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The Role of Digital and Virtual Teams in Project Management: Zambia Centre for Communications

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Abstract

The study addressed three specific objectives and these were: To identify the benefits of digital and virtual teams in project management; to compare and contrast the elements and components of virtual project management and the traditional project management and to establish challenges of the digital and virtual teams in project management. Within a standard quantitative research methodology, the study used an embedded mixed methods design, which entailed the collection and analysis of both quantitative and qualitative data. Questionnaires and interviews were utilized to obtain quantitative and qualitative data from 80 individuals who were chosen for their purpose and convenience**.**

The study established the following as benefits for teams working in remote: Less efforts required, flexible scheduling, lack of commute, cost saving, reduced anxiety/stress, freedom of travel/relocate, reduced office politics and able to live where ever one wanted. With regard to the second objective, the study established that in both modes of project management, there was diversity in national background and culture. There was also communication, setting of goals to be achieved and evaluation of the project outcomes in both modes. Virtual teams, on the other hand, were very different from regular teams. Members of traditional teams worked close to one another, but members of virtual teams worked in various locations. A virtual team also functioned beyond place, time, and organizational boundaries, with linkages strengthened by webs of communication technology, unlike a typical team. On the third objective, the study established that virtual project management challenges were categorized into seven classes

Keywords- *Project Management, Communication, Digital Team, Virtual Teams, ICT, Traditional Project Management*.

Introduction

Many initiatives are being carried out in a distributed manner. Various international organizations have gradually moved away from traditional communication and collaboration methods and toward a more integrated virtual global setting (Bordia, 2017). Microsoft, Amazon, Sales Force, and others in the information technology (IT) industry have pioneered the concept of global projects that create procedures across numerous countries (Sarah, 2013). This occurrence of multinational projects spawned the concept of virtual teams, which are globally distributed teams.

Around the time of the industrial revolution, the initial steps in the development of Information Technology (IT) may have been taken. The invention of the computer, on the other hand, is mentioned as the first significant milestone in the IT development process. Globalization and the information society would not have been possible without the introduction of the computer. "Computer" is an acronym that stands for

"Commonly Oriented Machine Purposefully Used for Technology, Education, and Research" (Panigrahy 2010).

Apple was responsible for a significant shift in the current condition of the world economy and technology. Steve Jobs and Steven Wazniak's Apple Series of Microcomputers reflected the 'dream package' for users (Acsai, 2016). Their computers had a keyboard, a screen, thousands of character memory, and a processor all packed into a small box. These computers already had menus and were user-friendly (Panigrahy 2010). IBM developed the first Personal Computer (PC) in 1981. (Panigrahy 2010). Since then, IT and Information Communication Technology (ICT) have taken off at a breakneck pace.

Today, the Internet is an information infrastructure that includes a mechanism for disseminating and circulating information. It is also a new medium that allows people to communicate, interact, and collaborate regardless of their geographical location. The Internet is presented and influential not only in IT and ICT, but also in economics, culture, and all other aspects of society (Leiner et al. 2009).
Users could begin surfing the Internet for literally any type of information after several browsers adopted the World Wide Web (WWW) technology (Leiner et al. 2009). Finally, the information society has emerged. The amount of information available is nearly limitless. There is a low-cost global connection that connects all continents, countries, and nearly all people. In short, the evolution of the Internet and information technology has resulted in a new global economy with no physical boundaries (Acsai, 2016).

The new economy of the twenty-first century is based on the developments described above, as well as the rapid convergence of the IT and telecommunications industries. In essence, telecommunications has created a new global mobile platform on which IT generated data can ride alongside cars, mobile phones, homes, and workplaces (Shaughnessy 2015). All of the tools mentioned above are part of the Internet of Things (IoT), which is another trend in the growth of IT and telecommunications. The merger of these two industries has created new business platforms that will reformulate, and have already done so, politics and economics in their constituents (Shaughnessy, 2015).

Business platforms have existed since IBM's first PC. Enterprise resource planning systems, customer relationship management systems, and sourcing databases are all examples of business platforms. Above and beyond the aforementioned platforms, new business platforms represent the point at which IT and business collide. New platforms are no longer just administrative tools, but also opportunities for new business models.
To summarize, virtual project management is a significant result of all of the new economy's triggers. Virtual project management is international project management; however, it is more than just managing a project across borders; the managed team is not physically located in the same location, so the team is virtual (Acsai, 2016).

A virtual team is a group of people who work on an interdependent task while being geographically separated, and whose members communicate and coordinate primarily through Information and Communication Technology (ICT) (Powell, Piccoli, and Ives 2014). Others have defined virtual teams as "a group of people with complementary competencies who execute concurrent collaborative work processes through electronic media regardless of geographic location" (Bordia, 2017). One thing that is clear from these definitions is that the team members have very little face-to-face interaction.

Due to advancements in information technology, business endurance, the availability of effective communication tools, and the breakout of the corona virus pandemic, there has been increasing incremental use of globally distributed virtual teams throughout the world in recent decades (Nawaz, 2021). The majority of communication occurs online, via email and video conferencing, among other methods. As a

result, rather than being physically present for face-to-face meetings, the teams can continue to work in a virtual setting (Nawaz, 2021). Despite the fact that project management was gradually shifting away from traditional methods and toward digitization, the COVID-19 epidemic has hastened this movement (Wu, 2021). The COVID-19 virus has put the globe on hold and has wreaked havoc on every industry and every person's life (Wu, 2021). In order to stay functioning during the coronavirus outbreak, businesses and sectors are being compelled to adapt their business models (Wu, 2021). The importance of digital project management (DPM), its adoption of digital technologies, and the changing role of the digital project manager, as well as the significant and abrupt shift in the rise of virtual teams and the benefits and challenges of remote project teams, are all highlighted in this study.

Problem Statement

With the outbreak of the COVID 19 global pandemic, there has been a new order of doing business including social distancing and virtual teams. Even though there are several academic studies in the field of virtual project management such as (Berry (2011), AIM Strategies (2010), Chhay et al. (2013), Malhotra et al. (2007), Amir (2010) and Hunsaker et al. (2008), there are not many works that focus on the role of digital and virtual teams in project management from the Zambian perspective. As a result of the identified research gap and the breadth of the field of virtual project management, there was a desire to conduct this study.

Significance of Research

The results of this study can be used by service and manufacturing organizations which involve in big projects of production of goods as well as software production, and can also be a guidance for further studies and research institutes to get familiar with various sections in uses of information technology in project management (virtual project) and continue their investigations at the area of building a virtual environment for such projects.

1. Literature Review

This chapter is a presentation of literature related to the topic under investigation. The study is designed to establish the role of the digital and virtual teams in project management. To this effect, the review of related literature is guided by the major themes of the study thus: the concept of virtual teams, the benefits of virtual teams in project management and the elements of virtual project management.

1.1 The concept of Digital and Virtual networking

A virtual team is defined as a group of people or stakeholders who collaborate on a common project from different locations and possibly different time zones and use information and communication technologies (ICTs) extensively to co-create. One of the main characteristics is virtually, which implies physical and temporal distance between members as well as a shared purpose (Muhammad, Bhatti, Chand, Bachal & Nawaz 2021).

Another important feature that distinguishes virtual teams from traditional "face-to-face" (FtF) teams is the collaborative use of technology for work. This is the result of the evolution of ICTs in the digital age, as well as the globalization tendency. Geographic dispersion is inherent in VTs, which leads to cultural variances and makes social relationships more difficult to form. All of this creates a slew of issues for member communication and emotional relationships (Muhammad, Bhatti, Chand, Bachal & Nawaz 2021). Global software development (GSD) is a software development paradigm in which development activities are carried out by experts based in various locations around the world to create successful products for a corporation (Muhammad, Bhatti, Chand, Bachal & Nawaz 2021).

Group is situated in a few diverse physical areas, contrasts in ethnicity and time zones adverse effect correspondence and coordination (Akbar et al., 2017). As rapid increment in global virtual teams the major

issue arises are basically due to two main factors: Lack of communication and lack of collaboration. Lack of communication always leads to collaboration problems (Muhammad, Bhatti, Chand, Bachal & Nawaz 2021).

Working in a team and improving communication is always a challenge, but when it comes to remotely situated teams, these difficulties demand special attention and remain a source of concern (Berry et al., 2011). Although we all know that regular contact among employees is crucial and important, it is becoming increasingly difficult in most firms to keep in touch with team members on a regular basis.

One trend that is outsourcing is becoming more common today; members or concerned domain consultants are added as a member of project team, who are not regular employees of parent organization (Gurung et al., 2011; Abro et al., 2020). They are hired and become team members because they are skilled or have experience that is required by the project team but is currently unavailable or on a tight timeline within the company. Another tendency is for workers to be assigned to multiple project teams and to work on multiple software projects at the same time. It has become usual for large, dynamic projects to demand evolution and change across the project's development life cycle.

Virtual teams (i.e., geographically dispersed collaborations that rely on technology to communicate and cooperate) have a number of potentially beneficial aspects that can boost productivity. Collaboration in virtual teams, like collaboration in co-located teams, refers to synchronous and asynchronous interactions and tasks to achieve common goals. Organizations can use virtual teams to recruit key specialists regardless of their physical location (Abro et al., 2020). This enables organizations to optimize teams by utilizing only the best available talent (Abro et al., 2020). In theory, virtual teams reduce the need for travel between locations, which should save time, money, and stress. By 2016, it was predicted that over 85 percent of working professionals were part of a virtual team (Abro et al., 2020). As a result, virtual teams have become increasingly important in the maintenance of our increasingly globalized social and economic infrastructure.

Virtual teams, like co-located teams, engage in a variety of collaborative activities such as formal and informal meetings via technology such as video conferencing (e.g., Zoom and Skype) and text conferencing (e.g., Slack and Microsoft Teams), file transfer, and application sharing (Ul Haq, Malik, Akram & Al Mutawa, 2020). As a result, virtual teams face collaboration challenges that make it difficult for them to be as successful as co-located teams. As a result, virtual teams spend a significant amount of time and money relocating team members for specific projects in order to avoid the difficulties associated with distance (Ul Haq, Malik, Akram & Al Mutawa, 2020). As a result, it's critical to develop technology that can better support virtual teams, decreasing the need for expensive re-locations and mitigating the issues that come when relocation isn't an option.

1.2 Benefits of Digital and Virtual Teams in Project Management

The widespread use of computer technology has altered the way businesses operate. Relationships between businesses and their suppliers, customers, and competitors have changed as a result of information technology. Ul Haq, Malik, Akram, and Al Mutawa (2020) discuss two specific ways in which information technology can influence competition: by changing industry structures and by supporting cost and/or differentiation strategies.

Examining five competitive factors is a typical method for identifying chances to modify an industry's structure and profitability. According to Ferronato (2017), the profitability of an industry is determined by the power of customers, suppliers, the threat of new entrants, the threat of replacement products, and competition among existing competitors. Each of the five competitive factors can be influenced by how a

firm employs information technology, as well as the need and opportunity for change. Information technology, for example, has changed the bargaining ties between businesses and their suppliers, channels, and buyers.

It is now simple for information systems to cross corporate boundaries. According to Akbar et al. (2017), inter-organizational systems have become common and, in some cases, have changed the boundaries of the participating industries; virtual information systems can reduce the power of buyers and suppliers, as well as erect new barriers that reduce the threat of entrants, they can help differentiate products and services, and they can help differentiate substitutes. According to Akbar et al. (2017), virtual systems can also help managers reduce the cost of rivalry actions and, in some cases, eliminate the need for competitive actions and reactions.

Virtual decision support systems have the potential to help a company create a cost advantage while also providing numerous benefits such as improving personal efficiency and reducing staff needs, expediting problem solving, and increasing organizational control (Khan et al, 2011). Managers seeking a cost advantage should look for situations in which decision processes appear slow or tedious, problems reoccur, or solutions are delayed or unsatisfactory. In some cases, DSSs can reduce costs where decision makers have a high turnover rate and training is slow and inefficient, as well as when activities, departments, and projects are poorly managed.

According to Ferronato (2017), Virtual DSSs can also save money by enhancing efficiency or eliminating value chain operations. A bank or mortgage lending company, for example, might save money by consolidating the number of stages and reducing the number of staff hours required to approve loans utilizing a new virtual DSS. Technology advancements can occasionally continue to reduce process costs, but competitors who copy an innovative DSS may negate or eliminate any advantage. Virtual decision support systems, according to Akbar et al. (2017), might potentially produce a differentiation that boosts profitability when the price premium charged is larger than any additional costs involved with attaining the differentiation.

Successful differentiation implies that a company can charge a higher price, sell more units, and increase buyer loyalty for service or repeat purchases. In some cases, competitors can quickly imitate the differentiation, resulting in increased costs for all competitors to implement the DSS (Ferronato, 2017). This decision support system can be used to assist a company in better focusing on a specific customer segment and thus gaining an advantage in meeting the needs of that segment. Management information systems and decision support systems can aid in customer tracking, and DSSs can make it easier to provide specialized services to a specific customer group (Ferronato, 2017).

In a now-classic study (Akbar, et al., 2017), a number of organizations were identified as having benefited from information systems. The majority of the systems were transaction processing systems, including Air Products' truck scheduling system, Cigna's risk assessment system, IBM's marketing management system, Owens-materials Corning's selection system, and Procter & Gamble's customer response system. Most businesses, on the other hand, prudently withhold many details about their success with automated decision support.

According to Hailu and Syed (2012), if a company is attempting to develop a decision support system that will provide a competitive advantage, managers and analysts should inquire about how the proposed DSS will affect company costs, customer and supplier relations, and managerial effectiveness. Managers should also attempt to assess how the proposed strategic system will affect the industry structure and competitor

behavior. Finally, in order to gain and maintain a competitive advantage, businesses must constantly improve their information and decision support technology (Hailu & Syed, 2012).

Employees with offices in geographically separated places may now connect, exchange, and collaborate on projects to achieve common company goals thanks to the introduction of information and communication technology (ICT). ICT has dissolved organizational and inter-organizational barriers in the process. As a result of all of this, people can now work anywhere they want (Akbar, et al., 2017). Rapid improvements in ICT over the last decade have enabled virtual teamwork within and across enterprises viable and cost-effective for any organization, and this mode of working and collaboration has significantly expanded in recent years.

Virtual environments based on traditional information technologies and internet-based platforms can be used to sustain company progress through virtual interaction and communication. According to Akbar et al. (2017), social dimensional factors must be considered early in the virtual team creation process and are critical to the team's effectiveness. Communication is a tool that has a direct impact on the social dimensions of the team, and team performance has a positive impact on satisfaction with the virtual team. Virtual teams are becoming increasingly popular (Akbar, et al., 2017), and the rapid development of new communication technologies such as the internet has pushed this trend to the point that most large organizations now use virtual teams to some extent (Park & Luminita, 2014).

The infrastructure required to support the development of new organizational forms is being provided by information technology. One such organizational form is virtual teams, which have the potential to revolutionize the workplace and provide organizations with unprecedented levels of flexibility and responsiveness (Akbar, et al., 2017). Virtual teams are critical mechanisms for organizations looking to leverage scarce resources across geographical and other boundaries (Akbar, et al., 2017).

Traditional R&D teams have become rare, according to Park and Luminita (2014), because research activities must be conducted 24 hours a day, seven days a week in order for a company to actualize its discoveries. This implies that R&D requires some virtual time. Successful virtual teams will adopt techniques that differ from those used in face-to-face cooperation (Gurung & Edmund, 2017). The innovation process is more constrained by place and time in an innovation network that resembles a traditional organization. To put it another way, the majority of innovation occurs within the confines of physical offices and working hours. Individuals' work is not confined by time or location in virtual organizations, and communication is greatly facilitated by technology. Individuals working in the development project have more freedom in such a product development environment (Akbar, et al., 2017).

Hence multinational companies are more likely to become tightly integrated into global R&D network than smaller unit (Gurung & Edmund, 2017). Distributed teams can carry out critical tasks with appropriate decision support technologies. Akbar, et al. (2017) in their study realized that perhaps the most important lesson is that the virtual information systems help companies to be both global and local at the same time. The virtual information systems can facilitate the collaboration of different people who are involved in product development, increase the speed and the quality of new product testing and validation and improve the effectiveness and the efficiency of product development and launch (Gurung & Edmund, 2017). Gregory (2011) found that the adoption of formal procedures and structured processes significantly increased the effectiveness of virtual teams.

1.3 Elements and components of virtual project management Trust

Trust is the bedrock of effective virtual teams. However, building trust can be difficult, especially when your team members are geographically dispersed and spontaneous interactions are infrequent and difficult to

arrange. Trust is earned through hard work over time. When team members follow through on commitments and get to know each other on a more personal level they have more confidence that they can rely on others to do their part to achieve team goals (Akram, Abrar-ul-Haq & Surjit, 2018).

Research has demonstrated that high levels of trust tend to translate into better team performance, especially when it comes to virtual teamwork (Gurung & Edmund, 2017). While collocated teams can rely on interpersonal relationships to build trust, effective virtual teams are more focused on task-based trust. As team members demonstrate accountability over time, they convince others that they can be relied upon to follow through on commitments and be responsible for completing assigned tasks (Akram, Abrar-ul-Haq & Surjit, 2018).

1.3.1 Collaboration

According to Akbar, et al. (2017), successful virtual teams have determined how to effectively collaborate across time and space. These teams work together and harness everyone's specific skills to complete tasks and achieve desired results, thanks to systems and processes that structure, support, and encourage team cooperation. Virtual collaboration and remote teamwork are made easier with the use of software solutions. Project management software makes it possible to manage workflow transparently so everyone can see what other team members are working on and provide support when needed (Akbar, et al., 2017).

1.3.2 Motivation

Effective virtual team leaders keep their teams focused and motivated to achieve their objectives. They inspire members by finding ways to make everyone feel included, such as involving them in decision-making, demonstrating how their work contributes to the bigger picture, and recognizing and celebrating team achievements and successes (Akram, Abrar-ul-Haq & Surjit, 2018). Virtual leaders can more effectively motivate and inspire their team members by getting to know them and understanding their values. They can give the team a sense of purpose, which empowers employees and allows them to align their personal goals with the team's overall mission. Teams with engaged and motivated members consistently perform better than those with disengaged employees, which translates to better productivity, profitability, and retention (Akram, Abrar-ul-Haq & Surjit, 2018).

1.3.3 Autonomy

Encouraging team members to assume responsibility not only motivates through heightened engagement, it also reinforces accountability (Akbar, et al., 2017). Effective delegation encourages team members to take initiative and take control, allowing them to make proactive decisions and increase commitment to initiatives. Furthermore, in the virtual world, achieving deadlines and maintaining high quality standards are more critical than when people really execute their work. Allowing people to organize their day and determine when and how work will be done, rather than “punching the clock,” is one component of motivating employees and promoting remote teamwork (Akram, Abrar-ul-Haq & Surjit, 2018).

1.3.4 Communication

Because they are spread out and face-to-face interaction is rare, it is paramount that members of virtual teams keep the lines of communication wide open (Nawaz, Haseeb, Malik, Ali & Malik, 2020). Through consistent contact, the best virtual teams overcome the challenges that geography presents. Feedback, accessibility, and timely response from all members, not just the leadership, keep operations running smoothly. Virtual communication software is a much more practical (and personable) solution than email for quick and flexible interactions. Team members can interact and communicate in real time, allowing them to

work together on complex projects even when they've never been in the same room together (Nawaz, Haseeb, Malik, Ali & Malik, 2020).

Video conferencing is also advantageous because it encourages team members to communicate with one another on a frequent basis. While face-to-face meetings aren't always possible, team leaders should strive to schedule one as part of their kick-off strategy or within the first few months of its formation. These meetings help team members to form relationships and begin the process of building trust that will facilitate accountability and virtual collaboration (Nawaz, Haseeb, Malik, Ali & Malik, 2020).

Virtual teams have made it possible for organizations to better leverage their resources and perform work more efficiently than ever before (Akram, Abrar-ul-Haq & Surjit, 2018). Putting together a virtual team, on the other hand, is no guarantee of success. Organizations that have high-performing, effective virtual teams pick team members that have the ability to thrive in a distant environment with great care. Even with the best people in place, however, it still falls to virtual leaders to implement many of the aforementioned practices to ensure that their teams remain engaged, efficient, and productive (Akram, Abrar-ul-Haq & Surjit, 2018).

Research Methodology

2.0 Research Design

Research design refers to the plan and structure of the investigation used to obtain evidence to answer research questions (Bulmer and Warwick as cited by Chombo, 2017). It indicates how the research is set up and explains what happens to the participants and methods of data collection used. This study employed an embedded mixed methods design (Creswell, 2014; Creswell & Clark, 2011; Onwueg buzie, 2012) which involved the collection and analysis of both quantitative and qualitative data within a traditional quantitative research design. According to Creswell (2009: 214),

> *... A concurrent embedded design is an approach in which both quantitative and qualitative data are collected at the same time during one data collection phase. A concurrent embedded strategy uses a primary method to direct the project and a secondary database to assist with the operations. The secondary method (quantitative or qualitative) is integrated, or nested, within the prevailing technique, and is given less priority.*

In this study, the qualitative method (secondary) was embedded in the quantitative (primary) as being the main one so as to help in describing some aspects of the study which could not be quantified. In short, the qualitative method helped to address some study questions that could not be adequately addressed using the quantitative method alone (QUAN + qual.). Generally, this design (concurrent embedded) was preferred in order to allow the researcher to collect the two types of data simultaneously, during a single data collection phase.

2.1 Study Population and Sampling

The study targeted all the employees for the Zambia Centre for Communication Programs (ZCCP). The study sample comprised a total of 80 participants. The participants were segmented as follows: 1 executive director, 1 project manager, 1 provincial coordinator, 1 economic strengthening coordinator, 6 Centre Managers, 10 Economic strengthening officers, 20 Data Associates, 20 DREAMS Connectors and the 20 Volunteers.

2.2 Sampling Techniques

This study used simple random and purposive methods of sampling. Purposive sampling was used to sample the executive director, the project manager, provincial coordinators and economic strengthening

coordinators by virtue of their positions. Purposive sampling is based on the judgment of a researcher regarding the characteristics of a representative sample. The strategy in purposive sampling is to select elements that are deemed to be typical of the population under investigation (Cohen and Manion as cited by Chombo, 2017). Simple random sampling was used to select the remaining categories of employees to come up with the required number.

2.3 Data Collection Instruments

Both primary and secondary data was used to establish the role of digital and virtual teams in project management. In order to collect primary data, questionnaires and interview schedules were employed. According to Orodho and Kombo (2002), research instruments include questionnaires, interview schedules and observations. The researcher used both open and closed ended questions in the questionnaires. Open-ended questions gave participants the opportunity to give their own responses while closed-ended questions required participants to choose responses out of the options presented before them. An interview was separately held with the 4 executive participants while questionnaires were administered on the other participants. On the other hand, the reviewed literature and internet sources provided secondary data upon which the analysis was based.

2.4.1 Questionnaire

A questionnaire is a research instrument used in the gathering of data over a large sample in a more accurate manner (Kasonde-Ng'andu, 2013). In this study, a questionnaire was divided into two sections namely: the participants' demographic characteristics and the participants' views on the role of digital and virtual teams in project management. Likert-type items were used to solicit responses aimed at measuring the degree to which the participants agreed or disagreed to a statement on digital and virtual teams in project management. This format was selected because of its ease of understanding to the participants to answer since they had only to choose a category. In addition, chances for irrelevant responses were limited to the minimum, because appropriate answer categories were provided.

2.5.2 Interviews

Interviews were conducted to get in-depth insights of participant's views regarding the role of digital and virtual teams in Project management. It is an interaction between the researcher and the participants in which both create and construct the narrative versions of the social world (Silverman, 2004). The interview guide was a written list of questions that the interviewer was expected to answer. Because the interviews were semi-structured and flexible, open ended questions were utilized in the interview schedules to collect in-depth information in order to obtain a thorough and detailed grasp of the subject at hand.

2.4 Data Analysis

The process of reviewing what has been collected in the field and deriving conclusions and inferences from it is known as data analysis. The method includes uncovering underlying structures, extracting important variables, discovering anomalies, and testing any underlying assumptions. It entails examining the data and drawing conclusions from it (Kombo and Tromp, 2006).

Both quantitative and qualitative methods were used in analysing data allowing easy processing and interpretation. Data gathered were first edited, serially numbered, and coded. The quantitative data were analysed using the Statistical Package for Social Sciences (SPSS) to generate descriptive statistics such as frequencies and percentages which were used in describing the distributions of summated variables.

Qualitative data on the other hand were analysed manually and thematically. Questions employed in the interviews formed the central themes on which the analysis was based. The responses on each question were grouped according to the emerging themes. From the information recorded, the researcher identified major

themes and sub-themes and critically analysed various expressions with a view to gaining deeper insights into the subject matter. The processed data were then descriptively narrated according to the major themes.

2.5 Validity and Reliability

The degree to which various components in the instrument cover the materials needed to be obtained through fieldwork is referred to as validity (Cohen and Marion, 1998). To put it another way, validity refers to how well a test measures what it claims to measure. Validity in this study therefore, is the degree to which the questionnaire and interview questions accurately solicited the views of the participants. In order to enhance validity of the findings, the data collected were verified by using triangulation and member checking.

Patton (1990) defines reliability as a measure of the degree to which a data collection instrument is able to provide consistent results or data after repeated trials with the same or similar respondents and in a controlled environment. In ensuring the reliability of the questionnaire in this study, during the pilot study, the test– retest method was used to determine the reliability of the questionnaire items. The questionnaires were administered to some workers other than the study participants in the study organisation and two weeks later, the same questionnaire items were administered to the same workers again. The responses of the workers on the two occasions were correlated using the Pearson's Product-Momentum Correlation to determine the degree of consistency. This yielded a coefficient (r) of 0.81which confirmed that the questionnaire items had a very high consistency, and therefore deemed reliable**.**

2.6 Ethical Considerations

As outlined by Resnick (2015), this research was guided by honesty and integrity, objectivity, carefulness, openness, respect for intellectual property and confidentiality. Particular care was given to confidentiality of the participants. The names of the participants were concealed. This was done so that the findings are not directly linked to the participants in the given organisation. To ensure legality, participants were kept confidential and consent was sought from them to participate in the research.

Presentation Of Findings

3.1 Views on the Benefits of the Digital and Vitual Teams in Project Management

The views of the study participants were obtained on a Likert scale to determine the degree to which the participants agreed or disagreed to the statement on the benefits. On a scale of 1 to 5 was used where 1 for strongly disagree (SD), 2 for disagree (D), 3 for neutral (N), 4 for agree(A) and 5 for strongly agree (SA). A mean score of 3.0 is used to determine whether or not participants agree to the statement. A score above 3.0 shows that the participants agree to the statement and otherwise do not agree. The table below shows the views of the participants on the benefits of the digital and virtual teams.

Table 1: Participants' Views on the Benefits of Virtual teams in project management (N=80)

Statement	SA	A	N	D	SD	Mean
Less efforts required	22 (26 %)	38(48%)	7(9 %)	9(11 %)	4(5 %)	3.8
Flexible scheduling	29(36%)	23(29%)	17(21%)	8(10 %)	3(4 %)	3.8
Lack of commute	31(39%)	39(49%)	5(6 %)	3(4 %)	2(3 %)	4.1
Cost saving	37(4	23(2	11(1	6(8	3(4	4.

	6%)	9%)	4%)	%)	%)	0
Able to care for family, relatives etc	12(15%)	21(26%)	9(11%)	28(35%)	10(13%)	2.9
Reduced anxiety/stress	15(19%)	16(20%)	24(30%)	15(19%)	10(13%)	3.1
Freedom of travel/relocate	32(40%)	19(24%)	18(22%)	9(11%)	2(3%)	3.5
Reduced office politics	13(16%)	37(46%)	14(18%)	11(14%)	5(6%)	3.5
Able to live where ever you want	33(41%)	18(22%)	17(21%)	10(13%)	2(3%)	3.4

From the list of benefits indicated in the table, the participants did not agree with one for being able to take care for the family, relatives and others. Otherwise, the participants agreed to the rest as being benefits of digital and virtual teams in project management.
When asked to explain how each of them was a benefit in project management, the following responses were given.

3.1.1 Lesser Efforts Required
The participants cited that when they worked from home as virtual members of a project or an organisation, then there was not much effort for several things to have them done as compared to when you get into the physical office. For example, one of them said:

> *To name a few, you would not have to spend money on office space, bills, or other office-related expenses. In short, you will save a significant amount of time and money on such matters.*

3.1.2 Flexible Scheduling
The participants also indicated another reason why people encouraged remote working was that it helped them achieve better work-life balance. For example, one participant had this to say:

> *Most employees aspire for work-life balance since their working lives have grown so hectic that they have little time for their families. It is very possible that they will work with much greater passion and excitement for the organization if they have such amenities.*

3.1.3 Lack of commute
Another benefit cited was that of lack of commuting by the employees working as virtual teams. They indicated that they would not be expected to commute to and from the office instead, they have to work from anywhere even in the comfort of their own homes. This is what one of them said:
"The benefits are many but the most obvious is that as employees, we are free to operate even from our own without having to commute every time to the office to get the work done."

3.1.4 Cost saving
The participants indicated that since people did not have to travel to reach their office, which is time-consuming, money for fuel and exhausting at the same time, such resources are therefore saved. One of the participants had this to say:

"It is less costly to work as virtual teams because most of the expenses incurred at the office such as electricity and water bills, travel costs and other costs are avoided."

3.1.5 Freedom of travel/relocate
It was also established that one of the most efficient benefits of virtual teams was that the employees were not limited to one region. This implies that one can hire talented employees from different parts of the country or even the world. For example, one participant had this to say:

With virtual teams, employees are free to be in any part of the country but still performing you task. This means that even if you want to relocate to another region, you can still do so without worrying about the job.

3.1.6 Reduced Office Politics

The participants also mentioned that with virtual teams and remote working, office politics was reduced. This is what some participants said:

We face a lot of challenges in these organizations. Some of them are those to do with office politics, where amongst the employees, some begin to collude to tarnish the reputation of others especially with issues of who takes up a certain senior position that falls vacant.

Another participant added:

Working together in one roof has many issues that include jealousy within the organisation. Some people may be working to frustrate the efforts of others so that they take over the positions they hold.

From the findings on the first objective of the study, it is clear that the employees of Zambia Centre for Communication Programs (ZCCP) appreciate virtual teams and remote working citing many benefits of using this method. The conclusions of this study correspond with those of Akbar, et al. (2017), who claim that virtual systems can assist managers in lowering the cost of rivalry actions and, in certain situations, eliminating the necessity for competitive actions and reactions. Furthermore, Akbar and others point out that virtual decision support systems can potentially help a company gain a cost advantage while also providing a slew of other benefits, such as improved personal efficiency and reduced staffing requirements, faster problem solving, and increased organizational control.

Virtual project management is an effective way to keep a project going while working from afar. The advantages of this management style are limitless. For obvious reasons, virtual teams are also effective. Employees achieve greater flexibility and work-life balance, both of which are highly coveted qualities. Additionally, having talented personnel with increased production from various parts of the world benefits owners and managers. It is critical to maintain effective communication, organize frequent meetings, provide project management training, and assign roles and duties to personnel in order to keep the team on track. Considering all of these elements, teams will be well on their path to success, finishing projects on schedule and with sufficient relevance.

*4.4 Element and Components in virtual project management versus the traditional project management***.**

On the second research objective, participants were asked to compare and contrast the elements and components in the virtual project management and those in the traditional project management.

To begin with, the participants were asked to identify elements that are common between the virtual teams and the convention teams. The findings are that in both modes of project management, there is diversity in national background and culture, there is communication, setting of goals to be achieved and evaluation of the project outcomes. For example, one of the participants said:

"Project management whether remotely or physically conducted, there all aim at achieving the set goals."

Another participant added:

"In both modes of project management, communication between the supervisors and the subordinates is critical."

Yet another participant also had this to say:

"There is also a diversity in the national background and culture of the employees."

When asked to different the two modes project management, the participants cited a number of differences and their responses are summerised in the table below:

Table 2: Elements in Virtual and Traditional teams

S/N	Fully Traditional Team	Fully Virtual Team
1	Team members are all co-located . They live in the same location	Team members are all in different locations
2	Team members communicate face-to-face. (synchronous and personal).	Team members communicate through asynchronous and impersonal means.
3	Team members coordinate team task together, in mutual adjustment	The team task is so highly structured that coordination by team members is rarely necessary
4	The innovation process is more restricted by location and time.	Individuals' work is not restricted by time and place, and communication is strongly facilitated by IT.
5	Physical teams in nature	Virtual teams in nature

From table 3 above, the highest challenge was differences in time zones cited by 72 (90%) participants, cultural differences among the employees was the second highest challenge cited by 84% of the participants, followed by difficulties in coordination of the tasks for the employees cited by 80% of the participants. Other challenges were: difficulties in building trust among virtual members as cited by 65% of the participants, Technological challenges to do with network was cited by 60% of the participants and the least cited challenge was language differences, cited by only 30% of the participants. The interpretation of the results is that since most of the challenges were cited by more than 50% of the participants, only the language differences challenge does not qualify to be a challenge as it was only cited by 30% of the participants. Otherwise, the rest are established as challenges facing the virtual teams in project management in the ZCCP.

Findings from secondary sources reviewed indicate that virtual project management challenges can be categorised into seven (7) classes According to Acsai (2016), the 7 classes of virtual project management challenges identified are: communication; isolation and confusion; developing trust; performance, diversity and virtual work-cycle management; free ride; cultural differences; and time zones.

Communication is essential in both traditional and virtual organizations. Communication is present everywhere, in collaboration among team mates, decision making, or flow of information since virtual team members do not sit next to each other during meetings, nor they see the amount of work another colleague performs, these factors make communication a challenge in virtual projects (Acsai, 2016). Generally, the most obvious part of communication as a challenge in virtual teams is the lack of nonverbal communication. Communication without facial expressions, body language, or eye contact makes the job of the communicating parties less easy (Chhay et al. 2013). This gap of nonverbal clues needs to be fulfilled by proper managerial communication style and methods. Also, frequent calls and video-audio tools for online meeting can help in addition to email and other nonverbal communications (Chhay et al. 2013).

Overcoming the feeling of isolation is another well-known challenge in virtual project management. Virtual team members are separated from their project members, and they frequently miss physical chats and, in general, human interaction. Researchers have discovered that interactions among coworkers motivate and satisfy employees (Acsai, 2016). It should be noted that while some employees prefer face-to-face interactions, others prefer independent, virtual work. To alleviate the sense of isolation, a viable solution could be to ask employees whether they want to work in a virtual team or not. To reduce the perception of isolation, team managers must communicate frequently with their team members via phone or audio-visual programs.

Another issue in virtual collaborations is establishing trust. Virtual team qualities such as time difference, cultural diversity, distance, and reliance on computer-mediated technologies all have a negative impact on trust (Chhay et al. 2013). There are two types of trust, according to Kirkman et al. The traditional type is known as ability-based or task-based trust, and it is built through personal contacts. When critical information is kept confidential, benevolent or interpersonal trust is formed. It necessitates team members' consistency, quick answers, and dependable performance. As a result, interpersonal trust can be established online without the need for face-to-face engagement (Kirkman et al. 2012). Team leaders should encourage team members to respond as quickly as feasible and to follow through on their pledges at all times to ensure the development of benevolent trust.

Performance measurement and managing people who are out of sight in general are all challenges for virtual project managers. Project leaders in traditional teams can see where members need help and where they are strong. Monitoring and measuring productivity, on the other hand, may be difficult in a virtual team. By contrast, Kirkman et al. (2012) introduce a complex, multi-layered assessment process that diminishes the difficulties of virtual performance management. Quarterly customer satisfaction surveys, in which clients share their impressions on virtual team performance, are part of the evaluation process. The customer service scores are then posted on the company's intranet. Virtual teams are typically made up of people from several countries, each with their own traditions, customs, and habits. Different communication and relationship-building styles are also cultural variances. "The positive features of team diversity include communication difficulties, misunderstandings, decreased cohesion, and increased conflict," whereas "the negative aspects of team diversity include communication difficulties, misunderstandings, decreased cohesion, and increased conflict" (Chhay et al. 2013). Cultural awareness is essential for avoiding disputes and developing connections, and cultural sensitivity trainings can be effective strategies for developing respectful and clear communication within the team (Chhay et al. 2013).

Because virtual teams' members work in different time zones, working around the clock is a common occurrence. The well-known benefit of making the best use of time in a 24-hour period is far from simple. Colleagues frequently plan calls and conferences before or after their formal working hours to be able to hold meetings. The project manager will need to improve his or her synchronization and coordination in order to accomplish this. In addition, atypical scheduling can disrupt virtual members' work-life balance, which the project leader must detect and handle carefully (AIM Strategies 2010).

Discussion of findings

In the study, it was revealed that to avoid the aspect of employee isolation, project managers must frequently use audio-video calls during virtual meetings. Using audio-video calls allows you to better understand what's going on the other end of the line. To that end, the installation of a video conference room, if possible, would allow more people to participate in the same video conference via the same video stream from the office.

The study also revealed that a virtual team's effectiveness is likely to be lower than that of a traditional one due to its dependency on technical equipment and frequent IT troubles. To overcome this challenge, project managers must effectively position their virtual team within the company, explain the value of their virtual team to the organization, and ensure that their virtual colleagues have the greatest available IT equipment and infrastructure, whether they work from a remote location or from their home office.

It was revealed in the study that, virtual managers and their employers should build on the perceived benefits indicated by this study both before and throughout the development and operation of virtual project teams. Individuals with solid understanding of the common language used in the given team and colleagues with more extrovert, more open-minded personalities would be better candidates when forming a virtual team, as working globally and with foreign people has proved out to be advantages for most virtual members.

plans and a fund to promote employee career development and progress. This contributed to organizational image externally as they led to organizational performance. Overall, the findings demonstrate the importance of

efficient internal communication for employee engagement and organizational effectiveness. There is a favourable correlation between internal communication, employee engagement, and organizational performance.

Conclusion

This study was designed to explore the role of digital and virtual teams in project management in the Zambia Centre for Communications Program. To address the objectives of the study, the research depended on both primary and secondary data. Primary data were obtained through questionnaires and interviews from the study participants who were purposively and conveniently selected to take part in the study. On the other hand, secondary data were obtained from previous studies and other internet sources. The study also looked at the literature to see if there were any similar threads between the findings and the literature.

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