correlation between behavioral intention and actual use of technology as means for worship. See Table 11 below.

Table 9. Pearson correlation coefficient between social influence and behavioral intentions.

		Social Influence	Behavioural Intentions
Social Influence	Pearson Correlation	1	0.319**
	Sig. (2-tailed)		0.000
	N	304	304
Behavioural Intentions	Pearson Correlation	0.319**	1
	Sig. (2-tailed)	0.000	
	N	304	304

**. Correlation is significant at the 0.01 level (2-tailed).

Table 10. Pearson correlation coefficient between facilitating conditions and behavioral intentions.

		Facilitating Conditions	Behavioral Intentions
Facilitating Conditions	Pearson Correlation	1	0.035
	Sig. (2-tailed)		0.547
	N	304	304
Behavioral Intentions	Pearson Correlation	0.035	1
	Sig. (2-tailed)	0.000	
	N	304	304

Table 11. Pearson correlation coefficient between facilitating conditions and behavioral intentions.

Correlations			
		Behavioral Intention	Actual Use
Behavioral Intention	Pearson Correlation	1	0.083
	Sig. (2-tailed)		0.001
	N	304	304
Actual Use	Pearson Correlation	0.083	1
	Sig. (2-tailed)	0.001	
	N	304	304

5. Conclusion

The aim of this study was to examine key factors that affect the adoption of technology as a medium for worship among Christians and propose a model which religious leaders can use to make informed decisions and create suitable technological solutions that enhance the worship experience so that church attendance is not greatly affected. The results analysis shows that performance expectancy, effort expectancy, social influence have a positive correlation influence on behavioral intentions to use technology as a medium of worship since they showed a p value < 0.005 while facilitating conditions didn't. The findings of this study are in agreement with Undi-Phiri and Phiri (2022) that the UTAUT model can be used to determine factors which affect adoption of technology. This means that the church leadership must take these into considerations the proposed UTAUT Model as they plan to use and adopt any form of technology in their church activities. This will in turn help the church members have a buy in and then attendance will be enhanced which will help keep the cash flow in terms of tithes and offerings. It will also help the church use technology when members are making contributions in tithes and offerings.

This will also help the church be prepared for any future pandemics which may affect physical meetings like covid-19 did.

Recommendations

The church leadership needs to put in place deliberate policies which encourage members to use technology in their worship and come up with proper guidelines to avoid it being abused. There is also a need by the leadership to have sessions with congregants where they can dispel the myths about the use of technology and clearly state the benefits of its use.

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Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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