TELECOMMUTING IN A DEVELOPING ECONOMY CONTEXT: CRITICAL SUCCESS FACTORS AND IMPACT ON ORGANIZATIONAL PERFORMANCE

BY

AYIKU DOROTHY SEYRAM

(10804064)

THIS THESIS IS SUBMITTED TO THE UNIVERSITY OF GHANA, LEGON, IN PARTIAL FULFILMEMT OF THE REQUIREMENT FOR THE AWARD OF MASTER OF PHILOSOPHY (MPHIL) DEGREE IN MANAGEMENT INFORMATION SYSTEMS

DEPARTMENT OF OPERATIONS AND MANAGEMENT

INFORMATION SYSTEMS

MAY 2022

DECLARATION

I do hereby declare that this work is the result of my own research and has not been presented by anyone for any academic award in this or any other university. All references used in this work have been fully acknowledged.

I therefore bear responsibility for any shortcomings.

……	16/5/2022 ……
AYIKU DOROTHY SEYRAM (10804064)	DATE

CERTIFICATION

I hereby certify that this thesis was supervised in accordance with procedures laid down by the university.

16/05/2022

……. ……...

DR. JOSHUA OFORI-AMANFO DATE
(SUPERVISOR)

16/05/2022

……. ……...

DR. EMMANUEL AWUNI KOLOG DATE
(CO-SUPERVISOR)

DEDICATION

To my Mom - Madam Linda Mawusinu Amevor

ACKNOWLEDGEMENT

My appreciation goes first of all to God Almighty for his grace while studying at University of Ghana and for giving me the opportunity to make a difference.

My sincere thanks extend to my supervisors: Dr. Joshua Ofori-Amanfo (lead supervisor) and Dr. Emmanuel Awuni Kolog (Co-supervisor). I will not have come this far without their tremendous input in the form of guidance while doing this thesis work.

To all my lecturers and teaching assistants, thank you for your time and patience during the course of my study. Your inputs and suggestions are very much appreciated. My gratitude goes as well to all my course mates. It has been nice learning together.

Finally, special thanks to all respondents who took time of their busy schedules to participate in this research and to my family and friends, I say a big thank you for the support, prayers and encouragements.

God bless us all.

TABLE OF CONTENTS

DECLARATION i

CERTIFICATION ii

DEDICATION iii

ACKNOWLEDGEMENT iv

LIST OF TABLES ix

LIST OF FIGURES x

LIST OF ABBREVIATIONS xi

ABSTRACT xii

CHAPTER ONE 1

INTRODUCTION 1

1.1 Research Background 1

1.2 Research Problem 4

1.3 Research Purpose 8

1.4 Research Objectives 8

1.5 Research Questions 8

1.6 Significance of the Research 9

1.7 Scope of the Research 9

1.8 Synopsis of Chapters 10

CHAPTER TWO 12

LITERATURE REVIEW 12

2.1 Introduction 12

2.1.1 Defining Telecommuting 12

2.2 Telecommuting Boundaries, Discontinuities and Continuities 17

2.2.1 Telecommuting Boundaries 19

2.2.2 Discontinuities and Continuities 21

2.3 Telecommuting Critical Success Factors (CSF) 29

2.4 Telecommuting and Organizational Performance 35

2.5 IS Theories for Telecommuting Studies 38

2.5.1 Socio-Technical Systems (STS) View of Telecommuting 39

2.6 Geographical Distribution of the Telecommuting Literature 40

2.7 Research Gaps and Directions for Future Research 41

2.8 Chapter Summary 42
CHAPTER THREE 43
THEORY AND HYPOTHESES DEVELOPMENT 43
3.1 Introduction 43
3.2 The Socio-Technical Systems (STS) Theory 43
3.3 STS Theory in Information Systems Research 45
3.4 Socio-Technical Systems (STS) Framework 46
3.5 Research Model Development 49
3.5.1 Social Subsystem Critical Success Factors 50
3.5.2 Technical Subsystem Critical Success Factors 53
3.5.3 Organizational Performance 54
3.6 Hypothesis Development 55
3.6.1 Communication 55
3.6.2 Learning and Knowledge Sharing 56
3.6.3 Telecommuting Employee Characteristics 56
3.6.4 Technology and Media Richness 57
3.6.5 Organisational Support 58
3.7 Chapter Summary 60
CHAPTER FOUR 61
RESEARCH METHODOLOGY 61
4.1 Introduction 61
4.2 Research Paradigm 61
4.2.1 The Positivist Paradigm 62
4.3 Research Approach Employed 63
4.3.1 Questionnaire development 64
4.3.2 The Survey Instrument Composition 65
4.3.3 Research Population 66
4.3.4 Sample Selection 66
4.3.5 Data Collection Process 67
4.4 Method for Data Analysis 68
4.5 Chapter Summary 69
CHAPTER FIVE 70

DATA ANALYSIS AND DISCUSSION OF FINDINGS 70
5.1 Introduction 70
5.2 Demographic Characteristics of Respondents 71
5.3 Discontinuities of the Virtual Environment in Ghanaian Firms 74
5.3.1 Discontinuities by the Type of Organization 75
5.4 Assessing the Measurement Model 77
5.4.1 Indicator Reliability 78
5.4.2 Internal Consistency Reliability 79
5.4.3 Convergent Validity 81
5.4.4 Discriminant Validity 81
5.4.5 Indicator Mulitcollinearity 84
5.4.6 Outer Weights and Loadings for Formative Constructs. 85
5.5 Structural Model Assessment 87
5.5.1 Assessing Structural Model for Multicollinearity Issues 87
5.5.2 Assessing the Structural Model for the Significance of Path Coefficients 88
5.5.3 Assessing the Goodness of Fit (GoF) 90
5.5.4 Assessing the Effect Size (f^2) 94
5.6 Chapter Summary 95
CHAPTER SIX 96
DISCUSSION OF RESULTS AND FINDINGS 96
6.1 Introduction 96
6.2 Discontinuities of the Virtual Environment in Ghanaian Firms 96
6.3 Telecommuting Critical Success factors and Impact on Organizational Performance 98
6.4 Chapter Summary 105
CHAPTER SEVEN 107
SUMMARY, CONCLUSIONS AND RECOMMENDATIONS 107
7.1 Introduction 107
7.2 Summary of Research Process 107
7.3 Summary of Key Findings 108
7.4 Conclusions 112
7.4.1 The Discontinuities of the Virtual Environment 113
7.4.2 Critical Success Factors of Telecommuting 114

7.4.3 Telecommuting Critical Success Factors and Impact on organizational Performance 115
7.5 Contributions of the Research and Recommendations 116
7.5.1 **Recommendations** ***for Research*** 116
7.5.2 **Recommendations** ***for Practice*** 118
7.5.3 **Recommendations** ***for Policy*** 119
7.6 Research Limitations and Directions for Future Studies 120
REFERENCE 121

LIST OF TABLES

Table 2. 1: Telecommuting related terms and definitions **13**

Table 2. 2: Categorization of reviewed studies according to their virtual environment characteristics **23**

Table 2. 3: Discontinuities in Virtual Team Environments **24**

Table 2. 4: Critical success factors for telecommuting. **32**

Table 2. 5: IS Theories used in Telecommuting studies **38**

Table 3. 1: Definition of STS subsystem elements and relationships **48**

Table 4. 1: Constructs, number of measurement items and sources **64**

Table 5. 1: Demographic Characteristics of Respondents **72**

Table 5. 2: Descriptive statistics for the discontinuities of the virtual environment **75**

Table 5. 3: Descriptive Statistics for Discontinuities by Type of Organization **76**

Table 5. 4: Construct Reliability measures. **79**

Table 5. 5: Cross-Loadings for assessing Discriminant Validity **82**

Table 5. 6: Fornell-Larcker Criterion for Discriminant Validity **83**

Table 5. 7: The Heterotrait-Monotrait ratio of correlations (HTMT) for Discriminant Validity **84**

Table 5. 8: Values from the Assessment of Formative Measurement Model **86**

Table 5. 9: VIF values for assessing multicollinearity levels of reflective constructs **88**

Table 5. 10: Bootstrapping for Hypothesis Testing **91**

Table 5. 11: Goodness of Fit (R Square Values) **93**

Table 5. 12: Goodness of Fit (SRMR Criterion)..... 93

Table 5. 13: Effect Size Values for Latent Variables 94

Table 7. 1: Summary of Findings..... 109

LIST OF FIGURES

Figure 3. 1: A socio-technical systems network **47**

Figure 3. 2: Research Model **50**

Figure 5. 1: Comparing Discontinuities according to the Type of Organization **77**

Figure 5. 2: Results from the PLS analysis showing the Outer Loading **80**

Figure 5. 3: Bootstrapping Path Coefficient Values **89**

LIST OF ABBREVIATIONS

AVE	Average Variance Extracted
CCA	Confirmatory Composite Analysis
CR	Composite Reliability
CBSEM	Covariance Based Structural Equation Modelling
CSF	Critical Success Factors
ETUC	European Trade Union Confederation
GoF	Goodness of Fit
ICT	Information and Communication Technology
HEI	Higher Educational Institutions
HP	Hewlett-Packard
HTMT	Heterotrait-Monotrait Ratio of Correlations
ILO	International Labour Organization
IS	Information Systems
IT	Information Technology
LKS	Learning and Knowledge Sharing
MIS	Management Information Systems
NWOW	New Ways of Working
ODT	Organizational Discontinuity Theory
OECD	Organisation for Economic Co-operation and Development
PCA	Principal Component Analysis
PLS SEM	Partial Least Square Structural Equation Modelling
RBV	Resource Based View
SEM	Structural Equation Modelling
SPSS	Statistical Package for Social Sciences
SRMR	Standardized Root Mean Square Residual
STS	Socio-Technical Systems
TAM	Technology Acceptance Model
TOE	Technology Organization Environment
TPB	Theory of Planned Behavior
VIF	Variance Inflation Factor

ABSTRACT

The purpose of this research was to ascertain the discontinuities of the virtual environment in Ghanaian firms, determine the success factors of implementing telecommuting and examine the effect of telecommuting on the performance of organizations. The objectives were thus to ascertain the discontinuities of the virtual environment in Ghanaian firms, to determine the CSFs driving the success of telecommuting in these firms and to examine the relationships between the CSFs and individual, team and managerial performance of the organization.

In order to carry out the study, the researcher employed a quantitative research approach using questionnaires in collecting data from 310 respondents. The respondents were knowledge workers from organizations such as Higher Education Institutions, Accounting and Audit firms, Banking and Insurance firms as well as Telecom and IT firms. A PLS-SEM analysis was performed on the collected data to examine the impact of telecommuting on organizational performance.

The study relied on the principles of the socio-technical systems theory as the dominant theory among others to test how multiple social and technical factors co-jointly influence organizational performance at multi-levels. This theory was adapted because telecommuting in this study was viewed as socio-technical organizational system.

Four discontinuities namely geography, culture, work practice and organization, and technology discontinuities were identified from literature and were employed by the researcher to characterize the virtual environment. The findings show that there were no discontinuities in the virtual environment for the studied organizations. Thereafter, the study focused on telecommuting in the context of a developing economy by identifying critical success factors and examined their impact on organizational performance. Telecommuting is a phenomenon that can have a multidimensional impact on an

organization hence, organizational performance in this study was measured at the individual employee level, team level and managerial level. Five (5) telecommuting critical success factors (CSF) as identified in literature, were employed in the study. Intra-organizational communication, employee characteristics, learning and knowledge sharing constituted the social factors whereas support and technology and media richness constituted the technical factors. Among the five CSFs explored, intra-organizational communication, learning and knowledge sharing (LKS), employee characteristics (social factors) and technology and media richness (technical factor) emerged from the findings as the CSFs for telecommuting as these factors were found to impact organizational performance at the individual, team or managerial levels.

Technology and media richness had a significant positive effect on performance at all the three levels of organization examined whereas intra organizational communication was found to be closely linked with managerial communication. LKS was shown to be significant in positively affecting performance only at the employee level of the organization while employee characteristics was significant in determining the performance of teams. Ultimately, these show that, telecommuting does have multilevel impact on the performance of organizations and this multilevel impact must be considered in order for organizations to harness benefits from their telecommuting implementations.

CHAPTER ONE

INTRODUCTION

1.1 Research Background

The nature of everyday life and work in contemporary times has undergone a revolution which has brought about changes to the way work is done. At the centre of these changes lies digitalization and technological developments. For instance, responding to work-related emails and calls is fast and easy as smart phones and tablets have emerged as enablers for anytime location-independent work while at the same time useful for staying in touch with friends and family. An individual now has the luxury of a variety of choices as to when, where and how work can be executed and what technologies support that choice (Messenger & Gschwind, 2016). Successively, working in the 21st century is now on the go.

Telecommuting sometimes called telework is a phenomenon enabled through the innovative use of Information and Communication Technology (ICT) in the work place. The ETUC framework agreement on telework defines it as "a form of organizing and / or performing work using information technology, in the context of an employment contract/relationship, where work, which could also be performed at the employer's premises, is carried out away from those premises on a regular basis" (European Trade Union Confederation (ETUC, 2002, p. 2). The telecommuter is therefore the individual involved in the work context defined above.

As a growing global phenomenon, telecommuting continues to receive attention both in academia and practice with studies from across a wide array of disciplines such as Management, Psychology, and Information Systems (Allen et al., 2015; Bélanger et al., 2013). At the organizational level,

telecommuting provides firms with the avenue to offer flexible work arrangements to employees, harnessing international talents, accessing global markets in pursuance of business growth (Asatiani, Hämäläinen, Penttinen, & Rossi, 2020; Asatiani & Penttinen, 2019) cost reduction, productivity, stopping the spread of illness by allowing sick employees to work from home, boosting employee morale and giving an organization the opportunity to become culturally adaptable (ILO, 2016). On the part of employees, telecommuting helps to reduce commuting time to work and the cost involved, and promotes higher worker autonomy and flexibility (Boell, Cecez-Kecmanovic, & Campbell, 2016; ILO, 2016). At the societal level, the phenomenon is associated with the reduction in pollution through the reduction of commuting traffic and the expansion of the labour market (ILO Eurofound, 2017).

While much research has gone into investigating employee and organizational related telecommuting factors, some studies have hinted on the negative sides of the phenomenon which includes work-life conflicts, decreasing worker relations, social isolations among others (Allen et al., 2015). Despite all these concerns, the phenomenon has right from its onset gained a lot of government attention where in the advanced nations like in the USA and Europe, policies and regulations were put in place that encouraged the widespread adoption of the practice. Increasingly, these nations have embraced the phenomenon with high telecommuting adoption rates recorded in countries like USA, Canada, Switzerland and Japan. Denmark, Netherlands, Finland and France are among EU countries where high levels of telecommuting is likewise recorded. Emerging economies such as China, Argentina, and India are catching up fast on the practice (ILO, 2016; OECD, 2020). In Africa on the other hand, telecommuting was hitherto not popular owing to a lack of legislation and deficient technological infrastructures (Myovella et al., 2019) further leading to low adoption rate for telecommuting among African countries.

Meanwhile, world systems have become disrupted by the arrival of the COVID-19 pandemic. Observable disruptions are seen in the way society is now organized and in the educational sectors (United Nations, 2020). Corporate work has since been affected. As a result, telecommuting and its work from home variant is now a global initiative in response to these disruptions (Donnelly & Proctor-Thomson, 2015). A recent survey in the USA estimated that 50 percent of the workforce are remote workers. The expected growth in the number of full time remote workers increased significantly from 30 percent (pre COVID era) to 65 percent (Brynjolfsson et al., 2020) as knowledge workers and non-knowledge workers alike have had to be forced to work from home. Not much can however be said of Africa since statistical data from across various levels are either limited or not available. As reported by Messenger (2019), this laxity towards telecommuting on the part of governments and other relevant stakeholders in these developing and emerging economies have led to the low rate of adoption of telework in all its forms and so limited studies in this context (Messenger, 2019).

As telecommuting has become a modern way of work, developing economies are still lagging behind in their adoption and use of technology, thereby making firms in these economies not strategically positioned to indulge in technology inspired innovations and practices such as telecommuting. Developing economies according to Roztocki & Weistroffer (2011) "are defined by low gross national income per capita and are generally characterized by low standards of living, weak industrial and commercial base and poor infrastructure." (Roztocki & Weistroffer, 2011, p. 163). These economies are often plagued by poor technological infrastructure which has limited their being able to adopt and use emerging technologies (Myovella et al., 2019).

Given the many merits and demerits of the phenomenon spelt out in extant literature, working with new ICTs and telecommuting have been the focus of a large number of scholarly works. Researchers have mostly sort to assess the impact of the phenomenon on work-life balance, working times, occupational

safety and health and finally on individual and organizational performance (Allen et al., 2015). Telecommuting has often been linked to increased performance and productivity at the individual, group and organizational levels (Bélanger et al., 2013). In another dimension it is a key to assessing a firm's innovation performance (Kyriakou et al., 2016) and as suggested by Allen et al., (2015), a firm's performance is one of the important determinants for its continued survival. In the same vein, Employees have been identified as important assets of the firm and therefore key players in determining an organization's performance (Holland et al., 2016). The impact of telecommuting on employee performance is considered critical to its successful adoption (Messenger, 2019).

Although much research has considered the impact on performance but at the individual level, outcomes measured at the individual or employee level only to a limited extent reflect the overall performance of the organization (Bélanger et al., 2013). Moreover, presently, not much studies exist on the phenomenon in Africa and with the poor technological infrastructure in most countries of Africa, one may want to know what factors may underpin the successful implementation of the practice in these developing economies. This study therefore seeks to investigate how telecommuting affects organizational performance in the context of a developing economy by determining the critical success factors at the individual, group and managerial levels.

1.2 Research Problem

Telecommuting outcomes are reported to be sometimes negative (Bentley et al., 2016). An example is with the case of social isolation (Allen et al., 2015; Hafermalz & Riemer, 2016; van der Lippe & Lippényi, 2020) and work-life conflicts etc. (Allen et al., 2015). Nonetheless, telecommuter and

organizational support have been found to be necessary for eradicating this negative social isolation effect (Bentley et al., 2016) while a few other studies have found evidence of the positive side of social isolations in itself to increase community engagement (Soroui, 2021) and personal productivity of telecommuting employees (Nakrošienė et al., 2019). Even though these negative effects of telecommuting may be important concerns in assessing telecommuting outcomes, not much is known as to how telecommuting outcomes tend to affect performance across various levels in the organization and what strategies are put in place to mitigate them. In this regard, this study considers the nature of telecommuting in Ghana and identifies challenges represented as discontinuities that may influence the organizational performance of firms.

A review of the literature suggests that assessing the impact of telecommuting is often challenging. For instance, the subject of work-life balance although prevalent in literature, is surrounded by varied views across board on the actual effects of the phenomenon. Prior studies have proposed that work life balance is one of the motivating factors for individuals and organizations for adopting work from home programs (Hilbrecht et al., 2013; Hill et al., 2010; Wheatley, 2012). However, other studies have made findings contrary to this notion arguing that telecommuting brings about work-life issues which leads to family conflicts (Allen et al., 2015; Tams et al., 2020). Similarly, literature relating to age and gender aspects of telecommuting has yielded uncertain findings. While some consider telecommuting especially the home based variant beneficial to men (Beno, 2019), others have arrived at conclusions that contradict the previous conception that women are more prone to benefit from it (Nakrošienė et al., 2019). Correspondingly, as studies claimed that millennials are more suited to telecommuting environments due to tendencies they have such as the desire for flexibility in working, attraction to the use of ICTs for work, etc. (K. K. Myers & Sadaghiani, 2010), some recent studies have observed that age seems to have no effect on telecommuting (Asatiani & Penttinen, 2019; Nakrošienė et al., 2019). It can be concluded

thus that telecommuting impact studies have rather produced contradictory results which has become a dilemma to both practice and research (Bélanger et al., 2013). Accordingly, this study makes contribution to literature to confirm the latter by exploring the role of age and gender when telecommuting in the Ghanaian context.

Successful telecommuting is a product of the interactions between the elements of technology, location, organization, employees and the environment in which the work is taking place (Messenger & Gschwind, 2016). Although literature on telecommuting critical success factors are generally limited, some identified factors are communication, eligibility, support, technological infrastructures, trust etc. The challenge however is what these factors mean in the context of a developing economy where for instance it is possible for employees who having varied characteristics may have different levels of access to technological resources or support from the organization. These factors also have implications for group or team level performance. However, what is common to most of the existing studies on telecommuting is that the phenomenon has been studied at the employee levels, leaving a dearth of studies at the group and managerial levels. In this study, the researcher seeks to inform both practice and research by determining individual, team and managerial CSFs that may be unique to developing economy context.

The OECD (2020) reports that the adoption of telecommuting before the pandemic varied significantly on many grounds such as by country, occupation, industry and organization (OECD, 2020). Extant literature further shows that, there are but limited studies done on telecommuting from the context of developing countries. Aroles et al., (2019) observed that existing studies on new forms of work including telecommuting usually adopt the lens of a developed economy at the expense of what forms the practice may take in developing econmies and the 'social cost' that may come with it. As countries around the globe have been forced into adopting telecommuting schemes in response to the recent pandemic (COVID-19), organizations in developing economies, especially those in Africa are also seen adopting

telecommuting practices (Lebopo et al., 2020). Moreover, the shift in global telecommuting adoption from voluntary to mandatory conditions challenges present views about the nature of the phenomenon and its impact on individuals, organizations and society at large (Bhattacherjee, Davis, Connolly, & Hikmet, 2018; Lebopo et al., 2020; van der Lippe & Lippényi, 2020). Identifying what critical factors ensure successful telecommuting in Africa and assessing what the effects are for positive performance is what the current research aims to achieve. To the best of the researcher's knowledge, there is only one study (Ansong & Boateng, 2018) on telecommuting in Ghana hence leaving a gap in literature which emphasizes the relevance of the current study. Additionally, existing studies in developing economies although scanty are centered around adoption issues of telecommuting while neglecting critical factors that guarantee successful telecommuting as these countries also adopt telecommuting practices (Lebopo et al., 2020).

Lastly, in order to make room for studies on telecommuting in the context of a developing economy, discontinuities that are unique to this environment and how organizations overcome them is not a theme readily available in literature. The current study is therefore a response to calls for research work on how organizations respond to or prevent discontinuities (Asatiani & Penttinen, 2019). The study accordingly, considers telecommuting as a complex work system and so comprises of both social and technical subsystems working together to attain desired outcomes. To achieve this, the study draws quantitatively on the socio-technical systems theory as a multifaceted approach to examining the nature of telecommuting by determining critical factors for successful implementation of the phenomenon in Ghana.

1.3 Research Purpose

The purpose of this research is to ascertain the discontinuities of the virtual environment in Ghanaian firms, determine the success factors of implementing telecommuting and examine the effect of telecommuting on the performance of the organization.

1.4 Research Objectives

The objectives of the study are:

1. To ascertain the discontinuities of the virtual environment in Ghanaian firms.
2. To determine the critical factors driving the success of telecommuting.
3. To examine the relationships between the critical success factors and individual, team and managerial performance.

1.5 Research Questions

1. What are the discontinuities of the virtual environment in Ghanaian firms?
2. What are the critical factors driving the success of telecommuting in a developing economy?
3. What is the relationship between the critical success factors and individual, team and managerial performance?

1.6 Significance of the Research

The significance of the present study is summarized in terms of its contributions to research/theory, practice and policy. The study's contribution to research can be conceived in three dimensions: first it serves to add to the exiting body of knowledge on telecommuting by providing insights relating to the nature of telecommuting in a developing economy. Secondly, the study contributes to theory by demonstrating the relevance of the socio-technical systems theory in unpacking insights from a complex work system of the nature being examined. Finally, it serves as a reference for future studies by providing research directions for more in-depth studies.

To practice, this study through the socio-technical systems approach has identified the critical factors underpinning the success of telecommuting which in turn offer insights for practitioners to be informed in their decisions regarding the implementation of telecommuting. The study also informs practitioners on the relationships that exist between critical success factors and performance in this work context.

Lastly, the findings from this study have strong implications concerning what the scope of telecommuting policies should consider. As the COVID-19 pandemic has forced many organizations to adopt working from home schemes, most organizations do not have policies regulating the practice. Insights from the current study could inform the design of policy frameworks by executives and governments in order to regulate, encourage and support the adoption of telecommuting in developing economies.

1.7 Scope of the Research

The current study will consider the internal subsystem elements of the socio-technical system. That is the social and technical subsystems. Factors of the external environment that are socio-economic,

political and or industry regulations and their effects on the telecommuting organization are beyond the scope of the current study hence, not included. The target population will include banking firms, accounting firms, higher education institutions, telecommunication and information technology firms, the reason being that the practice of telecommuting is commonly found among such organizations.

1.8 Synopsis of Chapters

The thesis is structured as follows:

Chapter One: Introduction; this chapter represents the introduction to the research. It comprises the research background, research problem, research purpose, research objectives, research questions, the significance of the research, the scope of the research and the synopsis of chapters.

Chapter Two: Literature Review; in this chapter is a review of the relevant literature on the telecommuting phenomenon. It begins with a brief discussion on the diverse definitions for telecommuting, then continues with telecommuting critical success factors, telecommuting and organizational performance, telecommuting boundaries, discontinuities and continuities, IS theories for telecommuting studies, geographical distribution of the telecommuting literature, research gaps and directions for future research and finally the chapter summary.

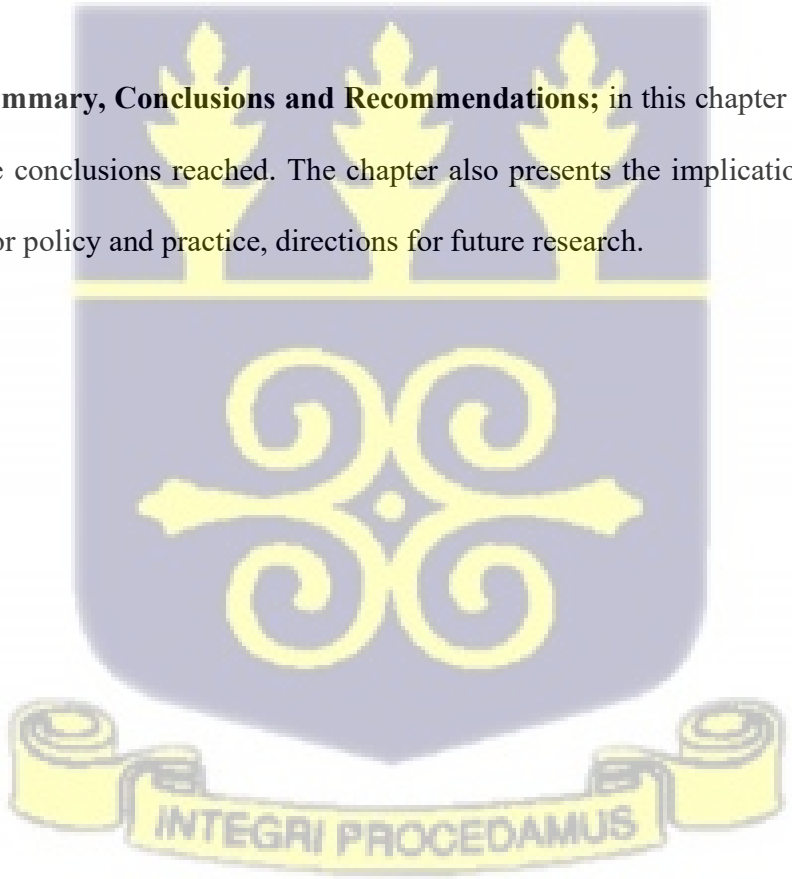
Chapter Three: Theory and Hypothesis Development; the chapter entails the development of the research model based on reviewed literature as well as the justification for the developed research model.

Chapter Four: Research Methodology; this chapter addresses the methodology adopted for the thesis. It includes the research paradigm, research method employed, data collection procedure, data collection instrument, and a description of the data analysis method employed.

Chapter Five: Data Analysis; chapter five presents the data analysis and discussion of the research findings. The demographical characteristics of respondents are first analysed, followed by an assessment of the measurement and structural model and the testing of hypothesis.

Chapter Six: Discussion of Results and Findings; the sixth chapter entails detailed discussions of the results obtained in the previous chapter. The chapter also briefly introduces the findings of the current study.

Chapter Seven: Summary, Conclusions and Recommendations; in this chapter is a summary of the study as well as the conclusions reached. The chapter also presents the implications of the study and recommendations for policy and practice, directions for future research.



CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter consists of a critical review and a synthesis of the relevant literature on the telecommuting phenomenon. The chapter is structured as follows: After the introduction, the chapter continues in section 2.2 with a discussion of the literature on boundaries, discontinuities and continuities that characterize the telecommuting work environment. This is followed by section 2.3, which is a discussion on Telecommuting and Organizational performance. Section 2.4 discusses the critical success factors identified in literature for effective telecommuting. Section 2.5 continues with the major IS theories for research on telecommuting, followed by section 2.6 which is the geographical distribution of literature on telecommuting while section 2.7 establishes the identified research gaps. Lastly, Section 2.8 concludes with a summary of key points providing a justification for the current study.

2.1.1 Defining Telecommuting

The works of Jack Niles in the 1970s and Allan Toffler in the 1980s introduced the concepts of Telework and Telecommuting (Nilles, 1975; Toffler, 1980). In their research, they both came to the conclusion that as technological advancement takes place and whiles the internet becomes cheap, fast and easily accessible irrespective of location, the arrangement and performance of work is expected to move beyond the confinements of the office space into the homes of employees (Boell et al., 2016; Donnelly & Proctor-Thomson, 2015). The term telecommuting has been associated with myriads of definitions and theorizations which reflect the complexities involving work in this context. Some other terms associated

with telecommuting are telework, flexible work arrangements, new ways of working (NWOW), the future of work, digital work, remote work, virtual work, virtual teams and the gig economy (Aroles et al., 2019; Asatiani et al., 2020; Asatiani & Penttinen, 2019; Baptista et al., 2020; Boell et al., 2016; Messenger & Gschwind, 2016; Porter & van den Hooff, 2020). Researchers have emphasized that these varied views represent a lack of a commonly accepted definition and therefore a hindrance to comparative analyses of past literature on telecommuting. Table 2.1 is a summary of definitions synthesized from the literature. The majority of these definitions have however assumed voluntary conditions for adopting telework neglecting that telecommuting can be compulsory in some contexts. Moreover, in the developing economy context, telecommuting is mostly mandatory per the directives of the telecommuting organization.

Table 2. 1: Telecommuting related terms and definitions

Terms	Definitions	Sources
Flexible work arrangements	These are practices such as working from home, working outside regular office hours, reducing or extending contract hours or banking overtime hours	Groen, Van Triest, Coers, & Wtenweerde, 2018)
Future of work	The term is widely used to refer to a new world of work brought about by technological trends in global connectivity, smart machines, and new media as well as changing social, political, and economic factors	Kerpedzhiev, Lehnert, & Röglinger, (2016)
Mobile work	This refers to work requiring physical movement from one place to another and/or temporary activity outside a fixed workplace	Porter & van den Hooff, (2020)
Remote working	The term denotes employees working for an organization but away from the office – usually from home.	Hafermalz & Riemer, (2016)
Remote workers	Refers to typically knowledge workers who work from home using ICT to coordinate and collaborate with their colleagues, clients and managers.	Hafermalz & Riemer, (2016)

Telecommuting	A work practice that involves members of an organization substituting a portion of their typical work hours (ranging from a few hours per week to nearly full-time) to work away from a central workplace typically principally from home using technology to interact with others as needed to conduct work tasks.	Allen, Golden, & Shockley, (2015)
	The use of ICT to replace or substitute for work environments that require individuals to commute to a traditional office.	Bélanger, Watson-Manheim, & Swan, (2013)
	Describes work undertaken away from traditional offices by means of technology.	Böll, Cecez-Kecmanovic, & Campbell, (2014)
	Means the part of teleworking associated with the daily commute between employees' homes and their principal workplaces.	Nilles, (1997)
	The use of telecommunication technologies to allow employees to perform their job duties remotely, away from their central workplace, in accordance with work agreements.	(Ye, 2012)
Telework	A form of organizing and/or performing work, using information technology, in the context of an employment contract/relationship, where work, which could also be performed at the employer's premises, is carried out away from those premises on a regular basis.	European Trade Union Confederation (ETUC), (2002), p.2
	Defined in four important dimensions: a) the workplace, where work can be performed from any location other than the organization's premises, such as the home of the employee (home-based-telework); from mobile locations such as airports or hotels (mobile or nomadic telework), or from specialized centers equipped with information and communication technologies such as telecentres and satellite offices; b) the use of information and communication technologies (ICTs); c) the amount of time spent in the different locations; d) The fourth dimension is linked to contractual relations between the employer and the employee.	Silva-C, Montoya, & Valencia, (2019)
	The participation in work away from an office by means of ICT.	Boell, Cecez-Kecmanovic, & Campbell, (2016)

	enterprise systems (ES) which enable employees to work remotely, away from firm's offices, by accessing the other types of firm's ES (through the Internet or mobile wireless networks) based on pre-defined access authorizations.	Kyriakou, Loukis, & Arvanitis, (2016)
	The use of ICT to enable daily work activities to be performed while being away from the office	Morrison, Chigona, & Malanga, (2019)
New Way of Working (NWOW)	Embodies the redesign of offices to accommodate task-based workplaces and a result-oriented way of working in which freedom and trust play an important role.	(Kok & Helms, 2016)
New work practices	New work practices to refer to a wide range of practices placed on a continuum of work flexibilization and diversification, from remote work to collaborative entrepreneurship to digital nomadism.	(Aroles et al., 2019)
Virtual work	Characterized as working from home, satellite offices or on the road	Chudoba, Wynn, Lu, & Watson-Manheim, (2005), Bloom, Liang, Roberts, & Ying (2015)
Gig-economy platforms	Defined as digital, service based, on-demand platforms that enable flexible work arrangements	Greenwood, Burtch, & Carnahan, (2017)

It can be observed from Table 2.1 that telecommuting is related to a great number of other terms but in different context. Some terms focus on the mobility associated with work in this context, others emphasize on the location from which work is being performed while yet others considered the contractual agreements surrounding telecommuting. However, in all, the use of ICT to perform work activities has been central to all these definitions. While telecommuting may mean working from home, telework seems to encompass working from a broader range of remote locations (i.e. telecentres, satellite offices, customer premises or home-based) of which telecommuting is part (Allen et al., 2015; Bélanger et al., 2013; Boell et al., 2016; Böll et al., 2014; European Trade Union Confederation (ETUC), 2002). Flexible work arrangements focus largely on work practices that span working in other places apart from the traditional office, to working beyond the office hours including overtime hours (Groen et al., 2018).

New ways of work (NWOW) focuses on how office spaces are re-created into results oriented environments, providing support for task-based way of working. All these take place further in an environment of trust and freedom (Kok & Helms, 2016). Similar to the NWOW is new work practices which also embodies work characterized by diversification and flexibility (Aroles et al., 2019). However, it departs from NWOW to include collaborative entrepreneurship and digital nomadism in the ongoing discussions about telecommuting. The term "future of work" is primarily work practices inspired by technological trends and relevant socio-economic factors (Kerpedzhiev et al., 2016). Mobile Work on the other hand refers to the movement in between geographically dispersed office locations and temporary work related activities performed at other locations such as in a car (Porter & van den Hooff, 2020). Virtual and remote work are general terms used in the literature to connote work away from the office. Whereas remote working primarily may mean working from home, virtual working includes home based working and other satellite locations as well as working whiles on the road but in both cases, remote workers substitute for face to face interactions with the use of technology to collaborate with colleagues, clients and supervisors or managers (Chudoba et al., 2005; Hafermalz & Riemer, 2016).

Messenger & Gschwind, (2016) have suggested that earlier works on telecommuting were primarily focused on three key elements namely technology, location and organization where technology refers to the ICTs and other related technologies utilized when telecommuting, location being the place from which work is participated and the (Messenger & Gschwind, 2016). The European Framework Agreement has accordingly put forward a definition of Telework which captures these elements (European Trade Union Confederation (ETUC), 2002, p. 2). In order to aid the conducting of this review of literature and to reflect the mandatory aspects of telecommuting, this study draws on this definition, to propose a definition for telecommuting which is applied throughout this work.

Telecommuting in this study will mean "a form of organizing and/or performing work, using information technology, in the context of an employment contract/relationship, where work, which could also be performed at the employers' premises, is carried out away from those premises on a regular basis under voluntary or mandatory conditions." The mandatory nature of telecommuting although has been in existence, has received little attention in literature. The emergence of the COVID-19 pandemic has drawn this aspect of telecommuting into the lime light as organizations are forced to introduce telecommuting schemes (Singh & Verma, 2021; Waizenegger et al., 2020).

2.2 Telecommuting Boundaries, Discontinuities and Continuities

The notion of working from a distance has its roots in the works of Jack Niles and Allan Toffler in the 1970s to 1980s respectively (Nilles, 1975; Toffler, 1980). In their research, they both came to the conclusion that as technology in respect of telecommunications advances, work was going to be detached from the traditional office and moved closer to the homes, if not into the homes of employees. The emergence of the internet gave this expectation a boost. As the internet advanced, it grew cheaper, faster and easily accessible irrespective of the location thereby lending it ubiquitousness to anytime location independent working. Increasingly, the arrangement and performance of work has moved beyond the confinements of the office space into the homes of employees or other remote locations, further enabled by emerging ICTs such as smart mobile phones and tablets (Boell et al., 2016; Donnelly & Proctor-Thomson, 2015). Telecommuting is therefore not a new phenomenon. Giant technology companies like Yahoo and HP have been reported to have spearheaded the adoption of the phenomenon dating back the 1980s. Nevertheless, Yahoo was the first to pull back in 2013 due to some challenges encountered. This withdrawal was later followed by HP (Boell et al., 2016; Messenger & Gschwind, 2016).

Consequentially, working in modern times has become characterized by flexible anywhere, anytime working. This flexibility in the arrangement of work is typically implemented in a firm based on agreements of some sorts between employers and their employees (Ansong & Boateng, 2018; Aroles et al., 2019). The popularity of these flexible forms of work such as telecommuting signify a shift in corporate working and thus calls for subsequent adjustments in the way work is organized and managed (Allen et al., 2015; Singh & Verma, 2021). In practice, telecommuting introduces new and emerging conditions which need investigation (Bélanger et al., 2013).

Telecommuting has been viewed differently by many researchers. In a study to assess the effects of different types of enterprise systems on an organizations' bid to be innovative, telecommuting was identified as a key enterprise system driving organizational process innovations (Kyriakou et al., 2016). Other studies also considered telecommuting as complex work context and while this line of research may have been popular, Bélanger et al., (2013) argue that telecommuting is more than a work context but should also be considered as an aspect of work , assessing how work is done, what roles are performed by the technologies supporting work in this context and its effects on work performance (Bélanger et al., 2013). The emphasis here is that different aspects of telecommuting could have distinct impacts on the performance of telecommuters, their work groups and on the organization as a whole (Watson-Manheim et al., 2002).

A recent study viewed telecommuting as a technological discontinuity, assessing its impact on different organizational competencies (Singh & Verma, 2021). According to the authors, the wide scale adoption of mandatory or compulsory telecommuting by organizations as witnessed in recent times due to the COVID-19 pandemic, represents a shift in technological usage and managerial dimensions of organizations who were not and are still not prepared for this disruption. In the end, the most adversely affected competency in the organization studied relates to processes and activities as they currently were

not able to support the shift to telecommuting as a work context (Singh & Verma, 2021). The telecommuting environment being a virtual work environment in itself has been characterized by boundaries which represent the points at which it differentiates from the usual work environment based at the employer's premises. Discontinuities result as the negative effects of crossing one or more boundaries in this virtual work environment. This therefore makes it important to understand the role of boundaries in the telecommuting environment. In the following sections, the concept of telecommuting boundaries is deliberated on from the literature.

2.2.1 Telecommuting Boundaries

The notion of boundaries is reported central to social sciences and have been increasingly adopted to understand relationships between systems in the organizational work environment (Watson-Manheim et al., 2012). Boundaries are essential as they lend an understanding to how a unit, domain or circumstance differentiates from the other. Examples include geography, time zone and culture. In terms of how obvious boundaries are to individuals, they may be physical, administrative and categorical in nature. Physical boundaries pertain to unchangeable material differences such as in geography and time. Administrative boundaries are usually conferred and legitimized by a higher authority while categorical boundaries entails how individuals classify others by for instance religion, shared background etc. (Watson-Manheim et al., 2012). Boundaries epitomize prospects as well as barriers for innovation, efficient knowledge sharing and organizing activities in the context of team members who may be telecommuting (Watson-Manheim et al., 2012).

As boundaries have been identified as existing in the telecommuting work environment, researchers are increasingly stressing on the need to comprehend how these boundaries influence the way work is

organized and managed in this context (Asatiani & Penttinen, 2019; Chudoba et al., 2005). A limitation with boundary studies however has been that boundaries are static in nature, having varying effects in different contexts. These features make it not able to sufficiently explain the dynamics of the changing work environment (Asatiani & Penttinen, 2019; Watson-Manheim et al., 2002, 2012). Moreover, not all boundaries result in discontinuities. What this means is that, working individuals often cross a number of boundaries in the work environment as they work but the effects of crossing a boundary may not always result in a discontinuity. An example with regards to telecommuting is when an employee now has to work from home. If the employees are millennials who are reported to support flexible work arrangements and love to work using new ICTs (Beno, 2019; Martin & MacDonnell, 2012; Myers & Sadaghiani, 2010), then using technology to collaborate with colleagues and managers, will seem rather normal and will not pose any challenge. If the employees on the other hand, have attitudes, norms and values not cut for telecommuting, this may represent a discontinuity which could heavily impact on the satisfaction derived from telecommuting and ultimately on their performance as they work from home or other remote locations.

Additionally, a boundary having a negative effect in one context may turn out having a positive effect in a different context. A discontinuity then is the negative effect of crossing these boundaries as mentioned earlier while a continuity is the strategy adopted by the organization to curtail such negative effects. (Chudoba et al., 2005; Watson-Manheim et al., 2002). Borrowing from the concept of the organizational discontinuity theory (ODT), a boundary becomes a discontinuity when it is realized by an individual as a shift in information and communication flows in various aspects of work (e.g. work setting) and which requires close monitoring and adjustment to manage (Watson-Manheim et al., 2012). Discontinuities and continuities are said to coexist at the boundaries of the telecommuting environment although their effects may vary across different contexts. In their study, Watson-Manheim et al., (2002) suggest that, the

concept of discontinuities and continuities can help to better understand the complexities surrounding telecommuting or virtual work as they tend to unearth underlying process irregularities and problems created by veiled boundaries as well as the strategies to alleviate these challenges (Watson-Manheim et al., 2002).

2.2.2 Discontinuities and Continuities

Boundaries that function as sources of discontinuities in literature have been identified as culture, time zone, geography, work practices, technology and organization (Asatiani & Penttinen, 2019). These six boundaries are referred to as the discontinuities present in a telecommuting environment (Chudoba et al., 2005). Discontinuities are the gaps or the absence of coherence in aspects of work such as work settings, task and relations with other work colleagues, managers. Continuities are those strategies for overcoming discontinuities in the changing work environment (Asatiani & Penttinen, 2019; Dixon & Panteli, 2010; Watson-Manheim et al., 2002).

Chudoba et al., (2005) discovered from their study that the majority of the studies in the area of telecommuting were focused on the strategies adopted by organizations to curb the effect of discontinuities. Prior to this observation, Watson-Manheim et al., (2002) suggested that telecommuting work environment can be characterized and understood along the lines of occurring discontinuities and the continuities that emerge to solve them. Benefits are thus attributed to the use of this concept to understand the telecommuting environment. For instance, Asatiani & Penttinen, (2019) claim that, discontinuities and continuities can serve as diagnostic tools allowing for context specific difficulties of telecommuting arising from the effects of crossing boundaries, to be located. In addition, the steps that

organizations intentionally take to address or prevent these difficulties can as well be identified. Accordingly as researchers adopt this concept, it can be possible to compare different virtual environments (Asatiani & Penttinen, 2019).

Despite their importance in understanding the telecommuting phenomenon, only a few studies have been found that looked at how these boundary dynamics emerge and are alleviated. Moreover, there is a dearth of literary work that assesses the impact of the aspects of telecommuting characterized by discontinuities and continuities, on performance (Asatiani & Penttinen, 2019; Chudoba et al., 2005; Dixon & Panteli, 2010; Watson-Manheim et al., 2002, 2012). From Table 2.4, only a few studies did not consider this virtuality aspect of the telecommuting environment (Lebopo et al., 2020; Silva-C et al., 2019). Majority of the reviewed studies implied one form of discontinuity or the other. It was observed as well with some studies that a number of discontinuities existed together, confirming the notion that discontinuities although logically separable, can also appear in clusters (Chudoba et al., 2005). Reviewing literature also unearthed a gap in telecommuting or telework studies with regards to the level of analysis. Most of these studies as seen in the Table 2.2 were employee focused whereas telecommuting is a multilevel phenomenon as established in some studies (Allen et al., 2015; Bélanger et al., 2013).

In the current study, the goal is to ascertain the nature of the telecommuting practice in Ghana through the lens of discontinuities and continuities. By so doing the characteristics of the virtual work environment for telecommuting can be shown, what the processes of telecommuting entails and the nature of work in this context. Table 2.2 gives a summary of reviewed studies, categorized according to the characteristics of the virtual environment setting for telecommuting whereas Table 2.3 defines the six factors proposed as discontinuities that characterize virtual team environments.

Table 2. 2: Categorization of reviewed studies according to their virtual environment characteristics

Author(s)	Virtual Environment Characteristic	Key Study Variables	Study Approach	Level of Analysis
Porter and van den Hooff, (2020)	Technology	Autonomy and Control	a multi-year qualitative case study	Individual, managerial
Kok and Helms, (2016)	Geography, Time zone, Work practices, Culture, organization, Technology	Attitude	Longitudinal study	Individual, managerial
Asatiani et al., (2020)	Culture	Socialization and Organizational culture	Action Research Design	Organizational
Asatiani and Penttinen, (2019)	Geography, Work practices, Culture, organization, Technology	Continuities	Qualitative Study	Individual, managerial, Team and Organizational
Hafermalz and Riemer, (2016)	Technology	Social Isolation	Case study	Individual
Beno, (2019)	Geography	Teleworker Attitudes	Quantitative	Individual
Böll et al., (2014)	Technology, work Practices	The nature of work, the role of IT	Exploratory study, virtual ethnographic research approach	Individual, Team and Organizational
Silva-C et al., (2019)		Manager attitudes	Quantitative Approach	Managerial
Boell et al., (2016)	Work Practices, Technology	The nature of work	virtual ethnography	Individual
Bentley et al., (2016)	Work Practices, technology, organization	Organizational Support	Quantitative, online survey	Individual
Ansong and Boateng, (2018)	Geography, Technology, Organization, work practices	Technology, Environment and Organization	Qualitative approach	Individual, organizational
Lebopo et al., (2020)		Job Characteristics, Support, Trust, Communication	Quantitative approach: Online survey	Organizational

Morrison et al., (2019)	Geography	Intention to Telework	Quantitative approach: Online survey	Individual
Vilhelmson and Thulin, (2016)	Geography, Organization, Technology	Diffusion of Telework	Quantitative approach	Individual
Chudoba et al., (2005)	Geography, Time zone, Work practices, Culture, organization, Technology	Virtuality	Quantitative approach: Web based survey	Team
Watson-Manheim et al., (2002)	Geography, Time zone, Work practices, Culture, organization, Technology	Virtual Work	Qualitative	Team

Table 2. 3: Discontinuities in Virtual Team Environments

Discontinuities	Definition
Geography	Work that occurs between people in different geographic locations.
Culture	Collaboration with members who represent different cultures e.g. members who speak different language, individual work cultures etc.
Work Practices	discontinuities that emerge when the developed common / shared practice for how work should be conducted becomes problematic to the extent that telecommuters loose hints of what is required of them.

Organization	when work that brings together individuals from multiple functional units in an organization (intra-organizational discontinuity) or individuals from different organizations (inter-organizational discontinuity) becomes challenging such that there is a readjustment to work processes.
Technology	differences in access to ICTs among members of a virtual or distributed team.
Time Zone	when collaboration with members across different time zones negatively affects the flow of work.

Geographical Discontinuities

Geographical discontinuities were the most studied virtual environment characteristic (Asatiani & Penttinen, 2019; Beno, 2019; Morrison et al., 2019; Vilhelmson & Thulin, 2016). They mostly relate to working where team members collaborate from across different geographic sites, an employee working while travelling and working from home during normal working hours (Chudoba et al., 2005).

Time Zone Discontinuities

Discontinuities relating to time zones were scarce in the literature and this is because the focus of most telecommuting studies do not directly consider distributed team level dynamics of telecommuting

workers. Thus, the implications of time zone related differences are seen primarily in distributed or virtual teams research (Böll et al., 2014; Chudoba et al., 2005). Discontinuities arising from time zone differences entail having to collaborate across different time zones in distributed teams. Often times, work in this context gets extended for longer than scheduled periods in order to establish communication with virtual colleagues (Chudoba et al., 2005).

Cultural Discontinuities

Cultural discontinuities refer to work involving individuals from different countries, speaking different languages but find themselves working together on projects. An individuals' work culture or educational background can as well signify a cultural challenge when working in a team (Asatiani & Penttinen, 2019). In comparison with the other form of discontinuities, cultural discontinuities are not too common in the telecommuting literature with only a few studies that have been conducted along this line (Asatiani et al., 2020; Chudoba et al., 2005; Watson-Manheim et al., 2002). Cultural differences among virtual or in this case telecommuting organizations have been known to cause problems with regards to cordination and effective communication (Asatiani et al., 2020). This problem can sometimes trickle down to how an organization disseminates its culture since telecommuters or virtual workers are often percieved distant from the culture of their organizations (Asatiani et al., 2020; Asatiani & Penttinen, 2019), thereby making it difficult for organizations to achieve a wide spread adoption of their organizational culture. This challenge is less seen with collocated organizations who are said to instead benefit from culturally diverse teams (Asatiani et al., 2020). In another study, discontinuites of culture showed up as challenges to integrating new staff and organization wide circulation of the firms' culture. While the integration of

new staff has always been a challenge for most organizations, it is particularly heightened in telecommuting organizations (Asatiani & Penttinen, 2019).

Work Practice Discontinuities

The enactment of work practices within an organization forms the basis for the creation of a common or shared understanding in the organization. Work practices are beneficial to organizations in bringing about operational efficiencies when enacted. Simultaneously, they can serve as potential sources of discontinuities within telecommuting organizations (Asatiani & Penttinen, 2019). Work practice discontinuities often times manifest as the inability of telecommuters to maintain a balance between their work-life and shared organizational practices as they work from home. In that, a telecommuter may be unable to avoid non-work-related distractions while working from home. This inability to maintain balance or avoid distractions can as well lead to the phenomenon of over working (Asatiani & Penttinen, 2019). In addition, working in a team in which membership changes often or where different means are used to track how work is done, (Chudoba et al., 2005) can all result in telecommuter loosing cues as to what is required of them (Asatiani & Penttinen, 2019) which leads to a discontinuity in the flow and performance of work.

Work Organization Discontinuities

Discontinuities associated with how firms organize work activities are another important aspect of the telecommuting work environment. They denote having to work from different locations or satellite offices, collaborating with members from different units of the organization or the distribution of work activities across organizational hierarchy etc. (Asatiani & Penttinen, 2019; Bentley et al., 2016;

Vilhelmson & Thulin, 2016). Asatiani & Penttinen (2019) in their study found that in order for organizations to construct continuities to mitigate the effects of discontinuities, there is a blend of both rigid and flexible approaches to work flow mangement, defining the role of technology and communication management. Also the more interdependent work tasks are, the higher the tendency it has to affect the efficiency and performance of telecommuters. Hence the authors report that not all interdependent tasks can be done remotely (Asatiani & Penttinen, 2019).

Technological Discontinuities

The use of technology forms an important part of virtual working or telecommuting. Technology has become infused in the processes of organizations whether big or small (Allen et al., 2015) and in light of this, researchers have increasingly suggested the need for a person-technology fit or a task-technology fit as organizations make technological investments (Baxter & Hester, 2014; Bélanger et al., 2013). Subsequently, organizations may go the extra mile to provide adequate infrastructure and support for working at a distance (Ansong & Boateng, 2018; Bentley et al., 2016). This however does not guarantee equal access by employees to the available technological tools and infrastructure that enable telecommuting. When access to technology is impeded in anyway, the performance of members individually and on a virtual team could be adversely affected. A technological discontinuity is also evident when telecommuters have to use internet technology devices such as video conferencing tools that they are not accustomed to. In other words, this form of discontinuity emerges while telecommuters work with technologies that are not evenly diffused among the employees of an organization (Chudoba et al., 2005).

2.3 Telecommuting Critical Success Factors (CSF)

In the context of telecommuting, CSFs are those conditions under which the phenomenon is successful and enhances the performance of the organization as a whole. Generally, studies on or related to telecommuting critical success factors (CSF) are very limited. Although telecommuting is growing in popularity in the organizational circles, it has not always been associated with positive outcomes. Implementation issues are among the causes of negative outcomes for telecommuting in organizations (Allen et al., 2015; Bloom et al., 2015). Moreover, seeing that telecommuting enables organizations to be strategic, innovative and modernized, there is the need for organizations to understand what it means for telecommuting to be successful so that the potential benefits can be harnessed. Critical factors are for that matter needed to ensure successful telecommuting. Research has gone into investigating telecommuting outcomes and in turn implicitly unearthed some critical success factors. Some of these factors include trust (Bentley et al., 2016) and support for telecommuters (Lebopo et al., 2020). Besides, an earlier study (Kowalski & Swanson, 2005) benchmarked support, communication and trust as constructs in a framework towards developing a successful telecommuting programme. In the study, trust was considered the most critical success factor for teleworking programmes while management support was considered one of the most important factors for successful telecommuting.

In the same vein, an experimental study by Bloom et al., (2015) on the effectiveness of working from home in an organization found three major conditions constituting the success factors underpinning the programme. Firstly, the authors found that the work roles of the employees (call center representatives) who opted to work from home were suitable for telecommuting. This finding is also confirmed through other studies (Suh & Lee, 2017). Job or task characteristics in the context of telecommuting is considered very crucial to the successful implementation of these flexible work forms (Lebopo et al., 2020). It refers

to the nature of the work role of an employee hence, it is one of the conditions necessary to ensure positive telecommuting outcomes such as increased performance.

Secondly, access to a centralized database made it easy for managers and supervisors to monitor employee performance through reports generated on daily, weekly and monthly basis. This feature also stresses the role and the significance of technology for telecommuting (Bentley et al., 2016; Hafermalz & Riemer, 2016) as well as the related technological support for both managers and employees (Bentley et al., 2016; Silva-C et al., 2019). For telecommuting to be successful, an underlying requirement has got to do with the availability of relevant technologies to facilitate working in this context (Bélanger et al., 2013; Messenger & Gschwind, 2016; Ye, 2012). The third condition that led to the success of the programme is centred on the degree of working from home. This reflects the time dimensional nature of telecommuting as some studies (Allen et al., 2015; Bélanger et al., 2013; Bentley et al., 2016; Suh & Lee, 2017) have begun to be concerned about and its impact on the performance of work teams. While some studies have found that when co-workers are working from home, their performance individually and as a team is negatively impacted (van der Lippe & Lippényi, 2020), the degree of telecommuting which could mean, the number of times a week, or hours a day that an individual may telecommute similarly affects performance in the organization as a whole (Allen et al., 2015; Bélanger et al., 2013).

CSFs for telecommuting are thus very important as the rate of adoption of telecommuting is increasing. A multi-level approach for identifying and empirically testing CSFs with reference to telecommuting is therefore paramount (Kowalski & Swanson, 2005). Yet there are not enough studies specifically addressing CSFs at the individual, team, managerial and organizational levels. Meanwhile, telecommuting is reported as a multi-dimensional phenomenon whose outcomes must be assessed across various levels to enhance deeper understanding (Bélanger et al., 2013).

Based on the literature reviewed, Table 2.4 below identifies and categorizes CSFs across individual levels, team levels, managerial levels and at the organizational levels. CSFs at the organizational levels are the most scarce factors in the literature while a few factors such as communication, trust and support have implications for all levels of analysis (Kowalski & Swanson, 2005; Lebopo et al., 2020; Nilles, 1997). Two studies (Boell et al., 2016; Böll et al., 2014) have stressed on the importance of including the nature of work as a dimension in telecommuting studies. The nature of work seems to have implications for determining job characteristics as well as how ICTs are enacted as part of the work practices. Generally, the findings of these studies suggests that the nature of work is necessary for gaining a thorough understanding of telework in practice (Boell et al., 2016; Böll et al., 2014). However this aspect of telecommuting is yet to be fully represented in the literature (Boell et al., 2016).

Job characteristics which also relates to the identification of tasks that can be performed while telecommuting is a key success factor discovered (Lebopo et al., 2020; Turetken et al., 2010). It includes such details about the job task such as the level of interdependence, the resources needed to execute the task and the degree of difficulty (Guimaraes & Dallow, 1999; Wahbeh et al., 2019). As telecommuting involves work that can be performed outside of the office, it entails tasks that requires the handling, analysis and communication of data (Lebopo et al., 2020). Examples of job roles that fit into these criteria include customer service representatives, accountants, system developers, data entry clerks, project managers, consultants and architects etc. (Guimaraes & Dallow, 1999).

Table 2. 4: Critical success factors for telecommuting.

Author(s)	Telecommuting Success factors	Individual Level	Team Level	Managerial Level	Organizational Level
Kowalski and Swanson (2005); Lebopo et al. (2020)	Trust	✓	✓	✓	✓
Kowalski and Swanson (2005); Lebopo et al. (2020); Turetken et al. (2010)	Communication	✓	✓	✓	✓
Bentley et al. (2016); Kowalski & Swanson (2005); Lebopo et al. (2020)	Support	✓		✓	✓
Allen et al. (2015); Waizenegger et al. (2020)	Learning and Knowledge Sharing		✓		

Allen et al. (2015); Nilles (1997); Ye (2012)	Technology and Media richness	✓	✓	✓	✓
Lebopo et al. (2020); Turetken et al. (2010)	Task/Job Characteristics	✓		✓	✓
Turetken et al. (2010); Ye (2012)	Individual Characteristics	✓	✓		
Allen et al. (2015); Bentley et al. (2016); Nilles (1997)	Telework Intensity	✓	✓	✓	✓
Boell et al. (2016); Böll et al. (2014)	The Nature of Work	✓			✓

In addition to how eligible a particular job is for telecommuting, the characteristics of the employee such as their level of professionalism, self-discipline, ability to work independently, attitudes and norms all constitute conditions in determining the success of telecommuting programmes (Lebopo et al., 2020; Ye, 2012). Employee or telecommuter characteristics follows closely with job characteristics in most studies and inherently suggests the need for an actor-task fit for the organization's implementation of telecommuting to be successful. When the characteristics of the tasks or work has been adequately

defined, it forms the basis upon which the eligibility of a worker for telecommuting is determined (Guimaraes & Dallow, 1999; Lebopo et al., 2020). As the characteristics of a telecommuting employee matches with the type and nature of the tasks accepted to be undertaken while telecommuting, this leads to an increase in performance. Turetken et al., (2010) in their study, found strong evidence to support their claim that employee or individual characteristics and job characteristics impact on telecommuting success. Job or task characteristics feature mostly at the individual and team level although it has significance for managers who have to define these characteristics and determine how viable they are for telecommuting.

Another success factor highlighted in table 2.4, but has received a rather low attention in literature relates to learning and knowledge sharing (Allen et al., 2015; Waizenegger et al., 2020). In the opinion of Waizenegger et al., (2020), learning and knowledge sharing are essential for a teams' collaboration and success. In addition, whereas knowledge sharing is deliberated as an important aspect of the processes for executing work functions, telecommuting is said to sometimes limit knowledge sharing tendencies in the organization. Technology and media richness constitute an essential success factor for telecommuting. Technology has been identified to play a key role in realizing effective telecommuting since the goal usually is to provide the best support network that promotes working in this context. Technology is therefore perceived as an enabler of telecommuting. Additionally, the richness of the communication media adopted for telecommuting can lead to its successful implementation. Media richness geared towards enhancing social interactivity supports telecommuting employees to substitute for face-to-face interactions when collaborating. This leads to a reduction in the negative effects on performance posed by the problem of social isolations that often accompany telecommuting (Allen et al., 2015; Nilles, 1997; Turetken et al., 2010; Ye, 2012).

Lastly, the extent or intensity of telecommuting is identified as another success factor. As shown in Table 2.4, this characteristic of telecommuting has implications across board from the individual levels to the organization as a whole and Nilles, (1997) suggests that the intensity of teleworking indulged in by individuals has implications for their effectiveness and therefore a precondition for successful teleworking. Prior telecommuting studies have on the other hand failed to explicitly determine this feature of telecommuting to ascertain its impact although the extent to which an employee works in another location other than in the premises of the organization is significant in determining telecommuting outcomes (Allen et al., 2015; Bentley et al., 2016; Nilles, 1997).

2.4 Telecommuting and Organizational Performance

Flexible work arrangements such as telecommuting have been known to be associated with positive organizational performance (Kotey & Sharma, 2016). Performance according to Martin & MacDonnell, (2012) is an assessment of the work taking place in an organization. As one of the outcomes of telecommuting, performance is of paramount importance to practice and research. Not only does it have implications for the individual employee but also for teams or work groups, managers and the organization as a whole. The proliferation of evidence in literature about the negative consequences (e.g. social isolation) of the phenomenon, has caused both practitioners and researchers to begin to raise questions about the best forms of management and support that enhance employee performance and wellbeing while telecommuting (Bentley et al., 2016). A reason being that there is no guarantee that a high performing employee will keep performing when telecommuting. Similarly, managers may find themselves engaged in trust building activities with their out of sight employees while finding ways to effectively monitor their performance and measure their productivity (Bailey & Kurland, 1999). Hence,

an understanding of how telecommuting affects the performance of an organization is needed to help both research and practice to understand the significance of the changes that will surface from the adoption of telecommuting programmes and what are the best practices in order to effectively accommodate these changes.

Organizations are complex work systems made up of subsystems, i.e., structures, organizational culture, functional units, employees and their managers etc. Work may sometimes be organized across different business units in which telecommuting employees may find themselves working together with their commuting counterparts or with fellow virtual workers in a number of intradepartmental and interdepartmental teams. It may be easier for an individual to work with members of the same department, owing to the fact that they share the same culture, work practices and values (Intradepartmental). In this instance it may be less challenging for managers to monitor those employees who may be telecommuting. The experience may be different with regards to interdepartmental teams such as project teams in which members are often from across different departments of an organization. Information that is considered a priority to an employee from sales may not be as important for another from IT or operations department. This kind of break in the flow of work affects how employees collaborate and share knowledge on a team. Their performance individually, team wise and on a management level may be greatly impacted.

At the organizational level, challenges associated with telecommuting have been linked to performance monitoring and performance measurement (Bailey & Kurland, 1999; Baruch, 2001). Against the backdrop that managing telecommuting is normally challenging, management issues relate to their inability to physically observe employees, measure and monitor their performance when telecommuting. Consequently, Bailey & Kurland, (1999) have stressed on the need for managers to shift from input to output based methods for managing telecommuting employees (Bailey & Kurland, 1999). Others also

refer to this output based management style as result-based management practice which advocates for productivity to be measured based on performance on projects and on assigned tasks (Baruch, 2001; Kowalski & Swanson, 2005).

Organizations benefit from positive employee performance which often and to some extent culminates into increased performance. Whereas at the managerial levels, the problems of telecommuting include a loss of control over the activities of employees and performance monitoring challenges, the individual level appears to benefit from perceived control and autonomy as well as their ability to monitor their own performance (Baruch, 2001; Porter & van den Hooff, 2020). A recent study found that working from home may be beneficial only to some workers and that individual performance appears to be negatively impacted when co-workers work from home. In the same study, team performance as reported by managers, takes a downward surge when co-worker telecommuting is frequent (van der Lippe & Lippényi, 2020). In another instance which represents quite the popular opinion in literature, positive correlations were found between telecommuting and individual performance (Allen et al., 2015).

Organizations may have varied goals and therefore their reasons for adopting telecommuting programmes may be different (Asatiani & Penttinen, 2019; Bélanger et al., 2013). A more pressing reason in recent times has been to facilitate business continuity in the face of the COVID-19 pandemic while also reducing the spread of the disease (Allen et al., 2015; Lebopo et al., 2020). In spite of all these, the actual impact of telecommuting on organizational performance and what constitutes this performance has been under studied (Allen et al., 2015).

2.5 IS Theories for Telecommuting Studies

The telecommuting phenomenon has been studied across a variety of disciplines (Allen et al., 2015; Bentley et al., 2016; Boell et al., 2016; Lebopo et al., 2020). The findings of these studies are but paradoxical in nature, making it difficult for comparative studies to be conducted. Reasons for these paradoxical findings have been attributed to the focus of prior research on the benefits and outcomes of telecommuting as some studies have reported (Boell et al., 2016). Other scholars (e.g. Akemu & Abdelnour, 2020; Aroles et al., 2019; Bélanger et al., 2013) have attributed it to a lack of comprehensive theoretical framework with which to study the multifaceted nature of telecommuting. The latter is evident as myriads of theories have been employed in telecommuting studies such as the organizational discontinuity theory, resource-based view (RBV), work systems theory, theory of planned behaviour (TPB), technology acceptance model (TAM) and socio-technical systems theory among others. Table 2.5 shows some IS theories applied in telecommuting research and their methodological approaches.

Table 2. 5: IS Theories used in Telecommuting studies

THEORY	RESEARCH PURPOSE	RESEARCH APPROACH	SOURCE
Affordance theory	To analyze how different affordances related to autonomy and control emerge in the interaction between employees, managers and mobile technologies.	Qualitative Research	Porter and van den Hooff (2020)
Theory of Planned behavior (TPB)	To understand the factors that affect the intention of IT workers to telework.	Quantitative Explanatory	Morrison et al. (2019)
Socio-technical systems theory	To examine the role of organizational social support and specific support for	Quantitative	Bentley et al. (2016)

	teleworkers in influencing their wellbeing.		
Technology Acceptance Model 3 (TAM 3)	To identify how middle manager's attitude towards telework impacts their adoption.	Quantitative, survey, exploratory factor analysis (EFA), confirmatory factor analysis (CFA)	Silva-C et al. (2019)
Technology organization environment framework (TOE)	To investigate the technological, environmental, and organizational factors that influence telecommuting adoption.	Qualitative single case study	Ansong and Boateng, (2018)
Signaling theory	To analyze the differential influence of workplace flexibility on organizational attraction	Quantitative: A randomized vignette-based experiment	Schmoll and Süß (2019)
Work Systems Theory	To find out what are the levels of changes in IS capabilities of digital functions across organizations due to the technological discontinuity caused by the mandatory telework implementation on an organizational scale.	Mixed Method	Singh and Verma (2021)
Resource based View		Mixed Method	Singh and Verma (2021)
Social Cognitive Theory	To examine the effects of two contextual dimensions of virtual work (workplace mobility and distributed work) and employees' perceptions of group efficacy (knowledge sharing ability).	On-line survey - Quantitative	Jackowska and Lauring (2021)

2.5.1 Socio-Technical Systems (STS) View of Telecommuting

Despite the contributions of these theories in advancing research on telecommuting, the complexities surrounding work in the context of telecommuting suggests a more comprehensive theorizing approach in an attempt to address reasons for inconclusive telecommuting findings. The STS theory emerges as

one such theory that can offer a holistic understanding into how factors interact and results in positive outcomes such as increased performance. Achieving successful telecommuting requires more than adequate technological infrastructure and a willingness on the part of management to support the programme. An interplay of factors ranging from employee related concerns to those pertaining to the organization as a whole must all be adequately examined. In practice these factors, arising from various aspects of the complex telecommuting phenomenon are those that all together tend to define how telecommuters, teams and organizations experience and assess telecommuting (Böll et al., 2014).

This interplay calls for a holistic view of the phenomenon in order to address these concerns for success. The STS theory is used to place the identified CSFs as well as discontinuities and continuities for this study in order to closely examine how they interact with each other and effect a positive performance in the context of telecommuting. Further discussion on the STS theory is provided in chapter 3.

2.6 Geographical Distribution of the Telecommuting Literature

The papers reviewed for this study comprises mainly of research articles. A large majority papers reviewed were centered on developed economies who are perceived to be advanced in their adoption and use of ICTs. Only seven studies with focus on developing economies were found; two from South Africa and one each from Ghana, India, Lithuania, Mexico and Columbia. This shows that the developing economy context is poorly represented in telecommuting studies and calls for a refocus on this side of the world to identify how the nature of the telecommuting practice and the implications of it may differ in this context (Aroles et al., 2019).

2.7 Research Gaps and Directions for Future Research

Following a critical review of the literature, the following gaps emerged.

1. Contextually the adoption of telecommuting varies by country, industry and organization (OECD, 2020). While the world at large has resorted to telecommuting programs for their survival in the face of the disruptions cause by the COVID-19 pandemic, it is still not fully understood what success mechanisms underlie the practice of telecommuting in developing economies (Akemu & Abdelnour, 2020; Aroles et al., 2019).
2. The shift from voluntary to mandatory telecommuting conditions in recent times introduces a gap in literature in that it challenges the culture, structures and management practices adopted in organizations. Whereas in developing economies such as in Ghana, telecommuting may be mandatory as compared to being mostly voluntary in advanced nations, what is still not clear about telecommuting in Ghana relates to what management strategies, culture and structures that have been put in place to manage telecommuting (Lebopo et al., 2020; Singh & Verma, 2021; Waizenegger et al., 2020).
3. Prior studies focused on telecommuting outcomes than on the factors necessary for successful adoption. The majority of these studies have produced contradictory findings on the outcomes of telecommuting such as in the case of work-life balance where telecommuting is perceived to help employees manage their work-family life and in another instance, leads to the blurring of the work-family boundaries. Moreso, existing studies on telecommuting have been studied at the employee levels, leaving a dearth of studies at the group and organizational levels.
4. The concept of discontinuities and continuities as a way to measure and characterize the virtual or telecommuting environment is an emerging perspective that requires further investigation as

to how continuities are enacted for telecommuting success as highlighted by previous studies (Asatiani & Penttinen, 2019; Dixon & Panteli, 2010; Watson-Manheim et al., 2002, 2012).

2.8 Chapter Summary

This chapter reviewed literature on telecommuting boundaries, discontinuities and continuities, telecommuting and organizational performance, telecommuting critical success factors, IS theories applied to Telecommuting research and the geographical distribution of reviewed papers. The chapter then concludes with the identified gaps underpinning the current study.

CHAPTER THREE

THEORY AND HYPOTHESES DEVELOPMENT

3.1 Introduction

This chapter explains the underpinning theory for the research, the development of the research model as well as the hypotheses guiding the study. The chapter further provides a thorough discussion of the STS Theory, STS theory in information systems (IS) research, the STS framework and finally the chapter summary.

3.2 The Socio-Technical Systems (STS) Theory

The STS theory has its origins from the socio-technical systems thinking which views organizations as open work systems that transform inputs into outputs (Bélanger et al., 2013; Davis et al., 2014; Trist, 1981). The UK Travis Stock Institute pioneered the emergence of the socio-technical systems thinking in a research conducted to uncover issues surrounding the introduction of a new coal mining machinery (Trist & Bamforth, 1951; Trist, 1981). The study inspired the notion that technological and sociological dimensions form part of the workplace and that there are interactions between these dimensions. Specifically, they reported that the introduction of new technology (technological dimension) without considering the effects on the related behavioural aspects such as the corresponding changes in work setting or shared practices (sociological dimensions), often results in social complications in the workplace (Trist & Bamforth, 1951).

Thus, from the perspectives of STS, organizations are input-output systems i.e., work systems comprised of two or more individuals cooperating on the basis of a work design while using hardware or software tools together with knowledge or information embedded within organizational processes to transform inputs into desired outputs. These interactions take place within both the internal and external environments (Bélanger et al., 2013). The STS conceives that an organization is made up of both social and technical subsystems which are interdependent and these subcomponents must be considered not in isolation but simultaneously. This characteristic of work systems arouses the need for both the technical and social dimensions to be taken into considerations in the design of organizational work systems.

The STS theory provides the avenue to determine the best solutions in response to organizational challenges as it offers the flexibility to study systems holistically (Davis et al., 2014) hence, the theory forms the basis upon which the current study is founded. Grounded on the principles of joint optimization, the theory posits that a change in one part of a work system affects the other. Therefore, when designing work systems in an organization, the process of joint optimization considers both the social and technical subsystems and their impact on each other. As organizations design systems to be implemented in the workplace, failure to consider what the effect of a development in one aspect or a change in one part is on the other part may cause inefficiencies in the desired systems (Bélanger et al., 2013; Davis et al., 2014).

The STS theory is not only applicable in the design and implementation of technology but also prominent in how organizations plan and organize work. As a result of the interactions between workplace technologies and other stakeholders in the organization, new and flexible ways of working have emerged, along with their associated challenges and risks. The theory enables organizations to predict work in that they are useful in improving the social aspects of an organization such as in defining new work roles,

work practices and organizational structures which leads to increased satisfaction for employees and efficient organizational systems (Davis et al., 2014).

3.3 STS Theory in Information Systems Research

The systems perspective to IS research is of as much importance as the likes of the process and variance perspectives. More so, the 'systems' in information systems is an indication of the increasing importance of the systems perspective (Burton-Jones et al., 2015). Accordingly, some researchers have concluded on the socio-technical systems view as the most fitting of information systems views (Robey et al., 2013). Organizations have been considered as complex systems composed of various independent subsystems which all come together to achieve desired outcomes. These subsystems are all together influenced by various technological, sociological and environmental factors (Appelbaum, 1997; Davis et al., 2014). The STS theory has found application in many domains, having been diffused across the social sciences and beyond. Bélanger et al. (2013) emphasises on the potential of the theory in the conceptualization and examination of how multiple factors conjointly effect telecommuting outcomes over time.

In information systems, the STS theory has been applied to studies focused on technology use (Hester, 2012). Scholars have employed the theory as a diagnostic tool to unearth fit or alignment challenges affecting the utilization of a wiki technology in an organization (Baxter & Hester, 2014). Bélanger et al. (2013) developed an STS theory based framework to study telecommuting. The authors were able to show what relationships exists between telecommuting antecedents (i.e. email culture, availability of technological infrastructures, task interdependence etc.) and work outcomes (i.e. knowledge sharing, employee commitment, isolation etc.) across various levels, arguing that telecommuting is a multi-level phenomenon. In another study on the nature and implications of 'smart working' (Bednar & Welch,

2020), the authors employed the use of the STS theory to capture the perspectives of stakeholders on the phenomenon. Similarly, Ryan & Harrison (2000) studied IT investments by utilizing the STS approach to uncover the social subsystem costs associated with new IT. The authors discovered that even though the social and technical subsystems are interdependent, the extent is not same in all situations (Ryan & Harrison, 2000).

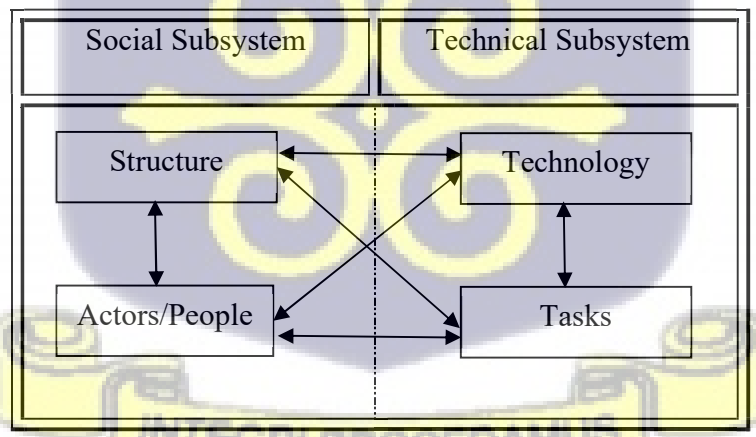
In sum, the STS theory has been applied to the study of many different aspects of the organizations including studying the introduction of new technologies and also for understanding changes that take place in the organization such as with work redesign for self-regulating or autonomous work groups (Appelbaum, 1997). Thus, the current study responds to the call by Davis et al. (2014) for more aggressive uses of the theory so as to reshape conceptions about what makes up an organizational system and possibly extend the reach of the theory into other contexts, including application of the theory in quantitative studies.

3.4 Socio-Technical Systems (STS) Framework

In line with the socio-technical systems theory, an organization is made up of two subsystems namely the social and technical subsystems which are co-dependent and interact with each other (Chen & Nath, 2008). Each subsystem comprises elements that work hand in hand towards an expected goal, by a process known as joint optimization. This implies that the elements in one subsystem interacts with those from the other subsystem, converting work system inputs into desired outputs. Gaps however emerge in the relationship among subsystem elements in a socio-technical system. These gaps, which are inconsistencies in the interactivity between subsystem elements often affect the performance of the entire system (Lyytinen & Newman, 2008). Considering the role of 'fit' therefore in understanding how the

two subsystems in a socio-technical system are interacting, it implies that the better the interaction or fit between the subsystems the better the effectiveness of the entire work system (Baxter & Hester, 2014; Bentley et al., 2016).

The social subsystem involves the people characteristics i.e. their attitudes, skills and values, the relationships among people, reward systems and authority structures whereas the technical subsystem deals with the technologies, tasks and organizational processes or practices included in the interaction and conversion of input into outputs (Bostrom & Heinen, 1977a; Chen & Nath, 2008). In this research a socio-technical systems framework as used by Baxter & Hester, (2014) is employed to perform a cross-organizational study on the nature of the telecommuting practices in Ghana. It comprises the following elements: actors, structures, tasks and technology as shown in Figure 3.1.



Source: *(Bostrom & Heinen, 1977)*

Figure 3. 1: A socio-technical systems network

Table 3.1 identifies and defines the relationships that exists between these subsystem elements in the STS network. In all, there are six relationships defined in the table which are actor-structure, actor-task, actor-technology, task-technology, task-structure, technology-structure. These relationships show that there is an interactivity between elements within the subsystems.

Table 3. 1: Definition of STS subsystem elements and relationships

Socio-technical elements	Definition
Actor	Actors include an organization's members and its main stakeholders who carry out or influence the work
Structure	The structure covers systems of communication, systems of authority, and systems of workflow. It includes both the normative dimension, values, norms, and general role expectations, and the behavioural dimension, patterns of behaviour as actors communicate, exercise authority, or work
Task	Task describes the work system's goals and purpose and the way in which work gets done within the organization
Technology	Technological tools used in the work system
Element relationships	**Description of alignment**
Actor-structure	Actors follow operating procedures; structures provide support to actors in their tasks
Actor-task	Actors understand and carry out tasks, actors are trained to perform tasks
Actor-technology	Actors understand and accept technology, actors adapt technology to the work environment
Task-technology	Technology is appropriately chosen and adequate to support tasks
Task-structure	Structure is aligned with task, adequate structure defined for tasks
Technology-structure	Technology is adapted and modified for given structure, structure takes advantage of capabilities of technology

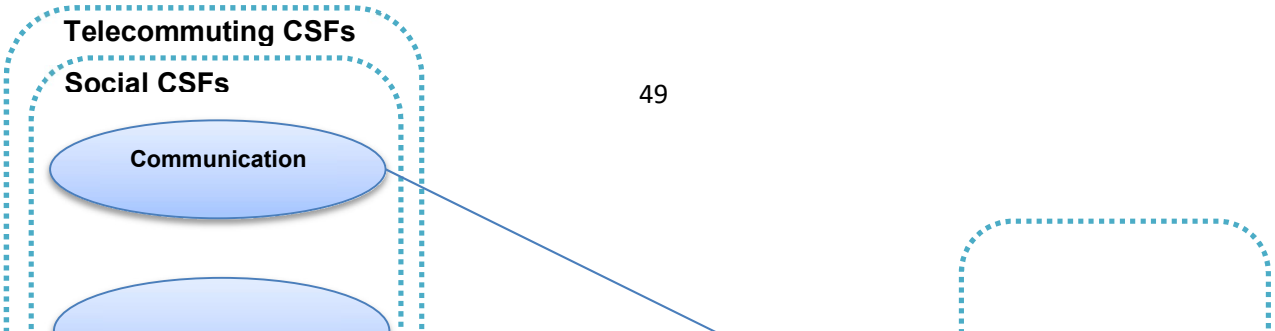
Source: Adopted from Baxter & Hester, (2014), p.52.

According to Bostrom and Heinen, (1977b) many of the challenges of management information systems (MIS) and related projects most often originate from the behavioural aspects of an organization. A standard MIS approach will be to first determine the technical system requirements and after, fine-tune

the social aspects to it. With the STS approach however, it is advocated that both social and technical requirements be jointly optimized in order to arrive at the best possible solution for the organization (Bostrom & Heinen, 1977a). The principles of the STS approach can be applied to the design of purely virtual or hybrid organizations in which telecommuting takes place (Asatiani & Penttinen, 2019; Chen & Nath, 2008). The joint consideration of both the technical and the social subsystems will allow organizations to better identify the challenges and opportunities associated with telecommuting and the best ways forward.

3.5 Research Model Development

In this research, the Critical Success Factors (CSFs) are categorized according to how they relate to each subsystem element. Specifically, the CSFs are grouped according to the social and technical subsystems and allows for the researcher to examine how these factors interact to create a jointly optimized telecommuting work environment that facilitates achieving desired performance outcomes. Based on the STS framework, the research model for the current study is presented in Figure 3.2. The model depicts CSFs of the social and technical subsystems respectively and how they interact to achieve desired performance outcomes. Fit is applied in this model to depict the inter-relationships between subsystem elements.



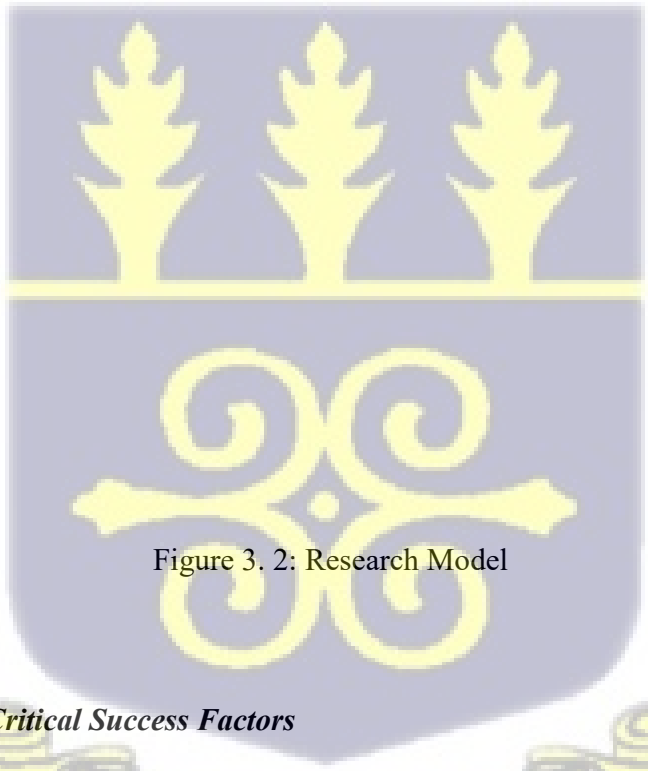


Figure 3. 2: Research Model

3.5.1 Social Subsystem Critical Success Factors

In an organizational setting, for managers to attain success with any telecommuting programme, there is the need to establish the role and importance of Critical Success Factors (CSFs) in the implementation of telecommuting. Moreover, success factors have been known not to exist in isolation but interact with each other (O'Leary et al., 2020). Hence, the current study seeks to determine what these factors are in the context of Ghanaian firms with reference to telecommuting. The identified CSFs from literature are further categorized based on the two subsystems of the STS theory. Those factors related to the technical subsystem are referred to in this study as technical CSFs whereas those of the social subsystem are

referred to as the social CSFs. The social CSFs for this study are: Communication, Learning and Knowledge Sharing and Employee Characteristics.

Communication

Communication refers to the way and manner in which information is transferred between an organization and its stakeholders such that it produces a response that can be understood by all stakeholders (Peter, 2015). In the context of telecommuting, communication becomes complicated as workers and managers work from locations that are physically dispersed (Kowalski & Swanson, 2005; Ye, 2012). Therefore, the importance of communication cannot be underestimated as it is linked to the creation of successful companies. (Haroon & Malik, 2018). This study thus sort to confirm communication as a critical success factor by asessing the following dimesions: usefulness of the established channels of communication, the ability to effectively communicate via the use of ICT, enactment of communication strategies that promote social interation among employees, availability of commuication's culture that promotes social interactions and policies for online communication.

Learning and Knowledge Sharing

Learning and Knowledge sharing have roots in knowledge management practices in organizations and are factors that are often studied together because of their complementarity. Knowledge sharing in its basic form is a process of making knowledge available to others in an organization (Ipe, 2003). As individuals in an organization work and interact, they go through a process of creating, sharing and using knowledge (Ipe, 2003). As organizations learn to leverage this knowledge that is created, they become

learning organizations. Organizational learning then involves how organizations build on past experiences to create practices that guide current and future behaviour (Levitt & March, 1988). Organizational learning has been said to positively influence innovation and performance while knowledge sharing is reported to be positively linked to innovative performance of organizations (Aizpurúa et al., 2011). In the context of the current study, the concepts of learning and knowledge sharing are studied together. Both concepts have great significance in the creation of successful organizations (Aizpurúa et al., 2011; Ipe, 2003). The study considers whether or not telecommuting organizations have this mind-set and the existence of the culture of learning and knowledge sharing. In addition, its relevance for the successful implementation of telecommuting is also considered.

Employee characteristics

The idea behind employee characteristics is rooted in the fact that not every employee may be suited for telecommuting (Guimaraes & Dallow, 1999; Ye, 2012). For that matter, in the context of telecommuting, employees are expected to possess a number of traits in order to be effective. In this study employee characteristics measured include ability to work without supervision, dependability, experience and technical know-how, technological efficacy, interpersonal skills, timeliness, organizational skills as well as attitudes such as positivity and openness to telecommuting.

3.5.2 Technical Subsystem Critical Success Factors

The technical subsystem of a telecommuting system comprises the task or job, goals and the technologies for executing those tasks. Technology and Media Richness and Organisational Support are included in this study as factors that constitute the technical CSFs in this study.

Technology and Media Richness

Technology forms a core building block of telecommuting. Customarily, organizations are responsible to provide technology that supports telecommuting while employees must use these technologies efficiently and effectively to work. These technologies include networking tools and infrastructure, internet, ICTs such as mobile phones, tablets and laptops and social networking platforms. Not only are these technologies expected to be useful, research suggests that they must also be able to induce social contexts with their use for work (Allen et al., 2015; Turetken et al., 2010) so as to be useful for telecommuting. Technology and media richness in this study is assessed based on their usefulness, ease of use and the level of social interaction involved with the use of technology and communication media for telecommuting.

Organisational Support

Inherently, employees who telecommute are reported to tend to require organisational support so as to curtail the feelings of isolation which in turn increases their satisfaction and performance (Bentley et al., 2016; Lebopo et al., 2020). According to Kowalski & Swanson (2005) support is a crucial factor for success with telecommuting implementations and often comes from different dimensions such as from

top management, managers and supervisors, technological support and trainings. This study correspondingly investigates the impact of support as a critical success factor as against performance across employee, team and managerial levels. The usefulness of the technological infrastructures and tools provided by the organization for telecommuting, the availability of technological support for telecommuters, training for employees before they embark on telecommuting, communication skills training for both employees and their managers, team members supporting each other to help meet deadlines and achieve targets as well as employees knowing the next in command to call for support or feedback are items employed to measure the organizational support dimension.

3.5.3 Organizational Performance

As this study determines and examines the impact telecommuting CSFs, the relationship between these CSFs and organizational performance is further investigated to see how the CSFs affect organizational performance at the employee, team and managerial levels. In view of this, organizational performance at the employee level considers items such as their ability to meet deadlines, achieve work goals, their level of control and efficiency, ability to prioritize different aspects of their work, the quality of work done, effectiveness of their collaborations and their productivity. The items employed to measure performance at the employee level were adapted for the team and managerial level performance measurement.

3.6 Hypothesis Development

3.6.1 Communication

In the context of telecommuting, communication skills is an important attribute to be possessed by managers and their subordinates since they rely solely on technology to be able to communicate and collaborate with work colleagues (Lebopo et al., 2020). Moreover, communication is seemingly complex when working in this context and may increase coordination issues when dealing with teams. (Kowalski & Swanson, 2005). Managers require training on how best to communicate effectively with their out of office subordinates. Typically, there may be the need to communicate the organization's work culture, goals and expectations regarding work with employees who may be working from home.

Consequently, telecommuters require training on how best to communicate among themselves. Effective communication in telecommuting increases employees awareness about their presence in the virtual organization, mitigate feelings of isolation, gain attention of supervisors for support and effectively collaborate with team members (Kowalski & Swanson, 2005; Lebopo et al., 2020). At the organizational level, communication is formal and takes the form of guiding policies diffused into all levels of the organization. At the managerial and telecommuter levels, both informal and formal communication methods must be employed to strengthen relationships (Kowalski & Swanson, 2005). Kowalski and Swanson (2005) report that when communication is effective, it leads to an increase in the satisfaction derived from telecommuting and facilitates interactivity through the creative use of technology. This further results in increased performance and productivity (Kowalski & Swanson, 2005). Communication is therefore essential at all levels of the organization when telecommuting. It is hypothesized that:

H1: Inter-organizational communication positively influences organizational performance at the individual, team and managerial levels.

3.6.2 Learning and Knowledge Sharing

The modern organization operates in a complex business environment where technology is advancing rapidly, data is growing every second and competitor organizations have increasingly become knowledgeable in providing customer centric, just in time products for the market. Secondly the development and growth of the knowledge economy, has also introduced knowledge work in which an organizational culture of learning plays a key role in improving the competitiveness of an organization in the market (Boldosova, 2019).

Even though telecommuting helps organizations to be modern, innovative and attractive with the international market (Singh & Verma, 2021), it has the potential to limit learning and knowledge sharing capabilities of the organization (Allen et al., 2015; Waizenegger et al., 2020). Knowledge sharing is an inherent part of the organizational processes for performing work activities (Allen et al., 2015). Learning and knowledge sharing promote team collaboration and their ultimate success (Waizenegger et al., 2020). Therefore, it is hypothesized that;

> *H2: Learning and knowledge sharing culture positively influences organisational performance at the individual, team and managerial levels.*

3.6.3 Telecommuting Employee Characteristics

Based on the notion that telecommuting is not always successful under different conditions, the alignment or fit between individual characteristics, work/job characteristics and manager/supervisor characteristics and the nature of work in this context all play key roles in ensuring telecommuting success and increased performance (Guimaraes & Dallow, 1999; Lebopo et al., 2020; Turetken et al., 2010; Ye, 2012). Not

everyone is cut for telecommuting as this aspect of working entails working from a distance and so comes with an inherent social cost (Aroles et al., 2019). Telecommuting poses a condition where workers may be disconnected to an extent from co-workers and may become challenging especially when the said employee is accustomed to collocated work. Besides there is no guarantee that high performing employees will still be able to perform well when telecommuting or when working in teams in which some or all members are telecommuting. As such, individual characteristics including their interpersonal skills, technological efficacy, attitudes, values and norms as well as their level of self-discipline and motivation, working experience and track record are all determinants to their success and performance whiles telecommuting.

H3: Employee characteristics positively influence organizational performance at the individual, team and managerial levels.

3.6.4 Technology and Media Richness

As telecommuting involves members of an organization working from remote locations using ICTs and related technologies to collaborate and coordinate work activities, technology forms an important backbone of telecommuting programs. Through the use of technology for work, under remote conditions, individuals are enabled to be able to transverse boundaries of geography and time (Raghuram et al., 2019). Technology may be adopted to play a substitutional or supporting role and whose effect varies based on the form of use. (Boell et al., 2016; Hafermalz & Riemer, 2016; Nakrošienė et al., 2019; Tams, Ahuja, Thatcher, & Grover, 2020).

Consequently, technology has become known as both an enabler and constrainer to remote work (Messenger & Gschwind, 2016). Besides, the technologies and media adopted for telecommuting are

expected to offer their features and capabilities to enhance the effectiveness of telecommuting. This as well points to a need for a fit or alignment in the use of technology for telecommuting (Baxter & Hester, 2014; Bélanger et al., 2013). Turetken et al. (2010) observed that the richer the communication media, the more likely it is for telecommuting to be successful. However, with the concerns being raised about the behavioural and social implications of enacting ICTs and other technologies as part of organizational processes, the richness of the communication media spans beyond removing uncertainties surrounding communication in this context to include a social context. A socially rich communication media such as LinkedIn or Facebook will go a long way to improve the effectiveness of communication among employees and teams when telecommuting. This helps to mitigate the problem of social and professional isolation associated with telecommuting and thereby making it easy for employees to telecommute (Allen et al., 2015).

It is argued that technologies and media for telecommuting should not only be fit for use but that it should be socially rich or fit, as to being able to mimic the experiences associated with collocated working and interactivity. Hence, the following hypothesis:

> *H4: Technology and media richness in telecommuting positively influences organisational performance at the individual, team and managerial levels.*

3.6.5 Organisational Support

In every telecommuting, support is a factor that is required at all levels within the organization, especially from the top management (Kowalski & Swanson, 2005). It comes in various forms such as emotional support (Kowalski & Swanson, 2005), telecommuter social support (Bentley et al., 2016), training (Kowalski & Swanson, 2005; Ye, 2012), managerial and organizational support (Bentley et al., 2016;

Kowalski & Swanson, 2005; Lebopo et al., 2020). Top management support has been recognized as an enabler or inhibiter to the implementation and progress of telecommuting programs (Kowalski & Swanson, 2005; Lebopo et al., 2020; Silva-C et al., 2019). Research has shown that whiles individuals in an organization telecommute; they require support in various forms to boost their satisfaction, wellbeing and performance. Managerial or supervisory support for instance has been linked to positive telecommuting outcomes such as increased performance (Kowalski & Swanson, 2005).

Training is another important dimension of support in this context required by both managers and their subordinates. Training in the form of effective communication skills helps all stakeholders to understand what the culture, goals, expectations and shared practices are as well as to enhance their being able to interact and collaborate. Organizations are expected to provide technological infrastructure and technological support for their telecommuting programs to be successful (Kowalski & Swanson, 2005). A challenge with the use of technology has been associated with uneven access to technology. This issue has implications for the performance of project team members who are telecommuting. When new technologies are introduced into the team to manage communication, coordination and collaboration, telecommuters may require training to improve their self-efficacy with the use of these unfamiliar technologies. The training which may be provided by the organization, typically comes with extra cost for the organization. It is therefore hypothesized that;

H5: Organisational support for telecommuting positively influences firm performance at the individual, team and managerial levels.

3.7 Chapter Summary

In this chapter, the socio-technical systems (STS) theory adopted for the study has been discussed. Based on the STS theory, a research model was developed for the study. Five (5) hypotheses were developed to enable analysis of the relationships between the CSFs and organizational performance dimensions

CHAPTER FOUR

RESEARCH METHODOLOGY

4.1 Introduction

Chapter four presents the steps and procedures employed in the data collection process. The topical issues covered in the chapter include the research paradigm, research approach employed, participants setting, the questionnaire development, the data collection process and the method for data analysis.

4.2 Research Paradigm

Every scientific community is guided by a set or collection of beliefs or assumptions known as a 'paradigm'. This belief system forms the basis by which scientists view and understand the phenomena that characterize the world (Creswell, 2003; Lincoln et al., 2011). Research paradigms allow a research community to share similar thoughts and adopt practices that are common to the members of the community. It entails assumptions about the world (both socially and physically) and as to how knowledge can be developed (Hirschheim & Klein, 1989). In order to conduct research that is acceptable, some researchers (M. D. Myers, 2019; M. D. Myers & Avison, 2002) have advocated that there is a need to follow a research paradigm. In information systems, research paradigms which have dominated the field include interpretivism, positivism (Orlikowski & Baroudi, 1991) and the critical realism (M. D. Myers, 2019) philosophical assumptions.

While some researchers such as Kitchin (2014) are suggesting a new paradigm owing to the emergence of big data, research paradigms can be differentiated based on their philosophical assumptions i.e. their

ontology, epistemology and methodology (Hirschheim & Klein, 1989). Ontological assumptions are concerned with how the world is viewed by the researcher as to whether it is assumed to be independent of the actions of humans or subjective and thus exists as a result of the actions of humans in its creation and evolution. Epistemological assumptions on the other hand deal with how knowledge is created and assessed. Methodology looks at what the researcher aims to achieve through their research, which theories and how best they can be used to explain practice (Orlikowski & Baroudi, 1991). The current study thus adopts a positivist paradigm as it best suits the purpose of the study to determine the CSFs for telecommuting and examine their impact on the performance of an organization.

4.2.1 The Positivist Paradigm

The positivist paradigm claims that the world can be empirically observed and logically analysed so as to provide an explanation to a phenomenon (Kaboub, 2008). Generally, researchers seek to test theory in order to predictively suggest meaning to a phenomenon understudy (M. D. Myers & Avison, 2002). It is assumed with this paradigm that the same phenomenon when studied by different researchers using similar scientific methods and under different context will generate similar results. The positivist paradigm is therefore closely associated with the quantitative research method (Rahi, 2017). Furthermore, Orlikowski and Baroudi (1991) identify a positivist research as one that has formal propositions, quantifiable measures of variables, large sample sizes and the testing of hypothesis.

This research adopts the positivists view of the world to study the phenomenon of telecommuting in Ghana. This choice is informed by the nature and purpose of the study to determine CSFs for telecommuting and to examine their impact on the performance of an organization. The associations between the independent variables which comprises of the critical success factors for telecommuting as

mentioned in the previous chapter and how they influence the dependent variable of organizational performance are critically explored. By assuming the positivist paradigm, the researcher is enabled to empirically examine real events such as telecommuting and offer explanations by means of logical analysis using the PLS SEM (Kaboub, 2008). The positivist paradigm is preferred because the researcher shares in the positivist belief that a phenomenon is real and discoverable as reality is assumed to be independent of the researcher. Therefore, reality of the truth can be observed and measured.

4.3 Research Approach Employed

The widely accepted three approaches to research are the quantitative, qualitative and mixed methods approaches. The quantitative research approach aligns with the positivist paradigm assumed for the current study and involves the use of instrument-based questions or surveys to collect data from a large population and statistically analyse the data to describe or deduce meaning. (Creswell, 2003; Rahi, 2017).

Therefore, for the purpose of the present study, the quantitative research approach was deemed more appropriate as the study aimed to ascertain the discontinuities of the virtual environment in Ghanaian firms, determine the critical success factors of implementing telecommuting and examine the effect of telecommuting on the performance of the organization. Accordingly, data was collected using a survey instrument. The survey method allows the researcher to collect data using pre-designed questionnaire related to the problem at hand (Rahi, 2017).

4.3.1 Questionnaire development

A cross sectional survey was conducted. The questionnaire development for the study followed an iterative process of refinement and validation through the involvement of expert opinion. The measurement scales for most of the constructs were developed for the study by the researcher following a careful review of the literature while a few were adapted from existing studies. Scales for the section on discontinuities of the virtual environment were adapted from Watson-Manheim, Chudoba and Crowston (2002). Scales for employee characteristics were adapted from Guimaraes & Dallow (1999). Table 4.1 provides a summary of the various constructs, number of measurement items employed as well as their sources.

Table 4. 1: Constructs, number of measurement items and sources

Constructs	**# Measurement Items**	**Sources**
Communication	6	Kowalski & Swanson (2005)
Learning and Knowledge Sharing	5	Allen, Golden, & Shockley, (2015), Waizenegger, McKenna, Cai, & Bendz (2020)
Employee Characteristics	6	Guimaraes & Dallow (1999), Ye (2012)
Support	6	Kowalski & Swanson (2005)
Technology and Media Richness	7	Turetken, Jain, Quesenberry, & Ngwenyama (2010)
Organizational Performance – Employee Level	7	Guimaraes & Dallow (1999)
Organizational Performance – Team Level	7	Guimaraes & Dallow (1999)
Organizational Performance – Managerial Level	6	Guimaraes & Dallow (1999)

Discontinuities of Geography or location	6	Watson-Manheim et al. (2002)
Discontinuities of Culture	5	Watson-Manheim et al. (2002), Asatiani & Penttinen (2019)
Discontinuities of Work organization and Practices	7	Watson-Manheim et al. (2002), Asatiani & Penttinen (2019)
Discontinuities of Technology	6	Watson-Manheim et al. (2002), Asatiani & Penttinen (2019)

4.3.2 The Survey Instrument Composition

The questionnaire for the study comprised four parts; parts A, B, C and D. Part A focused on the demographic information of the respondents. It included questions about gender, age, educational Level and employment history. Part B contained questions on the telecommuting history of respondents. It asks questions about the how often telecommuting was engaged in and the location from where this took place. Part C centred on the discontinuities characterizing the virtual environment. Questions covered geographic or locational, culture, work practices and work organization and technological discontinuities. Part D concerns telecommuting critical success factors, which include communication, learning and knowledge sharing, employee characteristics, support and technology and media richness.

Questions were designed in order to confirm these factors as necessary for the success of telecommuting implementation and assess what their impact is on the performance of the organization. To this effect, organizational performance was measured across three levels: the employee, team and the managerial levels. Likert Scales were employed to measure the constructs in Parts C and D. According to Hair, Page and Brunsveld (2020), Likert scales are used in studies that attempt to measure attitudes and perceptions or opinions. A five-point Likert scale was adopted for carrying out this study. This is in accordance with researchers such as Hair, Anderson, Babin and Black (2010) making suggestions of the accuracy and the

consistency supplied by the utilization of five-point Likert scale items for multivariate studies, hence making it suitable for the current study.

4.3.3 Research Population

The respondents in this study were individuals who reside in Ghana, a developing country. These respondents were involved in knowledge work and often telecommute. They included employees of accounting firms, audit firms, banking firms, higher education institutions as well as telecom and IT firms. Benson and Brown (2007) identify knowledge work as work that involves processing of information, problem solving and producing knowledge. In line with this definition, the above mentioned categories of organizations were selected for this research. Participation in the study was purely voluntary and this was made clear to the respondents prior to completing the questionnaire.

4.3.4 Sample Selection

According to Hair, Page and Brunsveld, (2020: p.179) "a sample is a relatively small subset of a larger population" and may be drawn using either probabilistic or non-probabilistic methods. Bearing in mind that a population entails elements or objects that share similar characteristics, a sample is the smallest proportion of that population needed to provide concrete understanding of the population. Sample selection is critical to the performance of any qualitative or quantitative research in that when the sample is properly selected, they provide just the amount of information required by business leaders and researchers to make decisions.

Academics have enlisted a number of techniques or formulae for determining the sample size of a population under study. Taking the line of determining the sample size based on the method of analysis adopted, Schikorski and Stevens (1997) suggested that 15 responses per each construct is sufficient for multivariate analysis. With regards to partial least square structural equation modelling (PLS SEM) in IS research, the commonly accepted method for determining the minimum sample size is based on the "10-times rule method" as proposed by Hair, Ringle and Sarstedt (2011). This rule highlights that the minimum PLS sample size should be greater than ten times the largest number of structural paths directed at an individual latent variable in the model (Goodhue et al., 2012; Kock & Hadaya, 2018).

Relating this rule to the current research implies that, since the highest number of indicators associated with a construct (i.e. a critical success factor) is seven (7). The minimum sample size becomes 7*10 = 70. However, because the data was electronically collected, within the time frame set for the data collection, 310 responses were received. The questionnaires were targeted at individuals who identified as knowledge workers mostly from higher education institutions, banking and insurance firms, accounting/ audit firms and Telecom/ IT.

The convenience sampling method was employed in selecting the research participants. The convenience sampling method was chosen due to its cost effectiveness and time saving characteristics. It basically allows the researcher to reach out to respondents (i.e. knowledge workers) that are easily and conveniently accessible.

4.3.5 Data Collection Process

The process of data collection started with the design of a structured survey questionnaire using google forms. A link was subsequently shared via WhatsApp platforms and emails which gave respondents

access to the google forms. In order to reach the appropriate respondents, the link was shared with work colleagues, friends and family who work in the organisations of interest to the study. Students from various higher education institutions were contacted to specifically share the link with their lecturers and workers of the university. The researcher's personal contacts from the Telecom/IT industry were likewise engaged to help with the distribution of the link via various work group pages and social media platforms.

Each respondent was permitted to complete the google form questionnaires only once. Data was collected from July 2021 to September 2021. Once the link was shared, responses kept coming in until the deadline of September 30, 2021 when the google form was closed. By the deadline, a total number of 310 responses had been received.

4.4 Method for Data Analysis

Data was retrieved and responses from participants were checked for completeness. This step helps to ensure that the data is made ready for further analysis. Next, the responses were coded and transformed into combined constructs using the statistical package for social sciences (SPSS) software. This helps to prepare the data for further statistical analysis. Moreover, the coding enables or helps with quantitative data analysis using partial least square structural equation modelling (PLS SEM) analysis. One driving purpose of the study was to explore the relationships between the CSFs and organisational performance variables being the employee, team and managerial level performances. Based on the kind of analysis anticipated, the Partial Least Squares Structural Equation Modelling (PLS SEM) was discovered most suitable because of its capacity to model complex relationships. Additionally, the SEM method is best for examining the causal and effect relationships between the independent and dependent variables (Hair,

Hult, Ringle, & Sarstedt, 2021) which is why this research employed the use of Smart PLS 3 to analyse the relationships between the various variables.

The covariance based structural equation modelling (CB-SEM) has been the popular approach used by many researchers and has over the years become synonymous to performing SEM. Meanwhile the variance based partial least squares (PLS) alternative to performing SEM is an equally useful method. It provides a causal modelling approach focused on increasing the variance explained with respect to the dependent latent variables in a model (Hair et al., 2011).

The partial least square structural equation modelling employs the use of both principal component analysis (PCA) and multiple regression to statistically analyse data. This approach allows researchers to explain complex multivariate events while using a collection of equations which seek to study the relationships that exist between one or more dependent variables and multiple independent variables (Hair et al., 2020). The PLS-SEM works well with both small or larger sample sizes and in cases of increased model complexities. Hence it has the advantage of being able to be applied to a wider range of situations unlike its CB-SEM variant. A popular software package that implements the PLS-SEM is the SmartPLS software (Hair et al., 2020, 2011). By following the guidelines for assessing and estimating using SmartPLS, a confirmatory composite analysis (CCA) is performed which allows for the assessment of outer measurement models for reliability and validity. Next the inner structural model is evaluated to determine the 'predictiveness' of the independent variables (Hair et al., 2020).

4.5 Chapter Summary

This chapter has discussed the research methodology employed for the study in order to achieve the objectives of the study. Discussions commenced on the research paradigm adopted for this study, the

research method i.e. questionnaire design and development, sample selection and data collection processes following which discussion on the technique for data analysis was done.

CHAPTER FIVE

DATA ANALYSIS AND DISCUSSION OF FINDINGS

5.1 Introduction

This chapter presents the data analysis and the discussion of the research findings. The chapter begins with the analysis of the demographic characteristics of the respondents. This is followed by the section on the discontinuities in the virtual environment among Ghanaian firms. The process by which SmartPLS

software is utilized to test and analyse the proposed research model is explained. In doing this, the measurement model is assessed for indicator reliability, internal consistency reliability, convergent validity and discriminant validity. This is followed by an assessment of the structural model for multicollinearity issues, the significance of the path coefficients, the goodness of fit, and the effect size. Afterward, a detailed discussion on the results obtained from the current study follows and the chapter concludes with the summary of the chapter.

5.2 Demographic Characteristics of Respondents

This study engaged a total of 310 respondents. Data collected from the 310 respondents highlighted the following statistics with regards to the gender, age, level of education, type of organization, position with the current employer, job tenure, place of telecommuting, duration of telecommuting (in years), frequency of telecommuting (in days) and working with others across different time zones. This result of the analysis is summarized in Table 5.1 below.

From Table 5.1 it can be observed that the dominant gender of the respondents is male (n= 177) who form 57.1% of the sample whereas female respondents were 133 in number. By observing the statistics for gender, there is no indication that telecommuting is more suited to females than males as some researchers (Nakrošienė et al., 2019; Singh & Verma, 2021) have suggested in their studies. In terms of age, 120 respondents fall within the age brackets of 26-35, followed by 15-25 (n = 94). This statistic shows support for the notion that millennials are more suited for telecommuting (K. K. Myers & Sadaghiani, 2010). The highest level of education among the respondents is PHD (n = 4) while the majority of respondents were degree holders (n=190).

From the data, the types of organizations emerging as telecommuting organizations include Higher Educational Institutions (n = 119), Telecom/IT organizations (n = 57), Accounting/Audit firms (n = 48), Banking/Insurance (n = 44). Respondents from the aviation industry, shipping and logistics, international trade, government agencies and power generation are all combined in the category as others (n = 42).

The most common observed position of the respondents in their respective organizations is Supervisor/team lead roles (39.4%) while job tenure was mostly from 0-2 years (n = 161) being 52% of the total sample. 53% of the respondents (n = 164) indicated they mostly work from home as compared to 39% working from both home and other remote or satellite office (n = 121). The duration or number of years engaged in telecommuting by the respondents is mostly below 3 years (187). 30.3% of the respondents telecommute all 7 days (n = 94) while 28.7% telecommute for 2-4 days (n = 89). From Table 5.1, 124 respondents (40%) reported to sometimes work with others from across different time zones while 186 respondents (60%) do not work with colleagues from different time zones.

Table 5. 1: Demographic Characteristics of Respondents

Demographics	**Characteristics**	**Number**	**Percentage**
Gender	Male	177	57.1%
	Female	133	42.9%
	Total	**310**	**100%**
Age	15-25	94	30.3%
	26-35	120	38.7%
	36-45	85	27.4%
	46-55	10	3.2%
	56-65	1	0.3%
	Total	**310**	100%
Educational Level	PHD	4	1%
	Masters	67	22%
	Degree	190	61%
	HND/Diploma	45	15%
	Others	4	1%

	Total	**310**	100%
Type of Organization	Accounting/ Audit firm	48	15.5%
	Banking /Insurance firm	44	14.2%
	Telecom/IT Firm	57	18.4%
	Higher Educational Institution	119	38.4%
	Others	42	13.5%
	Total	**310**	**100%**
Role With Current Employer	Accountant/Auditor/Banker/ Lecturer/ IT/Telecom Personnel	66	21.3%
	General Manager/Chief Information Officer	22	7.1%
	Manager	56	18.1%
	Supervisor/Team Lead	122	39.4%
	Staff	44	14.2%
	Total	**310**	**100%**
Job Tenure	0-2 years	161	52%
	3-5 years	83	27%
	5-7 years	29	9%
	8-10 years	14	5%
	More than 10 years	23	7%
	Total	**310**	**100%**
Place of Telecommuting	Home	164	53%
	Both	121	39%
	remote location/satellite office	25	8%
	Total	**310**	**100%**
Duration of Telecommuting	Below 3 years	187	60.3%
	4-7 years	57	18.4%
	8-10 years	22	7.1%
	above 10 years	44	14.2%
	Total	**310**	**100%**
Frequency of Telecommuting	1-2days	79	25.5%
	2-4days	89	28.7%
	4-6days	48	15.5%
	All 7 days	94	30.3%
	Total	**310**	**100%**
Working with others from different Time Zones	Yes	124	40%
	No	186	60%
	Total	**310**	**100%**

5.3 Discontinuities of the Virtual Environment in Ghanaian Firms

This study considered four discontinuities namely geographical or locational discontinuities, cultural discontinuities, work practice and organizational discontinuities as well as technological discontinuities. A 5-point Likert scale was utilised to measure the discontinuities where 1=Strongly disagree, 2=Disagree, 3=Neutral, 4=Agree, 5=Strongly agree. Questions were asked such that mean values below 3.5 suggest an agreement to the existence of discontinuities in the virtual environment whereas mean values of 3.5 and above suggest disagreement with the existence of the discontinuities. From analysing the data using the SPSS software, the descriptive statistics as indicated in Table 5.2 show mean value scores above 3.5 for all four types of discontinuities investigated in this study.

This outcome is an indication of disagreement to the existence of these discontinuities in the virtual environment of Ghanaian firms. What this means is that the virtual environment of Ghanaian firms may be characterized more with the concept of continuities than with discontinuities as some researchers have rightly suggested (Dixon & Panteli, 2010). Subsequently, telecommuters may not be faced with the challenges of working in the virtual environment since a lack of coherence in aspects of work may only become a discontinuity when all stakeholders perceive it as a challenge or problem (Watson-Manheim et al., 2012). Cultural discontinuities had the highest overall mean value of 3.860 and a standard deviation of 0.789, implying that organizations generally have a conducive culture for telecommuting. Similarly, geographical discontinuities, had an overall mean score of 3.841 (SD = 0.757) which shows that employees creating their own conducive environment for telecommuting may be advantageous to their better performance and hence a continuity for working in this context.

Table 5. 2: Descriptive statistics for the discontinuities of the virtual environment.

Discontinuites	Minimum	Maximum	Mean	STD Deviation	95% Confidence Interval (LL)	95% Confidence Interval (UL)
Geographical	1.667	5.000	3.803	0.757	3.718	3.887
Cultural	1.000	5.000	3.860	0.789	3.772	3.948
Work practices and organizational	1.000	5.000	3.627	0.788	3.539	3.715
Technological	1.167	5.000	3.696	0.683	3.620	3.773

Discontinuities of technology emerged with a mean score of 3.696 (SD = 0.683) and is characterised by the fact that telecommuters rather benefit from regularly working using mobile devices such as smart phones and tablets. Additionally, the features of the accepted technologies for telecommuting align with the goals of the organization for telecommuting. The discontinuities relating to work practices and work organization obtained a mean score of 3.627 (SD = 0.788). Specifically, working in this context is characterized by telecommuters who work in multiple teams from different functions at a time and does not pose any challenge to them when working outside the office. Secondly, employees are able to separate their work life from personal life when telecommuting which is an indication that telecommuters do not suffer the problem of work-life conflicts that has been identified as a negative effect of telecommuting in extant literature (Allen et al., 2015).

5.3.1 Discontinuities by the Type of Organization

This study primarily collected data from telecommuting employees from across four main categories of organizations as shown in the chart below (Figure 5.1). The organization groups include Accounting and

Audit firms, Banking and Insurance firms, Higher Educational Institutions and Telecommunications and IT firms. All other respondents who identified as telecommuters but were not in any of the above-mentioned categories of organizations were grouped under the category of others.

The descriptive statistics shown in Table 5.3 highlight the mean scores and standard deviation values of the discontinuities of the virtual environment per each category of organization. From the chart it can be observed that Telecom and IT firms although recorded the highest mean values, show the least existence of discontinuities followed by higher educational institutions. Accounting and auditing firms were on the other hand associated with high mean values for cultural discontinuities as compared to the other discontinuities present. This shows that these organizations may have proper structures in place as well as an organizational culture that supports working from a distance. Therefore, cultural discontinuities are not present.

Table 5. 3: Descriptive Statistics for Discontinuities by Type of Organization.

Type of Organizatio	Geography		Culture		Work P & O		Technology	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Accounting/ Audit firm	3.576	0.960	3.892	0.792	3.440	0.913	3.628	0.765
Banking / Insurance firm	3.701	0.622	3.755	0.794	3.497	0.634	3.640	0.585
Higher Educational Institution	3.824	0.738	3.782	0.811	3.691	0.806	3.749	0.673
Telecom/IT Firm	4.073	0.669	4.042	0.773	3.797	0.718	3.757	0.696
Others	3.742	0.709	3.910	0.718	3.561	0.781	3.599	0.703
Total	3.803	0.757	3.860	0.789	3.627	0.788	3.696	0.683

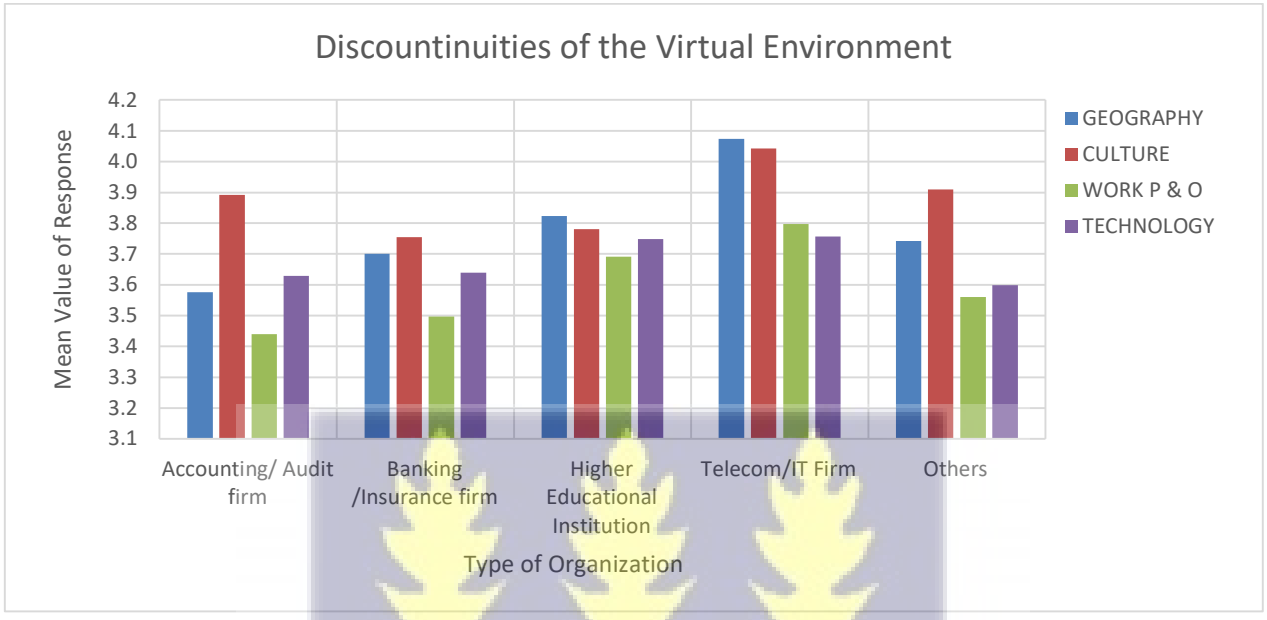


Figure 5. 1: Comparing Discontinuities according to the Type of Organization

5.4 Assessing the Measurement Model

To be able to analyse and evaluate PLS-SEM results, there is the need to commence with an assessment of the measurement model. One method by which measurement models can be assessed is the confirmatory composite analysis (CCA). By definition, CCA is a "methodological process for confirming measurement models in PLS-SEM" (Hair, Howard, & Nitzl, 2020: p.104). Consequently, the step which involves assessing the measurement model in PLS-SEM has been recognized as useful for performing confirmatory composite analysis (CCA). The CCA method helps researchers in the development and confirmation of measures in a nomological network (Hair Jr et al., 2021).

Considering that the research model comprises a multidimensional construct (Petter et al., 2007), organizational performance (employee level, team level and managerial level) which has a formative relationship with sub constructs (i.e. Telecommuting CSFs), the sub constructs on the other hand are

comprised of reflective items. Thus this study applies a CCA with formative models. What this implies is that formative measurement models cannot be evaluated using the foundational internal consistency requirements often associated with reflective measurement models since the two differ (Hair et al., 2020). Similarly in this study, indicator reliability, internal consistency reliability, convergent validity and discriminant validity will only be considered for the reflective telecommuting CSF while organizational performance will be assessed based on the variance inflation factor (VIF), the size and significance of indicator weights and the T-statistics values (Hair et al., 2020).

5.4.1 Indicator Reliability

The reliability of an indicator shows a variable's consistency in being able to measure what was intended to measure (Urbach & Ahlemann, 2010). This step involves monitoring the indicator loadings and their significance. As a rule of thumb, an indicator loading of 0.708 and above is desired since they are able to explain more than 50% of the variance in the particular construct (Hair et al., 2020; Hair, Risher, Sarstedt, & Ringle, 2019). To check the significance of indicator loadings, the confidence interval in PLS-SEM was considered. This was achieved in SmartPLS by Bootstrapping. Confidence intervals serve as an alternative to checking significance with t-statistics in PLS-SEM. Therefore, Indicator loadings confidence levels excluding zero are considered statistically significant (Wood, 2005).

Some indicators have had to be removed from the model as they were not able to significantly load unto their latent variables. Indicator loadings below the 0.708 threshold were therefore deleted from the model. Indicators that were deleted were ELE1 and TMR7. The remaining indicators in the model as depicted in Figure 5.2 thus satisfied the required threshold of loadings with values greater than 0.708 after the

PLS algorithm was re-run. This goes to show that the indicators or items were able to represent their required latent variables well.

5.4.2 Internal Consistency Reliability

According to Hair et al.(2019), the internal consistency reliability of a construct can be assessed in two ways using the Cronbach's alpha (α) and the composite reliability (CR) measures. Both criteria follow the rule that the values need to be above 0.70. The Cronbach's alpha (α) which used to be an earlier method of assessing reliability has been found limited due to the fact that indicators are all not equally reliable and therefore CR has emerged as a more accurate alternative. For internal consistency to be established, reliability in both cases must be less than 0.95 else, the indicators may be measuring the same item and so redundant (Hair et al., 2019). Referring to Table 5.4, which shows the results of the analysis, the values obtained all satisfy conditions for reliability for both Cronbach's alpha (α) and CR ranging from 0.851 to 0.910. Therefore, the reliabilities of the indicators are satisfactory.

Table 5. 4: Construct Reliability measures.

Constructs	Cronbach's Alpha	rho_A	Composite Reliability	Average Variance Extracted (AVE)
Communication	0.879	0.886	0.909	0.625
Employee Characteristics	0.867	0.869	0.904	0.652
Learning and Knowledge Sharing	0.851	0.851	0.910	0.771
Organizational Performance Employee Level	0.868	0.873	0.901	0.602
Organizational Performance Managerial Level	0.866	0.867	0.9	0.599
Organizational Performance Team Level	0.876	0.876	0.91	0.668
Support	0.852	0.853	0.900	0.692
Technology and Media Richness	**0.870**	**0.872**	**0.906**	**0.658**

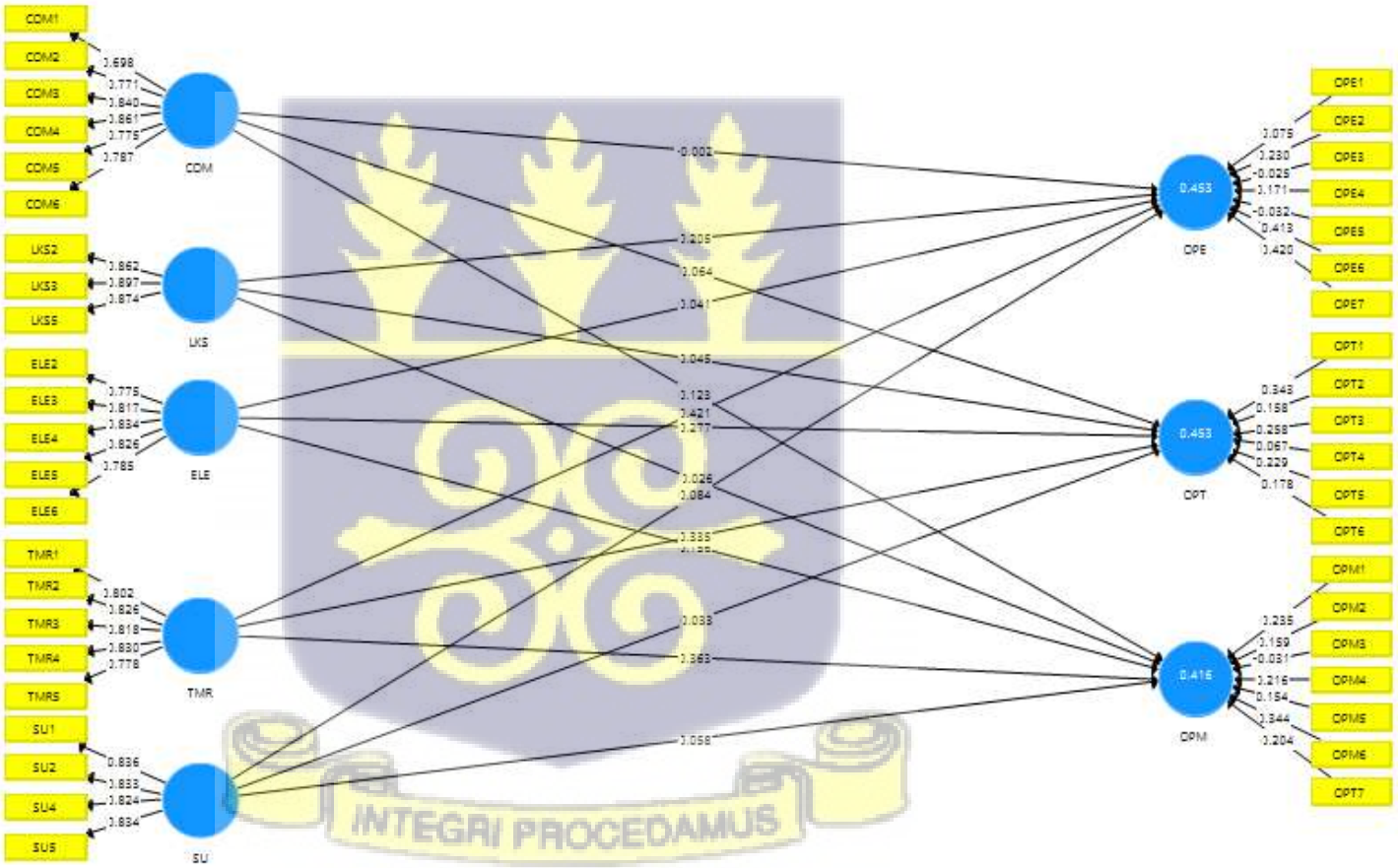


Figure 5. 2: Results from the PLS analysis showing the Outer Loading

5.4.3 Convergent Validity

The next step after establishing a good reliability for the constructs is to assess the validity. There are two kinds of validity with regards to measuring how much variance is shared between items and their constructs namely convergent validity and discriminant validity. Convergent validity seeks to measure the average variance shared by a latent variable and its indicators (Hair et al., 2019). Convergent validity helps the researcher to show that the items were able to measure the variance in their latent variables. To establish convergent validity, the average variance extracted (AVE) is used. The AVE can be obtained by averaging the obtained reliabilities of a construct. Therefore, a measure of 0.500 and above is acceptable (Hair et al., 2019). As shown in Table 5.4 the AVE values were all above the acceptable threshold of 0.500 with the lowest being 0.599 and the highest being 0.771. This means that the latent construct is able to explain at least 50% of the variability in its indicators. Discriminant validity which forms the second kind of validity is explained next.

5.4.4 Discriminant Validity

After establishing the convergent validity, the next step is to confirm the discriminant validity. According to Henseler, Ringle, and Sarstedt (2015) the discriminant validity method has become accepted for assessing the relationships that exist between latent variables in a structural model. The goal of discriminant validity is to demonstrate how constructs are statistically different from each other (Hair et al., 2020). To establish discriminant validity, there are three methods generally employed namely the cross loadings, the Fornel-Larcker criterion, and the heterotrait-monotrait ratio of correlations (HTMT).

According to Chin (1998), Cross loadings are obtained by comparing the component scores of each latent construct with all other items. If the loading of each is higher for its associated latent construct than for

any other construct and each of the items load best or highest in its own items, then the constructs are said to be distinct of each other hence discriminant validity is established. The cross loadings values are as shown in Table 5.5.

With the Fornell-Larcker criterion, discriminant validity is obtained if the proportion of variance shared by a latent variable is more in its indicator items than it shares with other constructs (Fornell & Larcker, 1981). This implies that taking the square root of AVE for a particular construct, the value obtained should be higher than all its correlation with other constructs as shown in Table 5.6. Notwithstanding, the Fornell-Larcker criterion has been criticized by researchers (Henseler et al., 2015) in that it does not rely on inferential statistics, hence lacks statistical procedures for testing discriminant validity.

Table 5. 5: Cross-Loadings for assessing Discriminant Validity

	COM	ELE	LKS	SU	TMR
COM1	0.701	0.385	0.508	0.468	0.428
COM2	0.773	0.442	0.536	0.480	0.451
COM3	0.840	0.519	0.644	0.532	0.499
COM4	0.859	0.655	0.738	0.612	0.549
COM5	0.773	0.487	0.583	0.452	0.473
COM6	0.786	0.604	0.669	0.532	0.510
ELE2	0.503	0.776	0.571	0.596	0.534
ELE3	0.506	0.817	0.542	0.653	0.593
ELE4	0.563	0.832	0.626	0.584	0.563
ELE5	0.548	0.827	0.628	0.649	0.586
ELE6	0.549	0.784	0.537	0.592	0.561
LKS2	0.736	0.629	0.865	0.665	0.599
LKS3	0.663	0.607	0.896	0.601	0.495
LKS5	0.654	0.657	0.872	0.548	0.522
SU1	0.563	0.685	0.604	0.835	0.612
SU2	0.545	0.608	0.568	0.832	0.667
SU4	0.531	0.611	0.559	0.825	0.614
SU5	0.532	0.629	0.563	0.835	0.663
TMR1	0.517	0.603	0.578	0.660	0.800
TMR2	0.501	0.575	0.529	0.664	0.826

TMR3	0.485	0.543	0.500	0.560	0.818
TMR4	0.489	0.563	0.429	0.592	0.831
TMR5	0.512	0.573	0.470	0.649	0.780

Table 5. 6: Fornell-Larcker Criterion for Discriminant Validity

	COM	ELE	LKS	OPE	OPM	OPT	SU	TMR
Communication	**0.790**							
Employee Characteristics	0.660	**0.808**						
Learning and Knowledge Sharing	0.781	0.720	**0.878**					
OP Employee Level	0.489	0.536	0.510	**0.776**				
OP Managerial Level	0.497	0.546	0.478	0.646	**0.774**			
OP Team Level	0.509	0.597	0.513	0.734	0.778	**0.817**		
Support	0.653	0.762	0.690	0.562	0.540	0.565	**0.832**	
Technology and Media Richness	0.616	0.704	0.616	0.618	0.596	0.613	0.769	**0.811**

According to Henseler et al.(2015) the HTMT is a better alternative for assessing discriminant validity. HTMT, which is also based on correlations, has been defined as " the mean value of the item correlations across constructs relative to the (geometric) mean of the average correlations for items measuring the same construct" (Hair et al., 2019, p.19). Being a ratio, the HTMT value is expected to be less than 0.85 or 0.90. At this point, variables are considered to have low correlation with each other and so discriminant validity is established. HTMT can sometimes become problematic when values are more than the required threshold. High values indicate that discriminant validity is not present or established. Moreover, the choice of the cut- off value for assessing discriminant validity in terms of HTMT is subjective (Henseler et al., 2015). Therefore, in order to assess the indicators for discriminant validity, the HTMT value used was 0.90. As depicted in Table 5.7, all the correlation values are less than 0.900

indicating that discriminant validity is established. To achieve this, the researcher has had to delete some more indicators from the reflective model namely; LKS1, LKS4, SU3, SU6 and TMR6.

Table 5. 7: The Heterotrait-Monotrait ratio of correlations (HTMT) for Discriminant Validity

	COM	ELE	LKS	OPE	OPM	OPT	SU	TMR
Communication								
Employee Characteristics	**0.750**							
Learning and Knowledge Sharing	**0.896**	**0.836**						
OP Employee Level	0.552	0.610	0.583					
OP Managerial Level	0.563	0.627	0.554	0.739				
OP Team Level	0.572	0.682	0.592	0.836	0.894			
Support	**0.751**	**0.885**	**0.809**	**0.648**	**0.624**	**0.651**		
Technology and Media Richness	**0.704**	**0.811**	**0.716**	**0.704**	**0.683**	**0.700**	**0.895**	

5.4.5 Indicator Mulitcollinearity

This is one of the distinct steps associated with validating formative measurement models. Indicator reliability measures the extent to which formative indictors may be correlated. Typically, high correlations are not expected between formative indicators since it often tends to create problems with multicollinearity. Additionally, high correlations between formative indicators affect the estimation of weights and therefore their statistical significance (Hair et al., 2020b). To assess the level of multicollinearity present, the variance inflation factor (VIF) is used. For VIF equals 3.0 or lower, there are no collinearity issues.

Some studies pegged VIF levels at 5.0 (Hair, Ringle, & Sarstedt, 2011) but recent times studies have suggested VIF levels at 3.0 (Hair, Page, & Brunsveld, 2020; Hair et al., 2019) as a fair level for assessing

the level of collinearity. In this study, the VIF results displayed in Table 5.8 show all values for the formative constructs are below 3.0. This demonstrates that there are no collinearity issues present.

5.4.6 Outer Weights and Loadings for Formative Constructs.

The next step after successfully assessing the formative measurement model to ensure there are no multicollinearity issues is to study the indicator outer weights. This step helps the researcher to determine the amount of contribution of each indicator to the formative construct score, hence, the size and significance of the indicator weights. The level of contribution is interpreted from the size of the outer model weights where a larger weight size indicates a higher contribution by the indicator. However, as a general rule of thumb, the values are inherently smaller than the outer loadings measured on reflective constructs.

Additionally, there is a need to determine that the indicators are statistically significant. PLS-SEM is considered a nonparametric statistical method in which significance is determined by using a bootstrapping procedure. The significance level generally accepted with regards to PLS-SEM models is a value that is less than or equal to 0.05 (Hair et al., 2020). From Table 5.8, it can be observed that the outer model weight values are within acceptable levels except for the two indicators (i.e. OPE3 and OPE5). However, since only the weight size is not enough to determine an indicator's relevance in forming a construct, the P-Values for the outer weights is considered. From the P-Values for the outer weights column, only seven indicators are statistically significant (i.e. OPE2, OPE6, OPE7, OPM1, OPM4, OPM6 and OPT1) and so are retained in the model.

Table 5. 8: Values from the Assessment of Formative Measurement Model

Formative Constructs	Indicators	Outer weights	T-value	P-Value/ Weights	Outer Loadings	P-Value/ Loadings	VIF
OP Employee Level	OPE1	0.062	0.579	0.563	0.594	0.000	1.615
	OPE2	0.314	2.910	**0.004**	0.741	0.000	1.796
	OPE3	-0.030	0.289	0.773	0.658	0.000	2.007
	OPE4	0.136	0.982	0.326	0.691	0.000	1.878
	OPE5	-0.084	0.688	0.492	0.618	0.000	1.866
	OPE6	0.410	3.651	**0.000**	0.832	0.000	1.910
	OPE7	0.432	4.283	**0.000**	0.851	0.000	1.854
OP Managerial Level	OPM1	0.303	2.652	**0.008**	0.814	0.000	1.860
	OPM2	0.146	1.069	0.285	0.734	0.000	1.973
	OPM3	0.008	0.070	0.944	0.689	0.000	1.921
	OPM4	0.275	2.266	**0.023**	0.793	0.000	1.940
	OPM5	0.058	0.570	0.569	0.677	0.000	1.842
	OPM6	0.311	2.265	**0.024**	0.795	0.000	1.722
OP Team Level	OPT1	0.377	2.673	**0.008**	0.847	0.000	1.791
	OPT2	0.152	1.430	0.153	0.766	0.000	2.053
	OPT3	0.230	1.906	0.057	0.826	0.000	2.292
	OPT4	0.089	0.777	0.437	0.762	0.000	2.188
	OPT5	0.189	1.596	0.111	0.802	0.000	2.227
	OPT6	0.197	1.412	0.158	0.784	0.000	2.015
	OPT7	0.175	1.522	0.128	0.780	0.000	2.006

The outer loadings and their P –Values as shown in Table 5.8 provide an alternative way to justify whether or not an indicator is to be retained. The outer loadings are used to derive an indicator's absolute contribution or importance. The absolute contribution of an indicator simply refers to the amount of information it contributes to forming a construct. Thus, an indicator may be considered absolutely important in forming a formative construct when its outer loading value is greater than or equal to 0.50 and is statistically significant (**≤ 0.05**). As such, the values in Table 5.8 for outer loadings and their P-values shows that the formative indicators are relevant and can be retained in the model.

5.5 Structural Model Assessment

An assessment of the structural model is the next step after a careful evaluation of the measurement model. Scholars have suggested some essential steps to achieve this goal (Hair et al., 2020; Hair et al., 2019; Urbach & Ahlemann, 2010). They include assessing the model for multicollinearity issues, the size and significance of path co-efficient, assessing the models' goodness of fit and the effect size.

5.5.1 Assessing Structural Model for Multicollinearity Issues

The purpose and significance of assessing the structural model for multicollinearity issues has been adequately addressed in section 5.4.5. Moreover, the evaluation of the structural model is grounded on the principles of multiple regression analysis. Therefore, when there is a linear relationship among two or more variables in a multiple regression analysis multicollinearity is said to have occurred. The presence of this linear relationship is an indication that there is a lack of orthogonality among the variables under observation (Alin, 2010). As stated earlier, multicollinearity levels are determined using the VIF where a value greater than 5.0 is interpreted as high collinearity between indicators (Hair et al., 2020). Table 5.9 includes inner VIF values for the reflective constructs in the model. The values shown in the table indicate the absence of multicollinearity issues since all the values are below 5.0. Note that at this point in assessing the structural model, the inner VIF values were considered rather than the outer VIF values.

Table 5. 9: VIF values for assessing multicollinearity levels of reflective constructs

	COM	ELE	LKS	OPE	OPM	OPT	SU	TMR
Communication				2.828	2.828	2.828		
Employee Characteristics				3.061	3.061	3.061		
Learning and Knowledge Sharing				3.255	3.255	3.255		
OP Employee Level								
OP Managerial Level								
OP Team Level								
Support				3.420	3.420	3.420		
Technology and Media Richness				2.726	2.726	2.726		

5.5.2 Assessing the Structural Model for the Significance of Path Coefficients

Once it has been established from the previous step that there are no issues with respect to multicollinearity, an assessment of the model path coefficients for its size and significance follows. This step is equally important as it provides the researcher an avenue to test the hypothesised relationships among the constructs (Hair et al., 2020). According to Henseler, Hubona and Ray (2016), path coefficients generally are standardized regression coefficients whose assessments must be based on their absolute size, their sign and significance (Urbach & Ahlemann, 2010). The authors recommend for these coefficient values to be interpreted as a change in the dependent variable (formative construct) if the independent variable (reflective constructs) is increased by one and all other variables remain constant. Path coefficient values may range from +1 to -1. The closer the value is to zero the weaker it is in predicting the dependent constructs whereas a value closer to the absolute value of 1 represents a stronger ability in predicting the dependent variables (Hair et al., 2020).

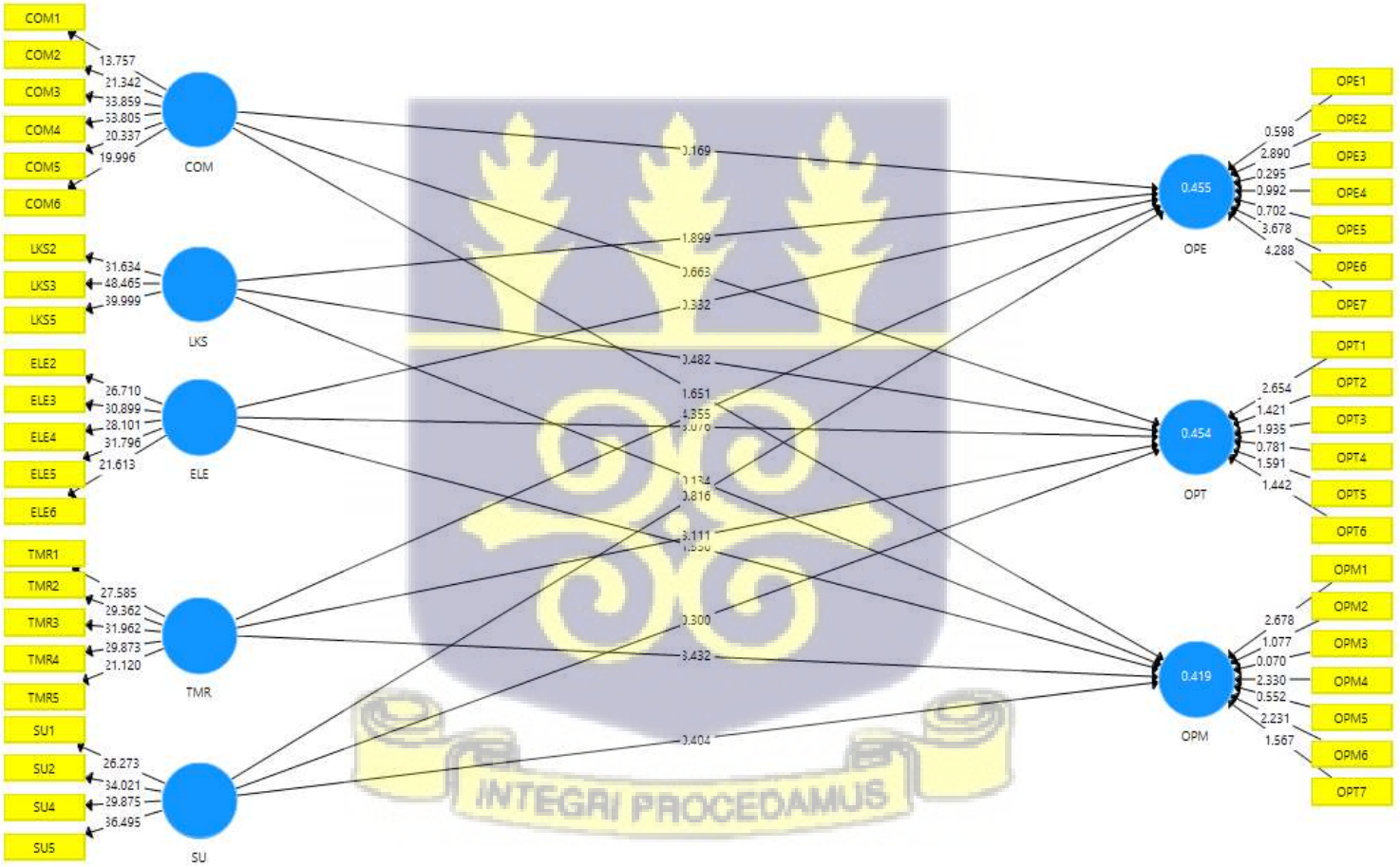


Figure 5. 3: Bootstrapping Path Coefficient Values

In order to evaluate a path coefficient for significance, inferential statistics drawn from an empirical bootstrapping procedure using a 5,000 bootstrap sample is recommended. Scholars (Henseler et al., 2016) suggest that this number for bootstrap procedures is close enough to infinity while also allowing for a computation time that is manageable and enables a consensus in determining empirical bootstrap confidence levels. A significant path co-efficient value is therefore one in which the confidence level does not include zero or the p-value is below the pre-set significance level of 0.1 or 0.05. After applying the bootstrapping algorithm with 5000 samples and an alpha (α) value of 0.1 for a two –tailed test, the results are displayed in Table 5.10 and in Figure 5.3. As can be seen from Table 5.10, 1 out of the 5 hypotheses (H5) was fully supported, having a p-value (0.000, 0.001, 0.002) lesser than the significance level of 0.1 Correspondingly, Hypothesis H1, H2 and H3 were partially supported. Besides the critical T-value for all the supported paths were above the 1.65 as suggested by Hair et al. (2011).

5.5.3 Assessing the Goodness of Fit (GoF)

An assessment of a model's fit is another critical step in confirming the validity of a structural model (Urbach & Ahlemann, 2010). The GoF test enables a researcher to detect misspecifications that may be associated with both the measurement and structural model. PLS provides the opportunity for researchers to be able to compare model-implied correlation matrix as against empirical correlation matrix (Dijkstra & Henseler, 2015; Henseler et al., 2016). This is achieved in PLS path modelling by bootstrapping so that the probability of obtaining a discrepancy between the empirical and the model-implied correlation matrix can be defined. The goal here is to determine if this value is as high as the one obtained for the sample at hand provided the hypothesized model is precise (Henseler et al., 2016).

Table 5. 10: Bootstrapping for Hypothesis Testing

Hypothesis	Relationship	std Beta	Std Error	T-Value	Decision	P-Value	95% CI LL	95% CI UL
H1a	Communication -> OP Employee Level	-0.005	0.109	0.169	Not Supported	0.866	-0.183	0.174
H1b	Communication -> OP Managerial level	0.165	0.092	1.651	Supported	0.099	0.017	0.32
H1c	Communication -> OP Team level	0.064	0.088	0.663	Not Supported	0.507	-0.082	0.21
H2a	Learning and Knowledge sharing -> OP Employee Level	0.21	0.115	**1.899**	Supported	0.058	0.02	0.401
H2b	Learning and Knowledge sharing -> OP Managerial level	-0.02	0.117	0.134	Not Supported	0.894	-0.215	0.162
H2c	Learning and Knowledge sharing -> OP Team level	0.053	0.095	0.482	Not Supported	0.63	-0.103	0.209
H3a	Employee characteristics -> OP Employee Level	0.032	0.082	0.332	Not Supported	0.74	-0.103	0.167
H3b	Employee characteristics -> OP Managerial level	0.143	0.097	1.556	Not Supported	0.12	-0.014	0.306
H3c	Employee characteristics -> OP Team level	0.262	0.089	3.076	Supported	0.002	0.112	0.409
H4a	Technology and Media Richness -> OP Employee Level	0.438	0.1	4.355	Supported	0	0.263	0.59
H4b	Technology and Media Richness-> OP Managerial level	0.403	0.114	3.432	Supported	0.001	0.218	0.593
H4c	Technology and Media Richness -> OP Team level	0.345	0.111	3.111	Supported	0.002	0.159	0.522
H5a	Support -> OP Employee Level	0.086	0.102	0.816	Not Supported	0.414	-0.082	0.252
H5b	Support -> OP Managerial level	0.042	0.114	0.404	Not Supported	0.686	-0.151	0.222
H5c	Support -> OP Team level	0.042	0.1	0.300	Not Supported	0.764	-0.116	0.213

By bootstrapping, inferential statistics can be gotten with which to perform the goodness of fit (GoF) assessment. At this point, both the estimated and the saturated model values are used. Saturation is achieved in the structural model when all constructs are able to correlate freely (Henseler et al., 2016).

While there may be several tests for model fitness, one commonly used method is by way of the coefficient of determination, R^2. The R^2 is a measure of the in-sample prediction of all endogenous constructs. It indicates the percentage variability of exogenous constructs in the model (Hair et al., 2020; Henseler et al., 2016). This implies that measuring the R^2 has the merit of allowing a researcher to test the explanatory power of a structural model. On the other hand, the adjusted R^2 values take into consideration how complex a model may be as well as its sample size. In a similar manner as the R^2 value, it helps to compare the explanatory power of a model across different data sets (Henseler et al., 2016).

The minimum R^2 value is given to be 0 while the maximum R^2 value is 1. However, in line with suggestions made by Hair et al. (2020), for researchers to review similar research in their discipline and to use those R^2 results as guidelines, considerations put forward in IS research are typically based on values suggested by Chin (1998). According to the author, R^2 values of 0.190 and lower have weak explanatory power, values around 0.333 have moderate while approximate values of 0.670 are considered to be substantial (Alhassan et al., 2020). From Table 5.11, the R^2 value are from 0.419-0.455, indicating that the combined exogenous latent constructs are able to explain about 41%-45% of the variability in the endogenous construct (Hair et al., 2019; Urbach & Ahlemann, 2010), hence the exogenous variables have moderate explanatory power.

Table 5. 11: Goodness of Fit (R Square Values)

Endogenous (Dependent) Variables	R Square	R Square Adjusted
OP Employee Level	0.455	0.446
OP Managerial Level	0.419	0.410
OP Team Level	0.454	0.445

PLS also makes it possible to assess the approximate model fit. In PLS-SEM, the approximate model-fit criterion implemented to serve this purpose is the standardized root mean square residual (SRMR) (Hu & Bentler, 1999). As its name implies, it is the square root of the sum of the squared Euclidean distance between the model-implied and the empirical correlation matrix. Evaluating the approximate model fit is crucial as it helps the researcher to understand the severity of the discrepancies that may exist between the two correlation matrices. Hu and Bentler (1999) proposed a cut-off value of 0.08 which has become widely accepted in research. However scholars consider a cut-off value of 0.1 as a more conservative approach to assessing the quality of a structural model using SRMR values (Dwaikat, 2020; Henseler & Sarstedt, 2013). Referring to Table 5.12, it is observed that the estimated model value for SRMR is 0.090 which indicates an acceptable model fitness (Cangur & Ercan, 2015). It can thus be concluded that there exists a justifiable presence of fit in this model.

Table 5. 12: Goodness of Fit (SRMR Criterion)

	Original Sample (O)	Sample Mean (M)	95%	99%
Saturated Model	0.051	0.041	0.047	0.051
Estimated Model	0.090	0.041	0.046	0.049

5.5.4 Assessing the Effect Size (f^2)

To further measure the predictive power of the structural model, the effect size ($\mathbf{f^2}$) may be used which is likewise considered an in-sample predictive metric. Its value is an approximation of the predictive power of each independent variable found in a model (Hair et al., 2020). The effect size measures the degree to which an independent variable may be significant on a dependent variable. The effect size, also referred to as $\mathbf{f^2}$ can be used to determine the significant effects of the independent variables and to quantify how substantial they are. The effect size typically ranges from small, medium and large. According to Cohen (1988), values between 0.02-0.15 are considered small effects; values between 0.15-0.35 are medium effects whiles values from 0.35 and above are taken as large effects. The effect size values shown in Table 5.13 is an indication that the exogenous latent variables have small significant impact on the endogenous construct. Conversely, taking the combined (OPE+OPM+OPT) effect size for Technology and Media Richness (TMR), the value is 0.305 which indicates a moderate to high significant impact of this variable on the endogenous constructs.

Table 5. 13: Effect Size Values for Latent Variables

Constructs	OPE	OPM	OPT
Communication	0.000	0.014	0.002
Employee Characteristics	0.000	0.013	0.045
Learning and Knowledge Sharing	0.027	0.000	0.001
OP Eemployee Level			
OP Managerial Level			
OP Team Level			
Support	0.004	0.001	0.000
Technology and Media Richness	0.128	0.097	0.080

5.6 Chapter Summary

This chapter sought to investigate the existence of four discontinuities of the virtual environment in Ghanaian firms and also assess the impact of some identified critical success factors of telecommuting on the performance of these organizations. Based on the mean values attained which were all above 3.5, respondents generally showed no agreement to the existence of any of the identified discontinuities. This on the other hand shows that the virtual environment is best characterized by continuities than with the notion of challenges (discontinuities). Next, the structural equation modelling analyses was conducted to test the relationships between the CSFs and the three (3) dimensions of organisational performance. In all six (6) out of the fifteen (15) hypotheses were supported namely hypotheses H1b, H2a, H3c, H4a, H4b and H4c.

CHAPTER SIX

DISCUSSION OF RESULTS AND FINDINGS

6.1 Introduction

The following section is divided into two parts; the first discusses the discontinuities or challenges of the virtual environment in the telecommuting organizations included in this study. The second covers the telecommuting critical success factors and their impact on organizational performance.

6.2 Discontinuities of the Virtual Environment in Ghanaian Firms

The need to ascertain the discontinuities of the virtual environment is in response to calls in literature for research that seeks to answer the question, "What kinds of discontinuities characterise different kinds of virtual work" (Watson-Manheim et al., 2012). To do this, the study identified four discontinuities in literature which were investigated, namely discontinuities of geography or location, culture, working practice and organization and lastly technology (Asatiani & Penttinen, 2019; Watson-Manheim et al., 2002, 2012). While the current study did not find support for the presence of these discontinuities, the findings on the other hand show that, Ghanaian firms may already be implementing strategies (continuities) that enable them sustain their virtual work environments. As such, relevance is attached to the findings in this research in that, it provides insights that enable a better understanding of the virtual environment in which telecommuting is taking place in Ghanaian firms.

Firstly, it was discovered that the data was not normally distributed but was statistically significant. The mean value of responses for all four categories of discontinuities were compared against the types of

organizations included in this study and the findings reflect a general disagreement from respondents to the existence of discontinuities in the virtual environment. Particularly, the Telecom/IT firms reported the least for the existence of geographical discontinuities. This finding seems contrary to expectations in that, the telecom industry is especially characterized by employees (engineers) who often travel to sites at locations other than their central office in other to perform their duties. This characteristic of working in telecom/IT firm can result in a lack of consistency in the flow of work. However, the findings from this study suggest that, working at a distant and its implications are not perceived to be associated with disruptions to work flow. This evidence suggests that, out of office employees are able to create conducive environments and access resources or seek professional guidance when working. In addition, this finding goes to show that, telecommuting may have become accepted not just as a context of work but as an aspect of working (Bélanger, Watson-Manheim and Swan 2013).

The discontinuities of culture were likewise not perceived to exist in the virtual environment by respondents especially in the telecom/IT and accounting firms. Cultural discontinuities relate to working with people from different cultural backgrounds (Chudoba, Wynn, Lu, & Watson-Manheim, 2005). At another instance, it refers to how new employees are integrated into the system or how organizational culture is communicated down to employees (Asatiani & Penttinen, 2019). These aspects of working hold the potential to become challenges in a telecommuters work and ultimate performance if not properly managed. In this research, the findings imply that there are no challenges in terms of cultural discontinuities and that employees are able to collaborate well with colleagues. Managers in the various organizations are likewise able to communicate well the organization's culture to their telecommuting subordinates. This discovery in relation to cultural discontinuities may be explained by the general Ghanaian culture of accommodating one another easily irrespective of individual cultural backgrounds.

The presence of discontinuities of work organization and practice was also not supported in this study and largely from the telecom/IT and the higher educational institutions (HEI). Discontinuities of work organization and practice refers to how an organization may design their telecommuting programmes by for instance stating the required times or durations for telecommuting. Issues relating to what the work culture and practice is when working outside the office all constitute aspects in this category. When such guidelines are put in place, they provide employees the avenue to balance work and life boundaries and therefore represents a continuity in the flow of work. However, when these aspects are not inculcated into the telecommuting programme, it leads to a discontinuity in how work is done outside the office and may become a challenge since employees are sometimes not be able to tell what is expected of them. From this study, the findings confirm that telecommuters work in an environment where work practices are clearly communicated and adhered to; hence, there are no discontinuities associated with the workflow when employees telecommute.

The last continuity explored is that of technology. When such a discontinuity is present, employees may find it difficult to adjust to the use of unfamiliar technological tools for work and this may lead to a decrease in their performance. In this study however, technological discontinuities were perceived not to be present in the virtual environment. What this infers is that, these organizations may have been able to strategically adopt technologies that support telecommuting and that employees possess the needed efficacy to be able to use these technologies when working outside the office environment.

6.3 Telecommuting Critical Success factors and Impact on Organizational Performance

This research was conducted with the purpose of ascertaining the discontinuities of the virtual environment in Ghanaian firms, determining the success factors of implementing telecommuting and

examining the effect of telecommuting on the performance of the organization. In other to achieve this goal, the researcher employed the socio-technical systems theory and used data collected from 310 respondents who confirmed having telecommuted at least in the last 0-3 years in Ghana.

There were fifteen (15) hypotheses of which six (6) were fully supported. Beginning at the first Hypothesis (H1a, H1b and H1c), it was proposed that "*Intra-organizational communication positively influences organizational performance at the individual, team and organizational levels."* This hypothesis was partially supported in the study in that it was revealed that intra-organizational communication positively influenced organizational performance only at the managerial dimension of the organization. The finding may be explained based on the fact that an organization's communication strategy stems from its style of management (Beauregard et al., 2019). Telecommuting has been considered a phenomenon that can have multilevel impact on an organization (Bélanger et al., 2013). The phenomenon has also been characterized by the fact that managers often times find it difficult to manage their telecommuting staff (Bailey & Kurland, 1999; Silva-C et al., 2019). In this study however, communication in the context of telecommuting, seems to have a certain level of significant impact only on the performance of managers. Typically, managers are there to assign, supervise, coordinate and monitor job performance of subordinates. Although in a telecommuting situation subordinates may be scattered, communication then becomes the major channel by which this managerial role may be played. Managers by so doing are able to manage their subordinates, thereby increasing their own managerial performance (Kaplan et al., 2018).

This observation also confirms findings in literature which considers communication as a key skill needed not only by employees but by their managers as well (Kowalski & Swanson, 2005; Lebopo et al., 2020). As suggested by Kowalski and Swanson (2005), communication at the managerial level can take a formal (e.g. communicating a policy) or informal approach (e.g. giving subordinates feedback) and

may seek to strengthen relationship among mangers and their subordinates. When this communication becomes effective stakeholders derive satisfaction from telecommuting, which often leads to an increase in performance.

Intra-organizational communication in this study, did not affect organizational performance at the employee and team levels (i.e. hypotheses H1a and H1c). This may be explained by the fact that, during telecommuting, employees irrespective of their location are able to harness the power of technology to effectively make contacts and reach out to more colleagues than was otherwise possible (Duxbury & Neufeld, 1999). Further, the use of technologies such as smart phones and tablets for emails and text messaging have become infused in the way business and relationships are conducted in contemporary times. These same technologies provide the platform for the development of co-worker friendships such that employees may not realise what effect intra-organizational communication may have on their own performance when telecommuting (Smith et al., 2018). Additionally, as employees are able to make such contacts with their peers using technology, their confidence is boosted and their reputation with colleagues is improved.

The Second hypothesis (H2a, H2b and H2c) captured the notion that an organizational culture of learning and knowledge sharing (LKS) positively influences the performance of an organization. While this area of research on organizational learning and knowledge sharing is yet to gain the deserved attention in literature (Allen et al., 2015), this hypothetical statement was partially supported in the study. There is literature supporting the view that an organizational culture of learning plays a key role in improving an organization's market competitiveness (Boldosova, 2019) but telecommuting on the other hand has the tendency to limit learning and knowledge sharing capabilities of an organization (Allen et al., 2015; Waizenegger et al., 2020). This makes LKS at an organizational level very important. Contrary to discussions in literature, which directs its impact to enabling team collaboration and success

(Waizenegger et al., 2020), the present study discovered that LKS had an impact on organizational performance only at the employee level but not at the team and managerial levels. What this implies is that, in telecommuting when employees are isolated, they would not want to create the impression among their superiors or even their peers that they are incompetent, lack skills or capacity. Employees will therefore be compelled to boost their skills and capacity to deliver by learning and knowledge sharing particularly at the peer level. This characteristic shows that peers talk to one another and share ideas to get around issues or challenges. Therefore, employees with a mind-set of LKS are more likely to perform well on their jobs when telecommuting, coupled with training and trust relationships built in support of LKS as well as an organizational culture grounded on LKS. Intra-organizational communication has been linked to knowledge sharing in organizations and this effect is best experienced at the employee level (Suzuki et al., 2019).

This study did not find support for the impact of LKS as a critical success factor at the managerial and team levels (i.e. Hypothesis H2b and H2c respectively). This observation may be explained by the fact that LKS is naturally an employee level dimension. Team level LKS is only possible to the extent that individual team members are willing to share what they know (Kim et al., 2021). LKS in itself does not affect managerial performance yet top management support for LKS goes a long way to positively impact on the overall performance of an organization (Lin, 2007).

The third hypothesis (H3a, H3b and H3c) proposed a positive relationship between employee characteristics and organizational performance across all levels in the organization. This is also in line with the call for research by Asatiani and Penttinen (2019) for more empirical studies on the relationships among employee attributes such as employee age, experience, self-sufficiency, ICT skills and performance in the context of virtual work. Moreover, research is yet lacking on the actual qualities, skills and motivations that characterize successful telecommuters (Beauregard et al., 2019). In

congruence with this line of thinking, the findings as summarized in Table 5.8 show a partial support of this hypothesis. Specifically, employee characteristics was found to significantly and positively influence team level performance. At the team level, some level of regulated behaviour which may imply the employee possessing some defined characteristics or attributes may be required. Without this, an individual may not fit into a team. This in effect explains why this hypothesis was supported. In addition, advocates of self-managing teams (SMT) posit that individual level factors such as employee characteristics are among enablers for SMT performance (Magpili & Pazos, 2018).

Against this backdrop, it must be emphasised that, not all employees may be cut for telecommuting which involves having to work from a distance (Aroles et al., 2019). Secondly, employees have varied characteristics such as their attitudes, skills and values (Allen et al., 2015), ability to work alone, be organized, possess different levels of technological efficacy, a people orientation and a good positive attitude towards telecommuting. Employees despite their dissimilar characteristics are expected to be able to blend with colleagues and mangers/supervisors who may have different characteristics to theirs. Furthermore, employees must have characteristics that match their job context when telecommuting. (Guimaraes & Dallow, 1999; Lebopo et al., 2020; Turetken et al., 2010; Ye, 2012). These traits are essential for employees to collaborate well with team members and ultimately bring about top quality performance in the team. This study thus makes contribution to literature on the importance of employee characteristics for telecommuting success and increased organizational performance at the team level.

On the other hand, hypotheses H3a and H3b were not supported into this study. The possible explanation may be that, at the individual or employee level (H3a), the objective is to get the task done at all cost for the employee to sustain his position. Therefore, with or without the requisite characteristics, employees will employ all means possible to be effective to sustain their roles. At the managerial level (H3b), telecommuting inherently challenges traditional management strategies for exercising control and

supervision over subordinates. In this case, managers are expected to be fair in their assessment of the performance of these telecommuting employees and to be able to foster relationships with them irrespective of their characteristics (Bailey & Kurland, 1999). Thus, the characteristics of telecommuting employees may not necessarily affect managerial performance.

Hypothesis four (H4a, H4b and H4c) proposes that "*Technology and media richness in telecommuting positively influences organisational performance at the individual, team and managerial levels."* This hypothesis was fully supported in this research and indicates that a socially rich communication media, when introduced along with the right technological tools for telecommuting significantly impacts on the performance of the organization at all levels (employee, team and Managerial). This is the case because in telecommuting, the organisation usually works through the channel of employing the appropriate technology and determining an acceptable level of media richness. Success of the work as well as work performance at all levels (employee, team and managerial) thus depends on this initiative on the part of the organization. Devices and equipment such as computers, laptops and the internet must function well so a worker can achieve his/her objective. Technology has become known as an enabler or constrainer to telecommuting (Messenger & Gschwind, 2016). Additionally, some researchers such as Messenger and Gschwind (2016) and Ye (2012) have suggested that technology alone is not enough to make telecommuting successful. Other factors such as the eligibility of the employee for telecommuting as well as an effective intra-organizational communication strategy among others are equally important and which is why there was a need to establish what the critical success factors are for implementing telecommuting.

That notwithstanding, when technology is adopted in combination with a socially rich communication media such as Slack, Facebook or LinkedIn, it helps to reduce the impact of social and professional isolation which negatively impacts performance in the context of telecommuting (Wang et al., 2020). At

the Managerial levels, the use of such technologies and media platforms helps mangers to increase visibility in their organization. Thus, supervising telecommuting staff becomes easy. Teams are able to effectively communicate and collaborate even with colleagues they may not be familiar with while new employees can easily be integrated and brought up to speed about projects. By so doing productivity levels shoot up, leading to improved performance within the organization. The findings of this research which is in support of the above outlook also confirms discoveries made by Turetken et al. (2010). In their study, the authors found that the richer the communication media, the more likely it is for telecommuting to be successful. To this end, the current study makes this significant contribution to research on the need to enhance technology and media richness such that it induces a social context along with its use at all levels of the organization when telecommuting (Allen et al., 2015; Wang et al., 2020).

The fifth hypotheses (H5a, H5b and H5c) which suggested "*Organisational support for telecommuting positively influences firm performance at the individual, team and managerial levels*" was not supported in this study. Scholars such as (Kowalski & Swanson, 2005) claim that support is a crucial factor for success with telecommuting implementations and often comes from different sources including top management, managers and supervisors, technological support and training. Organizational support which entails the organization taking into account the wellbeing and happiness of employees, did not find support in this study as a critical success factor for telecommuting. The reason may be adduced that organizational support is considered an organizational level factor (Diamantidis & Chatzoglou, 2018) and embedded in the organisational set up and the firm's cultural orientation. Consequently, employees do not expect the organization to make "special support" available to them during telecommuting beyond what they originally know and are aware of (Nayir, 2012). Organizational support therefore did not emerge as a critical success factor as a result of its inherent nature and embeddedness in the structures of the firm.

The five (5) critical success factors included in this research were namely, intra-organizational communication, learning and knowledge sharing, employee characteristics, technology and media richness and finally support. In effect, all the factors with the exception of support were considered critical success factors for telecommuting. This is because from this study, it can be seen that they each contribute to organisational performance at one level or multiple levels. For instance, technology and media richness had strong impact on organizational performance at all levels of the organization. Intra-organizational communication had a significant impact on the managerial performance of an organization while at the employee level, organizational culture of learning and knowledge sharing had a direct impact on the performance of the organization. Finally, at the team level, employee characteristics had a strong bearing on an organization's performance. These critical success factors also reflect how both technical factors (Technology and media richness) and social factors (intra-organizational communication, learning and knowledge sharing and employee characteristics) jointly affect the performance of an organization in telecommuting.

6.4 Chapter Summary

This chapter sought to investigate the existence of four discontinuities of the virtual environment in Ghanaian firms and also assess the impact of some identified critical success factors of telecommuting on the performance of these organizations. Based on the mean values attained which were all above 3.5, respondents generally showed no agreement to the existence of any of the identified discontinuities. This on the other hand shows that the virtual environment is best characterized by continuities than with the notion of challenges (discontinuities). Next, the structural equation modelling analyses was conducted to test the relationships between the CSFs and the three (3) dimensions of organisational performance. In

all six (6) out of the fifteen (15) hypotheses were supported namely hypotheses H1b, H2a, H3c, H4a, H4b and H4c. The impact of technology and media richness was revealed to have a significant impact on organizational performance all levels (H4a, H4b and H4c). Other emerging critical success factors in this study are intra-organizational communication, learning and knowledge sharing and employee characteristics.

CHAPTER SEVEN

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

7.1 Introduction

This chapter commences with the summary of the study's key findings followed by the conclusions of the study which highlights the extent to which the objectives of the current research were achieved. The chapter additionally presents the contributions of the study in relation to research or theory, practice and policy. Lastly, the limitations of the study and directions for future studies are presented.

7.2 Summary of Research Process

In order to carry out the study, the researcher collected data from respondents by using survey questionnaires administered via google forms. The respondents were from various organizations in Ghana involved in knowledge work. The collected data was analyzed using MS Excel, SPSS and SmartPLS 3.0 software for performing PLS-SEM analysis. MS Excel served as platform by which the collected data could be stored in its original format (i.e. CSV format). This made it easy for further statistical analysis using advanced statistical tools. SPSS software was employed specifically to derive descriptive statistics for the data collected on the discontinuities of the virtual environment. The SmartPLS 3.0 software was employed to carry out structural equation modelling procedures and testing for validity and reliability. All constructs were assessed for their reliability (i.e. outer loadings and Cronbach's alpha values) and level of validity (i.e. AVE and HTMT values). Equally, the structural model was tested for multicollinearity issues and the hypotheses tested, assessing the strength and significance of the path coefficients (Hair et al., 2020; J. Hair et al., 2019; Urbach & Ahlemann, 2010).

7.3 Summary of Key Findings

This study sought to firstly, ascertain the discontinuities of the virtual environment in Ghanaian firms. Four discontinuities namely geography, culture, work practice and organization, and technology discontinuities were identified from literature and included in this study. These discontinuities were employed by the researcher to characterize the virtual environment but were discovered not to exist in the virtual environment for organizations included in this study. Thereafter, the study focused on telecommuting in the context of a developing economy by identifying critical success factors and examining their impact on organizational performance. Organizational performance was examined across three dimensions being the employee, team and managerial levels of the organization.

The study relied on the socio-technical systems theory among other theories to test how multiple social and technical factors co-jointly influence organizational performance. Five (5) telecommuting critical success factors (CSF) as identified in literature, were employed in the study. Intra-organizational communication, employee characteristics, learning and knowledge sharing constituted the social CSFs whereas support and technology and media richness constituted the technical CSFs. The study established that intra-organizational communication, employee characteristics, learning and knowledge sharing and technology and media richness were the accepted critical success factors for consideration when implementing telecommuting programmes. In this research, organisational support was not accepted as a critical success factor for telecommuting since it did not have any statistically significant relationship with any of the dimensions of organisational performance examined.

Table 7. 1: Mapping Research Objectives with Findings and Contributions

Research Objectives	Research Findings	Supporting Literature	Research Contributions, Implications and Recommendations
To ascertain the discontinuities of the virtual environment in Ghanaian firms.	The findings revealed that there were no discontinuities in the virtual environment of the studied Ghanaian organizations.	Asatiani & Penttinen (2019), Dixon & Panteli, (2010), Bélanger et al. (2013).	The current study is in response to calls in literature for research that seeks to answer the question, "What kinds of discontinuities characterise different kinds of virtual work." • The absence of discontinuities however, has implications for the presence of continuities instead, in the virtual environment. This means that Ghanaian firms may have adopted some strategies (continuities) that help them maintain coherence in aspects of their work in the context of telecommuting. • Continuities similarly serve as a way to characterise the virtual environment in Ghanaian firms. • Therefore, this study adds to the body of literature on discontinuities and continuities of the virtual environment.

To determine the critical factors driving the success of telecommuting	• From the reviewed literature, five (5) critical success factors were included for this study. Three (3) of the five were considered social success factors which are Communication, Learning and knowledge sharing and Employee characteristics. The Technical success factors then were Organizational support and Technology and media richness. The critical success factors that emerged from this study are • Intra-organizational communication • Learning and Knowledge sharing (LKS) • Employee Characteristics • Technology and media richness. Organizational support was in this study not accepted.	Kowalski & Swanson, (2005); Lebopo et al., (2020); Allen et al., (2015); Aroles, Mitev, & de Vaujany, (2019)	• The current study sort to discover the success mechanisms that make telecommuting successful in developing countries. • From the findings presented in this study, it shows that, technology and media richness, managerial communication, employee learning and knowledge sharing, and employee characteristics for team collaboration are critical factors to be considered to ensure success with organizational implementation of telecommuting programs.
To examine the relationships between the critical success factors and individual, team and managerial performance.	In all, the study included fifteen (15) hypotheses of which six (6) were supported. These are: • Intra-organizational communication positively influences organizational performance at the managerial level. • An organizational culture of learning and knowledge	Porter & van den Hooff, (2020); Bailey & Kurland, (1999); Martin & MacDonnell, (2012); Bentley et al., (2016)	• This study arguably is the first of its kind to confirm the nature of the virtual environment in a developing economy while also considering that telecommuting could have multilevel impacts in an organization. • This study applied the Socio technical systems

	sharing (LKS) positively influences the performance of an organization at the employee level. • Employee characteristics significantly and positively influences team level performance. • Technology and media richness for telecommuting positively influenced organisational performance at the individual, team and managerial levels of an organization. Despite the evidence in literature about support, being a crucial success factor for telecommuting, at all three levels of the organization, the hypothesis that Organizational support for telecommuting positively influences firm performance was not supported in this study.		(STS) theory in a quantitative study and demonstrated the relevance of the STS theory in unpacking insights from a complex work system such as telecommuting. • Specifically, this study contributes to literature on the STS theory such that factors that can be considered social CSFs and technical CSFs have been unveiled for successfully implementing telecommuting. • This study therefore has important implications for knowledge work and specifically for telecommuting practice in Ghanaian firms. • The findings from this study serve as a benchmark by which organizations can measure their virtuality as they seek to implement virtual working programmes such as telecommuting. • Organizations will be able to identify and blend social and technical factors when instituting telecommuting programmes bearing in mind how they together

			influence their performance. • The findings of this study with regards to policy show that through this study, the avenue is granted for the relevant stakeholders such as company executives and government agencies to be able to come up with a universal scope for telecommuting implementation schemes with the sole aim to regulate, encourage and support the adoption of telecommuting in developing economies.

7.4 Conclusions

In this section, the conclusions of the study are presented according to the research objectives for the study. Firstly, the study sort to ascertain the discontinuities of the virtual environment in Ghanaian firms. The second objective was to determine the CSFs driving the success of telecommuting in these firms and lastly to examine the relationships between the CSFs and individual, team and managerial performance of the organization.

7.4.1 The Discontinuities of the Virtual Environment

Data was collected and analysed on four discontinuities of the virtual environment, which were discontinuities of geography or location, culture, working practice and organization and technology. From the descriptive statistics obtained, it was concluded that there were no discontinuities in the virtual environment. This may mean that continuities rather than discontinuities characterize the virtual environment in Ghanaian firms. Consequently, organizations have adapted some strategies that help them maintain coherence in aspects of their work in the context of telecommuting and therefore there were no discontinuities.

In terms of geographical discontinuities, the finding reflects a continuity in the flow of work in the sense that out of office employees are able to create conducive environments and access resources or seek professional guidance when working remotely. A possible explanation for this observation may be due to telecommuting becoming accepted not just as a context of work but also as an aspect of working (Bélanger et al., 2013). In terms of cultural discontinuities, findings indicate, employees are rather able to collaborate well with colleagues whose work culture differs from theirs. Managers in the various organizations are likewise able to communicate well the organization's culture to their telecommuting subordinates. Hence, the researcher concludes that there were no discontinuities of culture in the firms studied.

For discontinuities of work organization and practice, the findings show that telecommuters largely in telecom/IT firms and in higher educational institutions (HEI) work in environments where work practices are clearly communicated and adhered to. Hence, there were no discontinuities associated with how work is organized and practiced when telecommuting. Technological discontinuities being the last discontinuity explored was likewise not present in all the types of organizations included in this study.

This finding implies that technologies have been instituted that support telecommuting in the studied organizations. Employees in these firms do not find it difficult adjusting to the use of unfamiliar technological tools for work. Moreover, employees find themselves using smart phones and tablets for work purposes especially when working away from the office, which instead helps their performance. The use of these kinds of ICTs allows employees to be able to work anytime anywhere and respond to work related issues promptly even if they are not positioned close to their laptops. Therefore, technological continuities instead of discontinuities may be present in the organizations studied.

Whereas the notion of discontinuities and continuities are considered in literature as ways to characterize the virtual environment, the current study set out to characterize the virtual environment based on discontinuities. From this study, it was discovered that, there were no discontinuities in the virtual environment in the telecommuting environment studied.

7.4.2 Critical Success Factors of Telecommuting

From literature, the five (5) CSFs identified, were quantitatively analysed in this study to examine how they impact on the performance of firms. Consistent with the second objective of this study to determine critical factors driving the success of telecommuting in Ghanaian firms, technology and media richness, managerial communication, employee learning and knowledge sharing (LKS), and employee characteristics for team collaboration emerged as the critical success factors of telecommuting that can positively impact on organizational performance.

The findings with regards to technology and media richness in this research indicate that when a socially rich communication media is introduced along with the right technological tools for telecommuting, it significantly impacts on the performance of the organization at all levels (employee, team and

Managerial). Similarly, the findings show that intra-organizational communication has a significant impact on the performance of managers. LKS in the context of telecommuting was as well revealed to have a strong positive relationship with performance at the employee level while employee characteristics was found to significantly and positively influence team level performance in an organization.

7.4.3 Telecommuting Critical Success Factors and Impact on organizational Performance

Studies centred on organizational performance have mostly narrowed down to assessing the impact of variables on employee or job performance. This study took this a step further to assess how telecommuting impacts on employee, team and managerial performances as dimensions in the study of the overall performance of an organization. Besides, telecommuting is reported to be able to have multilevel impact on an organization.

The impact of technology and media richness was felt at all the three levels of organizational performance examined. What this means is that, managers through the use of technologies and media platforms that are socially rich, have increased visibility in their organization thereby making it easy for them to supervise their telecommuting staff. Team communication and collaboration is effective and new employees are more easily integrated and brought up to speed about projects through the use of such socially rich technologies. On the one hand, intra organizational communication was found to be closely linked with managerial communication, hence, performance at the managerial levels of an organization. This shows that when communication becomes effective between managers and their employees, they will supervise and coordinate with telecommuting employees successfully and by so doing increase their own managerial performance (Kaplan et al., 2018).

On the other hand, LKS was only shown to be significant in positively affecting performance at the employee level of the organization. LKS, when adopted in an organization plays a crucial role in the performance of an organisation at the employee level but not at the team and managerial levels. Meaning that, employees with LKS mentality will ultimately perform better. Lastly, employee characteristics was significant in determining the performance of teams. As team performance is an equally important aspect of an organization's performance, employee characteristics should be a factor considered as organizations institute telecommuting programmes.

This study concludes based on these findings that telecommuting does have multilevel impact on the performance of organizations and this multilevel impact must be considered in order for organizations to harness benefits from their telecommuting implementations.

7.5 Contributions of the Research and Recommendations

This section highlights the contributions, implications and recommendations for research, practice and policy.

7.5.1 Recommendations *for Research*

Although the phenomenon of telecommuting has received a fair share of attention in literature, evidence as to what makes telecommuting successful among developing economies is missing in extant literature. Moreover, literature on exactly how and to what extent telecommuting can influence organizational performance is still scanty. Ultimately, the emergence of the COVID 19 pandemic saw the rise in the adoption of telecommuting schemes in organizations worldwide. As the pandemic became a global

concern, so has the need to continue business activities in the wake of the pandemic. As a result, organizations resorted to telecommuting and the related schemes in order to promote business continuity.

The study sort to ascertain the nature of the virtual environment in which telecommuting was taking place among Ghanaian firms through the lens of discontinuities and continuities of the virtual environment. This study arguably is the first of its kind to have explored how the virtual environment can be characterised in a developing economy while also considering that telecommuting could have multilevel impacts in an organization. The findings of this study did not show support for the presence of discontinuities in the virtual environment of the studied organizations. What this finding implies is that continuities may instead be present in the virtual environment. The presence of continuities in the virtual environment is in agreement with other scholars on the notion that continuities rather than discontinuities best characterise the virtual environment (Asatiani & Penttinen, 2019; Dixon & Panteli, 2010).

Additionally, the study adopted the tenets of the socio-technical systems theory to classify the critical success factors of telecommuting identified from literature. As there has been calls in research on the need for scholars to extend how they conceptualize STS theory in other disciplines, this makes the study noteworthy to have applied the theory in a quantitative study, demonstrating the relevance of the STS theory in unpacking insights from a complex work system such as telecommuting. Specifically, this study contributes to literature on the STS theory by differentiating both social CSFs and technical CSFs for organizational implementation of telecommuting.

Of the five CSFs identified from literature, in this study, factors that make up the social critical success factors were three (3) which included intra-organizational communication, learning and knowledge sharing (LKS) and employee characteristics. Factors that make up the technical critical factors were two

factor, which is organisational support and technology and media richness. After testing the hypotheses, four out the five CSFs were found to be statistically relevant. That is, organisational support as a technical success factor was discovered not to be statistically relevant. By comparison, the social factors each impacted on organizational performance at different levels of the organization (i.e. employee, team and managerial). Technology and media richness, although the only technical critical factor examined, impacted on organizational performance at all three levels. This shows that the technical success factors impacted organizational performance most as compared to the social factors.

7.5.2 Recommendations *for Practice*

To practice, first, this study helps organizations to be able to characterise their virtual working environment and identify, which areas need improvement. This characterisation of the virtual environment is particularly useful in these modern times of workplace digitalization and virtualization. Although this study did not establish any discontinuities pertaining to the virtual environment, the implications point to the strategies (continuities) by which the studied organizations virtualize their work environments. Essentially, these strategies that have been put in place within the studied organizations serve as a way to characterise the virtual environment. Correspondingly, continuities (strategies) may further be categorized according to whether they relate to work practice, work organization, geography, culture, technology and time zone boundaries that may be present within an organization. The findings from this study therefore serves as a benchmark by which organizations can measure their virtuality as they seek to implement virtual working programmes such as telecommuting.

Secondly, this study through the socio-technical systems approach has identified the critical factors underpinning the success of telecommuting which are intra-organizational communication, learning and

knowledge sharing (LKS), employee characteristics and technology and media richness. Accordingly, practitioners may therefore be informed regarding which factors to prioritize when developing their telecommuting programmes.

7.5.3 Recommendations *for Policy*

To policy, this study has made important discoveries relative to the telecommuting practice at the organizational and national levels. Some scholars have pointed out about the reluctance on the part of developing economies in aggressively pursuing telecommuting programmes (Messenger, 2019; Messenger & Gschwind, 2016). One of the reasons accounting for this reluctance stems from a lack of policy frameworks guiding telecommuting adoption and implementation in these countries. Other scholars have also indicated that the adoption of telecommuting varies by organization, sector, industry and even by country (ILO Eurofound, 2017) which all together makes this study relevant.

In this research, it was discovered that, both social and technical factors are required for the success of telecommuting. As telecommuting is beneficial not only to the development of the organization but as well to the development of the employees of the organization, guidelines and policies can be developed through these findings to encourage the adoption and implementation of telecommuting in these economies. The findings of this study provide the avenue for the relevant stakeholders such as governments, industry leaders and company executives to be able to come up with a universal scope to regulate, encourage and support the adoption and implementation of telecommuting schemes in developing economies.

7.6 Research Limitations and Directions for Future Studies

The current study is not without limitations. To start with, the study was conducted based on respondents in Accra. However, in order to provide more generalizable insights on the impact of telecommuting on an organization's performance, future studies should specifically consider knowledge workers and organizations based in other parts of the country. Secondly, this study was focused on Ghanaian firms but it will be interesting to know how these findings compare with those of other countries in Sub Saharan Africa or the world at large. Future studies may undertake comparative studies between two or more countries, or between developed and underdeveloped economies checking to see how countries differ in terms of the CSFs for implementing telecommuting.

Whereas this study only considered discontinuities in characterising the virtual environment, future studies may use continuities instead to study the virtual environment in different classes or sizes of firms and assess the impact of those strategies on the performance of an organization. Finally, this study was limited in the number of technical factors incorporated. Future studies should include more technical critical success factors in assessing impact on organizational performance.

REFERENCE

Aizpurúa, L. I., Saldaña, P. E. Z., & Saldaña, A. Z. (2011). Learning for sharing: an empirical analysis of organizational learning and knowledge sharing. *International Entrepreneurship and Management Journal*, *7*(4), 509–518.

Akemu, O., & Abdelnour, S. (2020). Confronting the digital: Doing ethnography in modern organizational settings. *Organizational Research Methods*, *23*(2), 296–321.

Alhassan, M. D., Kolog, E. A., & Boateng, R. (2020). Effect of gratification on user attitude and continuance use of mobile payment services: a developing country context. *Journal of Systems and Information Technology*.

Alin, A. (2010). Multicollinearity. *Wiley Interdisciplinary Reviews: Computational Statistics*, *2*(3), 370–374.

Allen, T. D., Golden, T. D., & Shockley, K. M. (2015). How effective is telecommuting? Assessing the status of our scientific findings. *Psychological Science in the Public Interest*, *16*(2), 40–68.

Ansong, E., & Boateng, R. (2018). Organisational adoption of telecommuting: Evidence from a developing country. *The Electronic Journal of Information Systems in Developing Countries*, *84*(1), e12008.

Appelbaum, S. H. (1997). Socio-technical systems theory: an intervention strategy for organizational development. *Management Decision*.

Aroles, J., Mitev, N., & de Vaujany, F. (2019). Mapping themes in the study of new work practices. *New Technology, Work and Employment*, *34*(3), 285–299.

Asatiani, A., Hämäläinen, J., Penttinen, E., & Rossi, M. (2020). Constructing continuity across the organisational culture boundary in a highly virtual work environment. *Information Systems Journal*.

Asatiani, A., & Penttinen, E. (2019). Constructing continuities in virtual work environments: A multiple case study of two firms with differing degrees of virtuality. *Information Systems Journal*, *29*(2), 484–513.

Bailey, N., & Kurland, N. B. (1999). The advantages and challenges of working here, there, anywhere, and anytime. *Organizational Dynamics*, *28*(2), 53–68.

Baptista, J., Stein, M.-K., Klein, S., Watson-Manheim, M. B., & Lee, J. (2020). *Digital work and organisational transformation: Emergent digital/human work configurations in modern organisations*. Elsevier.

Baruch, Y. (2001). The status of research on teleworking and an agenda for future research. *International Journal of Management Reviews*, *3*(2), 113–129.

Baxter, G. J., & Hester, A. J. (2014). Socio-technical systems theory as a diagnostic tool for examining underutilization of wiki technology. *The Learning Organization*.

Beauregard, T. A., Basile, K. A., & Canonico, E. (2019). *Telework: Outcomes and facilitators for employees*.

Bednar, P. M., & Welch, C. (2020). Socio-technical perspectives on smart working: Creating meaningful and sustainable systems. *Information Systems Frontiers*, *22*(2), 281–298.

Bélanger, F., Watson-Manheim, M. B., & Swan, B. R. (2013). A multi-level socio-technical systems

telecommuting framework. *Behaviour & Information Technology*, *32*(12), 1257–1279.

Beno, M. (2019). Home-based Telework and the Role of Gender-Results of a Study in Austria. *CONF-IRM*, 12.

Bentley, T. A., Teo, S. T. T., McLeod, L., Tan, F., Bosua, R., & Gloet, M. (2016). The role of organisational support in teleworker wellbeing: A socio-technical systems approach. *Applied Ergonomics*, *52*, 207–215.

Bloom, N., Liang, J., Roberts, J., & Ying, Z. J. (2015). Does working from home work? Evidence from a chinese experiment. *Quarterly Journal of Economics*, *130*(1), 165–218. https://doi.org/10.1093/qje/qju032

Boell, S. K., Cecez-Kecmanovic, D., & Campbell, J. (2016). Telework paradoxes and practices: the importance of the nature of work. *New Technology, Work and Employment*, *31*(2), 114–131.

Boldosova, V. (2019). *Deliberate storytelling in big data analytics adoption*. *February 2017*, 1–27. https://doi.org/10.1111/isj.12244

Böll, S., Cecez-Kecmanovic, D., & Campbell, J. (2014). *Telework and the nature of work: An assessment of different aspects of work and the role of technology*.

Bostrom, R. P., & Heinen, J. S. (1977a). MIS problems and failures: a socio-technical perspective, part II: the application of socio-technical theory. *MIS Quarterly*, 11–28.

Bostrom, R. P., & Heinen, J. S. (1977b). MIS problems and failures: A socio-technical perspective. Part I: The causes. *MIS Quarterly*, 17–32.

Brynjolfsson, E., Horton, J. J., Ozimek, A., Rock, D., Sharma, G., & TuYe, H.-Y. (2020). *COVID-19*

and remote work: An early look at US data. National Bureau of Economic Research.

Burton-Jones, A., McLean, E. R., & Monod, E. (2015). Theoretical perspectives in IS research: from variance and process to conceptual latitude and conceptual fit. *European Journal of Information Systems*, *24*(6), 664–679.

Cangur, S., & Ercan, I. (2015). Comparison of model fit indices used in structural equation modeling under multivariate normality. *Journal of Modern Applied Statistical Methods*, *14*(1), 14.

Chen, L., & Nath, R. (2008). A socio-technical perspective of mobile work. *Information Knowledge Systems Management*, *7*(1, 2), 41–60.

Chin, W. W. (1998). The partial least squares approach to structural equation modeling. *Modern Methods for Business Research*, *295*(2), 295–336.

Chudoba, K. M., Wynn, E., Lu, M., & Watson-Manheim, M. B. (2005). How virtual are we? Measuring virtuality and understanding its impact in a global organization. *Information Systems Journal*, *15*(4), 279–306.

Cohen, J. (1988). Statistical power analysis for the behavioral sciences–second edition. 12 Lawrence Erlbaum Associates Inc. *Hillsdale, New Jersey*, *13*.

Creswell, J. W. (2003). A framework for design. *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches*, 9–11.

Davis, M. C., Challenger, R., Jayewardene, D. N. W., & Clegg, C. W. (2014). Advancing socio-technical systems thinking: A call for bravery. *Applied Ergonomics*, *45*(2), 171–180.

Diamantidis, A. D., & Chatzoglou, P. (2018). Factors affecting employee performance: an empirical

approach. *International Journal of Productivity and Performance Management*.

Dijkstra, T. K., & Henseler, J. (2015). Consistent and asymptotically normal PLS estimators for linear structural equations. *Computational Statistics & Data Analysis*, *81*, 10–23.

Dixon, K. R., & Panteli, N. (2010). From virtual teams to virtuality in teams. *Human Relations*, *63*(8), 1177–1197.

Duxbury, L., & Neufeld, D. (1999). An empirical evaluation of the impacts of telecommuting on intra-organizational communication. *Journal of Engineering and Technology Management*, *16*(1), 1–28.

Dwaikat, N. Y. (2020). A comprehensive model for assessing the quality in higher education institutions. *The TQM Journal*.

European Trade Union Confederation (ETUC). (2002). *Framework Agreement on Telework | Etuc resources center*. https://resourcecentre.etuc.org/agreement/framework-agreement-telework

Fornell, C., & Larcker, D. F. (1981). Evaluating structural equation models with unobservable variables and measurement error. *Journal of Marketing Research*, *18*(1), 39–50.

Goodhue, D. L., Lewis, W., & Thompson, R. (2012). Does PLS have advantages for small sample size or non-normal data? *MIS Quarterly*, 981–1001.

Greenwood, B., Burtch, G., & Carnahan, S. (2017). Unknowns of the gig-economy. *Communications of the ACM*, *60*(7), 27–29.

Groen, B. A. C., Van Triest, S. P., Coers, M., & Wtenweerde, N. (2018). Managing flexible work arrangements: Teleworking and output controls. *European Management Journal*, *36*(6), 727–735.

Guimaraes, T., & Dallow, P. (1999). Empirically testing the benefits, problems, and success factors for telecommuting programmes. *European Journal of Information Systems*, *8*(1), 40–54.

Hafermalz, E., & Riemer, K. (2016). *The work of belonging through technology in remote work: A case study in tele-nursing*.

Hair, Howard, M., & Nitzl, C. (2020). Assessing measurement model quality in PLS-SEM using confirmatory composite analysis. *Journal of Business Research*, *109*, 101–110.

Hair, J. F., Anderson, R. E., Babin, B. J., & Black, W. C. (2010). *Multivariate data analysis: A global perspective (Vol. 7)*. Upper Saddle River, NJ: Pearson.

Hair, J. F., Page, M., & Brunsveld, N. (2020). *Essentials of business research methods*. Routledge.

Hair, J. F., Ringle, C. M., & Sarstedt, M. (2011). PLS-SEM: Indeed a silver bullet. *Journal of Marketing Theory and Practice*, *19*(2), 139–152.

Hair, J., Risher, J., Sarstedt, M., & Ringle, C. (2019). When to use and how to report the results of PLS-SEM. *European Business Review*.

Hair Jr, J. F., Hult, G. T. M., Ringle, C. M., & Sarstedt, M. (2021). *A primer on partial least squares structural equation modeling (PLS-SEM)*. Sage publications.

Haroon, H., & Malik, H. D. (2018). The impact of organizational communication on organizational performance. *Journal of Research in Social Sciences*, *6*(2), 140–151.

Henseler, J., Hubona, G., & Ray, P. A. (2016). Using PLS path modeling in new technology research: updated guidelines. *Industrial Management & Data Systems*.

Henseler, J., Ringle, C. M., & Sarstedt, M. (2015). A new criterion for assessing discriminant validity in variance-based structural equation modeling. *Journal of the Academy of Marketing Science*, *43*(1), 115–135.

Henseler, J., & Sarstedt, M. (2013). Goodness-of-fit indices for partial least squares path modeling. *Computational Statistics*, *28*(2), 565–580.

Hester, A. J. (2012). Measuring alignment within relationships among socio-technical system components: a study of wiki technology use. *Proceedings of the 50th Annual Conference on Computers and People Research*, 147–154.

Hilbrecht, M., Shaw, S. M., Johnson, L. C., & Andrey, J. (2013). Remixing work, family and leisure: teleworkers' experiences of everyday life. *New Technology, Work and Employment*, *28*(2), 130–144.

Hill, E. J., Erickson, J. J., Holmes, E. K., & Ferris, M. (2010). Workplace flexibility, work hours, and work-life conflict: finding an extra day or two. *Journal of Family Psychology*, *24*(3), 349.

Hirschheim, R., & Klein, H. K. (1989). Four paradigms of information systems development. *Communications of the ACM*, *32*(10), 1199–1216.

Holland, S. J., Simpson, K. M., Dalal, R. S., & Vega, R. P. (2016). I can't steal from a coworker if I work from home: Conceptual and measurement-related issues associated with studying counterproductive work behavior in a telework setting. *Human Performance*, *29*(3), 172–190.

Hu, L., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling: A Multidisciplinary Journal*, *6*(1), 1–55.

ILO. (2016). *opportunities of teleworking for workers and employers in the ICTS and financial services sectors: Issues paper for the Global Dialogue Forum on the Challenges and Opportunities of Teleworking for Workers and Employers in the ICTS and Financial Services S.*

ILO Eurofound. (2017). *Working anytime, anywhere: The effects on the world of work | Eurofound*. https://www.eurofound.europa.eu/publications/report/2017/working-anytime-anywhere-the-effects-on-the-world-of-work

Ipe, M. (2003). Knowledge sharing in organizations: A conceptual framework. *Human Resource Development Review*, *2*(4), 337–359.

Jackowska, M., & Lauring, J. (2021). What are the effects of working away from the workplace compared to using technology while being at the workplace? Assessing work context and personal context in a global virtual setting. *Journal of International Management*, *27*(1), 100826.

Kaboub, F. (2008). Positivist paradigm. *Encyclopaedia of Counselling*, 343.

Kaplan, S., Engelsted, L., Lei, X., & Lockwood, K. (2018). Unpackaging manager mistrust in allowing telework: comparing and integrating theoretical perspectives. *Journal of Business and Psychology*, *33*(3), 365–382.

Kerpedzhiev, G., Lehnert, M., & Röglinger, M. (2016). *The future of business process management in the future of work*.

Kim, M. S., Phillips, J. M., Park, W.-W., & Gully, S. M. (2021). When leader-member exchange leads to knowledge sharing: the roles of general self-efficacy, team leader modeling, and LMX differentiation. *The International Journal of Human Resource Management*, 1–28.

Kitchin, R. (2014). *Big Data , new epistemologies and paradigm shifts*. *June*, 1–12. https://doi.org/10.1177/2053951714528481

Kock, N., & Hadaya, P. (2018). Minimum sample size estimation in PLS-SEM: The inverse square root and gamma-exponential methods. *Information Systems Journal*, *28*(1), 227–261.

Kok, A. de, & Helms, R. W. (2016). *Attitude Towards the New Way of Working-a Longitudinal Study*.

Kotey, B., & Sharma, B. (2016). Predictors of flexible working arrangement provision in small and medium enterprises (SMEs). *The International Journal of Human Resource Management*, *27*(22), 2753–2770.

Kowalski, K. B., & Swanson, J. A. (2005). Critical success factors in developing teleworking programs. *Benchmarking: An International Journal*.

Kyriakou, N., Loukis, E., & Arvanitis, S. (2016). Enterprise Systems and Innovation--An Empirical Investigation. *2016 49th Hawaii International Conference on System Sciences (HICSS)*, 4686–4696.

Lebopo, C. M., Seymour, L. F., & Knoesen, H. (2020). Explaining factors affecting telework adoption in South African organisations pre-COVID-19. *Conference of the South African Institute of Computer Scientists and Information Technologists 2020*, 94–101.

Levitt, B., & March, J. G. (1988). Organizational learning. *Annual Review of Sociology*, *14*(1), 319–338.

Lin, H. (2007). Knowledge sharing and firm innovation capability: an empirical study. *International Journal of Manpower*.

Lincoln, Y. S., Lynham, S. A., & Guba, E. G. (2011). Paradigmatic controversies, contradictions, and emerging confluences, revisited. *The Sage Handbook of Qualitative Research*, *4*(2), 97–128.

Lyytinen, K., & Newman, M. (2008). Explaining information systems change: a punctuated socio-technical change model. *European Journal of Information Systems*, *17*(6), 589–613.

Magpili, N. C., & Pazos, P. (2018). Self-managing team performance: A systematic review of multilevel input factors. *Small Group Research*, *49*(1), 3–33.

Martin, B. H., & MacDonnell, R. (2012). Is telework effective for organizations? *Management Research Review*.

Messenger, J. C. (2019). Introduction: Telework in the 21st century–an evolutionary perspective. In *Telework in the 21st Century*. Edward Elgar Publishing.

Messenger, J. C., & Gschwind, L. (2016). Three generations of Telework: New ICT s and the (R) evolution from Home Office to Virtual Office. *New Technology, Work and Employment*, *31*(3), 195–208.

Morrison, J., Chigona, W., & Malanga, D. F. (2019). Factors that Influence Information Technology Workers' Intention to Telework: A South African Perspective. In *Proceedings of the South African Institute of Computer Scientists and Information Technologists 2019* (pp. 1–10).

Myers, K. K., & Sadaghiani, K. (2010). Millennials in the workplace: A communication perspective on millennials' organizational relationships and performance. *Journal of Business and Psychology*, *25*(2), 225–238.

Myers, M. D. (2019). *Qualitative research in business and management*. Sage.

Myers, M. D., & Avison, D. (2002). *Qualitative research in information systems: a reader*. Sage.

Myovella, G., Karacuka, M., & Haucap, J. (2019). Digitalization and economic growth: A comparative analysis of Sub-Saharan Africa and OECD economies. *Telecommunications Policy*, 101856.

Nakrošienė, A., Bučiūnienė, I., & Goštautaitė, B. (2019). Working from home: characteristics and outcomes of telework. *International Journal of Manpower*.

Nayir, F. (2012). The Relationship between Perceived Organizational Support and Teachers' Organizational Commitment. *Eurasian Journal of Educational Research*, *48*, 97–116.

Nilles, J. M. (1997). Telework: enabling distributed organizations: implications for IT managers. *Information Systems Management*, *14*(4), 7–14.

O'Leary, K., Gleasure, R., O'Reilly, P., & Feller, J. (2020). Reviewing the contributing factors and benefits of distributed collaboration. *Communications of the Association for Information Systems*, *47*, 476–520.

OECD. (2020). *Productivity gains from teleworking in the post COVID-19 era: How can public policies make it happen?* https://www.oecd.org/coronavirus/policy-responses/productivity-gains-from-teleworking-in-the-post-covid-19-era-a5d52e99/

Orlikowski, W. J., & Baroudi, J. J. (1991). Studying information technology in organizations: Research approaches and assumptions. *Information Systems Research*, *2*(1), 1–28.

Peter, L. (2015). *Effective business communication* (pp. 18–24). McGraw Hill Inc. Newyork. Publishing Nigerian Limited.

Petter, S., Straub, D., & Rai, A. (2007). Specifying formative constructs in information systems

research. *MIS Quarterly*, 623–656.

Porter, A. J., & van den Hooff, B. (2020). The complementarity of autonomy and control in mobile work. *European Journal of Information Systems*, *29*(2), 172–189.

Raghuram, S., Hill, N. S., Gibbs, J. L., & Maruping, L. M. (2019). Virtual work: Bridging research clusters. *Academy of Management Annals*, *13*(1), 308–341.

Rahi, S. (2017). Research design and methods: A systematic review of research paradigms, sampling issues and instruments development. *International Journal of Economics & Management Sciences*, *6*(2), 1–5.

Robey, D., Anderson, C., & Raymond, B. (2013). Information technology, materiality, and organizational change: A professional odyssey. *Journal of the Association for Information Systems*, *14*(7), 1.

Roztocki, N., & Weistroffer, H. R. (2011). Information technology success factors and models in developing and emerging economies. *Information Technology for Development*, *17*(3), 163–167.

Ryan, S. D., & Harrison, D. A. (2000). Considering social subsystem costs and benefits in information technology investment decisions: A view from the field on anticipated payoffs. *Journal of Management Information Systems*, *16*(4), 11–40.

Schikorski, T., & Stevens, C. F. (1997). Quantitative ultrastructural analysis of hippocampal excitatory synapses. *Journal of Neuroscience*, *17*(15), 5858–5867.

Schmoll, R., & Süß, S. (2019). Working Anywhere, Anytime: An Experimental Investigation of Workplace Flexibility's Influence on Organizational Attraction. *Mrev Management Revue*, *30*(1),

40–62.

Sias, P. M., Pedersen, H., Gallagher, E. B., & Kopaneva, I. (2012). Workplace friendship in the electronically connected organization. *Human Communication Research*, *38*(3), 253–279.

Silva-C, A., Montoya, R., & Valencia, A. (2019). The attitude of managers toward telework, why is it so difficult to adopt it in organizations? *Technology in Society*, *59*, 101133.

Singh, H., & Verma, S. (2021). Evolution of IS Competencies due to Mandatory Telework on Organizational scale–A Work-Systems Approach. *Proceedings of the 54th Hawaii International Conference on System Sciences*, 5789.

Smith, S. A., Patmos, A., & Pitts, M. J. (2018). Communication and teleworking: A study of communication channel satisfaction, personality, and job satisfaction for teleworking employees. *International Journal of Business Communication*, *55*(1), 44–68.

Soroui, S. T. (2021). Understanding the drivers and implications of remote work from the local perspective: An exploratory study into the dis/reembedding dynamics. *Technology in Society*, *64*, 101328.

Suh, A., & Lee, J. (2017). Understanding teleworkers' technostress and its influence on job satisfaction. *Internet Research*.

Suzuki, M., Ando, N., & Nishikawa, H. (2019). Intra-organizational communication and its consequences. *Management Decision*.

Tams, S., Ahuja, M., Thatcher, J., & Grover, V. (2020). Worker stress in the age of mobile technology: The combined effects of perceived interruption overload and worker control. *The Journal of*

Strategic Information Systems, *29*(1), 101595.

Trist, & Bamforth, K. W. (1951). Some social and psychological consequences of the longwall method of coal-getting: An examination of the psychological situation and defences of a work group in relation to the social structure and technological content of the work system. *Human Relations*, *4*(1), 3–38.

Trist, E. L. (1981). *The evolution of socio-technical systems* (Vol. 2). Ontario Quality of Working Life Centre Toronto.

Turetken, O., Jain, A., Quesenberry, B., & Ngwenyama, O. (2010). An empirical investigation of the impact of individual and work characteristics on telecommuting success. *IEEE Transactions on Professional Communication*, *54*(1), 56–67.

Urbach, N., & Ahlemann, F. (2010). Structural equation modeling in information systems research using partial least squares. *Journal of Information Technology Theory and Application*, *11*(2), 5–40.

van der Lippe, T., & Lippényi, Z. (2020). Co-workers working from home and individual and team performance. *New Technology, Work and Employment*, *35*(1), 60–79.

Vilhelmson, B., & Thulin, E. (2016). Who and where are the flexible workers? Exploring the current diffusion of telework in Sweden. *New Technology, Work and Employment*, *31*(1), 77–96.

Wahbeh, A., Sarnikar, S., & El-Gayar, O. (2019). A socio-technical-based process for questionnaire development in requirements elicitation via interviews. *Requirements Engineering*, 1–21.

Waizenegger, L., McKenna, B., Cai, W., & Bendz, T. (2020). An affordance perspective of team

collaboration and enforced working from home during COVID-19. *European Journal of Information Systems*, *29*(4), 429–442.

Wang, W., Albert, L., & Sun, Q. (2020). Employee isolation and telecommuter organizational commitment. *Employee Relations: The International Journal*.

Watson-Manheim, M. B., Chudoba, K. M., & Crowston, K. (2002). Discontinuities and continuities: A new way to understand virtual work. *Information Technology & People*.

Watson-Manheim, M. B., Chudoba, K. M., & Crowston, K. (2012). Perceived discontinuities and constructed continuities in virtual work. *Information Systems Journal*, *22*(1), 29–52.

Wheatley, D. (2012). Good to be home? Time-use and satisfaction levels among home-based teleworkers. *New Technology, Work and Employment*, *27*(3), 224–241.

Wood, M. (2005). Bootstrapped confidence intervals as an approach to statistical inference. *Organizational Research Methods*, *8*(4), 454–470.

Ye, L. R. (2012). Telecommuting: Implementation for success. *International Journal of Business and Social Science*, *3*(15).

APPENDIX A: SAMPLE QUESTIONNAIRE

University of Ghana Business School

Dear Respondent,

I am an MPhil student at the Department of Operations and Management Information Systems of the University of Ghana Business School. I am conducting a study on the topic "**Telecommuting in a developing economy context: critical success factors and impact on organizational performance**". I would be glad if you could spare some time off your busy schedule to complete this questionnaire for me. It takes on the average 20 minutes to get the questionnaire completed. Please be assured that all information provided will be treated as strictly confidential and will be used for academic purposes only. Again, all data collected will be stripped off personal identifiers to ensure anonymity.

For any questions or clarifications regarding this questionnaire, please contact me through: dsayiku@st.ug.edu.gh or 0249323215

SURVEY QUESTIONS

PART A: Demographics

Please tick [√]) where appropriate.

1. What is your gender? Male [ ] Female [ ]

2. Which of the following age brackets do you belong to? 15-25 [ ] 26-35 [ ] 36-45 [ ] 46-55 [ ] 56-65 [ ] above 65 [ ]

3. What is your level of education? SHS and below [ ] Diploma [ ] Degree [ ] Masters [ ] PhD [ ] Others (Please specify)…….

4. Which of these descriptions best fits your organization? Accounting firm [ ] Banking firm [ ] Higher Educational Institution [ ] Audit firm [ ] Others (Please specify)……...

5.What is your current role with this employer? General Manager/Chief Information Officer [ ] Manager [ ] Supervisor/Team Lead [ ] Accountant/Auditor/Banker/Lecturer[ ] Others (Please specify)……...

6. How many years have you worked with this employer? 0-2 [ ] 3-5 [ ] 5-7 [ ] 8-10 [ ] More than 10 [ ]

PART B: Telecommuting History (please tick [√]) where appropriate

7. Do Have you ever telecommuted or worked from another location outside your workplace? Yes [ ] No [ ] .

8. If Yes, kindly specify your place of telecommuting? Home [ ] remote location/satellite office [ ] Both [ ]

9. How long have you been telecommuting? Below 3 years [ ] 4-7 years [ ] 8-10 years [ ] above 10 years [ ]

10. How often do you telecommute in a week? 1-2days [ ] 2-4days [ ] 4-6days [ ] All 7 days [ ]

11. Do you often collaborate or work with people from across different time zones? Yes [ ] No [ ] .

PART C: Discontinuities of the virtual environment. Using a 5-point Likert scale, where 1=Strongly disagree, 2=Disagree, 3=Neutral, 4=Agree, 5=Strongly agree, please indicate by ticking (√) the extent to which you agree or disagree with the following statements.

DISCONTINUITIES OF THE VIRTUAL ENVIRONMENT						
	GEOGRAPHY OR LOCATION	**1**	**2**	**3**	**4**	**5**
GEO1	I have a conducive work environment when I work away from the office					
GEO2	I use comparable technological tools when I work away from the office					
GEO3	I create my own conducive work environment for telecommuting					
GEO4	I am motivated by the organization to create a conducive work environment for telecommuting					
GEO5	I feel connected to work with colleagues when telecommuting					
GEO6	I find it easy to access professional resources and advice when telecommuting					
	CULTURE	**1**	**2**	**3**	**4**	**5**
CU1	I collaborate with people who speak different native languages or are from different cultural backgrounds					
CU2	I collaborate with employees whose work culture differs from mine					
CU3	My performance is not affected when I collaborate with employees whose work culture differs from mine					
CU4	Coordinating work is not a problem when I collaborate with people whose culture are different from mine					
CU5	Our organizational culture is conducive for telecommuting					
	WORK PRACTICES AND ORGANIZATION	**1**	**2**	**3**	**4**	**5**
WPO1	I often work in multiple teams from different functions at a time					
WPO2	I work with teams that have different ways to track their work					
WPO3	I work at different but designated sites outside the office.					
WPO4	We have well defined working hours for telecommuting.					
WPO5	I work more overtime hours when telecommuting					
WPO6	I am able to separate personal life from work life when telecommuting.					
WPO7	We have written policies, guidelines and other formal communication for telecommuting in the organization.					
	TECHNOLOGY	**1**	**2**	**3**	**4**	**5**
TEC1	The features of the accepted technologies align with the goals of the organization for telecommuting.					
TEC2	Internet and network access issues do not affect the flow of my work when telecommuting.					
TEC3	I am satisfied with using the required technologies for working when telecommuting.					

TEC4	I sometimes work with new or unfamiliar technological tools which affect my performance when telecommuting.					
TEC5	On a regular basis, I work using mobile devices such as smart phones and tablets.					
TEC6	I work beyond or after working hours as a result of telecommuting.					

PART D: Telecommuting critical success factors and organizational performance. Using a 5-point Likert scale, where 1=Strongly disagree, 2=Disagree, 3=Neutral, 4=Agree, 5=Strongly agree, please indicate by ticking (√) the extent to which you agree or disagree with the following statements.

TELECOMMUTING CRITICAL SUCCESS FACTORS						
INTRA-ORGANIZATIONAL COMMUNICATION: For telecommuting success……		**1**	**2**	**3**	**4**	**5**
COM1	useful channels of communication must be established in the organization					
COM2	employees must effectively communicate with each other through the use of technology					
COM3	effective communication strategies must be enacted to encourage social interactions					
COM4	employees must be able to use ICTs to effectively communicate with their managers or supervisors					
COM5	the organization's communication culture must encourage social interactions among employees					
COM6	the organization must have policies guiding online communication					
LEARNING AND KNOWLEDGE SHARING: For telecommuting success……..		**1**	**2**	**3**	**4**	**5**
LKS1	the organization must have a culture of learning and knowledge sharing					
LKS2	a team culture of learning and knowledge sharing must be encouraged					
LKS3	employees must have a learning and knowledge sharing mindset					
LKS4	telecommuters must receive training on the importance of learning and knowledge sharing					
LKS5	employees need to build trust relationships to support learning and knowledge sharing among themselves					
EMPLOYEE CHARACTERISTICS: For telecommuting success……		**1**	**2**	**3**	**4**	**5**
ELE1	employees must be able to work alone or require minimal supervision					
ELE2	employees must have work experience, skillfulness and the ability to be depended on					
ELE3	employees must possess technological efficacy and knowledge about the required telecommuting tools					

ELE4	employees must have an open and a positive attitude to telecommuting					
ELE5	employees must be time conscious and have organizational skills					
ELE6	employees must have interpersonal skills and a level of people orientation					
ORGANIZATIONAL SUPPORT: For telecommuting success……		**1**	**2**	**3**	**4**	**5**
SU1	technological infrastructures and tools provided by the organization must be useful for telecommuting					
SU2	technological support must be provided to telecommuting employees when needed					
SU3	employees must receive training before they start telecommuting					
SU4	both employees and their managers must receive communication skills training					
SU5	members on a team must support each other to help meet deadlines and achieve targets					
SU6	employees must know the next in command to call for support or feedback					
TECHNOLOGY AND MEDIA RICHNESS: For telecommuting success……		**1**	**2**	**3**	**4**	**5**
TMR1	employees must effectively communicate and collaborate via ICTs					
TMR2	adopted technologies must be useful to enhance team coordination and collaboration					
TMR3	ICTs should be adopted by the team or work group based on the nature of the task at hand					
TMR4	ICTs should be adopted by the team or work group based on technology's features					
TMR5	the adopted technologies must enhance social interactions among employees					
TMR6	the adopted technologies must be easy to use					
TMR7	every aspect of an employees' job must be executable using ICTs					
ORGANIZATIONAL PERFORMANCE : EMPLOYEE LEVEL		**1**	**2**	**3**	**4**	**5**
OPE1	I am able to meet established deadlines for my tasks regularly					
OPE2	I am able to achieve my work goals when telecommuting					
OPE3	I am in better control and efficient when telecommuting					
OPE4	I am able to prioritize the different aspects of my work to get them completed when telecommuting					
OPE5	My performance in telecommuting is considered to be of top quality					
OPE6	I am very productive in my telecommuting work					
OPE7	I am able to efficiently collaborate with other colleagues when telecommuting					
ORGANIZATIONAL PERFORMANCE: TEAM LEVEL		**1**	**2**	**3**	**4**	**5**
OPT1	The team is able to meet its work deadlines regularly					

OPT2	The team is in better control and efficient in its telecommuting work					
OPT3	Team cohesion and visibility is achieved when telecommuting					
OPT4	The team is able to regularly achieve its work targets					
OPT5	The performance of the team is considered satisfactory					
OPT6	The team is considered to be productive					
OPT7	The performance of the team is recognized to be of top quality					
ORGANIZATIONAL PERFORMANCE: MANAGERIAL LEVEL		**1**	**2**	**3**	**4**	**5**
OPM1	Our managers and supervisors are able to achieve work established deadlines regularly					
OPM2	Our managers and supervisors are able to regularly achieve their work targets					
OPM3	Our managers and supervisors are effective and efficient in their telecommuting work					
OPM4	The performance of our managers and supervisors are considered to be satisfactory					
OPM5	The performance of our managers and supervisors are recognized to be of top quality					
OPM6	Our managers and supervisors are able to maintain appropriate corporate relationships with all employees					

THANK YOU!!!