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Institutionalization of Knowledge Management Strategies in Agricultural Research Organizations in East Africa

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Declaration

This thesis is my original work and has not been presented for any degree in any other university for examination.

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Dedication

This thesis is dedicated to my beloved wife, Christine and my three children Precious, David and Joshua, for their support throughout the study period.

"Thank you."

Acknowledgement

Publications

This study has produced two journal papers. The first paper was on systematic literature analysis. The aim was to reduce the widening gap in this topic. Specifically, the paper's main interest was to see how the extant literature has examined institutionalization of KM strategies in Agricultural Research Organizations (AROs). The paper was published in the Knowledge for Development (KM4Dev) Journal.

Akuku, B., Oboko, R., & Waema, T. M. (2020). Institutionalization of knowledge management strategies in agricultural research organizations: a systematic literature review. Knowledge Management for Development Journal, 15(1), 73-98.

The second paper examined the characteristics of KM strategies in AROs in East Africa. The paper's main aim was to explore the key characteristics of KM strategies in Agricultural Research Organizations (AROs) in East Africa in terms of what exists, what does not exist, and why. This paper was published in the Information Development Journal and details are as follows:

Akuku, B., Waema, T. M., Oboko, R., & Brown, I. (2020). Knowledge Management Strategies adopted in Agricultural Research Organizations in East Africa. Information Development. (https://doi.org/10.1177/0266666920968165).

Abstract

Knowledge Management (KM) has remained an area of research interest in the Information Systems (IS) domain, and researchers and practitioners have recognized the contribution of KM strategies to organizations. Despite this interest and significance, in practice, Agricultural Research Organizations (AROs) in East Africa (EA) have not effectively institutionalized their KM strategies, implying that the envisioned benefits have not been fully realized. Although studies have shown that agricultural research knowledge can reduce the number of poor people in Sub-Saharan Africa (SSA) by 2.3 million (0.8%) annually, in the East African context, AROs are facing persistent and pressing challenges in institutionalizing KM strategies in practice. As a result, constraints in the management of the research knowledge remain. Some of the constraints include fragmented processes, unbalanced interests, and fewer studies that focus on practical aspects.

The purpose of this research study was to improve understanding and explanation of how KM strategies are institutionalized in AROs in East Africa. It also offers a more in-depth insight to practitioners and understand better what takes place in practice. Answering the research questions enabled the study to consistently: conceptualizes the key characteristics of KM strategies, including the critical gaps; describes and explains the causal factors influencing institutionalization of KM strategies; explains the processes involved in institutionalization of KM strategies; and provides insight on essential considerations for institutionalization of KM strategies from a practical context.

The guiding philosophy for this study is pragmatism. The study used explanatory design since the institutionalization of KM strategies is not well researched. Also, to generate a better-researched model for understanding it. This study used concurrent mixed methods, involving mainly qualitative through semi-structured Key Informant Interviews (KIIs) and a survey questionnaire technique for the quantitative approach for different research questions. Descriptive and inferential data analysis methods were used in analyzing quantitative data and content analysis for qualitative data. From the

results, five critical characteristics of KM strategies in AROs in East Africa are revealed and explained namely: well-formulated, technology-focus, alignment, implementation process, and value proposition. The External factors influencing institutionalization of KM strategies in AROs in East Africa are presented under three broad categories: cognitive, normative and regulative pressures. Besides, ICT adoption, management and organizational factors are also shown as internal and contextual factors. Five processes involved in institutionalization of KM strategies in AROs in East Africa are presented. Two of these, namely initiation and end-of-strategy, are newly developed processes. The five-process model also shows the relationship between the processes and their sequential and cyclic nature. Eight critical considerations on how AROs in East Africa should institutionalize their KM strategies emerged from the results.

This study has presented a theoretical approach that conceptualizes the characteristics of KM strategies and their respective relationships. The conceptual framework developed in this study can be used for analyzing KM strategy problems experienced by organizations in different contexts and as references for scholars and practitioners. Previously institutionalization has been presented as a sequence of processes, but this study has gone a step further to show that it also has a cyclic character since the end of a strategy life of one version ushers in the initiation of the next. Emerging practical benefits to KM practitioners, policy-makers and development partners interested in the subject are well explained. There is an explicit confirmation that all the indicators of institutional pressures are significant in explaining their influence on the strategic decision-making process of AROs to institutionalize KM strategies. Therefore, strategic decisions are vital in ensuring the successful institutionalization of KM strategies.

While researchers and practitioners in the IS domain have recognized the contribution of KM strategies to organizations, the extent of institutionalization of KM strategies in AROs in East Africa needs to improve to ensure that KM strategies' envisioned benefits are fully realized. As this study has shown, the overall extent of adoption, implementation, and entrenchment of KM strategies in AROs in East Africa ranges

between 48% to 64%. These values indicate low and moderate levels of institutionalization. With this extent of institutionalization of KM strategies, AROs in East Africa are not benefiting as much as they could from the investments in KM strategies. Unfortunately, scholars have not focused on specific aspects of practice, process and context. Therefore, this study has paid adequate attention to these areas and further explored the subject in great detail.

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List of Abbreviations

AGRA	Green Revolution in Africa
AROs	Agricultural Research Organizations
ASARECA	Association for Strengthening Agricultural Research in Eastern and Central Africa
BDA	Big Data Analytics
BOM	Board of Management
CCAFS	Climate Change, Agriculture and Food Security
CDA	Cotton Development Authority
CDO	Coffee Development Organization
CG	Consortium Group
CGIAR	Consortium of International Agricultural Research Centers
CIAT	International Center for Tropical Agriculture
CIMMYT	International Maize and Wheat Improvement Center
CIP	International Potato Centre
DDA	Dairy Development Authority
EA	East Africa
ECIS	European Conference on Information Systems
ECKM	European Conference on Knowledge Management
EMR	Electronic Medical Record
EP	Expectation
ERP	Enterprise Resource Planning
FAO	Food and Agriculture Organization of the United Nations
FARA	Forum for Agricultural Research in Africa
FEDI	Financial Electronic Data Interchange systems
IBLI	Index-Based Livestock Insurance
ICEBI	International Conference on E-Business Intelligence
ICEMCT	International Conference on Education, Management and Computing Technology
ICIPE	International Centre of Insect Physiology and Ecology
ICRAF	World Agroforestry Centre

ICRISAT	International Crops Research Institute for the Semi-Arid Tropics
ICT	Information and Communication Technology
ICTUS	International Conference on Infocom Technologies and Unmanned Systems
IISE	Institute of Industrial and Systems Engineers
IITA	International Institute of Tropical Agriculture
IJETR	International Journal of Engineering and Technical Research
IJISSC	International Journal of Information Systems and Social Change
IJISSS	International Journal of Information Systems in the Service Sector
IJITL	International Journal of Innovation in Teaching and Learning
IJKM	International Journal of Knowledge Management
IJRME	International Journal of Research in Management, Economics & Commerce
IJSESD	International Journal of Social Ecology and Sustainable Development
IKM	Institutionalization of Knowledge management
IKMS	Institutionalization of Knowledge management strategies
ILRI	International Livestock Research Institute
IS	Information System
IT	Information Technology
JECO	Journal of Electronic Commerce in Organizations
JITTA	Journal of Information Technology Theory and Application
KALRO	Kenya Agricultural and Livestock Research Organization
KEFRI	Kenya Forestry Research Institute
KII	Key Informant Interviews
KM	Knowledge Management
MA	Mandate
NA	Network Association
NACOSTI	National Commission for Science, Technology and Innovation
NARO	National Agricultural Research Organization
NFA	National Forestry Authority
NGO	Non-Governmental Organizations

NOAMU	National Organic Agricultural Movement of Uganda
OL	Organizational leadership
PF	Professionalism
PJCSS	Pakistan Journal of Commerce and Social Sciences
PP	Prevalence of Practice
PS	Perceived Success
RBV	Resource-Based View
RD	Resolved Dependence
SDM	Strategic decision-making
SEM	Structured Equation Modelling
SME	Small and Medium Enterprises
SSA	Sub-Saharan Africa
TACRI	Tanzania Coffee Research Institute
TAFIRI	Tanzania Fisheries Research Institute
TAFORI	Tanzania Forestry Research Institute
TALIRI	Tanzania Livestock Research Institute
TARI	Tanzania Agricultural Research Institute
TAWIRI	Tanzania Wildlife Research Institute
TMS	Top Management Support
TMT	Top Management Teams
UN	United Nations
UNFA	Uganda National Farmers' Association
USAID	United States Agency for International Development
UTAUT	Unified Theory of Acceptance and Use of Technology
ZAFIRI	Zanzibar Fisheries Research Institute
ZALIRI	Zanzibar Livestock Research Institute
ZARI	Zanzibar Agricultural Research Institute

CHAPTER 1: INTRODUCTION

This chapter describes the background of the Information Systems domain, Knowledge Management (KM) and institutionalization of KM strategies in Agricultural Research Organizations (AROs). A description of the purpose, context and problem statement of the study. Description of the knowledge gaps, research questions and definition of terminologies are also presented. The chapter also provides an overview of the significance, contribution and concludes with an outline of the thesis structure.

1.1 Background

Information System is recognized as a discipline that interfaces a multi-disciplinary perspective and different IS theories have been applied to explore different challenges in organizations (Almalki et al., 2017). In practice, IS discipline is concerned with operational, management and strategic levels and functions in organizations. Similarly, different strategic approaches have been taken in IS domain to expand Information Technology (IT) to include management of organizational knowledge, processes and people (Zhang, 2005). For instance, a number of authors assert that IT can facilitate KM in organizations (Hutajulu, 2019). Further, many researchers have found that advancement in IT is crucial to effective implementation of KM in organizations (Hutajulu, 2019). Within IS discipline, it is widely noted that there is sufficient research on KM that examines the implications of knowledge for organizations (Hirschheim & Klein, 2012; Abbas, 2015). In addition, examining academic and practical problems in different sub-fields in KM domain such as KM strategy contributes new knowledge to IS community (Hutajulu, 2019). For instance, in strategic planning, examining KM strategies can help in understanding the problems and requirements of technology, processes and users with respect to the management of organizational knowledge (Guetat & Dakhli, 2014). To this end, KM has remained an area of research interest, and researchers and practitioners have recognized the contribution of KM strategies to organizations.

Despite the research interest and significance, AROs in East Africa have not effectively institutionalized their KM strategies in practice (Salami et al., 2010; Leeuwis et al., 2018), implying that the envisioned benefits are not fully realized. For instance, Leeuwis et al. (2019) study found that the agricultural research knowledge generated by some of the AROs in Kenya and Ethopia have not delivered the expected economic, social, and sustainability impacts. In addition, other studies have reported that for decades, AROs in developing countries such as East Africa countries have been searching ways to effectively manage the agricultural research knowledge (Hall & Dijkman, 2019). This is because, there is need for effective management of agricultural research to drastically improve food security and rural incomes in the developing countries (Dorai & Dijkman, 2016). However, a case study conducted in one the AROs in Kenya showed that institutional change has been a key bottleneck to institutionalization KM strategies and systems (Banerjee et al., 2019). Further, the authors argue that, despite the recognition that AROs in these countries have generated sufficient research knowledge, they are under increasing pressure to find ways to effectively manage the organizational knowledge to ensure envisioned impact and benefits are achieved. On the other hand, as the pressure mounts from funders for impact and envisioned benefits, AROs in East Africa continue to face challenges in carrying out new approaches and practices such as institutionalization of KM strategies.

Studies show that agriculture plays an essential role in economic growth, poverty reduction and food production in developing countries (Dethier & Effenberger, 2012; Adekunle et al., 2013; Das, 2018). Subsequently, agricultural research knowledge has been identified as a critical driver in this area (Alene & Coulibaly, 2009; Ferroni, 2010; Michael & Goodness, 2015; Milosević & Lamberti, 2018; Temple et al., 2018). For instance, studies show that in Uganda, farmers that applied knowledge from AROs received an additional income of approximately $0.13 from increased yield (Alwang et al., 2019). This extra income increased the household income by 43%, leading to a reduced poverty gap in the country (Alwang et al., 2019).

Although studies have suggested that agricultural research knowledge can reduce the number of poor people in Sub-Saharan Africa (SSA) by 2.3 million (0.8%) annually (Alene & Coulibaly, 2009), constraints in the management of the research knowledge remain (Hyman et al., 2017). While KM strategies can help organizations resolve the challenges they face in managing organizational knowledge, in AROs, there are persistent and pressing challenges (Kawtrakul, 2012; Hyman et al., 2017). Some of the constraints include fragmented processes, unbalanced interests, and fewer studies that focus on practical aspects of KM strategy research, development and institutionalization. Whereas the KM discipline has held researchers' and practitioners' interest over the years, authors have reported that KM initiatives and programs in the agricultural research domain have not achieved the expected results (Vangala et al., 2017). Despite the constraints, AROs in developing countries such as these in East Africa have been experiencing intense external pressure to adopt strategies to support KM plans and stakeholders' demands (Reardon et al., 2019). A study by Hellin and Camachox (2017) found that decision-makers in AROs are required to shift their focus to effective agricultural research knowledge management. The authors indicated that the demand for practical utilization and relevance of agricultural research knowledge from external stakeholders is high. Similarly, studies record that the pressure to institutionalize KM strategies/plans and practices in AROs has been growing over the years (Vangala et al., 2015; Vangala & Banerjee, 2016).

Consistently, researchers and practitioners have increasingly recognized the contribution that KM initiatives such as KM strategies bring to organizations (Popa & Ștefan, 2019; Giampaoli et al., 2019; Martins et al., 2019). For instance, a study by Kaba (2020) established that KM research has continued to grow and has attracted high interest from academic institutions and industry practitioners. The author found out that KM research is allied to many disciplines and specializations across different organizations and countries. This increased popularity has resulted in continuous and significant progression of the field. For instance, between 1997 and 2017, the discipline recorded 63,141 scholarly documents compared to 333 between 1960-1996. Using scientometric analysis, Kaba (2020) stated that by August 2018, the field had

produced 63,474 documents distributed as follows: 59.7% conference papers, 31.46% articles, 2.89% book chapters, and 5.95% others, respectively. Although KM is interdisciplinary and the number of publications and research interests continues to grow, few studies have examined the institutionalization of KM strategies. Additionally, some studies that have examined the status of KM strategies implementation in AROs in developing countries have noted that empirical challenges exist (Abbas, 2015; Popa & Ștefan, 2019). The authors have also indicated a lack of models and corresponding theories that can elucidate how AROs can address the constraints they are facing in KM strategy development and execution.

In addition, there is a shortage of studies in this area. Studies like that of Abbas (2015) looked at the importance of KM strategies and practices in Nigeria's agricultural research institutes. However, the author did not examine how the KM strategies are institutionalized in the Nigerian context or elsewhere. Dileepkumar (2010) highlighted some of the challenges facing the management of knowledge in AROs. The author also pointed out that few empirical studies have focused on understanding the execution of KM strategies in the context of AROs. While the author identified significant knowledge gaps, the author did not examine different institutionalization dimensions for KM strategies.

Further, the study left out important aspects, such as practice and process perspectives. Examining these perspectives is essential in ensuring that the activities that facilitate the continuous acquisition and utilization of an organization's knowledge are effectively undertaken (Alers-Tealdi, 2015). These assertions justify the importance of examining how KM strategies are institutionalized within a specific context, such as AROs in East Africa.

The practical constraints and theoretical gaps in extant literature discussed in this section corroborate the findings presented in the results section and justify the need for more research on this topic. Espousing the "*practice turn*" emphasis in extant literature, Barley et al., (2018) argued that failure by researchers to incorporate the empirical perspective has contributed to the many practical constraints facing

organizations with respect to implementation of KM strategies. Therefore, this study incorporated context as an essential and relevant perspective in particularizing, situating and interpreting empirical findings. This stand enabled this study to gain pronounced insights leading to practical and theoretical contributions to the body of knowledge.

1.2 Statement of the Problem

In practice, AROs in East Africa have not effectively institutionalized their KM strategies, implying that achieving the envisioned benefits remains a challenge (Salami et al., 2010; Leeuwis et al., 2018; Banerjee et al., 2019). Studies assert that due to persistent and pressing challenges AROs in these countries are facing with regard to effective management of knowledge, the value of agricultural research knowledge is not being realized (Kawtrakul, 2012; Hyman et al., 2017). For instance, Lwoga (2010) stated that KM strategies in AROs in Tanzania have not been effectively implemented and their quality should be re-examined to address inherent gaps. Specifically, while AROs in East Africa play an important role in generating and managing agricultural knowledge, in practice, they are facing difficulties in institutionalizing their KM strategies (Leeuwis et al., 2018; Wolford, 2019).

Therefore, these assertions indicate that AROs are not benefiting as much as possible, and their KM initiatives lack the tools needed to support the effective utilization of research knowledge with no established model to link research and practice. For instance, authors have mentioned that efforts to implement KM strategies in AROs in East Africa have not produced expected results due to weak institutional change (Banerjee et al., 2019).

In addition, attempts by the organizations funding AROs in East Africa to search for ways to translate scientific research knowledge into impact, as a research practice that expands academic research confines to application, have not been successful (Leeuwis et al., 2018). For instance, due to interest from external funders, inclusion of local contextual issues is often missed in the implementation of KM strategies (Leeuwis et al., 2018; Banerjee et al, 2019). While several approaches are applied to improve KM

practices, AROs continuously face persistent and pressing challenges in institutionalizing KM strategies (Leeuwis et al., 2018). Effective institutionalization of the strategies is necessary to improve the realization of the value of agricultural research knowledge.

Some of the constraints include institutional change, fragmented processes, unbalanced interests and a low number of studies that focus on practical aspects (Banerjee et al., 2019). These challenges are consistent with claims from IS studies which have indicated that IS strategy research and development are mainly concerned with macro issues and are remote from practice (Hendry et al., 2010; Peppard et al., 2014). These challenges are inter-related, and authors have stated that lack of approaches is difficult to conceptualize, and therefore KM strategy research is at risk of losing practical relevance (Jakubik, 2011; Pour et al., 2018; Peppard et al., 2014; Durand et al., 2017), and KM strategy is part of IS strategy. These findings demonstrate that it is not known how KM strategies in AROs in East Africa are institutionalized in practice, and the characteristics (relative quality) of KM strategies is unexplored (North et al., 2018; Moeini et al., 2019). Further, these problems confirm that these organizations face difficulties in this area, and there is a need to explore how KM strategies are institutionalized.

Despite the problems, AROs in East Africa have continued to experience constant and unending strategic reforms and demands from external stakeholders, exacerbating the risk of not considering internal KM strategy priorities, needs and mandate. Studies like those of Leeuwis et al. (2018) and Banerjee et al. (2019) have highlighted that AROs continue to face intense and universal pressures to streamline the management of knowledge and institutionalize KM strategies.

The next section presents the purpose of the study. The main aim is to improve the understanding of scholars and practitioners about the institutionalization of KM strategies in the context of AROs in East Africa.

1.3 The Purpose of the study

This study aims to improve understanding and explain how KM strategies in AROs in East Africa are institutionalized. A better explanation of the study research questions within a specific context reveals different aspects of institutionalization of KM strategies. It also offers a more in-depth insight to practitioners. Answering the research questions enabled the study to consistently: conceptualizes the key characteristics of KM strategies, including the critical gaps; describes and explains the causal factors influencing institutionalization of KM strategies; explains the processes involved in institutionalization of KM strategies; and provides insight on essential considerations for institutionalization of KM strategies from a practical context. The research questions are next.

1.4 Research Questions

This study examines the institutionalization of KM strategies in AROs in East Africa. When undertaking this study, previous studies had not established how KM strategies had been adopted, implemented and entrenched in AROs in East Africa. The overall research question is: How are KM strategies institutionalized in AROs in East Africa? The specific research questions set in this study are:

1. What are the characteristics of KM strategies in AROs in EA?
2. What are the factors influencing institutionalization of KM strategies in AROs in EA?
3. What are the processes of institutionalization of KM strategies in AROs in EA?
4. How should AROs in East Africa institutionalize KM strategies in practice?

1.5 Significance of the Study

Over time, AROs in East Africa have been implementing KM strategies as part of the broad strategic reforms agenda, but these efforts have not produced expected results (Salami, Kamara, & Brixiova, 2010; Leeuwis et al., 2018; Banerjee et al., 2019). Many organizations have turned to KM strategies to address the challenges they face in

performance and competitiveness (Kyobe, 2010). However, in the context of AROs in East Africa, it has been noted that KM strategies are not well streamlined, and there is a need for their re-evaluation, re-strategizing and re-focusing (Lwoga, 2010). Furthermore, in previous studies, KM strategies have been examined as something that organizations have or do not have (Moeini et al., 2019), rather than scrutinizing their content or relative quality. North et al. (2018) argue that analyzing the quality of a KM strategy, such as characteristics, is fundamental in grounding the strategy to a relevant theoretical framework and improves its successful implementation in organizations. In line with this, a KM strategy's success depends on the processes and practices that look beyond the high-level goals outlined in the strategy development and execution plans. Additionally, previous studies have not examined and discussed the factors influencing institutionalization of KM strategies, the processes involved. While AROs in East Africa face difficulties in institutionalizing KM strategies, there is no theoretical and empirical knowledge about how such organizations should adopt, implement and entrench KM strategies in practice.

This study adopts a *practice turn* stance and provides a detailed description and explanation of the research findings to address the knowledge gap between research and practice in the KM strategy sub-domain. Adopting the *"practice turn"* in KM strategy research has been identified as an essential part of the academic research process that reveals the hidden dynamics in organizational studies (Barley et al., 2018). While there has been extensive research on KM in different thematic areas, including the development of KM strategies, the concept of "*practice turn*" or a practice perspective is generally lacking in extant literature. This perspective can lead to more scholarly contributions, enhance the academic environment and increase the cross-fertilization of research concepts (Ma & Yu, 2010; Maritz & Toit, 2018). Additionally, the practice perspective enables the integration of KM strategy activities into the decision-making processes in organizations, which is key to the successful institutionalization of the strategy (Gourlay, 2006). Academic relevance and rigor could be potential contributors to the inadequate number of studies that have included

the practice perspective. However, the inclusion of a practice perspective does not affect a research study's relevance and rigor.

This study provides a better understanding and explanation of the different dimensions of institutionalization of KM strategies in AROs in East Africa in line with the research questions. The various research questions are addressed through this study, taking the practice aspect as an essential and relevant perspective. A detailed presentation, discussion, and explanation of this study's findings in chapter four contribute new knowledge to the body of knowledge. The study's results contribute to reducing the knowledge gap in the literature.

1.6 The Study Context

This study was conducted in national public and private international AROs in East Africa countries. The countries comprised Kenya, Uganda and Tanzania. These countries' economies are mainly agricultural-based, and approximately 75% of the population depends on agriculture for livelihood and employment (Awiti & Scott, 2016; Omondi et al., 2017). The AROs have been at the forefront of generating agricultural research knowledge for a variety of stakeholders. The representation included public local, private local and private international AROs with varying types of KM strategies, management approaches and establishments, and as such, they capture a reasonable scope. A previous review of KM strategies in AROs in Africa showed that KM strategies contribute substantially to the realization of agricultural research goals (Hirschheim & Klein, 2012). However, numerous constraints exist. While some studies have covered KM strategies in AROs and countries (Abbas, 2015), in East African countries, AROs are increasingly facing difficulties in streamlining their KM initiatives as well as KM plans (Salami et al., 2010; Kahsay & Hansen, 2016). For example, a study conducted to assess the application of KM strategies in the agricultural sector in Tanzania pointed out the need for a thorough examination of KM strategies (Lwoga, 2010).

Despite these challenges, AROs in East Africa are expected to respond to an increased call and pressure to incorporate KM initiatives in the agricultural research agenda

(Ballantyne, 2009). Additionally, AROs in East Africa have been experiencing pressure to integrate ICTs in KM processes due to the high proliferation of advanced ICTs to support agricultural scientific knowledge (Bodkhe et al., 2020). This increased demand to incorporate advance ICTs has been exerting extra pressure on AROs to automate KM strategy processes and discover new knowledge from agricultural scientific knowledge. For instance, an empirical study by Recha et al. (2017) pointed out that AROs in East Africa have been experiencing pressure from donors to demonstrate the impact of the organizational knowledge and to integrate ICTs into KM strategies implementation processes. The context provided the study with an opportunity to explore KM strategies and their institutionalization and interpretation of theoretical, methodological and empirical findings.

1.7 The Definition of Terminologies used in Thesis

In this section, the definitions and descriptions of the important terminologies used in this thesis are provided, and their conceptualization for consistency throughout this document.

Institutionalization has been conceptualized as a process (Hirst, 2010; Selznick, 2011). The process involves the process of habitualization, objectification and sedimentation, referring to pre-institutionalization, semi-institutionalization and full-institutionalization (Tolbert & Zucker, 1999), which corresponds to the process of adoption, implementation and entrenchment (Hirst, 2010). In this study, it is defined as the process of adoption, implementation and entrenchment of organizational practices such as KM strategies.

Adoption refers to the formal decision-making process to accept a given practice. It has been conceptualized as the initial/acceptance phase of a new ideal such as a KM strategy. The new ideal undergoes an evaluation process, and if considered acceptable, the practice is embraced on a more permanent basis (Hirst, 2010). In this study, adoption refers to the formal decision-making process to accept a new ideal such as a KM strategy. The adoption of KM strategies is a requisite for organizations as the initial phase in the decision-making process for institutionalization (Abou-Gamila et

al., 2015). The critical concepts of adoption are understanding of users' needs, activities and practices that facilitates the management and utilization of organizational knowledge (Zewdu, 2017).

Implementation is defined as the rational process of executing a practice (Hirst, 2010; Pandey, 2016). In this study, implementation is the rational process of executing a practice. It involves the decision to commit to put a KM strategy into practical use. It involves the process of evaluation, analysis of supporting systems, deployment and impact assessment of the strategy (Baporikar, 2017). The process involves the decision and commitment to put a practice such as a KM strategy into practical use within the organization. The key aspects to consider in the implementation process are people, processes and functions (MohdZin & Egbu, 2010). Implementation of a KM strategy requires organizational readiness, governance structures and awareness of the organizational knowledge existence and value (Ardianto & Tanner, 2011). The process has four primary levels: evaluation of the strategy, analysis of supporting systems, strategy deployment and impact assessment of the strategy (Baporikar, 2017).

Entrenchment is the process of persistent, continuous spread and long-term use of the practice (Hirst, 2010). In this study, it refers to the process of persistent use and continuous spread of KM strategy in an organization. It involves integrating a practice into organizational culture, structures and learning processes including performance measurement (Hirst, 2010). It involves the decision to establish the use of the practice such as a KM strategy in the organization's routine. It also involves integrating a practice into organizational culture, structures, learning processes and performance measurement (Hirst, 2010).

Knowledge Management is multi-disciplinary and there is no one agreed definition. In this study, KM is defined as the systematic coordination of organizational knowledge, including processes, technology and people (Dalkir, 2013). The dimensions of KM include multidisciplinary nature, the evolution of processes and practices. At the organizational level, KM processes involve mainly people and technology. It requires decision-making processes that lead to the generation, the use

and loss of organizational knowledge. Conceptualization of KM includes the purpose, value and benefits of KM to interested entities such as scholars and practitioners (Massingham, 2019).

Knowledge Management Strategy refers to the plan that facilitates KM activities in an organization (Dalkir, 2013). In this study, KM strategy is defined as the plan of actions intended to facilitate the realization of organization's KM goals. In organizational studies, it is a high-level plan that describes and outlines the organizational and technological processes, including tools, practices, and structures to manage knowledge in the organization (Opeke & Adelowo, 2020). In organizational studies, it is viewed as an explicit framework that defines, guides, and incorporates KM activities into the organization's action plan.

Technology in this study, technology refers to the different IS and related supporting tools mainly in facilitating organizational knowledge transfer, use, storage and preservation (Massingham, 2019).

Agricultural Research Organizations are institutions established to generate and validate agricultural scientific research knowledge to solve the agricultural community's academic and practical problems. The research process and activities are usually discussed as basic, adaptive and applied research. These concepts describe the different types of knowledge generated and validated by AROs through a scientific research process. Their central role is to create, improve and adapt scientific research knowledge and coordinate and promote the knowledge to support further research and development activities. Additionally, their work is to translate scientific research knowledge for academic applications and practical impact.

East Africa refers to the geographical area that has remained within the boundaries of Kenya, Tanzania and Uganda.

1.8 The structure of the Thesis

Chapter 1 introduces the study, provides the background, problem statement and describes the purpose, research questions and significance/importance of the study.

The study's context and a definition of key terms used are discussed in this chapter. The chapter concludes with the structure of the thesis.

Chapter 2 covers the review literature on different vital themes relevant to institutionalization of KM strategies. The key areas are the literature method used, a summary of findings and related disciplines within the study domain. They include KM, IS strategy, KM strategy and other critical perspectives, mainly process and practice. The chapter provides a literature synopsis that coherently looked at all the relevant critical thematic areas. Also, it highlights the role theory as a sensitizing lens to guide the conceptual framework design and data collection. The theoretical basis, argumentation and relevant theories are discussed.

Chapter 3 describes the research methodology, which includes the research philosophy, design, and approaches. The research methods, data collection and analysis methods are also discussed. The different techniques and methods are presented and argued.

Chapter 4 presents the analysis, study results and discussions, and their interpretation. It provides the results and discussions for the different research questions. The research questions are reiterated to guide the reader.

Chapter 5 presents a summary of findings, conclusions, contributions, limitations of the study, and future research recommendations. It is followed by a full list of references for the thesis and several attachments, for example, administrative documents, research instruments and relevant extracts.

CHAPTER 2: LITERATURE REVIEW

2.1 Introduction

This chapter describes how extant literature has been identified and analyzed to provide a theoretical basis for this research study. A useful literature review helps to gain a better understanding of previous research studies on a topic. Like any other research endeavor, a literature review must be rigorous and methodological using accepted approaches and techniques (Paré et al., 2016). The process must demonstrate the contribution of new knowledge to the overall body of knowledge in the field.

In this study, the literature review process was approached as a qualitative study (Bandara et al. 2011/2015; Tate et al., 2015). A complementary approach combining systematic and hermeneutic methods was used to search, select, analyze and present results. In the following sections, the process, the methods used, discussion of results and conclusion are presented.

2.2 The purpose of Systematic Literature review

The purpose of systematic literature analysis was to reduce the widening gap in the study topic. The specific interest was to find out how past studies have examined the topic of institutionalization of KM strategies in organizations and specifically in AROs in East Africa. In this section, the following questions were reviewed and answered: (i) to what extent has the literature addressed KM strategies' institutionalization? (ii) to what extent has the body of knowledge explored factors influencing KM strategies' institutionalization in AROs from a practice and process perspective? (iii) What are the critical knowledge gaps in the extant literature on institutionalization of KM strategies in ARO? The key areas examined included practice, process perspective, and factors influencing institutionalization of KM strategies.

2.3 Literature Method Used

Literature review methods have seen rapid development in all academic disciplines, but they have also received mixed reactions (Boell & Cecez-Kecmanovic, 2014; Tate et al., 2015; Paré et al., 2016). Literature review methods are still criticized for lacking

standard procedures (Schultze, 2015; Schryen et al., 2017; Cram, 2019). Scholars discussing literature review methods have not agreed on any method. However, a combination of techniques and approaches can provide scholarly richness (Schultze, 2015; Geeling et al., 2016). Despite the differences in philosophical stances and methodological approaches, the role and significance of a literature review are well recognized and undisputed (Webster & Watson, 2002; Bandara et al., 2011; Rowe, 2014; Laghrabli et al., 2015; Schultze, 2015; Wagner et al., 2010; Schryen et al., 2017; Cram, 2019). In principle, the method used must be consistent with the purpose, genre and scope of the study and documented and explained (Schultze, 2015; Templier & Paré, 2018; Cram, 2019).

This study adopted a complementary approach and applied principles from the systematic and hermeneutic review methods after considering the ontological, epistemological, or ideological differences and theoretical standpoints. The systematic method provided exact steps that explicitly guided the review process, making it reproducible and defensible. On the other hand, the hermeneutics method offered additional guidelines for the critical analysis, interpretation of the findings, and identifying gaps in extant literature (Schryen et al., 2017). Although scholars discussing literature review methods have not agreed on one method, a combination of techniques and approaches provided this study with scholarly richness and complementarity in the review process (Schultze, 2015; Geeling et al., 2016).

The systematic part followed the guide by Okoli and Schabram (2010). The steps included: planning; selection; extraction and execution of extant literature. In the planning stage, the purpose of the literature process is identified and an explicit, comprehensive and reproducible protocol is developed. During selection phase, a criterion is established to guide on choosing relevant articles. Thereafter, at extraction phase, data is obtained and finally a synthesis of literature is undertaken. A search and selection of all papers and articles meeting the criteria were conducted, covering the primary databases (Scopus, Web of Science and Google Scholar). Subsequently, a search was undertaken in library catalogs and relevant websites, allowing for a comprehensive search of papers and articles available in online databases. The

hermeneutic approach was used for critical examination and argumentation to enrich the writing of the review results.

2.4 Literature Review Findings

In general, there is widespread recognition that KM strategies are strategic assets to organizations (Jakubik, 2011). However, the analysis conducted by Serenko (2013) shows that KM research risks losing practical relevance because KM domain researchers have not included approaches that examines the practice side. These authors' work postulates that academic relevance and rigor can potentially contribute to the lack of practical aspects. The authors stated that it is possible to ensure the necessary relevance and rigor to include practice-focused approaches. Consequently, empirical research to explain KM practices' breadth and depth in different organizations is lacking (Kamasak, 2012). A literature analysis covering 34 years identified policy, leadership, the external environment and organizational readiness as gaps in KM research literature (Dwivedi et al., 2011).

The literature analysis revealed that KM strategies are extensively studied (Serenko et al., 2010). However, studies in KM strategy research have neglected the practice perspective (Ma & Yu 2010; Jakubik, 2011). These studies further suggested that new studies looking at KM strategies should consider focusing on what takes place in an organizational setting to bridge this widening gap between academic research and practice. For instance, an analysis of the literature examining KM strategy studies between 1998-2007, using *"citation analysis," "co-citation analysis,"* and *"social network analysis"* identified the inclusion of practice aspects as a critical theme or concept (Ma & Yu, 2010). Consistent with assertions made by previous studies (Peppard et al., 2014; Durand et al., 2017; Kitsios & Kamariotou, 2019), these authors provide further evidence to show that the gap between research and practice in the KM domain continues to widen. Despite these findings, subsequent studies have not responded to this call or attempted to fill the gap. The next sections present literature findings on different themes and concepts. First, the literature on KM is discussed,

followed by IS strategy literature, KM strategy literature in ARO in general and East Africa in specific, and institutionalization of KM strategies in ARO contexts.

2.4.1 Knowledge Management

Over the years, KM has continued to emerge as a significant field for research and practice (Jasimuddin, 2006; Jami et al., 2018; Agostini et al., 2020). Different studies have established that KM research has dynamically increased in the last two decades, and great potentials exist (Ahmed et al., 2008; Kumar & Mohindra, 2015; Yu & Yang, 2018). Scholars have found significant changes in KM research topics ranging from organizational management and managerial aspects to new subject areas such as technology, corporate practices and processes (Sedighi & Jalalimanesh, 2017; Yu & Yang, 2018). Although KM research has achieved a high level of maturity, in practice, organizations face severe constraints in streamlining their KM initiatives (Jennex et al., 2020). Additionally, Gourlay (2006) identified a dearth of studies that have explained how KM activities are practically integrated into organizations' decision-making process. A literature review conducted by Serenko (2013) recommended that research in the KM domain should improve understanding of KM's impact on organizations. The author also suggested that researchers should use empirical approaches and case studies. Besides, Serenko (2013) argued that researchers should communicate and engage practitioners in their findings. Despite the numerous literature discussing KM and its themes, the topic of institutionalization of KM strategies lacks.

2.4.2 Information Systems Strategy Studies

Information system (IS) strategies are critical for supporting organizations' objectives at different organizational levels (Almalki et al., 2017). Their primary function is to respond to the organizations' information and technological requirements, and if successfully implemented, they can improve the outcome, efficiency and reduce costs. In organizational studies, IS strategy provides a roadmap and enables organizations to realize their Information Technology (IT) goals (Rusu & EI Mekawy, 2011). An IS strategy or related strategy, such as a KM strategy, aims to support an organization in establishing its KM requirements or initiatives as part of the strategic goal. Despite

this strategic role, studies in IS strategy contend that there tends to be a wide gap between strategy research and practice (Peppard et al., 2014; Almalki et al., 2017).

Studies have identified that IS strategy is an essential topic for practitioners, but an in-depth exploration of its practical relevance has lacked in the literature (Almalki et al., 2017). For instance, creating relevant knowledge output and translating them into usable formats by end-users or disseminators are some of the gaps identified (Ibid., 26). Consequently, scholars contend that research studies on IS strategy have not discussed the practical and empirical issues affecting organizations (Desouza et al., 2006; Peppard et al., 2014). Mainly research in IS strategy has not considered or included the practice perspective. The impact of the research contributions in the actual settings has not been a priority. These gaps have motivated scholars in this field to call for a practice turn (Marabelli et al., 2015; Hwabamungu et al., 2018). Scholars argue that valuable knowledge exists in practice to sufficiently enrich strategy research (Peppard et al., 2014).

The practice discourse is useful in examining the day-to-day, that is, the micro-level activities within the organization. A strategy is a form of practice and not an object (Whittington, 2006; Orlikowski, 2010; Marabelli et al., 2015; Almalki et al., 2017). Proponents of practice turn contend that understanding what takes place in practice can enable a study to discover the real concerns, difficulties and challenges facing organizations. Lee (2010) emphasized the importance of considering certain vital concepts such as *"theory, organization, and relevance"* while undertaking an IS research study. Despite these crucial recommendations, IS strategy research and related literature have not sufficiently conceptualized and theorized institutionalization concepts. In this regard, the gaps in IS strategy literature provided an additional understanding of the research problem and contextualization of the study. The findings from IS strategy research literature are consistent, and this confirms that the outlined research problem in this study are relevant and persistent. For instance, Peppard et al. (2014) established that IS strategy development and research are remote from practice. The authors further asserted that there is less focus on the actual strategy work in terms of processes and practices. In line with the findings, this study has addressed these

gaps by adopting the practice turn approach. Other IS studies on strategy also found that most studies have not paid attention to issues affecting IS strategies' execution (Peppard et al., 2014; Teubner & Mocker, 2008).

The authors also stated that while the strategy's content is central to implementation, few studies have paid attention to this area. The authors further highlighted that a robust empirical basis is lacking due to limited studies and theories explaining how IS strategies are executed in practice. Besides, studies have found that focusing on a strategy's macro-elements is equivalent to issuing "right rules" (Peppard et al., 2014). The real problems affecting the execution of many IS strategies are in day-to-day activities such as putting the strategy into practical use (Nonaka, 2010; Nonaka & Toyama, 2007). In addition, previous studies have provided important concepts which highlight the relationship between IS and KM. the authors have indicated that these concepts are central to understanding phenomena related to KM in organizations. In this regard, KM has been conceptualized as a sub-field of IS discipline. For instance, there is sufficient contributions to knowledge on KM among IS scholars published in IS related journals (Omona et al., 2010). The different sub-fields in KM have provided focus and direction to KM research within the IS community and the contributions have influenced research in IS domain.

2.4.3 Institutionalization of KM Strategy

In organizational studies, institutionalization is defined as a process. Hirst (2010) described institutionalization as the process of adoption, implementation and entrenchment. The author provided a model for explaining institutionalization of KM practices in organizations. Further, Hirst (2010) asserts that adopting a process analysis or approach is central to understanding how KM practices are institutionalized.

A literature review using discourse analysis showed that KM strategy development and research have continued to increase (Grant, 2011), but the concept of institutionalization of KM strategy lacks. While KM has been viewed as a process involving different activities and practices (Moustaghfir, 2009; Kjærgaard & Kautz,

2008), studies have not linked the respective activities and practices to each of the processes. To comprehensively address these gaps, there is a need to examine the processes of institutionalization.

Even with the limitation in the extant literature, there is need for understanding the institutionalization process can ensure that those activities facilitating the continuous acquisition and utilization of an organization's knowledge are effectively undertaken (Alers-Tealdi, 2015). This is because knowledge remains a fundamental strategic resource for enhancing competitiveness, and there is a need to ensure that organizations' KM strategies are effectively institutionalized. On these grounds, the effective institutionalization of a KM strategy is seen as a mandatory condition for organizations to succeed with their KM initiatives (Alers-Tealdi, 2015). Sandhawalia and Dalcher (2011) suggest that organizations lack KM competencies to ensure that KM practices are effectively institutionalized. The authors also stated that there are not enough studies that provide the theoretical and empirical insights needed to enhance practitioners' capacities. Based on the gaps identified in the extant literature, having sufficient understanding and in-depth research on the institutionalization of KM strategies will ensure that organizations can manage and leverage their knowledge and maximize their returns intellectual capital. A clearer understanding could boost their efficiency and decision-making abilities and allow employees to access the required knowledge or expertise, leading to a well-informed workforce and decision-making.

The literature further mentions that examining KM strategies from a specific context or organizational dimension can provide insight to inform practice (Kushwaha & Rao, 2015). Other studies contend that the concept of practice has been used without theoretical justification and empirical cases are lacking (Lounsbury & Crumley, 2007). For instance, Hirst (2010) asserted that practice is vital for understanding institutionalization processes and can allow a research endeavor to focus on what is taking place in the organization. In organizational studies, the concept of practice has been linked to adoption, implementation and entrenchment of a new idea or innovation such as a KM strategy (Hirst, 2010). Drawing from institutionalization literature, it can

be seen that practice and process concepts are interrelated in the sense that when a practice is accepted, it has the potential of being institutionalized to become a full-fledged process. It then follows that a specific practice such as a KM strategy has a chance to progress towards adoption, implementation and entrenchment in an organization. Simultaneously, the literature asserts that theories or theoretical models or frameworks can help explain the interrelationship between practices, processes and outcomes (Lounsbury & Crumley, 2007; Hirst, 2010). This is because scholars view *"practice"* from a process perspective. To advance the discussion regarding the institutionalization of KM strategies, the framework described by Hirst (2010) provides a more detailed view by linking the organizational practices and outcomes to process analysis.

While Hirst (2010) framework expanded the understanding of the practice and process concepts and their interrelationship, the author did not analyze the extent to which studies have conceptualized these concepts. Subsequently, while the framework can be used to analyze the complexities affecting organizations, such as the factors influencing institutionalization, it does not provide an exhaustive account of how the extant literature has explored these concepts from a context perspective. Although the author recommended that new studies test and explain the framework following an empirical analysis with different organizational cases, subsequent studies have not used the framework to discuss and explain institutionalization from a practice and process perspective.

In the area of conceptualization of institutionalization processes of KM strategies, the area is scarcely discussed in extant literature. Consequently, the link between adoption, implementation and entrenchment is not specified, justified, or discussed in many studies. The findings contribute additional evidence and confirm that the literature on the institutionalization of KM strategies, approaches and practices in organizations remains limited – as shown in the past (Hirst, 2010; Sandhawalia & Dalcher, 2011; Kushwaha & Rao, 2015; Handzic, 2017). Although some of the articles presented in this review have discussed the main elements related to institutionalization, the extent

of dialogue is not enough to respond to the unique challenges facing organizations in this area.

The literature gap demonstrates limited discussions exist on how KM strategies are institutionalized, especially in explaining the processes and practices at the micro-level in organizations. Against this background, the need for more studies focusing on processes of institutionalization of KM practices such as KM strategies at the micro-level has been identified (Hirst, 2010). Understanding institutionalization processes can ensure that those activities that facilitate the effective management of an organization's knowledge are effectively undertaken (Alers-Tealdi, 2015). This study has addressed these gaps by examining, conceptualizing and theorizing the concepts of practice and process using context. When the concepts of practice, process and context were combined and conceptualized, extant literature asserts that theories or theoretical models or frameworks can be used to explain the interrelationship between practices, processes and outcomes (Lounsbury & Crumley, 2007; Hirst, 2010). This is because scholars view "practice" from a process perspective. To advance the discussion regarding the institutionalization of KM strategies, the framework described by Hirst (2010) provides a clearer view, taking the organizational practices and outcomes into account. This study uses this framework for defining the concepts and explaining the logical relationship between the concepts and the context. Further, this study generated a conceptual framework to describe and explain the different dimensions of institutionalization of KM strategies in line with the research questions. The details on how this study has addressed these gaps are discussed in subsequent chapters.

2.4.4 Knowledge Management Strategy Studies

The domain of KM strategy development has continuously intensified over the years (Grant, 2011; Venkitachalam & Ambrosini, 2017), and KM strategy has been extensively studied (Ma & Yu, 2010; Chen, Huang, & Fang, 2017). Surprisingly, these research studies' practice side has not been carried out (Ma & Yu 2010; Serenko et al., 2013; Jakubik, 2011). In this regard, authors have suggested and emphasized the significant contribution that studies in KM strategy can bring to the body of knowledge

by examining what occurs in organizations' actual settings (Serenko et al., 2013; Chen et al., 2017). The authors further asserted that there is a gap between academic research and practice on KM strategy studies. In turn, the impact of KM strategy research in improving knowledge management in organizations has been questioned, faulted, and doubted (Chen et al., 2017).

Ma and Yu (2010) used different analysis methods to examine KM strategy studies between 1998-2007, particularly *"citation analysis, co-citation analysis, and social network analysis. "*The authors found that organizations stand to gain more from KM strategies studies if the researchers pay attention to practical challenges, but unfortunately, this is not the case. Subsequently, the studies' findings are not widely put into action by organizations due to the disconnect between research and practice. Consistently, Oluikpe (2012) asserted that KM strategy research studies need to consider organizational processes to address the gap between KM research and critical concerns in organizations. This is because improving the understanding of concepts such as practice and process is essential in uncovering the challenges organizations face with the execution of KM strategies.

Undoubtedly, understanding different dimensions of KM strategy research has been improved by previous studies, but examining the role and impact of KM strategies in organizations has remained fragmented over time (Kim et al., 2014; Venkitachalam & Ambrosini, 2017). This situation has been caused by the generic approach and perspective adopted by prior studies on KM strategy. The approach has produced inconsistent findings and recommendations that cannot be used in different contexts. Previous studies have assumed that all KM strategies can be consistently and effectively be executed irrespective of the organizational context (Kim et al., 2014). The failure to examine and understand contextual factors by previous studies has created a considerable gap (Kim et al., 2014; Kero, 2016). The authors further argued that external and internal contexts momentously affect the effectiveness, impact and execution of KM strategies in organizations. Besides, previous studies have not focused on examining and improving understanding of how to align KM strategies with organizational context and environment (Kim et al., 2014; Kero, 2016). In

addition, extant literature has identified more gaps in KM strategy research. For instance, prior studies did not combine external and internal factors on institutionalization of KM strategies in organizations. Instead, they concentrated on identifying the origin of the knowledge, whether external or internal, and the extent of knowledge accumulation, whether through people or KM systems (Kim et al., 2014).

While these efforts are essential, the failure to investigate KM strategies' different interactions' key dimensions in an organizational context has made it difficult to explain what happens in practice. This study examined the practice and process concepts in the literature to explore these gaps and presented the results from a context perspective. The study also explored the extent of the gap in the literature concerning the institutionalization of KM strategies. The findings are shown in the next section.

2.4.5 A practice perspective

The literature analysis established that some studies have discussed the challenges facing the implementation of KM strategies in different contexts and industries (MohdZin & Egbu, 2010). However, the literature review revealed that few studies had examined the practice perspective. Consequently, none of these studies has provided a conceptual framework or model to explain these concepts in detail. Moreover, the extent and level of discussion in most studies/papers do not include how to link practice concepts to a process analysis and study outcome. Concerning the *"practice turn,"* which is one of the key stances, the literature review revealed a wide gap in the body of knowledge in this area. Consistent with previous studies findings, practice is an essential concept in KM strategy related studies. Still, none of the papers reviewed applied practice-oriented theories as a research methodology.

Similarly, there is neither mentioning variables or indicators nor their operationalization. There is need to adopt a practice turn/perspective and link the activities and practices to the processes of institutionalization of KM strategies in addressing the gaps. There is also need to look at the practical constraints that AROs in East Africa face in institutionalizing KM strategies, including examining their applicable relative quality and considering how to institutionalize them.

2.4.6 A process perspective

Following the definition of institutionalization adopted earlier, the literature analysis did not find publications that explicitly examine the process of adoption, implementation and entrenchment of KM strategies in organizations. Besides, there are no papers or articles that applied or used organizational cases as part of the empirical process analysis. To effectively determine the adoption, implementation and entrenchment of KM strategies at the organizational level, more comparative analysis is required for different organizations and contexts (Hirst, 2010; Selznick, 2011). This is because a process analysis provides empirical studies with a model for exploring the institutionalization processes. Furthermore, a comparative analysis can help studies identify contextual similarities and differences. Analyzing the ongoing processes can help uncover the relationship between institutionalization processes, practices, and analysis of different organizational levels such as adoption, implementation and entrenchment. However, these concepts and approaches are mostly unexplored in the extant literature.

Since these arguments are compelling, there is need to examine these concepts in detail by adopting institutional theories as a lens to explore the processes of institutionalization of KM strategies in the context of AROs in East Africa. This will provide an excellent theoretical and empirical foundation by highlighting the processes and their relationships with the KM strategy practices, activities and context.

2.4.7 Knowledge Management Strategy in Agricultural Research Organizations Studies

While studies have examined different aspects of KM strategies in several countries, constraints still exist in their execution in various organizations and contexts, including Agricultural Research Organizations (Abbas, 2015). For instance, a study conducted to assess the approaches used in KM strategies in the agricultural sector in Tanzania found out that the content of KM strategies adopted by AROs are have varying significant gaps and should be re-developed (Lwoga, 2010). Therefore, an extensive examination of the content of KM strategies can uncover some of the constraints. For

instance, assessing KM strategies' characteristics or content and comparable quality can discover the vital practical challenges and areas that require improvements.

The suggestion by Lwoga (2010) that AROs in Tanzania should consider reformulation of their KM strategies is an indication that there is a need to examine the actual content of KM strategies in these organizations and similar contexts. An analysis of extant literature has shown that there is not enough research to provide the required in-depth knowledge to understand how AROs can institutionalize KM strategies in East Africa. Consistently, other authors have emphasized that the successful implementation of a KM strategy depends on its characteristics (Bailey & Clarke, 2000; Bettiol et al., 2011; Akram et al., 2015). Mantas (2017) postulated that organizations should formulate coherent KM strategies that are consistent with the organizational development objectives. For instance, the author argues that it is vital to ensure that the developed strategy is practical to implement. From the extant literature analysis, this study noted that research covering KM strategy characteristics has not been exhaustive enough, and the contextual perspective is not well brought out. Additionally, the context has been highlighted as an important and relevant perspective in particularizing the characteristics of a KM strategy and interpretation of related empirical findings. Future studies can use the findings to develop a theoretical framework to enrich these gaps further.

Studies have also mentioned that externally driven or developed KM strategies can be challenging to implement (Lwoga, 2010). Also, there has been increased pressure on organizations to implement and apply ICTs to improve the management of agricultural research knowledge (Rafea, 2009; Dileepkumar, 2010). Different studies have reported that external demands and reform agenda have failed to consider internal priorities, needs and mandate in AROs (Hirschheim & Klein, 2012; Banerjee et al., 2019). A study by Leeuwis et al. (2018) noted that AROs are experiencing pressure from funders to embed the management of agricultural research knowledge into development agenda. This because the funders observe that there is low implementation of agricultural strategies such as KM strategies and the way agricultural research knowledge is managed requires strengthening. Although studies

have explored aspects of KM strategies, such as factors influencing their adoption and implementation in organizations, there is a shortage of studies focused on AROs. Similarly, no reviews have undertaken a comparative analysis or provided a framework to compare similar or different industries or contexts regarding the institutionalization processes of KM practices such as KM strategies.

2.4.8 Knowledge Management Strategies in Agricultural Research Organizations in East Africa Studies

Over time, AROs in East Africa have been implementing a series of agricultural strategies such as KM strategies as part of the broad reform strategic frameworks. However, studies show that these efforts have not produced expected results for these organizations (Salami et al., 2010). Different studies have documented several constraints affecting the actualization of these organizations' KM strategies but from a broader view of agricultural strategies (Eicher et al., 1999; Salami et al., 2010). It is also well documented that AROs in developing countries such as the East Africa countries rely heavily on donor support. As a result, there are persistent paradigm shifts in strategic focus (Delgado, 1998; Eicher et al., 1999; Nakawuka et al., 2017). The authors assert that despite massive research and the generation of considerable scientific knowledge by AROs in East Africa, knowledge management remains a crucial challenge. While the KM strategies intend to address these challenges, the extent of their execution has not been studied or well documented.

Focusing on East Africa, a systematic literature review was carried out to identify the main concepts and the gaps. The review of the extant literature involved a theoretical, conceptual and empirical perspective. Extant literature can be searched using several defined criteria for inclusion and exclusion. The terms searched were: *"KM strategy, KM strategies, KM plan, KM policies, Institutionalization, Agricultural Research Organizations, Agricultural Research Institutes, Adoption, implementation and entrenchment, East Africa, developing countries.* From the review there is a shortage of literature in this area. An initial keyword search generated a total of 384 papers. After a thorough review of the titles and abstracts and the removal of all duplicates, a total of 45 were considered for a next phase. A detailed reading and review of the

articles eliminated 25 articles, and therefore 20 articles were reviewed. In the case of AROs in East Africa, there are no studies that articulate the area of KM strategies. There is need for in-depth knowledge to improve understanding and explain the different dimensions of institutionalization of KM strategies in AROs in East Africa.

Although the IS domain is an interdisciplinary and established field, researchers have not sufficiently examined KM strategies' institutionalization in AROs. The inclusion of a process and practice perspective equally lacks. While AROs are knowledge-intensive organizations and agriculture is crucial for East Africa countries' economies, few studies have examined how KM strategies work in these important organizations and the sector. Besides, AROs in East Africa always face KM strategy execution-related challenges.

During such reviews, there is need to look at the term institutionalization as defined by Hirst (2010), referring to the process of adoption, implementation and entrenchment. Although the analysis of literature shows that there are studies that focus on some aspects specific to practice, process and context. However, none of the studies explores the ideas of adoption, implementation and entrenchment, nor analyzes their inter-relationships. Furthermore, a more profound articulation of factors influencing institutionalization of KM strategies lacks in literature. As a concept, entrenchment has not been studied or mentioned in any of the studies.

This inadequate research on this topic is not surprising since other studies have called for a practice turn and the inclusion of process analysis in strategy related studies (Peppard et al., 2014; Handzic, 2017; Merkus et al., 2019). Consequently, inadequate studies on the subject may be responsible for low competencies to support the coherent formulation and the successful institutionalization of KM strategies in AROs in East Africa. These assertions are consistent with other discussions in literature: Handzic (2017), for example, contends that KM strategies are in danger of losing practical relevance.

Therefore, it is clear that the institutionalization of KM strategies in organizations is mainly unstudied, and not much is known or discussed in the extant literature. Hirst

(2010) showed how theorization affects the formation of KM practices such as KM strategies through specification and justification. Unfortunately, this expanded theorization concept has not been adopted or used. In comparison, Hirst (2010) improved the understanding of institutionalization by clearly explaining the concepts. The author recommended that subsequent studies need to link process analysis to the context, focusing on an organizational level analysis, but these concepts' application lacks. Institutionalization is not an adequately explored.

Institutionalization enhances the acceptance and use of practices reflected in a strategy prepared with the goal of solving persistent problems (Hirst,2010). Over time, a strategy can provide a guideline for the organization's success and competitiveness (Nakawuka et al., 2017). Therefore, examining the institutionalization process can ensure that KM activities are well structured, desirable, and part of an organization's culture and routine. In the case of AROs in East Africa, there are no studies that have articulated institutionalization of KM strategies. Besides, there is no conceptual framework to quantify success or their impact.

These discussions show that limited studies or relevant literature on this topic contributes to the challenges, and practitioners lack the necessary insights to recommend possible solutions. The implication is that the intended benefits of KM strategies are not realized. Yet, both researchers and practitioners have increasingly recognized the contribution that KM strategies bring to an organization in recent years. These literature review findings confirm that despite the growing number of papers and publications in the KM field, institutionalization of KM strategies has not been studied enough, especially in AROs in East Africa and other contexts elsewhere.

2.4.9 Characteristics of Knowledge Management Strategies Literature review.
Characteristics of KM strategies as a theoretical or empirical concept has not been widely discussed in extant literature but remains an object of interest to researchers and practitioners. Despite the substantial interest, the number of studies on the subject remains limited (Akram *et al.,* 2015). There is also a lack of a detailed description of the critical concepts that can explain KM strategies' characteristics. Scholars suggest

that epistemological and methodological assumptions might have contributed to the limited discussions on the subject (Merkus et al., 2019). These claims are corroborated by the findings by Chang et al. (2019) study, which stated that examining the effectiveness of organizational KM strategies is a persistent and pressing challenge. A reasonable explanation about the relative quality and content of KM strategies in AROs in East Africa lacks. In this case, examining the details of the strategy content, including key characteristics, can uncover the constraints, particularly from a context perspective.

Additionally, other scholars (Bettiol *et al.,* 2011; Akram *et al.,* 2015) have emphasized that the KM strategy's success depends on its characteristics. Extant literature has also mentioned a critical assessment of KM strategies' essential features as a prerequisite for strategy formulation (Mantas, 2017). Further, understanding the KM strategy's context is an important aspect that can guide KM strategy practitioners to ensure the inclusion of desired characteristics (Bettiol *et al.,* 2011; Mantas, 2017).

From the preceding, it is evident that a detailed examination of a KM strategy's characteristics is necessary to practitioners and scholars. Therefore, to understand KM strategy characteristics, it is essential to describe and explain the key concepts used in the strategy. This can reduce the theoretical and empirical gaps by examining the main concepts used to describe KM strategies' characteristics.

From a general perspective, a good strategy must be coherent with well-stated activities, resource allocation plans, goals and objectives, and aligned with the overall organizational strategy (Kabus & Kana, 2018). In particular, Bailey and Clarke (2000) elaborated on relevance and currency of knowledge as characteristics to consider when assessing a KM strategy's benefits in an organization. The significance of a KM strategy is connected to the benefits that an organization gets from the strategy. A KM strategy should include relevance for it to obtain top management support and motivation to put it into beneficial use. However, extant literature has not provided sufficient details on the key concepts that can be aggregated to form relevance as a characteristic. Although Bailey and Clarke (2000) have singled out relevance as an

essential characteristic of KM strategy, scholars have not explained its existence or lack in KM strategies. Instead, the scholars only emphasized that a strategy must be relevant to the needs of the organization to transform an organization positively

In another study, Mantas (2017) identified practicality, competitive value, implementation plan, clear focus, agility and knowledge base as the main characteristics of KM strategies. The author also suggested that organizations should formulate coherent KM strategies consistent with objectives, desired targets, and users' needs. Further, the author pointed out that most KM strategies are implemented without expert advice, leading to misunderstanding of their meaning, function and application. While Mantas (2017) brought some important characteristics, the author did not provide a detailed description and explanation of the critical features identified. A mere mention of the elements is insufficient to enable scholars and practitioners to identify the key concepts used to examine the characteristics in detail, including their existence or non-existence in KM strategies. A framework that explains the relationships between the concepts and related features is needed to provide a detailed description and explanation of the characteristics of KM strategies. Unfortunately, this level of detailed description and explanation remains a gap in the literature.

From a practical perspective, Mantas (2017) argues that employees have consistently and culturally not known the benefits they can draw from understanding KM strategies' content. In turn, this has led to a low interest in examining the relative quality of the strategies. It further underscores the need for a detailed study that identifies, evaluates and describes KM strategy characteristics and what constitutes each of the traits. The lack of sufficient elaboration widens the theoretical and empirical gap in the literature concerning improving understanding of what are the key concepts that can explain the characteristics of KM strategies and potential gaps.

A study by Bettiol *et al.* (2011) established six critical characteristics of KM strategies and these include knowledge focus, the role of personnel, knowledgebase, implementation plan, management tasks and relevance. It identified the main feature of KM strategy as a knowledge base from a business-driven perspective. The authors

conclude that competitive value is a useful attribute that every strategy should have to stimulate top management support by prioritizing its plan to drive its success. Additionally, the authors emphasized building internal stakeholders' capacity and having adequate ICT systems as critical attributes for KM strategies in a business environment. However, Bettiol *et al.* (2011) did not explain KM strategies' characteristics regarding what exists and lacks.

Further analysis of extant literature revealed that Akram *et al.* (2015) identified different characteristics and emphasized using ICT as critical in supporting organizations to create, protect and exploit organizational knowledge at different levels. The authors further asserted that integration is an important characteristic that can help implement the KM strategy's activities at a project level. However, they did not provide a detailed explanation. The conclusion is that a knowledge gap still exists concerning studies that have examined KM strategies' characteristics from the literature analysis. The gaps are inadequate descriptions of characteristics and a review of whether the features exist in KM strategies.

Similarly, the relationship between the findings and the context was also not explained. It is also not clear which concepts constitute each of the characteristics. These gaps further confirm the need to coherently conceptualize the key characteristics of KM strategies taking a specific context to support the empirical assessment.

2.4.10 Summary and Description of Key KM Strategy Characteristics.

The literature review on characteristics of KM strategies is summarized in Table 1. Therefore, the table provides a synopsis of the characteristics of KM strategies.

Table 1: Literature summary on characteristics of KM strategies

Key Characteristics	Description	Purpose	Source	Context
Relevance	Ensure the value of the strategy, including aspects of cooperation between relevant actors.	Leads to user/employee motivation and prioritization of the strategy	Bailey & Clarke (2000)	Context not specified
Practicability and application	They should have clear goals, well-defined objectives, be	Enable ease of use and learning	Bailey & Clarke (2000);	Applicable to Knowledge-intensive

of a knowledge-Base system	user friendly, and have realistic targets		Bettiol *et al*, (2011); Akram *et al*, (2015); Mantas (2017)	Business services and Greek firms
Knowledge Currency	The strategy should have elements that define the contextual quality of organizational knowledge and knowledge reuse.	Historical knowledge can still be used even if they are not current, for instance, a previous model.	Bailey & Clarke (2000)	Context not specified
Knowledge focus	The strategy should have aspects that focus on managing knowledge, including creation, codification and transfer.	Enables the use and transfer of knowledge	Bettiol *et al.,* (2011); Mantas (2017)	Applicable to Knowledge-intensive Business services and Greek firms
Competitive value	Drives the strategy execution and success, including attracting management support and prioritization	Drives execution, success and support	Bettiol *et al.,* (2011); Mantas (2017)	Applicable to Knowledge-intensive Business services and Greek firms
Implementation processes	The strategy should have clear implementation frameworks and processes, well-defined activities, roles and responsibility, resource mobilization approaches and good communication plans	Guides the process	Bettiol *et al*, (2011); Akram *et al,* (2015); Mantas (2017)	Applicable to Knowledge-intensive Business services and Greek firms
Clear focus and agility	The strategy should be able to adapt to changes within the institutional environment as well as being flexible, easy to understand and directional	Minimizes complexities	Mantas (2017)	Greek firms
Coherent strategy formulation	The strategy development process should be consistent with the goals and objectives well stated.	Ensure objectivity, effectiveness and result orientation	Mantas (2017)	Greek firms

	The needs of the target audience should also be taken into account			
Integration	The strategy should be integrated into overall organizational goals, vision and mission, including project and program design, budget planning and resource allocation.	To ensure the strategy contributes to the core organizational work for more significant impact and value realization	Akram *et al.* (2015)	Context not specified

2.4.11 Types of KM Strategies Organizations have adopted

The need to identify the types of KM strategies adopted in AROs in East Africa is critical to understanding their characteristics in the different organizations and countries. Extant literature has identified two main types of KM strategies: codification and personalization of KM strategies (Hansen et al., 1999). In the codification type, organizational knowledge management is characterized by converting knowledge into electronic documents or KM systems that categorize, organize, store and disseminate the knowledge. This type of strategy allows and enables the knowledge to be systematically stored in shared databases or organizational repositories, making the reuse of organizational knowledge much more manageable and possible. In the personalization type of KM strategies, organizational knowledge management is characterized by the development of networks or teams for linking people so that tacit or implicit knowledge can be shared. In this type of KM strategy, person-to-person communication concerning organizational knowledge is practiced.

From a different perspective, KM strategies have been categorized using external and internal dimensions (Hughes et al., 2007). The authors explained internal-oriented KM strategies as characterized by creating, sharing, and accumulating knowledge inside an organization. The external-oriented KM strategies are characterized by learning, imitating, and transferring knowledge beyond the organization's boundary. For instance, Choi et al. (2008) explained KM strategies' internal type as knowledge generation focused. The authors classified them as explicit-oriented while the external

type of KM strategies as tacit-oriented strategies. The authors argued that explicit-oriented strategies improve organizational work efficiency by codifying and utilizing knowledge using ICT infrastructures and related systems. Tacit-oriented KM strategies are concerned with implicit knowledge and are characterized by person-to-person communication and socialization processes (Choi et al., 2008). While this categorization is elaborate, it can be summarized as codification and personalization type of strategies. Where explicit or internally oriented type corresponds to codification while implicit or externally oriented corresponds to personalization. Additionally, there is no link between the types of KM strategies and their characteristics that can help scholars and practitioners to determine either the characteristics or type of the strategies that an organization has adopted.

In the context of AROs in East Africa, there is a shortage of studies that have discussed the types of KM strategies that these organizations may have adopted. Therefore, there is need to examine the types of KM strategies adopted in AROs in East Africa. This was assessed with how AROs in East Africa manage and communicate the organizational knowledge they generate.

2.5 Theoretical Frameworks Literature Review

This section elaborates on the theoretical frameworks employed and how this led to developing the initial conceptual framework discussed in the next section. Weber (2012) provides a framework and benchmark for evaluating theories in the IS discipline. Besides, the scholar emphasized the importance of developing new theories or frameworks for the IS discipline. The authors cited that IS studies have neglected this important contribution. Bichler et al. (2016) argue that theories are at the core of grounding scientific knowledge. Lim et al. (2013) assert that although theories are vital to developing new knowledge, IS research studies have understudied theory foundations. Other scholars argue that understanding and applying theory enhances theoretical thinking and contributions to IS research studies (Mueller& Urbach, 2013).

The approach taken was to examine different theoretical foundations to help identify appropriate theories that can serve as a lens for developing a conceptual framework,

identify variables, relationships, and related indicators. Therefore, the reviewed theories have been used in extant literature. A critical review of the literature showed that institutional theory is widely used in IS research (Larsen et al., 2014; Larsen & Eargle, 2015), as shown in Table 2. Some previous studies have employed institutional theory to examine KM practices in organizations (Hirst, 2010). Currie (2009) contends that institutional theory is conceptually rich. Therefore, it is a unified theory for analyzing and understanding complex social phenomena such as institutionalization of KM strategies in the actual setting.

Table 2 provides a list of the top 10 IS theories and their frequency of use by various studies in the IS field. The institutional theory is one of the most widely used approaches in IS studies (Larsen & Eargle, 2015). Details of studies that have employed the other theories are also provided.

Table 2: Top ten widely used IS theories

Theory	Frequency
Institutional theory	9.4%
Social network theory	6.7%
Contingency theory	6.6%
Organizational culture theory	5.8%
Transaction cost economics	5.6%
DeLone and McLean IS success model	5.1%
Technology acceptance model	5.1%
Socio-technical theory	4.8%
Garbage can theory	4.0%
Diffusion of innovations theory	3.7%

(Source: Larsen & Eargle, 2015)

As shown in Table 2, Institutional Theory is the most widely used in the IS field with a 9.4% frequency, followed by Social Network Theory at 6.7%. The last widely used is the Diffusion of Innovations Theory at 3.7%. The next section provides a detailed description of institutional theory, including criticisms and justification. Apart from being the most widely used theory, this study adopted the theory as the primary theoretical lens. This is because of its theoretical richness in conceptualizing different constructs of institutionalization.

2.5.1 Institutional Theory

An institution has been defined as a social structure that exerts pressure or expectations on organizations' decisions (Lin et al., 2020). For over four decades, organizational studies have widely adopted institutional theory (Alvesson & Spicer, 2019). In IS studies, institutional theory has been significantly useful as a theoretical lens for analyzing the influence of institutional pressures that organizations experience on institutionalization of practices (Mignerat & Rivard, 2009; Fossum, 2016).

The theory has many strands applied in many studies (Scott, 2014. It has two versions referred to as "*old*" and "*new.*" The new version is also referred to as the neo-institutional theory (Currie, 2009). The neo-institutional theory has become dominant and established to complement the *"old"* institutional theory (Alvesson & Spicer, 2019). Regardless of the version, at the heart of the theory is the argument that organizations can institutionalize new arrangements and practices, not for

effectiveness and efficiency, but to attain a sense of acceptability (Alvesson & Spicer, 2019).

Institutional theory has three theoretical foundations (pillars): cognitive, normative and regulative (Scott, 1995; Scott, 2001; Bjorck, 2004; Alvesson & Spicer, 2019; Lin et al., 2020). This study adopted the neo-institutional theory because it has important constructs useful in conceptualizing the factors influencing the institutionalization of KM strategies and the processes. Besides, extant literature affirms that the three pillars of the institutional theory are appropriate for studies investigating the institutionalization of practices in organizations (Scott, 2013; Scott, 2014; Greenwood et al., 2017). Subsequently, the theory's concepts and theoretical foundations are well developed to describe and conceptualize institutional influences or external pressures experienced by organizations (Zilber, 2012; Alvesson & Spicer, 2019). The concepts are also useful for describing variables as well as revealing detailed aspects of organizational structures. These organizational structures include plans, processes and practices (Currie, 2009; Hirst, 2010).

The theory can enable a research study to examine organizational issues and transforms ideas into a conceptual and analytical framework (Bjorck, 2004; Scott, 2008; Greenwood et al., 2017; Alvesson & Spicer, 2019). However, most IS studies have not used the theory to analyze how these concepts further develop the conceptual, theoretical frameworks and even explanatory theories (Currie, 2009). Besides, scholars contend that studies in the IS domain should take advantage of institutional theory's conceptual richness as a lens for analyzing IS concerns and themes in related organizational studies (Currie, 2009). Despite the literature gaps, studies have used the institutional theory to generate scholarly definitions, understanding, and explanations on institutionalization processes in many organizations (Greenwood et al., 2017; Alvesson & Spicer, 2019).

While there are valuable contributions from institutional theory, there is a shortage of studies that have used the approach to investigate how KM strategies are institutionalized in organizations. Because of these claims, this study first developed

an initial/preliminary conceptual framework to help identify key variables, concepts and relationships. Additionally, the constructs have enabled the description and explanation of the findings and contributions. This approach followed recommendations in extant literature. The institutional theory allows organizational level analysis levels (Currie, 2009; Butler & Hackney, 2020). For instance, Alvesson and Spicer (2019) recommended that researchers could problematize their assumptions by designing the research question to examine how organizations and their actors respond to pressures.

Theoretical concepts are used to describe and explain institutionalization processes and practices of KM strategies in the context of AROs in East Africa. Drawing from the constructs of institutional theory, this study examined the extent of influence exerted on the organizational strategic decision-making process. The descriptions of variables, concepts, assumptions, and institutionalization processes in the conceptual framework are consistent with institutional theory constructs. Similarly, there are relevant variables, indicators, and relationships from institutional theory constructs that helped develop the initial conceptual framework.

The neo-institutional theory application gained momentum with the publication of institutionalism in the organizational analysis by Powell and DiMaggio (1991). Further, Scott (2001) extended Powell and DiMaggio's (1991) work on institutions and organizations. These authors' work significantly contributed to revitalization in the use of the theory in the social sciences. Consistently, the IS field has witnessed a rise in interest in the theory in the past decades with varied contributions and applications (Abeygunasekera, 2019). For instance, many researchers in the field have used the theory's concepts as a lens to interpret and analyze data in organizational studies. The theory has also been mainly adopted to examine processes, development, adoption, implementation, and use of IT solutions or systems (Fossum, 2016). Apart from using the theory as a theoretical lens, some studies have sought to extend the theory's concepts' theoretical understanding. For instance, some studies have used the theory to examine the relationship between technology and organizations (Barley, 1986; King et al., 1994; Orlikowski & Barley, 2001). In Orlikowski and Barley (2001) case, the

authors used the theory in organizational analysis to examine how macro-environment forces affect organizations' actions. By examining the interaction between IT studies and organizational studies by adopting institutional theory as a theoretical lens, the authors argued that studies stand to gain considerable knowledge. This is important in improving the understanding of epistemological differences. Specifically, the authors mentioned that researchers in IT stand to benefit more by incorporating institutional theory in organizational studies. While the theory has been extensively used, it has not been used to develop a conceptual framework.

2.5.2 Theoretical Background of Institutional Theory

Early versions of institutional theory, often referred to as *old institutional theory,* focused on examining processes by which practices in organizations were instilled and or influenced by what is taking place in the operating environment (Berger & Luckmann, 1967; Zucker, 1987; Scott, 2008; Gaughan, 2018). The concepts were applied to investigate and understand the influence of external pressures on organizations (Scott, 2008; Gaughan, 2018). The theory's proponents believe that external forces lead organizations to be guided by complex environmental influences they need to conform to. The proponents of the institutional theory argue that actions and activities that are carried out by organizations become typified, and when frequently repeated, they evolve into reproducible patterns (Berger & Luckmann, 1967). The concept is known as "*habitualization*".

Habitualization implies that the actions and activities within an organization's environment are repeatable and reproducible in similar organizations (Berger & Luckmann, 1967). The scholars argued that organizations are likely to adopt or accept similar practices due to pressure resulting from its operating environment. This is because habitualized actions are easily retained and embedded as routines in similar organizations. Berger and Luckmann (1967) postulated that everyday activities and actions are easily transmitted to other organizations operating in similar conditions. They also argued that practices and activities become recurrent and repeatable leading to a concept called *"objectification."* To be precise, once these actions become rule-like or habits, they are then easily retained (Berger & Luckmann, 1967). The scholars

identified a third stage called "*sedimentation*" where actions and practices acquire a state of historical continuity. These three stages are referred to as institutionalization processes. These processes are discussed in the next section. Other studies have used the theory to investigate different phenomenon and topics (Currie, 2009).

2.5.3 Institutionalization Processes from Institutional Theory Perspective

Early institutional theory scholars argue that organizations may incorporate actions and practices defined by prevailing influences of established practices from the environment (Berger & Luckmann, 1967; Scott, 2001). Drawing from the work of Berger and Luckmann (1967), institutionalization is the process of creating and perpetuating practices and actions in organizations over time and space. This process entails responding and exemplifying habitualized actions from other organizations (Tolbert & Zucker, 1999).

Institutionalization has also been identified as a sequential process involving an initial acceptance and spread of an idea or innovation in organizations (Tolbert & Zucker, 1999). The first phase is acceptance, also referred to as "*habitualization*" is the stage where actions or practices believed to have the ability to solve a problem are developed and associated with certain actions and practices in response to some particular stimuli. The second phase is called *"objectification."* It is where activities and practices are transmitted or transferred and contextualized into continuous use beyond the initial point of acceptance (Tolbert & Zucker, 1999). The third stage is called "*sedimentation,*" and the adopted actions and practices acquire a state of historical continuity. Thus, institutionalization is a sequential process of habitualization, objectification and sedimentation. However, each phase may be influenced by different or similar forces or pressures within an organizational environment. These stages are discussed in detail in the next section.

Habitualization

Tolbert and Zucker (1999) defined habitualization as the process involving accepting new activities in response to a set of problems or a specific issue. The process of habitualization involves formal acceptance of certain practices in the policies and procedures of an organization or a group of organizations to confront the same or similar problems resulting in actions. The process is also called pre-institutionalization activities. At this stage, creating new actions and practices in an organization is mostly an independent activity (Hirst, 2010). This is because organizational decision-makers can often be influenced by a common idea or act in response to a particular stimulus to accept a practice such as a KM strategy.

In most cases, the decision to accept/adopt a given innovation may occur in response to a particular form of pressure or simultaneous intervention due to association with other similar organizations. Similarly, organizations experiencing a specific problem may search for a solution or respond to a particular stimulus and accept practices adopted by others (DiMaggio & Powell, 1983/2002). In some cases, the decision-makers may follow other organizations' actions without interrogating the practice's value or benefits. There are cases where accepting a practice has been undertaken as a sense of necessity. In this regard, adoption levels may be measured mainly by factors that influence the decision to buy a given organization's practice. This process is called the pre-institutionalization phase.

At the pre-institutionalization phase, organizations may adopt a particular practice such as KM strategy due to several factors. For instance, affiliated organizations facing similar circumstances may choose to accept a practice to solve a problem. Besides, an organization may compare another similar organization's performance, practices, or a set of similar organizations. Such comparisons will almost certainly expose an array of patterns, thus influencing an organization's decision to accept the particular practice.

Objectification

After an organization has adopted/accepted a given practice, the next stage is to move towards a more permanent and widespread use of the accepted practice. Moving from

the acceptance phase or habitualization stage to the continued use of the practice is referred to as objectification (Tolbert & Zucker, 1999; Hirst, 2010). The scholars argue that objectification must follow the adoption of a given practice to ensure a more permanent use of the organization's adopted practice. Objectification is the process where organizational decision-makers may agree to support the implementation of a practice, possibly due to perceived value or benefits. At this stage, the emphasis is on increasing the new practice's acceptance or adoption level with an expectation of continued use.

Objectification is also referred to as semi-institutionalization (Tolbert & Zucker, 1999; Hirst, 2010). At this stage, several factors influence organizational decision-makers to support the continued use of the adopted practice. For instance, organizations may experience/evidence from other similar organizations that have adopted the practice as a measure leading to implementing the said practice. While the extent of the decision may vary from organization to organization, evidence of success from similar organizations is a significant determinant. For instance, Tolbert and Zucker (1999) posit that the number of organizations that have adopted a practice has a substantial impact on the extent of a decision an organization is likely to make regarding implementing a given practice. This is because the perceived relative value and benefits are likely to have an influence.

Furthermore, organizations' decision-makers are likely to use information gained from observing similar organizations and their subjective view regarding a practice. Other influential factors may include leadership, rules and resources, among others. Practices that have become widely accepted to a certain extent (i.e., are in continuous use) can be described as being at the semi-institutionalization phase. In this process, there is a need to move towards widespread use and stable status beyond continuing to use the practice. This leads to full institutionalization of the practice in an organization and is referred to as *"sedimentation"* (Hirst, 2010).

Sedimentation

Full-institutionalization or sedimentation is the process where the practice is widely in use and stable in an organization. Sedimentation is characterized by the complete spread of the practice across the organization over a long period (Tolbert & Zucker, 1983; Hirst, 2010). Identification of factors that influence the extent of acceptance and implementation of the practice may lead to an understanding of the process of sedimentation.

2.6 Application of Institutional Theory in Information System Studies

Several studies have adopted institutional theory as a lens for investigating IS-related phenomena (Cai & Mehari, 2015; Mignerat & Rivard, 2015; Cave, 2017; Dang & Pekkola, 2017). A literature analysis conducted by Mignerat and Rivard (2015) revealed that IS studies have widely used the theory. The main concepts used are institutional effects or pressures, adoption, implementation, institutionalization, and interactions between IT innovations and the institutions. Institutional theory has been extensively used for studying the subject of institutionalization (Meyer & Rowan, 1977; DiMaggio & Powell, 1983; Mignerat & Rivard, 2015). In modern societies, the authors have argued that organizational strategies and practices are readily accepted to achieve organizational goals. Therefore, the concepts of institutional theory can help in examining how KM strategies are born or adopted.

A study by Purvis et al. (2001), for instance, used institutional theory to investigate the forces influencing the assimilation of KM platforms in organizations. The study addressed the theoretical and empirical gap between adoption and actual assimilation of the platforms. The authors found that institutional forces play a significant role in the adoption of KM platforms. The authors also identified dominant organizational forces to influence the use of technology in organizations significantly. Besides, it was established that individuals' actions within an organization significantly affect the adoption of technology. While the study provides insightful and valuable contribution, it does expand further on institutionalization processes. Therefore, the study was limited to factors influencing the adoption and did not cover implementation and

entrenchment aspects. To fully describe and explain how practices such as KM strategies are institutionalized, there is a need to examine all the phases of institutionalization.

Previous studies have consistently recommended that linking process analysis to context and outcome is essential in improving organizations' institutionalization processes and understanding the subject (Hirst, 2010). A comparative study with different organizations and contexts can help achieve this recommendation. However, the study by Purvis et al. (2001) did not undertake a comparative analysis. The comparative analysis findings can provide more in-depth insight by linking the outcome to the study's context. Although the study's conclusions by Purvis et al. (2001) confirmed that the effects from institutional/external pressures influence individuals' actions within organizations concerning the adoption of KM platforms, the authors a small number of concepts of institutional theory.

In the process of addressing these gaps, this study has conceptualized all the important constructs of institutional theory and examined their direct and indirect influence/effects on institutionalization of KM strategies, as discussed in the results section of this thesis. Another study by Davidson and Chismar (2007) considered the macro-and micro-level analysis to investigate institutional-triggers and technology-triggers' interactions and influences. Combining the macro-and micro-level analysis is a valuable contribution. Still, the study failed to show the mediation of effects and the relationship between the macro-and micro-level influences or effects concerning institutionalization. The concepts or perspectives of practice and process were also not considered and examined. These are important concepts that can enrich explanations for studies that have adopted institutional theory (Mignerat & Rivard, 2015; Cave, 2017; Dang & Pekkola, 2017)

Currie (2009) issued a detailed review of the application of institutional theory in IS research. The review established numerous uses of the theory in the field ranging from organizational time horizon studies to descriptive studies. The author emphasized the need for more process-oriented studies and recommended combining the institutional

theory with other theories. The author further demonstrated that macro and micro levels' effects and processes could be better understood from a multi-level analysis, including organizational field analysis. Drawing from institutional theory concepts as introduced by Tolbert and Zucker (1983), Currie (2012) used the theory to understand and analyze macro and micro-level effects in the health care industry. The study used the theory as a lens to investigate the concerns in health-care organizations that adopted a large-scale policy initiative for rolling out electronic patient records across organizations in England. The study also responded to calls from proponents of institutional theory to pay attention to practical problems and relate the concepts to real-life situations or contexts. The findings showed that institutional theory is important in examining organizational field-level analysis such as adoption, implementation and entrenchment of innovations. In this case, the electronic health record system across organizations failed to achieve acceptance among health professionals. The findings are consistent with prior studies where the perceived benefits influenced the adoption of IS-related innovations. The study findings further showed that the policy initiative in this particular case study resulted from cross-level pressures that influenced the adoption.

Nielsen et al. (2014) revealed that IT adoption and usage are influenced by macro pressures within organizations. Baptista (2010) used the theory to investigate how strategies influence institutionalize IT artifacts. However, despite the growing interest and use of the theory, it has been mainly used to examine macro-level and not micro-level dimensions in the IS field.

Both interpretive and positivist scholars have applied the theory (Weerakkody et al., 2009). The authors stated that publications on the conceptual and theoretical advances of the theory are few. Additionally, the literature review found that few studies had combined institutional theory with other relevant theories that complete the intrinsic theoretic or conceptual gaps.

In broad terms, the review summarized some of the areas where the theory has been applied include examining the assimilation of enterprise systems in post-

implementation in organizations. Studies have also used the theory to derive a research model for explaining how top management mediates external institutional pressures on the degree of ERP systems usage. Other areas include determining whether the theory can explain the assimilation of IS/IT in Small and Medium Enterprises (SMEs) and exploring how organizations in the same industry eventually reached the same level of IS/IT assimilation because of operating in similar environments. Another main area was to investigate the external institutional influence on corporate IT budgeting processes. An important area of interest where the theory has been used has been to assess how industry standards influence activities (Weerakkody et al., 2009).

In the context of the public sector, the theory has been extensively used, for instance, to explore the diffusion of technologies and policies and to explain their establishment (Weerakkody et al., 2009). Table 3 shows a summary of the areas where the theory has been used in IS research studies.

Table 3: A summary of themes where Institutional Theory has applied in IS studies

No	Application areas in different organizations, industries and countries	Authors/Reference
1	Information and Communication Technology (ICT) projects implementation	Hayes, 2008
2	Computerization, for example, e-procurement	Soares-Aguiar & Palma-dos-Reis, 2008.
3	Understanding ICT-enabled transformation	Davidson & Chismar, 2007
4	Interaction of institutional and technological change triggers in alignment processes during the implementation	Ituma & Simpson, 2007
5	Examining assimilation of inter-organizational processes	Bala & Venkatesh, 2007
6	The role of IT on organizational change	Hu, et al., 2007
7	Organizational evaluation and selection decision-making process on systems	Currie & Guah, 2007
8	Examining EDI diffusion dynamics and considering alternative adoption patterns that operate beneath specific institutional incentives and programs. This was based on organizational cases within specific industrial contexts to explore and explain the	Nevo et al., 2007

	interactions between multiple factors and EDI diffusion.	
9	To understand the factors that enabled the adoption of inter-organizational systems to examine the institutional pressures exerted to adopt financial electronic data interchange systems (FEDI).	Liang et al., 2007
10	To examine and explain the assimilation of inter-organizational business process and standards in organizations, including the difficulties faced by such organizations	Miranda& Kim, 2006
11	To explain the role of information technology is in organizational change.	Salmeron & Bueno, 2006
12	To explore how ICTs are inextricably interlinked with institutionalization processes	Haughton, 2006
13	To examine how and why the values of an institutional or group dominate across an organization.	Davidson & Chismar, 2007
14	To examine how external pressures influenced human behavior as shaped and regulated by social structures, for instance, the trajectories of careers.	Sawyer et al., 2005
15	To examine the premise by which organizations' structures are constituted to disparate institutional contexts in decision-making in the context of IS outsourcing.	Tingling & Parent, 2004; Liang et al., 2007
16	To explore the tension between internal and external IT capabilities in the realization of IT productivity in organizations.	Cavalluzzo & Ittner, 2004

Source (Weerakkody et al., 2009)

As shown in Table 3, many studies in the IS field have applied institutional theory as a lens or theoretical framework to research different themes. This provides confidence in the approach. Gaps in the use of the theory can be addressed as follows:

(1) Expanding the concept of institutionalization process to include adoption, implementation and entrenchment, *(2)* Including concepts from strategy-as-practice theory in the development of the conceptual framework in examining the influence of institutional pressures of cognitive, normative and regulative pressures on internal factors, and *(3)* Adopting a practice turn by linking the results to the different contexts and organizations through a comparative analysis *(4)* Complementing the understanding and relationship between macro-level pressures influence and institutionalization of KM strategies. The effect of macro-level pressure on the

strategic decision-making process can be examined using concepts such as practices, practitioners' decisions, and actions the direct and indirect influence on the different institutionalization levels for KM strategies in AROs.

2.6.1 Application of Institutional Theory in Organizational Studies

Previous studies using institutional theory have generated valuable contributions, insights and advanced theoretical and empirical understanding on different aspects of institutionalization of practices in organizations (Oliver, 1991; Hirst, 2010; Al-Htaybat, 2018). Institutional theory scholars have postulated that regulative, normative, and cognitive pressures may influence organizational actions and practices (Scott, 2001; Greenwood et al., 2017). The scholars contend that these three main dimensions or pressures often influence organizations. Regulative pressure, for instance, has been exerted upon organizations as a result of compliance requirements from regulations, laws, or sanctions (Hou et al. 2018). Organizations are often influenced or expected to comply with government policies or requirements from other dominant organizations. An organization may thus accept a practice or undertakes certain actions per the intentions and values of existing laws, regulations, and policies to safeguard its interests (Greenwood et al., 2017).

Studies show that organizations with a regulatory mandate or resource dominance may enforce compulsory pressure and retributive measures to undertake specific actions or institutionalize a practice through legal or regulatory requirements (Greenwood et al., 2017; Hou et al., 2018). The aim of exerting such pressures is to influence or force an organization to conform or comply with legal requirements or expectations. For decades, institutional pressures have influenced specific organizations to institutionalize practices (Meyer & Rowan, 1977; DiMaggio & Powell, 1983; Scott, 1987; Hearn et al., 2016; Krell et al., 2016).

The indicators for cognitive/mimetic pressure are uncertainty, perceived success and prevalence of a practice. Similarly, normative pressure indicators are professionalism, expectations, and associations/relationships among similar organizations (Krell et al., 2016). Regulative or coercive indicators are mandate requirements or resource

dependency (Krell et al., 2016). Therefore, organizations tend to conform to their environment to increase their chances of survival, relevance, or success.

Kostova and Roth (2002) applied institutional theory to examine the adoption of practices in an organization under institutional duality. The authors found that a subsidiary multinational corporation influenced the organization to adopt certain practices. They concluded that institutional pressures were the main factors that influenced the adoption of practices in the organization. Additionally, the study found that the pressure from cognitive, normative, and regulative sources directly influenced the organization's adoption decision. However, the study did not analyze other aspects of implementation and entrenchment and institutionalization processes. They also did not show the relationship between macro-level/institutional pressures and micro-level factors such as strategic decision-making and organizational leadership. Furthermore, the authors did not explain the extent of the influence of macro-level factors.

In similar ways, Alers-Tealdi (2015) applied institutional theory and explored the institutionalization mechanisms of KM in the United States of America's federal government. The author established that institutional theory elements remained essential in defining and influencing organizational practices in KM initiatives. The author argued that organizations often hold activities out of influence by similar organizations. Besides, the organizations may take up actions as lawful through regulative pressures. Subsequently, the author recommended that future studies should undertake a more in-depth examination of the influence of institutional/macro-level pressures on the organizational-field level/micro-level. The author suggested that institutional theory could be used as a theoretical lens to examine the organizational-field level analysis. Despite the recommendations, studies have not exhaustively reviewed the extent of the influence of macro-level pressures on micro-level decision-making processes in the KM field. While previous studies have articulated the consequences of institutional pressures on organizations, the application of institutional theory has not been used to examine their influence and processes of institutionalization in a single study

Figure 1 is a schematic diagram that provides a generic illustration of the different external pressures and corresponding indicators and relationship to institutionalizing a practice.
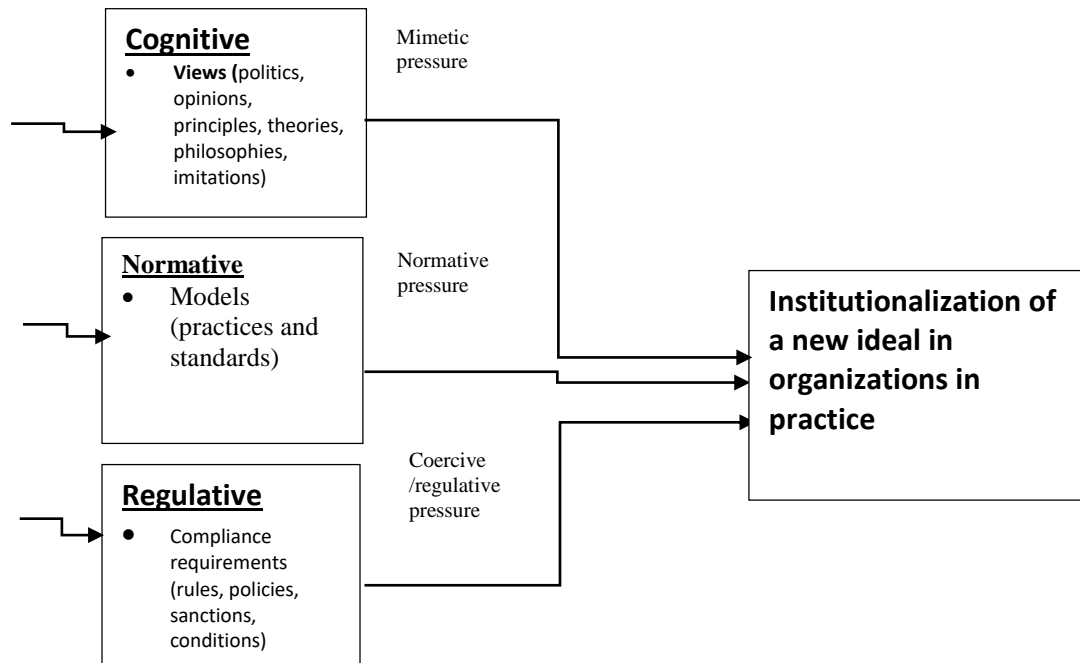
Figure 1: Basic/generic elements of Institutional Theory (Scott, 2008; Powell & Colyvas, 2008)

Figure 1 shows the key strands of the institutional theory (Scott, 2008; Powell & Colyvas, 2008). The central tenets are cognitive/mimetic, normative and regulative/coercive pillars. Studies have explained these tenets and their influence on organizations. Dobson and Nicholson (2017) stated that several external pressures could have influenced an organizations' decision-making processes. For instance, Greenwood et al. (2017) found that external forces/pressures are experienced at organizational field levels; thus, the field-level can be used as the analysis unit. Hirst (2010) explained that when examining institutionalized practices in organizations, organizational-field levels of adoption, implementation, and entrenchment can form the analysis unit.

2.6.2 Application of Institutional Theory in Knowledge Management Studies

Extant literature has examples of how institutional theory has been used to explore different aspects of KM related studies. Studies show that organizations have adopted and assimilated KM systems into their operational routines to respond to external pressures (Sodero et al., 2013). For instance, Currie and Suhomlinova (2006) used the neo-institutional theory to examine the impact of institutional pressures on KM-related phenomena. Using the theory concepts, the authors postulated that organizational-realities are critical in strategy development. Suddaby et al. (2013) argued that using neo-institutional theory as a lens is vital in drawing inferences on how influence from macro/external sources affects individuals' actions in organizations. The authors asserted that neo-institutional theory is well established and suitable to explain the connection between organizational macro-elements and organizational-field/micro-level, such as activities, actions and practices. However, the authors suggested that the strategy-as-practice (S-as-P) theory can benefit from the neo-institutional theory's broader view.

Additionally, Suddaby et al. (2013) suggested that S-as-P theory can enrich neo-institutional theory by highlighting concepts such as micro-level changes and how they occur through external pressures. The authors further stated that examining how strategies are executed in practice using neo-institutional theory can help explain and theorize the interactions and interpretations of individual and organizational actions. Also, they indicated that a more in-depth examination of the strategy subject or theme using neo-institutional theory as a theoretical lens could lead to better re-theorization and understanding of strategy-related activities. Concerning examining the different aspects of strategy in organizations, Suddaby et al. (2013) emphasized that researchers can use neo-institutional theory as a sensitizing lens when investigating organizations' strategy activities and practices. The neo-institutional theory and S-as-P theory concepts can be adopted and utilized as a sensitizing lens to develop a conceptual framework of a study as part of research design. This approach can enable a study to incorporate a practice turn in examining the institutionalization of KM strategies.

A study by Alatawi et al. (2012) applied institutional theory as a lens in examining and measuring the different types of environmental pressures exerted on public sector organizations' intention to adopt KM systems in the context of Saudi Arabia. Using the theory, the authors explained that institutional forces were significant in predicting KM systems' adoption in public sector organizations. Another study by Cave (2017) adopted institutional theory and applied the theory's constructs to develop the conceptual framework and explore adoption and conformity to practices and data governance policies. The author adopted institutional theory as a theoretical lens to theorize how external institutions affect the board of management's ability to provide oversight to organizations. The constructs of the institutional theory were applied to design data collection processes and interpretation of results, and as a result, several themes emerged. The author explained how external institutions influenced practices, processes and procedures. For instance, the results showed that organizations tend to comply with overarching rules and regulations laid out by organizations they depend upon, such as governing bodies and government and funding agencies. When the organizations implemented data governance and information management practices, the author found that the influence was from regulatory guidelines. The author argued the results using the constructs from institutional theory and provided insights in interpreting and explaining how the changes in regulations led to conformity with organizational practices and policies. For instance, stakeholders responsible for data governance had to continually evaluate and reassess how they complied with additional and new regulations and guidelines laid down by external bodies with authority over them.

2.6.3 Justification for Institutional Theory

For decades, the institutional theory foundations have been discussed in the literature as early as 1970 (Dobson & Nicholson, 2017; Alvesson & Spicer, 2019). The basis of institutionalization includes the following concepts: institutional pressures, organizations or institutions, organizational context, institutionalization processes and institutionalized practices (Alvesson & Spicer, 2019). Institutional theory has rich constructs that have been useful in the generalization of findings. Studies suggest that

for a theory to be helpful, it must explicitly identify, describe and explain concepts such as variables, indicators, and their relationships (Hirst, 2010; Alvesson & Spicer, 2019). In this line, institutional theory concepts were considered essential to describe the variables and problematize assumptions explicitly. The theory also has many strands that have been rigorously and carefully examined by past studies (Alvesson & Spicer, 2019). It has also gained enough theoretical and empirical argumentations to support conceptualizing different institutionalization processes and how organizations have institutionalized practices. The theory's constructs can be used to conceptualize, understand, and explain how KM strategies are institutionalized in AROs in East Africa.

In organizational studies, the theory provides researchers with the opportunity to combine and generalize concepts and unpack their constructs (Hirst, 2010; Greenwood et al., 2017; Alvesson & Spicer, 2019). For instance, the constructs that describe external influences can be used to examine and explicitly explain how practices and processes are institutionalized in organizations. Additionally, Parast et al. (2011) postulated that institutional theory provides sound arguments for researchers to specify the concepts in detail, including indicator level descriptions and their relationship.

Othman et al. (2013) established that institutional theory supports the differentiation of concepts. The authors used the theory to explain the influence of the different pressures on adopting specific organization regulations. The authors argued that the approach enabled them to explain the various external forces influencing organizations' decisions. For instance, they indicated that organizations respond to the model used by other organizations as a response to the pressure from external demands. They concluded that mimetic/cognitive pressure was responsible for adopting practices and procedures in the organization. This was because the dominant organizations were perceived as successful by non-dominant organizations.

The theory has been used to trace how organizations' interactions influence practices and processes through the interactions between external and internal stakeholders (Selznick, 1996; Uygun et al., 2015). For instance, institutionalization is multi-

dimensional, and institutional theory is useful in examining institutionalization processes. The authors used the theory's concepts to understand and explain the multiple effects on organizations' decision-making processes to determine the factors influencing organizational readiness levels. Another study by Xu et al. (2019) found that institutional theory provided the theoretical basis to explain how external pressures drive or stimulate organizations' practices.

Over the years, the application of institutional theory as a theoretical lens in organizational studies has resulted in several uses with varying conceptions (Sahay & Avgerou, 2002; Lim et al., 2009; Melville, 2010; Lim et al., 2013; Lee, 2015; Bichler et al., 2016). Extant literature underscores the extensive use of institutional theory in IS research studies (Lim et al., 2009; Gregor, 2006; Kuechler & Vaishnavi, 2008; Mueller & Urbach, 2013).

However, choosing a theoretical lens must be justified. Gregor (2006) distinguishes the different types of theories and their interrelationships. The author categorized different ways of using theories in IS research. These include analysis and describing, understanding, predicting, explaining and predicting, and design and action. Further, the author mentions causality, prediction, explanation, and generalization as critical factors for choosing IS research studies' theories. Broadly, several theories have been applied, and different theorists have argued on different approaches and applications. Other theories can be examined for suitability of use, but institutional theory remains the theory of choice for such studies. The other theories can be considered, reviewed and compared are discussed as follows:

(a) Structural Contingency Theory

The structural contingency theory has been applied when examining the relationships between organizations and the external environment, such as uncertainties, structural differentiation, and coordination of activities (Wang, 2014). The main areas where the theory has been applied are organizational performance and its competitive advantage. Proponents of the theory have argued that the effect of organizational structure on

performance depends on several aspects but mainly uncertainty arising from the external environment (Zhang & Liu, 2017).

In comparison to institutional theory, structural contingency theory has been applied to understand and explain the unplanned change in organizations, such as unexpected or unanticipated processes and their connection with macro and micro levels effects. For instance, Deroy and Clegg (2015) applied the concept of contingency theory to describe how unique occurrences become established or linked to organizations' processes over time. The authors argued on the need to recognize the important role played by an unexpected process or practice. They postulated that the process could be described and explained by the concept of recursive contingency from the theory and claimed that such occurrences lead to an institutional change forming a process of institutionalization. Besides, Deroy and Clegg (2015) claimed that a theoretical shift must significantly improve theorizing institutional theory. The authors compared structural contingency theory and institutional theory and argued that unexpected and aggregate processes are possible due to contingency. The authors also argued that institutionalization processes' effects are affected by the nature and relationship between institutional change and complex processes and cultural dominance from the organizational environment. However, they did not show how structural contingency theory constructs apply in conceptualizing institutionalization practices and processes. In previous studies, structural contingency theory has been used to describe or explain the relationship between organizational structures such as processes or practices and performance concerning contingency (Rogers, 2005; Deroy & Clegg, 2015). However, the theory does not have the concepts that can describe and explain the factors influencing the institutionalization of organizations' practices. The constructs cannot describe the different processes of institutionalization of practices. The theory's constructs and tenets have not been used to describe and explain the relationship between macro-level and micro-level factors.

At the level of indicators, a profound construct that has been used as a variable of contingency has been uncertainty. This is because the proponents of the theory argue

that that contingency can be external or internal. However, this indicator variable has not been connected to the macro-level factors of cognitive/mimetic pressure.

In summary, while structural contingency theory has been widely used in organizational analysis, it has been focused on the effects and impact of contingency factors on organizational structures but not on institutionalization aspects. The theory has been discussed mainly to describe and understand contingency factors, mostly uncertainty and other coordination mechanisms. In this line, this study found that structural contingency theory does not tenets analyze the macro-level factors that influence institutionalization. For instance, the theory chosen for use in a study must sufficiently inform the research design and development of a conceptual framework concerning the research domain (Walsham, 1995). Additionally, the theory must be consistent with the purpose, research questions, and scope of a study being conducted. In this regard, the structural contingency theory lacked the necessary concepts.

(b) Resource-Based View Theory

The Resource-Based View (RBV) theory has been applied to examine the organization as a combination of groups of entities with specific interests, ideas and goals (Pfeffer & Salancik, 1978). In this case, the main application area is to examine an organization as the unit of analysis, typically on its interdependencies, resource and power dynamics. Its main application includes studying strategy literature from an organizational resource management perspective (Yuen et al., 2019). The focus has been evaluating the differences in organizations' performance under changing and unpredictable scenarios (Yuen et al., 2019; Rahman et al., 2019). The fundamental constructs of RBV theory are resources, organizational capabilities, competitiveness, and performance (Rahman et al., 2019). The concepts of this theory may not effectively assist in the design of a study that examining how practices such as KM strategies are institutionalized in organizations.

The concepts of RVB theory do not satisfy the essential requirements of a study on institutionalization such as causality, analysis, explanation and generalization findings.

In the context of KM field, studies have used the theory to explore the knowledge-intensive activities in organizations (Geok, 2010), but not institutionalization aspects.

While the RBV theory has been used and discussed in IS research by many studies, to a considerable extent, most of them have focused on critical resources and their impact on the competitive advantage of organizations (Taher, 2012). Other areas of application include environmental performance, strategic alliance, and organizations (Salem et al., 2020; Alazemi & Ahmad, 2020). Since its emergence in IS and related studies, RBV has been applied as a theoretical lens by IS scholars, especially to investigate how resources and capabilities have contributed to the organization's strategy and performance (Nwankpa & Datta, 2017; Salem et al., 2020). Additionally, the theory has been widely applied as a lens to examine organizational strategies and organizational resources (Yuen et al., 2019). From the theory's strands, the focus has been on how the internal factors such as resources and capabilities influence organizational performance and strategy and the ultimate impact outside the organization (Yuen et al., 2019). For instance, the theory has been used to assess how the resources and capabilities generate positive impacts such as financial returns, customer satisfaction, and sustainable competitive advantage.

A study by Keya et al. (2018), for instance, used the RBV theory concepts to examine factors that determine the sustainable competitive advantage of financial institutions in Kenya, a case study of Barclays Bank. Other application areas where the concepts of the theory have been useful include gaining insight into the role of organizational resources such as human, financial, and technology to influence organizations' competitive advantage and performance. For instance, Thong and Wong (2018) confirmed that the theory has been effectively applied to examine organizational activities and how resources enable practices. Given that the tenets of theory emphasize an organization's resources as the fundamental influence, the theory is very limited to address the research questions and scope of a study on institutionalization of KM strategies.

Although some previous studies using the theory have identified resource factors as the primary influence on adopting and implementing organizations' practices, the theory has limited concepts to measure the extent of influence of institutional pressures.

(c) Unified Theory of Acceptance and Use of Technology

The Unified Theory of Acceptance and Use of Technology (UTAUT) has been applied to assess organizational readiness for KM strategy adoption (Jalaldeen et al., 2009). The theory has been used as a theoretical lens to examine organizational willingness to adopt the KM strategy by considering organizational-level and individual-level factors. Other studies have applied the theory to develop models to understand and explain user acceptance or adoption and utilization or implementation of a new ideal such as IT innovations (Yuan et al., 2016; Hermanto et al., 2018). While different studies have applied the theory to understand and explain the adoption and implementation of new ideas such as technology, it does not provide the conceptual richness that can describe and explain all the different institutionalization levels.

Although previous studies have extended theory, they cannot explicitly explain the effects of external or macro-level pressures on organizations' strategic decision-making. The concepts cannot describe institutionalization processes of KM strategies. For instance, Dhir et al. (2018) found that the theory has been criticized for several reasons. Notably, it is complex to use as a model or theoretical framework since it contains many variables and constructs with varying scope and application. When used to investigate different factors with many constructs, the theory has limited explanatory power. For instance, Peters (2019) found that the theory is limited in examining factors that affect adopting new technologies in different contexts.

In general, an assessment of the theory's concepts and its application in extant literature revealed that it could not be used to develop the conceptual framework sufficiently, describe the research problem and the research questions for a study on institutionalization of KM strategies. An ideal theory must support conceptual framework design and describe different research aspects to be considered an appropriate theoretical lens in a study. Furthermore, it has problems associated with

inherent complexities and ambiguities that could affect the definition and description of variables.

2.6.4 Neo-Institutional Theory as Framework for Analysis

Institutional theory *("old" and "new")* has three main elements; regulative, cognitive and normative (Scott, 2008). The neo-institutional theory provides two different analysis levels. First, examining macro-level effects on organizational decision making. Such analysis can enable a researcher to understand institutional pressures such as rules, norms, and implicit expectations that affect organizations' strategic decision-making (Meyer & Rowan, 1977). Second, the theory provides a perspective that focuses on analyzing institutionalization of practices in organizations, sometimes referred to as institutionalization processes (Zucker, 1987). This perspective resulted from studies that extended the neo-institutional theory (DiMaggio & Powell, 1983/2002). It has been considered a turning point and a bridge between the external and organizational-field level analysis. Both perspectives provide researchers with a broad range of theoretical and empirical foundations to examine organizational practices and actions.

A study by Alers-Tealdi (2015) applied the neo-institutional theory to examine the influence of culture, incentives, and technology on U.S. federal agencies' knowledge sharing behavior. The study findings revealed that the neo-institutional theory is different from the theories mentioned above. This is because it provides profound tenets, concepts, or constructs and indicators to examine organizational-field level as the primary analysis unit. This goes beyond analyzing individual organizations or a group of organizations as the primary units of analysis (Scott, 2014). While other theories can analyze macro phenomena, the institutional theory remains the most appropriate theory for studying the influence of macro-level pressures on organizations' strategic decision-making to institutionalize practices. It is also suitable for analyzing institutionalization processes such as KM strategies (Carmeli et al., 2011). This is because institutional theory provides a theoretical lens that can enable a study to focus on organizational-fields or components of the organizational-field as

the area of interest (DiMaggio & Powell, 1983; Scott, 2014; Mani & Gunasekaran, 2018).

Neo-Institutional Theory Pillars

Neo-institutional theorists argue that organizations respond to influences from internal participants' institutional pressures and actions (Scott, 1987; Lawrence et al., 2011). The main components of the neo-institutional theory are institutionalization and isomorphism processes. Neo-institutional theory can be used as a sensitizing device due to its well-established tenets investigating institutionalization aspects such as processes and influences from external organizational pressures (Powell & Colyvas, 2008). These strands are useful in a study design and interpretation of results. The three pillars presented an in-depth understanding and description of the different concepts. Table 4 has shown a general summary of institutional theory's elements or tenets, the dimensions or basis for compliance, indicators, and grounds for legitimacy that form the theory's theoretical foundation. There the theory can be used to examine the effects of external and internal pressures on institutionalization.

Table 4: The three pillars of Institutional Theory

Pillars	Regulative	Normative	Cognitive
Basis of Compliance	Expedience	Social Obligation	Shared Understanding
Indicators	Rules Laws Sanctions	Certification Accreditation	Common beliefs
Basis of Legitimacy	Legally Sanctioned	Morally Governed	Recognizable culturally supported

 Source (Scott, 2001)

As shown in Table 4, the basis of compliance describes the central epistemological concept for each pillar. Similarly, legitimacy mechanisms show how each dimension exerts different types of influence and the source of influence. The indicator has been used for observation and measurement of the various organizational field level analysis. This framework can be adopted to understand, describe, and explain the

different macro-level influences on the organizational decision-making process for institutionalizing KM strategies.

In general, the regulative pillar draws upon rules and regulations. The normative pillar draws upon standards and expectations. The cognitive strand draws upon shared understandings or agreements, perceptions, and prevalence of a practice (Peters, 2019; Scott, 2014). Establishing these pillars in the analytical model provides an explanatory matrix or analytical framework. Such a framework can be applied to analyze how AROs in East Africa institutionalize their KM strategies. The framework can structure the different dimensions of institutionalization processes and describe the external influences known as the institutional pressures. The indicators and mechanisms explained the observed values of how the pressures/forces affect or influence the specific areas of institutionalization, for example, adoption, implementation and entrenchment of KM strategies in AROs in the context of East Africa.

Criticisms of Institutional Theory

While several scholars agree that institutional theory has undergone significant advancements and gained popularity over the years, several significant theoretical and methodological issues have been raised. In IS research, there has been tension between theories, especially those focusing on organizations' responses to external stimuli and those focusing on internal organizational happenings. Institutional theory has been criticized for supporting order and rationality, and that it has mainly been used to explain persistence and homogeneity in organizations (Mungai, 2017). The most criticized areas have been the static nature of explaining organizational concepts and difficulties when required to calculate organizational variables (Mohamed, 2017). These concerns are limiting the applicability and effectiveness of the theory. Mohamed (2017) argued that the theory has a static nature, institutionalization-centric and unable to provide and develop better institutional explanations. Another example is a little discussion on power elements and conservative bias which has been cited as a significant concern (Perrow, 1986; Cooper et al., 2008; Mungai, 2017). Similarly, researchers using the theory have been criticized for applying the theoretical concepts in ad hoc ways. For instance, Currie and Swanson (2009) claimed that the theory could

not provide critical explanations of highly complex processes and non-linear organizational changes.

Some other criticisms against the theory include the need for more concepts to support direct measures, enable researchers to clarify their stance when providing details and contribution towards the theory, and for further theory development. Dixit and Sambasivan (2019) argued that institutional theory in its current state does not enable researchers to focus on micro-level analysis also known as organizational field-level analysis but well suited for macro-level analysis. In the same context, other scholars have criticized the theory for focusing too much on organization similarities, limiting extensive focus on organizational differences as informed by empirical data (Lawrence et al. 2011; Greenwood et al., 2014). Also, Meyer and Höllerer (2014) emphasized that the theory has not paid attention to the relationship between external effects on organizations and individuals' actions within the organization.

An analysis of extant literature has shown mixed arguments. For example, some authors contend that the critiques have made the theory more robust, leading to a progressive contribution to the body of knowledge. Other authors have explained that the criticisms expanded the theory's understanding instead of limiting the focus to using the theory for inquiry only. For instance, Barley (2008) mentioned that interaction between the old and new theory's two perspectives had provided a fruitful synergy for institutional analysis.

The main criticism of the institutional theory is ambiguity. For instance, what constitutes an institution, institutionalization and institutionalism concepts, and how macro and micro influences are reconciled in a single study. Despite the criticisms, institutional theory has gained momentum in social sciences studies. While the old-institutional theory assumes passivity, neo-institutional theorists have explained that the theory can draw from both the properties of macro and micro-level factors (Powell & Colyvas, 2008; Kalum, 2018). The authors argue that the theory contains concepts that allow for macro and micro-level analysis of institutionalization processes. For instance, Powell and Colyvas (2008) underscored that the theory could describe and

explain the effects between macro pressures and micro-factors, such as day-to-day activities, including practices and processes in organizations. Therefore, applying the theoretical concepts, for instance, the cognitive, normative and regulative pressures, could explain the extent of influence from external pressures. This theorization level can explain what occurs at the micro-level, such as organizational activities, practices, and processes.

2.7 Strategy-As-Practice Theory

Studies have identified strategy-as-practice theory as important when examining organizations' practical aspects (Turner, 1996; Payne 2014; Jarzabkowski, 2005). The concept of a *"practice turn"* has enabled studies to understand practices inside an organization as the focus of the research (Whittington, 2006; Karanasios & Slavova, 2019). In turn, this has enabled understanding of the interrelationship and effects of the field of strategy research. Additionally, the theoretical foundations of S-as-P theory complement the limitations, contentions and complexities of institutional theory. The theory has provided researchers with crucial insights, for instance, the tools and methods of strategy formulation, how strategizing is undertaken, and the role and characteristics of practitioners or actors (Almaz & Çizel, 2016).

Most scholars have used the term strategizing to describe and examine or analyze the day-to-day decision-making processes on strategy activities/actions (Maritz &Toit, 2018). The theory's practice focus provides an opportunity to explore the micro-level, such as actual day-to-day actions, practices, and organizational strategy processes. Strategy-as-Practice theory scholars have emphasized the practice turn as a critical concept. Additionally, the proponents of the theory have argued that researchers can draw from the theoretical concepts to understand, describe and explain the micro-level details of practices, praxis and practitioners within an organization (Golsorkhi et al., 2010). Similarly, to analyze the effects from external or macro-level influence on micro-level practices, praxis and practitioners. This is because the theory provides important constructs for examining how strategies are executed in organizations (Turner, 1996; Payne 2014; Jarzabkowski, 2005).

The concept of "*practice turn*" enables studies examining organizational strategies to understand the interrelationship and effects between the external environment on the whole organization and organizational field levels (Whittington, 2006). For instance, institutional theory has been criticized for its inability to explain the role of organizational leadership, strategic organizational decision-making, and organizational diversity (Suddaby et al., 2013; Berisha et al., 2018). Proponents of S-as-P theory have emphasized that the concepts have filled the gaps and respond to institutional theory criticisms. In turn, this has led to the rapid expansion of the S-as-P theory. Therefore, the theory has grown beyond being an independent theory and addresses the institutional theory gaps (Sudday et al., 2013; Asmuß, 2018).

Consequently, scholars contend that neo-institutional theory cannot sufficiently explain practitioners' internal actual actions, practices, and experiences coherently (Powell and Colyvas, 2008; Suddaby, 2013). The authors suggest that to address these limitations, researchers must pay attention to both phenomena of interest and the actual actions, practices and experiences of institutionalization of practices (Lawrence & Suddaby, 2006). For instance, Sudday et al. (2013) emphasized that specialized focus on the phenomena of interest and actual institutionalization processes is important for studies that want to draw upon S-as-P theory's strengths and integrate with neo-institutional theory. Whittington (2006) argued that the S-as-P theory has emerged as a framework to help researchers answer how strategizing works in organizations.

Asmuß (2018) explained that the S-as-P theory has focused on the organizational strategy-related activities by emphasizing the processes of strategizing. The theory acknowledges the different organizational levels of activities, for instance, planning, formulation or development, and execution of strategies in organizations. The main aim has been to move away from the traditional theoretical approaches where the strategy has been regarded as something organizations possess and not what organizations do (Whittington, 2006; Asmuß, 2018). This approach aims to stimulate a rigorous understanding of the relationship between macro-level pressures and their effects on micro-level factors. Previously, researchers attempted to examine this relationship by developing new theories and undertaking empirical research studies in

different fields (Mintzberg, 1994). The work of these researchers has contributed to the emergence of the strategy-as-practice theory.

Whittington (2006) pointed out that the theory has developed conceptual richness for any study in the organizational strategy that seeks to investigate the practices, actual actions and practitioners in organizations. The theory has been described in terms of shared relationships bridging external/macro influences and internal/micro reactions in organizations. This has been achieved and explained using three key concepts namely praxis (actual actions), practices (including tools and technology) and practitioners (Whittington, 2007). The practice concept, for instance, incorporates aspects of how strategy practitioners draw upon institutionalized strategic practices in distinctive ways through the praxis such as specific activities or actions to generate strategy processes mainly in the development and execution. The tenets of S-as-P theory are discussed in the next section.

Strategy Practitioners refer to the people involved in developing and executing the organizational strategy by undertaking specific actions, activities, and practices. Examples are managers, consultants, and others who participate in strategy formulation, shaping and execution.

Strategy practices are routines, procedures, techniques and types of discourses undertaken at organizational and extra-organizational levels. They may include the use of tools and technologies.

Strategy Praxis are specific or actual actions or activities, such as meetings, discussions, and interactions that generate or implement the strategy. Also, they include processes, potential activities that lead to new strategy practices.

Strategy praxis describes strategy development and execution's critical activities and actions by explaining the strategy participants' involvement, including processes and practices (Whittington, 2006/2007). The "*practice turn*" or practical relevance has become a recurring theme in the IS strategy-related research. This movement toward practical relevance aims to improve understanding and explain the concrete micro-actions, including people and practices. Thus, Strategy-as-practice theory provides the

theoretical concepts to examine the practices, practitioners and actual actions when studying how strategies are executed in organizations (Turner, 1996; Payne 2014; Jarzabkowski, 2005). Figure 2 is an illustration of the three concepts or tenets of the theory.
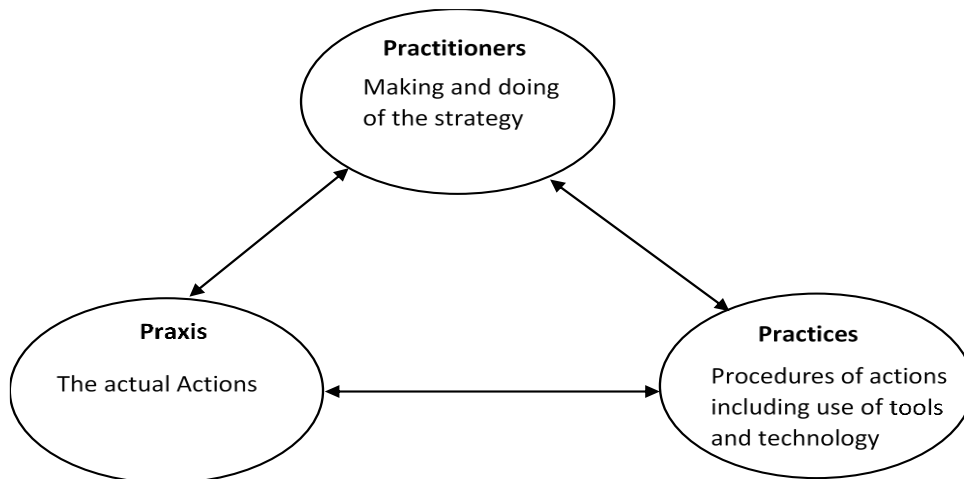
Figure 2: Strategy-as-Practice theory (Jarzabkowski, 2005)

As shown in Figure 2, the practice-turn places strategy studies deep inside the organization. It enables a research process to understand the interrelationship and effects on the organization (Whittington, 2006). It has been argued that it can drive strategy research towards practical relevance. The S-as-P theory is suitable to analyze the actual micro-actions, practices, and experiences beyond the analysis of the macro-effects on organizations (Karanasios & Slavova, 2019).

2.7.1 Practice Turn

Literature from modern social science has mentioned concerns that organizations may espouse practices without institutionalized organization activities. For example, an organization may formally accept a practice, but the operational activities involved in institutionalizing that practice are not resilient to lead to ground level acceptance and implementation (Mignerat & Rivard, 2012). Advancing a practice turn in strategy-related research requires a more integrated view of both macro and micro-elements (Whittington, 2006). As Whittington (2006) postulated, organizational strategy successes and failures can be examined by looking at the effects of the external influences and context. Jianqiang et al. (2018) emphasized that the concept of practice,

praxis, and practitioner completes the "*practice* turn." The split between intra-organizational actions and extra-organizational influences on organizational practices has set a challenge to researchers seeking to understand and explain how organizations institutionalize practices. Towards this end, a more integrated approach can be applied by examining the external and internal factors. The external factors can be examined using institutional theory.

Drawing from the study by Whittington (2006), activities within organizations are central to managerial work. For instance, strategy formulation and execution phases. As discussed by proponents of the practice turn, the strategic decision-making process regarding what happens and how it happens in the organization has a connection to external forces' influence. Chia (2004) stated that research on the strategy-related phenomenon had witnessed increased calls to attend to the macro and micro-processes and practices of organizational strategy life.

Other scholars have argued that the S-as-P reorients the researchers' attention to the micro-processes and strategizing (MacKay et al., 2020). The theory has emphasized examining the organization's actors' day-to-day activities, practices, and processes (Jarzabkowski, 2005). It is vital to review these factors and their relationship within the organizational context. The areas include the connections and associations between macro influences and micro processes, practices, and practitioners' actions through strategic decision-making.

2.7.2 Justification for Strategy as Practice Theory

The strategy-as-Practice theory enables studies to focus and scrutinize the micro-processes, practices and activities by connecting the institutionalization concerns such as external pressures (Dahl et al., 2016; Whittington, 2017; Tavakoli et al., 2017). The theory is suitable since the concepts can describe micro-level aspects of institutionalization.

Arguably, S-as-P theory has extended strategy research by focusing on organizational micro-level strategic activities and their response to macro-level effects (Whittington, 2017; Tavakoli et al., 2017; MacKayet al., 2020). The departure from analyzing

strategy processes and strategic decision-making as a single process has enabled studies to pay attention to the mundane micro-details that constitute the actual endeavors at the organizational field level (Brown & Thompson, 2013; Jarzabkowski & Whittington, 2008; Whittington, 2017). For instance, Herepath (2014) postulated that the strategy-as-practice theory provides an innovative theoretical lens to understand the effects of macro-level influences on micro-level actions at an organizational field level.

The choice of strategy as practice theory complements neo-institutional theory and specifically analyzes the relationship between external pressures and the organizational strategic decision-making process. Thus the theory can be used to find out how much the extent of external pressures (cognitive, normative and regulative) experienced by an organization influences the strategic decision to institutionalize KM strategies in AROs. Strategic decision-making can be analyzed as the intervening variable to assess the influence between macro-level pressures and institutionalization of KM strategies. Golsorkhi et al. (2010) explained that S-as-P concepts could analyze micro-level factors and bring a wide range of dimensions. For instance, practitioners' concept provides a basis for examining what people do when strategizing in organizations.

Specifically, the practice concept can allow a study to examine and analyze practitioners' actions through strategic decision-making processes. The Strategy-as-practice theory can enable a study to embrace the practice turn approach.

Criticisms of Strategy-as-Practice Theory

While a fundamental justification for Strategy-as-P theory is the practice turn, Splitter and Seidl (2011) contend that systematic epistemological reflections of generating practical relevance using the practice-based approach lack in extant literature. Also, despite the explicit concern for practical significance, the authors asserted that the extent and conditions for which the practice-centric research would prove relevant to practitioners is not exact and remains unknown in literature. The authors also claimed that the theoretical foundations' epistemological implications to demonstrate the

relationship between strategy research and strategy praxis were not systematically explained. The authors argued that producing scholarly knowledge that attests relevance on strategy related studies requires the researcher to develop a form of reflexivity through a practice lens.

Drawing from the theory of practice, Lewandowski (2000) argued that true reflexivity could be achieved through the researcher's engagement and understanding of the social conditions and conditions of social practices. When compared to practice theory concepts, Hurtado (2010) contends that strategy-as-practice theory scholars have not sufficiently incorporated key concepts from the theory. The author also claimed that there had been misinterpretation and inappropriate use of the S-as-P theory practice concept. The scholar argued that in studies where the concepts from practice theory have been incorporated, there had been a lack of emphasis on their collective implications. In a direct criticism, the author asserted that strategy-as-practice is not clear on its appropriate object of inquiry, and articulation of the unit of analysis has been lacking. Furthering the argument, the strategy-as-practice theory has been criticized for lacking clarity on the relationship between macro and micro approaches. For instance, the theory's proponents have attempted to transpose or translate theoretical and methodological insights from practice theory without understanding or clarity (Whittington, 2017). In general, strategy and organization have been considered distinct concepts, and treating them as one without clear separation has been criticized (Bodhanya, 2009).

Despite the strategy-as-practice theory criticisms, it has significantly contributed to analyzing and understanding strategy research in organizations. This is because of the focus it has placed on activities in organizations using a practice lens. Bodhanya (2009), for instance, emphasized that the theory has rich concepts to identify the links between strategy and organization. Additionally, from strategy formulation to implementation, there has been a strong contrast which the S-as-P theory has problematized. Studies that have examined strategies have treated the strategy as an object in previous theories and not as an unfinished project. The idea of treating the strategy as an ongoing project has brought a new interpretation, embracing the strategy

as a discourse and analyzing the organizational environment not as distinct but by examining actors' involvement.

Chia and MacKay (2007) argue that there are cases where there has been a lack of clarity between what constitutes practice with processes and individual activities. While appreciating that practices are like micro-processes or activities and are conceptually interpreted as central to individual/organizational actors' actions, the scholars criticized the theory by claiming that the tenets of the theory presume that practices are what organizational actors 'do.' The authors argued that the tendency has been for the primary locus of analysis in strategy decision-making research to remain the individual or the individual organization instead of the social practice itself. These contentions generated several questions about whether the strategy-as-practice approach has been asserting itself as a unique perspective or an extension of the strategy or process theories. Subsequently, it has been argued that researchers have found it challenging to apply S-as-P theoretical conceptions in systematic empirical research (Carter, 2013; Ezzamel & Willmott, 2008; Vaara & Whittington, 2012).

Other areas that have been criticized include the interchangeable use of the concepts "activities", "practices", and "processes". This is because the theory shares basic philosophical presuppositions with the process approach. This has been said to have created several conceptual tensions for the theory.

Despite these criticisms, proponents of the theory contend that theoretical, philosophical, and methodological groundings are needed to help researchers clarify, differentiate, and appropriately apply the practice perspective from a process-orientation (Chia & MacKay, 2007).

In spite of extensive justification in the extant literature, several authors have cited that the theory has tenuous theoretical foundations. These claims are surprising given that the theory has explicitly articulated the theoretical concepts that underpin the critical concepts of practice, practitioners and praxis/actual actions/activities. These concepts can be applied to contextually examine and analyze the intervening role of strategic decision making between external pressures and institutionalization of KM strategies.

2.7.3 Application of Strategy-as-Practice Theory

The theory has been applied in different subjects, organizations, and contexts or settings with varying degrees of versatility. Since its emergence as an approach and theoretical lens or theory, the application and use have grown (Johnson et al., 2007). It has been used as a theoretical basis or foundation to examine and analyze strategy related studies and has been deeply rooted in organizational studies (Davis, 2013). The central theme has been the relationship between strategic organizational decisions (embedded in organizational actions, practices and processes) and external phenomena in the organizational environment (Seidl & Whittington, 2014). The precise focus is the effects (relationships and associations) of micro-activities as influenced by the macro-environment (Johnson et al., 2003; Davis, 2013). For instance, Uusi-Illikainen (2017) used the theory to examine a public sector strategy's implementation.

The theory draws its strength from persuasive demonstration to researchers that understanding what strategy practitioners do in practice is essential. Earlier strategy research and practice related theories had not clearly articulated this vital point (Seidl & Whittington, 2014). For instance, Jarzabkowski (2004) applied the theory to examine the use of practice concept in an empirical setting. In practice, the author found that strategic organizational actions span multiple levels from macro-institutional factors to within-organization or micro-level factors. The scholar explained the relationship between micro-level strategic activities and the macro-level elements' influence by analyzing how management practices were used to put strategies into use. The author defined management practices as the primary unit of analysis. The organizational context macro and micro-level elements were linked to management practices. When analyzing and interpreting the findings, the author used S-as-P theory concepts to explain the types of practices that became institutionalized at different organizations. The author also observed that focusing on management practice as the primary unit of analysis and what management does regarding strategy can help researchers better understand the actual practices.

Additionally, the author argued that using the management practice concept as the unit of analysis may highlight effective practices, different skill levels, and applicability of

practices within a given context. The study concluded that understanding the relationship between management practice and organizational actions can help explain adopting a particular practice. The authors argued this as necessary in demonstrating the effect management practices may have on organizations' strategic activities over time. The author further argued that this understanding is useful in analyzing different institutional environments as well as contexts. Another study by Fenton and Langley (2011) found that institutionalized practices from the external environment influenced strategic decision-makers' stories or narratives as they interact and undertake their day-to-day strategic activities.

Kaliappen et al. (2019) used strategy-as-practice as a complementary theory. They focused on internal organizational decisions to undertake the necessary strategies and activities to shape, adapt, and renew their strategic choices. The authors adopted the strategy-as-practice theory and stressed that organizational capabilities and activities are essential for the value creation process. The authors also used the theory's concepts to provide a theoretical framework for analyzing the right strategies, activities, and capabilities essential to ensure organizations succeed in their strategic endeavors.

Drawing from the theory, Crick et al. (2020) established an understanding of employees' relationships with external customers and organizational performance. They highlighted that analyzing the inter-firm relationships in regional clusters was important. An analysis of extant literature for the past twenty years on strategy as practice revealed numerous contributions, especially on the bigger picture of understanding how daily routines shape strategy work in organizations (Tamayo et al., 2016). For instance, Vaara and Whittington (2012) noted that the theory had extended the mainstream strategy research by highlighting practices and the effects that previously have not been noticed. Similarly, the theory has been used to develop conceptual frameworks to analyze the social interactions in strategy work and the organizational environment, and internal actions, practices and practitioners (Whittington, 2006; Balogun et al., 2014; Jarzabkowski & Kaplan, 2015). The theory has mainly focused on examining the micro-practices and routines in organizations'

day-to-day strategy work. However, Tamayo et al. (2016) suggested other analysis levels, such as groups, organizational, national, and industry, should be included.

2.8 The Relationship between Neo-institutional Theory and Strategy-As-Practice Theory

Several meta-theories have been used to either complement strategy-as-practice theory or examine a phenomenon of interest in strategy research (Bryant & Jary, 2014). There are two sets of arguments. One school of thought believes that meta-theories can be used in strategy-related research without a complementary theory. In a strategy-related analysis, the second group argues that meta-theories are unlikely to provide the conceptualization required to examine the relationship and association between the macro-level influences and strategic decision-making. For instance, Bryant and Jary (2014) argue that structuration theory rarely explains how macro-level phenomena are likely to affect micro-level activities. Thus, combining the two theories or perspectives provides different concepts for better conceptualization, both macro and micro-foundations in organizations (Powell & Colyvas, 2008).

Previously, scholars have highlighted the intersection between institutional theory and strategy-as-Practice theory. When analyzing strategy practices within the organization, S-as-P theory has the required concepts, but institutional theory considers other social demands in the organizational environment (Vaara & Whittington, 2012; Smets et al., 2015). While structuration theory can provide a general view, it lacks the concepts needed for analyzing strategy research, especially from practice, process and context perspectives (Bryant & Jary, 2014).

Practice theory has been used to explain how social beings, through diverse motives and intentions, transform the world they live in through social structure and human agency relationships. Specifically, the practice theory seeks to explain the relationship between human action and the global entity referred to as 'the organization system' (Dougherty, 2004).

Scholars contend that neo-institutional and strategy-as-practice theories offer alternative approaches to each other for organizational studies, especially studies

seeking to understand and explain the macro-level influences on the micro-level organizational field (Suddaby et al., 2013). The theories complement each other in different and several ways. First, both theories share some overlap. For instance, the focus on what actors do in the organizations resulting from influences from the external environment is one of these theories' shared cognitions. Therefore, the theories can be considered and used the theories in a complementary way by showing each theory's contribution. The concepts offered by both theories can be applied in the conceptual framework for a study, as shown. In turn, this can inform the study design and methodology as well as in the interpretation of results.

In similar ways, Durand (2012) emphasized the need to bridge the gap between theories by combining relevant theories in a study. The author underscored the growing complementarity between the two theoretical approaches. The author also stated how this could help understand organizations concerning analyzing the organizational environment and strategizing in organizations. From both theories, theoretical foundations and concepts are important in examining how KM strategies have been institutionalized in AROs in East Africa. The institutional theory, for instance, is useful in analyzing the macro-level influences and their relationship with the strategic decisions of the organizations in AROs in East Africa. In similar ways, drawing from the concepts of Strategy-as-P theory is important in analyzing the effects of actual actions (praxis), practice and practitioners. The complementarity is achieved since the neo-institutional theory is macro-oriented and primarily focuses on organizational environmental influences. On the other hand, Strategy-as-practice theory is micro-orientated, mainly focusing on interactions between strategic decisions and how these decisions have been influenced by external pressures to institutionalize KM strategies in practice.

While the two theories are interrelated, the extent of their use has been limited and not exhaustive in describing and explaining the interaction between institutionalization and strategizing. Previously, the neo-institutional theory has been used to explain how organizations respond to pressures from their operating environment (Meyer and Rowan, 1977). Consequently, the strategy-as-practice theory has been used to describe

the effects of strategic decision-making as influenced by pressures from the operating environment thus placing a study deep into understanding day-to-day actions, practices, and processes of decision-makers in organizations (Jarzabkowski et al., 2007). Drawing from the criticisms leveled against each theory, theoretical foundations and conceptions of neo-institutional theory cannot clearly explain the micro-level elements of processes, practices and individual decisions. These limitations are the main theoretical strength, foundation and concepts of the strategy-as-practice theory. Similarly, the strategy-as-practice theory is criticized for its inability to explain the broader macro-elements of how practices emerge, reproduce, and are maintained in organizations. These shortcomings are the main theoretical foundations of the neo-institutional theory

The 'practice' emerged as a critical concept for understanding and analyzing the central questions of what external pressures influence actors such as decision-makers to institutionalize KM strategies. Therefore, the theory can help explain the causal relationship or association between macro and micro variables. Using the tenets of the theory has helped define the relationship between the macro-level influences experienced by AROs and strategic decision-making regarding institutionalization of KM strategies in AROs in East Africa. Theoretically and empirically, the extent of macro-level effects on the strategic decision-making process determines the level of institutionalization. To understand and explain such relationships or associations from a practice perspective or as a lens was needed. Therefore, the S-as-P theory provides richer concepts compared to practice or organizational theories. Because this study also focused on understanding and explaining the micro-level happenings such as activities, practitioners, and practice actions. The S-as-P theory was considered an appropriate complementary approach for this part of the study.

2.9 Upper Echelon Theory

In this section, the upper echelons theory has been discussed, its use in previous studies, and its theoretical and philosophical foundations (Lapointe-Antunes et al., 2019).

2.9.1 Theoretical Background

Hambrick (2007) explained that the theory has progressed in three ways: (1) the concepts are applicable for studies examining top management teams' behavior or characteristics, including demographic, psychological, and social factors. (2) The theory can conceptualize moderators that mediate in the relationship between organizations' top management and performance, including discretionary decisions and decision-based processes. (3) The aspects affecting top management team actions, activities, and organizational performance. Upper echelons theory constructs and conceptions have been used widely to examine the antecedents and consequences of top management teams (TMTs) and organizational leadership (Hambrick & Mason, 1984; Yamak et al., 2014). The theory's concepts have majorly been used to analyze top management support and organizational leadership and their effects on organizations' actions and practices (Al-Shammari et al., 2019). Researchers have significantly advanced the understanding of organizational leadership and top management support. They have placed increasing emphasis on important characteristics such as activities, actions, and practices.

While several theories have discussed various aspects and characteristics of organizational top management and leadership, upper echelons theory provides a synthesis and concrete conception of "upper echelons perspective" (Hambrick & Mason, 1984; Matzler et al., 2008). For instance, the theory has been used widely to investigate top management support's effects on organizations' strategic directions. The theory states that organizational strategic outcomes and performance levels are related and can be predicted by the characteristics and other aspects of its management and leadership (Houet al., 2013; Yamak et al., 2014). This is because the theory focuses on the top decision-makers in organizations. Its constructs and concepts can be used to investigate, explain and analyze strategy and management related research. The theory has been effectively used to examine organizational performance in several areas (Hou et al., 2013). For instance, Yasmeen et al. (2020) confirmed the role of top management support and recommended that the executives in organizations should gain professional knowledge on the strategies

Hambrick and Mason (1984) emphasized that understanding causal relationships has been an important concept in theory. For instance, strategic actions in organizations have resulted from top management and leadership decisions, mainly resulting from the macro forces or pressures. From a generic perspective, the upper echelon model has been illustrated. The relationship between the organization's external and internal environment and the organization's performance is shown. These concepts and relationships have often been analyzed from a mediation perspective. The external environment's role in top management and leadership of organizations has been a critical concept of upper echelons theory.

Drawing from the theory, the external context in which organizational top management and leadership are embedded varies with different organizational contexts. Therefore, it was essential to understand how external pressure from the organizational environment shapes top management support and leadership decisions and actions to institutionalize a practice such as KM strategies. Previously, earlier versions of upper echelons theory have been criticized for focusing on the characteristics of top management (Yamak et al., 2014). Scholars have argued that the concepts of the theory can only be used to explain the demographic variables. Despite these limitations, the constructs of the expanded version of the theory can explain the direct, moderation, or mediation effects (Yamak et al., 2014). For instance, external pressures exerted on an organization's strategic decision-making process can, directly and indirectly influence organizational top management and leadership actions and decisions to institutionalize a practice.

Also, the concepts have been used to conceptualize and explain the relationship between these variables. The constructs of the theory can be used to describe and explain the moderating effects between strategic decision making and institutionalization of KM strategies in the context of AROs in East Africa. From a theoretical standpoint, top management support and organizational leadership's moderating influence on different organizational outcomes has been extensively emphasized in extant literature (Li, 2015; Al-Shammari et al., 2019). Arguably, the influence can be through the extent of supervision and competency of leadership

situated in the provision of resources, commitment and quality of decision making to institutionalize a practice such as KM strategies.

2.9.2 Justification and Relevance of Upper Echelon Theory

The significance of analyzing and explaining leadership and organizational factors in institutionalization of KM strategies can be supported by different theories, theoretical and empirical studies. Upper echelon theory (Hambrick & Mason, 1984) is one of the dominant theories that has been extensively used to describe and explain the influence of top management support and leadership factors to adopt innovations or practices in organizations. The upper echelon theory has been used to analyze the relationship between the top management factors and the adoption of innovation or practice and the subsequent outcome. The theory has constructs that can help analyze the organizational leadership and top management actions, decisions and experiences, and the extent of influence by which practices or innovations are institutionalized in organizations (Khosravi et al., 2019). The theory has also been applied to analyze how the actions and decisions are informed by the circumstances the organization's leadership and top management face, such as the extent of external pressure that has been exerted upon them. The operating environment or external influences affect the choices and decisions of key leaders and management teams in organizations. For instance, the decision to either adopt or not to adopt an innovation or practice, such as a new KM strategy, can be moderated by the effect of top management support and organizational leadership.

The theory constructs and concepts provide the logic that top management and leadership decisions or choices and actions may be based on personalized ideas or influenced by the environment they have been subjected to (Juravich, 2012; Khosravi et al., 2019). Drawing upon the tenets of the theory, top management and organizational leadership are likely to interpret situations and make decisions based on experiences and influences from the environmental factors exerted upon them. As organizations increasingly face complex pressures from the organizational environment, their leaders' and managers' decisions and actions to institutionalize strategies can respond to the external demands (Dong et al., 2009). Based on the

theoretical concepts, a study framework can be conceptualized using the theory as a lens to examine how organizational leadership and top management support moderates the influence between strategic decision-making and institutionalization of KM strategies. The external environment or macro-level pressures can be drawn from institutional theory concepts (cognitive, normative and regulative pressures). Organizational performance or outcome can be the extent of institutionalization of KM strategies in AROs in East Africa. The upper echelon actions or choices can be organizational top management support and leadership due to their moderating effects on strategic decisions to institutionalize KM strategies. The concepts of the theory that were used in the conceptualization process are shown in Figure 3.
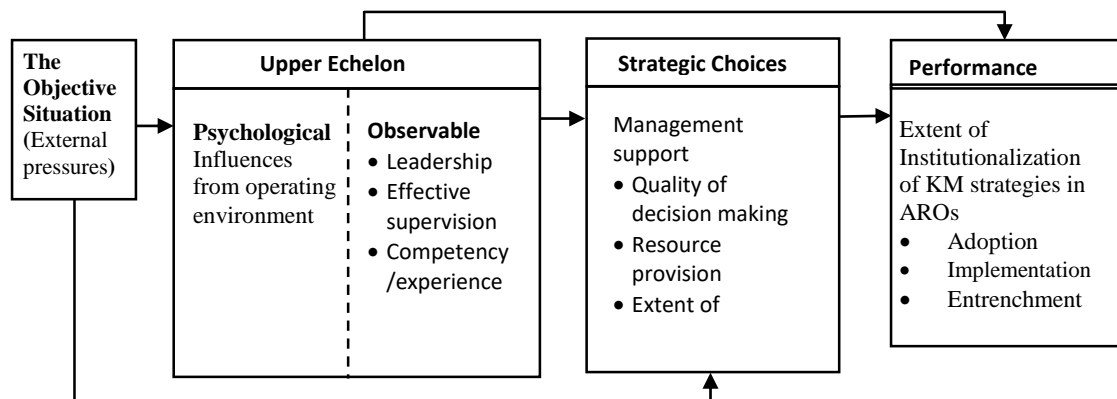
Figure 3: Schematic diagram of Upper Echelon Theory (Yamak et al., 2014)

Criticisms of Upper Echelon Theory

Upper echelon theory has been extensively used in IS studies, but most of the studies have mainly focused on examining the influence of different leadership styles in organizations (Khosravi et al., 2019). A study by Juravich (2012) analyzed the literature on the use and application of upper echelon theory. The literature analysis revealed that upper echelon theory was mainly criticized for examining top management teams' demographic characteristics. The scholar argued that studying a single individual manager or a group of managers or top management teams of organizations is inadequate to establish all factors that influence a practice's organizational outcome. The author pointed out that studies should consider contextual differences in organizations. As Juravich (2012) argued, there are several

organizations where collaborative decisions are undertaken as standard practices when addressing critical strategic issues. Therefore, a focus on top management demographic analysis alone is not enough to analyze and explain relations between macro and micro-level factors and their effects on the performance or outcome of a process or practice in an organization.

Another criticism is how the theory deals with the analysis of organizations with complex multi-level top management structures. In such organizations, examining individual or top management attributes or demographic characteristics, the critical variables of organizational performance or other outcomes cannot provide enough data. Further, due to the management system's hierarchical nature or structure, it is difficult to identify and isolate a single-level relationship from other practices (Klein & Kozlowski, 2000). To address these limitations, it is crucial for studies using the upper echelon theory to analyze the relationship between macro-level and micro-level variables by applying a multi-level model approach. For instance, different macro-level environmental pressures exerted on top management support and organizational leadership may bring different perspectives in the organization's decision-making processes and actions.

The concept of demographic characteristics is an essential factor of top management teams. It has focused on many studies applying the upper echelon theory as the theoretical foundation or lens (Pittino et al., 2019). However, a single direction and attention on demographic characteristics as the primary variable has been criticized and regarded as a black box, a mere indicator, and not revealing other critical aspects of influence on the organizational outcome (Olaka et al., 2017; Pittino et al., 2019). The upper echelon theory can be used as a theoretical lens to conceptualize the moderating variables. To examine the institutionalization of KM strategies in AROs in East Africa, top management support and organizational leadership can be conceptualized as the moderating or mediation variables. The theory can be adopted to complement institutional theory and strategy as practice theory and conceptualize the study variables, study design and conceptual framework. Drawing from these

theories' concepts, the variables and their relationships on institutionalization of KM strategies in AROs in EA can be conceptualized.

2.10 Institutionalization Processes

An institutionalization process can ensure that activities that facilitate the continuous management of an organization's knowledge are effectively undertaken (Alers-Tealdi, 2015). Earlier studies used the organic growth model, differentiation model and diffusion model in understanding institutionalization processes (Clark, 1968). These models can be used to examine basic concepts of institutionalization processes. In this approach, adoption is considered the trial phase of innovation through the evaluation process and if deemed acceptable, it can be embraced on a more permanent basis. However, earlier studies neither theorized nor contextualized institutionalization processes in actual settings (Dillard et al., 2004; Lu, 2017). This is because external factors highly influence organizations with low levels of institutionalization. Therefore, organizational susceptibility to external pressures or demands depends on the level of institutionalization. Concerning understanding institutionalization levels, Uygun et al. (2020) pointed out that several models to measure institutionalization exist.

Other studies emphasized that understanding the different institutionalization levels, notably: macro and micro levels is necessary (Schultz & Wehmeier, 2010). The authors argued that neo-institutional theory explains the macro-level institutionalization elements or tenets. For instance, the theory can explain institutionalization processes in organizations, but the theory cannot explain micro-level dimensions such as what happens in practice. Concerning examining micro-level aspects of the institutionalization process, Schultz and Wehmeier (2010) indicated that a dominant theory or theoretical framework is required. The interplay between organizational actions and environmental pressures has been the central concern in research and scholarly analysis. Scholars have argued that organizations may institutionalize a practice due to external pressure regardless of derived benefits, and

therefore examining institutionalization processes requires a multi-level analysis (Schultz & Wehmeier, 2010).

Institutional theory has been used to analyze different aspects of organizational studies and examine institutionalization processes at inter-organizational and intra-organizational levels (Hirst, 2010). Regarding what constitutes institutionalization processes, some studies have elucidated concepts such as innovation, theorization, diffusion and institutionalization (Mignerat & Rivard, 2009). However, explanations detailing institutionalization processes at the micro-level have not been discussed in most IS studies (Weiss et al., 2013; Greenwood et al., 2014).

In general, understanding institutionalization processes has been identified as an important aspect for explaining how practices emerge, develop, transform, and possibly decline (Tolbert & Zucker, 1999; Hirst, 2010). For instance, Tolbert and Zucker (1999) mentioned that few studies have focused on specifying and conceptualizing institutionalization processes. To fill this gap, the authors explained institutionalization and causative forces that often lead to different processes. They described the processes as habitualization, objectification and sedimentation. Drawing from institutional theory, Hirst (2010) redefined the processes like adoption, implementation and entrenchment. Corresponding to pre-institutionalization, semi-institutionalization and full-institutionalization (Tolbert & Zucker, 1999).

Hirst (2010) expanded the theoretical model developed by Tolbert and Zucker (1999) to explain institutionalization processes concerning how KM practices are institutionalized at the micro-level. The author argued that previous studies had not demonstrated institutionalization processes by examining what takes place inside organizations to institutionalize practices. This gap has led to little explanation of institutionalization processes at the micro-level (Lounsbury & Ventresca, 2003; Lounsbury, 2008).

While there is a limited number of studies that have focused on the institutionalization of KM strategies, Hirst's (2010) provided a model for explaining the institutionalization processes, emphasizing the significance of using a practice and

process perspective. This is because examining the institutionalization of KM practices, such as a KM strategy at an organizational level, ensures that the inter-relationship between process and practice remains the central focus. The author shows how a process analysis could illustrate the links between the context and outcome when examining KM practices' institutionalization. Consistently, the analysis carried out in this thesis revealed a significant gap in studies that have discussed the concepts of institutionalization of KM strategies, especially from a process and practice perspective. Similarly, despite the literature that has explored the factors influencing adoption and the implementation of KM strategies in organizations, a limited number of studies have focused on AROs.

Institutionalization of KM Strategies

While studies have looked at the importance of KM strategies in agricultural research organizations, institutionalizing the strategies has not been widely examined. For instance, Abbas (2015) highlighted several factors that can influence the formulation of KM strategies. However, the author did not explicitly review how the strategies had been institutionalized. Also, few studies have examined the institutionalization of KM strategies either from a practice or process perspective. As to the extent to which researchers explored the factors influencing the institutionalization of KM strategies in AROs from a practice or process perspective, the literature analysis revealed a minimal number of studies.

2.11 The Development of the Conceptual Framework

This study developed a conceptual framework to describe the concepts of institutionalization of KM strategies in the context of AROs in East Africa and provide a theoretical lens to the research process and a sensitizing device for data collection. The key variables, concepts, assumptions, processes, and relationships were identified, described, and explained through the conceptual framework. In this study, a conceptual framework has been defined as the link concepts that offer insight for data collection and analysis. It is also a guide for theorization based on the theoretical foundations of dominant theories and research methodologies. This study's conceptual

framework illustrates constructed and hypothesized key factors, variables, and presumed interactions. It includes the description and specification of the different levels and processes of institutionalization. The concepts, hypotheses, assumptions, and presumed relationships have been drawn from the theoretical constructs of the dominant theories used in the subsequent sections, both graphically and in narrative form.

2.11.1 Preliminary conceptual framework

The conceptual framework has been created or developed from concepts obtained through the literature review process to describe all the study features and enable a flexible data collection process (Ravitch & Riggan, 2011; Davoodi et al., 2017). In general, a conceptual framework intends to capture the concepts in the subject of interest, based on evidence in the field of study. It is an essential representation of the categorized variables and concepts. Studies have shown that a conceptual framework provides the guidelines that practitioners and researchers can use for future studies regardless of the specific research they are developed to serve (Bianchini et al., 2017). Although a conceptual framework could have been developed for particular research as a framework, they can map out the casual relationships or effects of interest and translate the findings into reproducible, defensible and plausible outcomes applied by studies later. Consistently, Varpio et al. (2020) described a conceptual framework as a reference to the state of general knowledge from extant literature, and identification of the gaps to enable understanding of the phenomenon of interest or research problem and outlined research methodology.

Drawing from recommendations by previous research, the conceptual framework has been used to present an in-depth analysis of concepts used in this study by articulating the logic of using the theories or as a set of theories and interpreting findings. For instance, Varpio et al. (2020) explained that a conceptual framework justifies conducting a given study. Besides, it supports the significance and the contribution of the study to the body of knowledge. In this study, the institutional theory was chosen as the theoretical or sensitizing lens while drawing from theoretical constructs and concepts of strategy-as-practice and upper echelon theories. This study's conceptual

framework consists of variables, relationships, and presumed interactions drawn from the three theories and informed by the literature review.

Guided by the analysis of extant literature, institutionalization of KM strategies has been understudied, yet organizations face challenges in this area. In this regard, institutional theory has been adopted as a prominent theoretical focus amongst scholars examining different organizations' phenomena of interest. Conceptually, this study considered it a dominant theory to help gain a better understanding and explanation of the variables influencing adoption, implementation and entrenchment of KM strategies in AROs in the context of East Africa.

In this study, institutional theory tenets and concepts have been used to develop the conceptual framework as a lens to conceptualize the independent variables and their presumed relationships. Subsequently, to describe, understand, and explain the effects of macro-level pressures (independent variables) on micro-level actions, Strategy-as-Practice theory tenets and concepts were used to conceptualize the intervening variable (strategic decision-making). While the principles and constructs of the two theories are described and explained, the relationship between the variables, institutionalization of practices could be moderated by a third element: organizational leadership and top management support. Therefore, upper echelon theory tenets and concepts were used to conceptualize the moderating variables and their presumed relationships.

From the selected theories, the variables were defined and described to advance the research design, data collection, and analysis. The conceptual framework contributed to obtaining relevant findings on how KM strategies have been institutionalized, the processes, and how they should be institutionalized, and the processes. The conceptual framework helped to deepen the understanding of research problems, study context, and the dominant theories concerning the subject studied.

2.11.2 The Theories used and Theoretical Approach

Extant literature continuous to report that AROs are experiencing increasing difficulties, challenges and constraints in the effective management of agricultural research knowledge (Devaux et al., 2018). To improve the understanding of

institutionalization of macro-driven KM strategies, the theories used in this study were carefully chosen. Intuitively, in this study, the choice of theories and approach has been an appeal that conceptualizing both macro and micro variables into the conceptual framework was critical in answering the research questions. Researchers have applied organization-focused theories to conceptualize variables and the relationships or interactions in many instances. However, they have not focused on conceptualizing institutionalization processes as defined in the literature review section.

Literature has shown that the concepts of practice and process are interrelated. An accepted practice has the potential of being institutionalized into the process of adoption, implementation and entrenchment. The literature has shown that theories or theoretical models or frameworks have been used to explain the interrelationship between practices, processes and outcomes (Lounsbury & Crumley, 2007; Hirst, 2010). The practice has been viewed from a process perspective. To advance the discussion on the institutionalization of a practice, Hirst (2010) provided a theoretical framework that described the processes of adoption, implementation and entrenchment.

2.11.3 The Concepts of Institutionalization Processes in the Conceptual Framework

Tolbert and Zucker (1999) clarified that institutional theory's theoretical concepts could analyze different aspects of institutionalization, such as processes in organizations. Also, they emphasized that the theoretical concepts and perspectives can enhance empirical research. By conceptualizing institutionalization processes, researchers using institutional theory can explore how practices are institutionalized or undertaken in organizations through the decision-making process such as activities, actions, and practices.

As illustrated in Figure 4, organizations are often introduced to innovation, such as a KM strategy from external sources. The external sources include external stakeholders, legislation, donor/market demands, and technological changes.
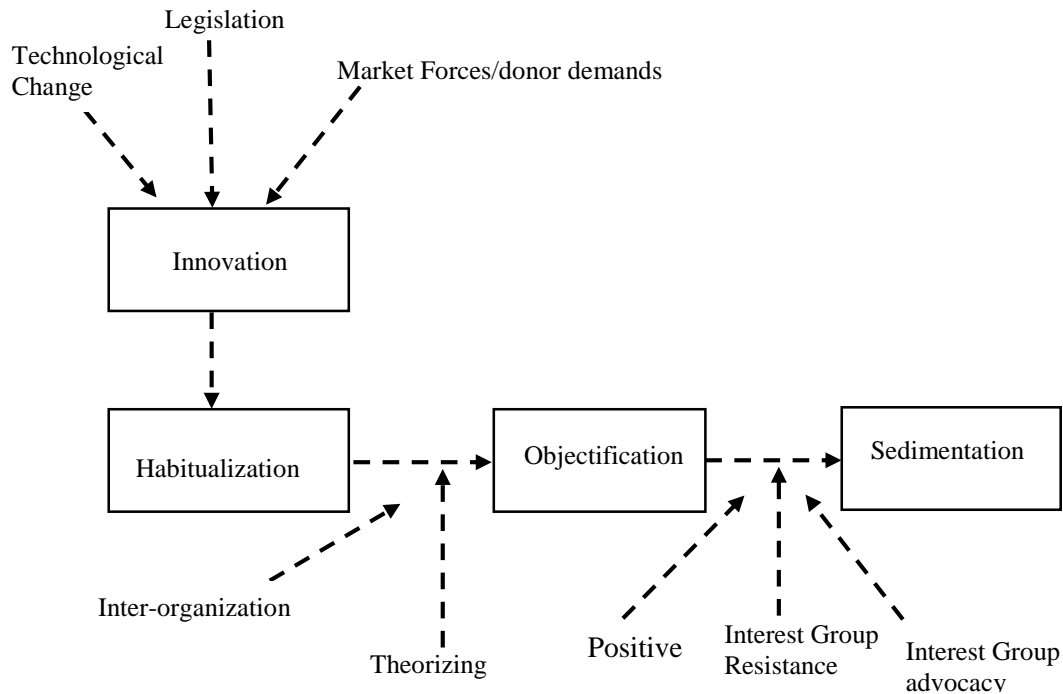
Figure 4: Institutionalization processes at an organizational field level or micro-level (Tolbert and Zucker, 1999)

Figure 4 demonstrates the introduction of innovations in organizations and the institutionalization processes for the innovation. At every stage, there are activities and practices that take place. For instance, in the first phase called "habitualization", actions and activities are empirically developed and adopted by users within an organization. This process often involves minimal decision making by a few responsible users. A general acceptance follows, where the activities, actions, or requirements of the innovation are carried out. This second phase, called "objectification" is where the real and tangible ideas, actions, or activities are suggested and established with users both from within and outside the organization. The last stage called "sedimentation" is where the actions remain consistent and are maintained over time. In this process, institutionalization gains a higher acceptance and use within the organization. Users become optimistic about the innovation and

interested groups advocate for the wide use of the invention by overcoming uninterested groups' resistance. Tolbert and Zucker (1999) presented institutionalization as a sequential process with varying levels. Therefore, the extent to which an innovation or a practice may be institutionalized in the organization varies at different habitualization, objectification, and sedimentation levels.

Hirst (2010) redefined the institutionalization processes to adoption, implementation and entrenchment. This redefinition corresponds to habitualization, objectification and sedimentation, as shown in Figure 5. It describes the different institutionalization levels of a new ideal such as KM strategy in practice at the organizational field level (micro-level). The author extended the framework by Tolbert and Zucker (1999), shown in Figure 4.
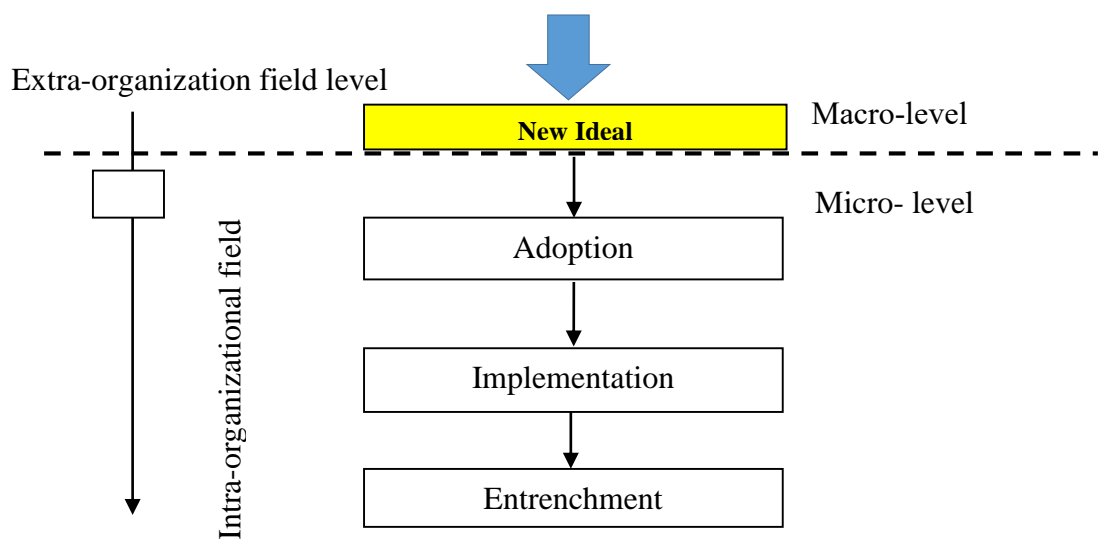
Figure 5: Organizational field/micro-level of Institutionalization (Hirst, 2010)

Tolbert and Zucker (1999) concentrated on several dimensions: characteristics of users, processes, the stimulus for implementation, theorization of activities, how actions are formed and executed and variations and failures in execution. In redefining

institutionalization processes, Hirst (2010) shifted the focus and examined the influence of external or macro-level factors on the micro-level or intra-organizational field processes-adoption, implementation and entrenchment- in organizations as shown in Figure 5. By developing a framework for process analysis at the micro-level, the author argued that intra-organizational field-level analysis revealed the different mechanisms, consequences and the outcome of the institutionalization process. Through the redefinition, Hirst (2010) presented the institutionalization processes to include the different organizational analysis levels -adoption, implementation and entrenchment-, the distinct forms of change, mechanisms of influences and organizational activities or actions. From the different concepts, dimensions and frameworks, this thesis developed a conceptual framework and examined the processes of institutionalization of KM strategies in the context of AROs in East Africa. These concepts are discussed in the next section.

2.11.4 Description of the Variables used in the Conceptual Framework

The conceptual framework concepts formed the theoretical foundation for identifying variables and related indicators, their inter-relationship and hypotheses that tested the different relationships among the variables. As a logical, analytical sensitizing device that integrates several variables (Kumar & Rao, 2015; Shad et al., 2019), it is important to explain the concepts in detail. Using the constructs in a context such as AROs in East Africa provided the best explanation of the subject or phenomenon of interest examined.

Mimetic Pressure

Mimetic pressure, also called cognitive pressure arises when organizational goals are unclear. A problem requires an urgent solution, or uncertainty exists in the organizational environment that leads to an organization modeling itself after another organization (DiMaggio & Powell, 1983). Mimetic pressures are forces or compulsions/influences that lead organizations to imitate other organizations by modeling their activities after such organizations (Krell et al., 2016; Steele, 2018). Studies have shown that mimetic pressures can influence organizations' strategic decisions to take-on identical actions, practices, and activities of other organizations

(DiMaggio & Powell 1983; Oliver, 1991; Teo et al., 2003; Oliveira & Martins, 2011). Drawing from institutional theory and extant literature on institutionalization, an organization can institutionalize practices or a new ideal such as a KM strategy due to mimetic pressure. In most cases, organizations are compelled to align themselves with the actions or activities of other organizations.

In this study, the indicators for mimetic pressure were identified as uncertainty, perceived success, and a practice's prevalence. Using these indicators, this study hypothesized that mimetic pressure influences the strategic decision-making process of AROs in East Africa to institutionalize KM strategies. From the theoretical concepts, study assumptions, and analysis of literature, an alternate hypothesis was formulated, stating that the extent of mimetic pressure exerted on AROs in East Africa influences the strategic decision-making process to adopt, implement and entrench KM strategies. To examine how the mimetic pressure as a factor influences the strategic decision-making of AROs to institutionalize KM strategies, uncertainty, perceived success and prevalence of practice were identified as the key indicators.

Krell et al. (2016), for instance, found that mimetic pressure had an impact on team competence concerning project management in organizations. In turn, this influenced the successful adoption of information systems in organizations. The authors identified uncertainty as one of the mechanisms or indicators that was associated with mimetic pressure. Uncertainty was evidenced mainly in cases where organizations had insufficient information to solve a problem and mostly where other similar organizations had resolved similar issues in the environment or context. Consistently, earlier proponents of institutional theory conceptualized the influence of mimetic pressure as one of the external pressures that influence the decisions, actions, and activities of organizations (DiMaggio & Powell, 1983). Krell et al. (2016) confirmed this assertion. The authors found that the influence of mimetic pressure affects activities and actions, mainly due to uncertainty. This was common when organizations were uncertain about solving specific problems, undertaking specific activities, and reaching a particular goal. When uncertainty prevails in an organization's environment, decision-makers in the organization tend to believe in

other similar organizations' actions or activities. This often leads to mimicry or imitation of actions or activities of other organizations. The model takes place when an organization assumes that by imitating another similar organization, the chances of its success will increase by relying on the experience and activities or tasks performed by other similar organizations. In this context, the imitating organization's strategic decision-makers or decision-making processes will likely experience pressure to copy another or other similar organizations.

From the background knowledge of how AROs in East Africa are established and operate, mimetic pressure was conceptualized as one of the likely sources of influence on these organizations' strategic decision-making processes to institutionalize KM strategies. In the conceptualization process, this study hypothesized that mimetic pressures are likely to influence the strategic decision-making of AROs in East Africa to adopt, implement and entrench KM strategies. Building on claims from previous studies, for instance, inadequate information has been mentioned as one of the contributors to uncertainty in organizations (DiMaggio & Powell, 1983; Teo et al., 2003; Liang et al., 2007; Krell et al., 2016). On mimetic pressure, uncertainty was identified as one of the indicators. Other indicators of mimetic pressure included perceived success and prevalence of a practice. However, before this study, these concepts, argumentation and hypotheses remained untested or unexamined concerning how KM strategies are institutionalized in AROs in East Africa. Therefore, this thesis examined this area by testing hypothesis H1a.

Hypothesis (H1a): The extent of mimetic pressure experienced by an organization is likely to determine the level of influence on its strategic decision making to institutionalize (adopt, implement and entrench) KM strategies.

Normative Pressure

Normative pressure is defined as the force or compulsion/influence that drives organizations to comply with the environment's requirements, such as professional standards or norms (Zhang, 2017). In general, the forces or compulsions are exerted on organizations due to the demand to comply with standard practices or other related

requirements (Syamsuar, 2015; Krell et al., 2016). Scholars assert that normative pressure influences organizations' strategic decision-making to meet stakeholders' expectations in the organizational environment (Krell et al., 2016).

The extent of normative pressure an organization experience can influence the strategic decision making to follow specific industry and professional practices or standards. Such organizational strategic decision-making is often influenced by the belief that compliance with specified standards or practices drives organizational change and success (Palthe, 2014; Dang & Pekkola, 2017). These studies further argue that normative pressure influences key strategic decision-makers in organizations and indirectly influences an organization's activities and practices. Normative pressure has been found to influence organizational decision-making at different levels. Abayomi et al. (2020), for instance, found that organizations tend to comply with the expectations from stakeholders to gain acceptance, legitimacy, and conformity regarding the implementation and assimilation of information systems. The scholars also identified some of the sources or indicators of normative pressure as expectations from stakeholders, customers, suppliers, and consultants.

Other studies found that normative pressure is derived from interactions amongst organizations within similar playing or operating in the same field, especially those with some ties or shared norms (Teo et al., 2003; Cao et al., 2014; Lee et al., 2017). The scholars have mentioned professionalization, associations between organizations and expectations from stakeholders as indicators of normative pressure. This is because organizations share similar norms, for instance, through membership, associations, or consortium.

In the context of AROs in East Africa, the international organizations have been established under organized associations such as the Consortium of International Agricultural Research Centers (CGIAR), a global partnership uniting several international AROs engaged in agricultural research. At the regional level, several relations exist. For instance, the Association for Strengthening Agricultural Research in Eastern and Central Africa (ASARECA) is a sub-regional body that provides

oversight roles for the national and international AROs in 11 African countries, including Kenya, Tanzania and Uganda. The associations and consortia, for example, ASARECA and CGIAR, bring together national and international AROs of the member countries for different operations. These operations include aspects of KM, KM strategies and communities of practice. The goal is to provide standard solutions to the challenges facing the agricultural sector in the member countries. There are also continental bodies, for example, the Forum for Agricultural Research in Africa (FARA), charged with coordinating and advocating AROs in Africa on matters of agricultural research for development.

In East Africa, the consortiums, associations and continental bodies within the agricultural research field progressively share standards/professional norms, membership/networks, and expectations for different aspects of KM. AROs have been subjected to comply or adhere to specific requirements within the member countries due to the shared models, expectations, professionalism, and associations. For instance, comply to expectations to adopt, implement and entrench KM strategies in the respective organizations and countries. Studies have shown that the pressure to adhere to similar practices or standards can spread and is strengthened when organizations undertake everyday activities (Cao et al., 2014; Lee et al., 2018). For instance, participation in organized forums, collective expectations, and professional consultation are potential normative pressure grounds. Considering the nature by which AROs in East Africa have been established and operationalized, this study hypothesized and examined the extent of influence from normative pressure on these organizations' strategic decision-making to adopt, implement, and entrench KM strategies. In this regard, hypothesis H1b was tested to examine the factors influencing institutionalization of KM strategies in the context of AROs in East Africa. The findings are provided in the results section.

Hypothesis (H1b): The extent of normative pressures an organization experience is likely to determine the level of influence on its strategic decision making to institutionalize (adopt, implement and entrench) KM strategies.

Coercive Pressure

Coercive pressure, also known as regulative pressure, is exerted on organizations by other organizations they depend upon (DiMaggio & Powell, 1983; Hoejmose et al., 2014). In general, organizations must comply with conditions, rules, or regulations set upon them by dominant organizations (Xiao et al., 2010). The pressure may be formal or informal and originates from dominant partners with resource or mandate privileges, for instance, governments, funders, or mandated organizations (DiMaggio & Powell, 1983; Topi & Tucker, 2014; Agrawal, 2013). Because organizations are subject to the governing or resource controlling organizations, the coercive pressure remains a crucial influence on organizations' strategic decision-making (Oliver, 1991; Lawrence et al., 2011; Pennarola, 2016). For instance, Pennarola (2016) highlighted that the influence of coercive pressure on organizations' strategic decision-making is characterized by dependency on dominant organizations. The effect is experienced in the form of compliance requirements or resource dependency. Saeed (2018) indicated that coercive pressures are exerted by governments, funding, or coordinating/regulatory agencies mainly to comply with expected instructions and resource provision conditions. Proponents of institutional theory contend that the environmental context where an organization conducts its business, for instance, regulators, funders, and governments have the potential to influence its strategic decision-making to institutionalize a practice (DiMaggio & Powell, 1983; Saeed, 2018). In this regard, institutional theory's concepts highlight the institutional environment characterized by rules, expectations, and standards that organizations must comply.

Other studies show that organizations may be influenced into making decisions to institutionalize a practice by regulators or resource providers (Nurdin et al., 2012). The authors also argued that coercive pressure can have a strong influence on decision-makers in organizations. Consistently, proponents of the institutional theory have explained that the pressure from an organizational context where an organization conducts its business can influence its strategic decision-making to institutionalize a practice (DiMaggio & Powell, 1983; Saeed, 2018). The authors have mentioned

regulators, funders, and government agencies as sources of coercive pressure. Coercive pressure as a concept of institutional theory has highlighted that the institutional environment provides rules, expectations and conditions that organizations are subjected to and expected to comply with.

In general, when organizations are subjected to coercive pressures, their strategic decision-making, such as actual actions, practices, and practitioners' perceptions, are influenced (Saeed, 2018). The influence of strategic decision-making can also be seen in the interpretation of the different aspects of institutionalization of a practice. Thus, this study examined the influence of coercive pressure on the strategic decision making of AROs in East Africa to institutionalize KM strategies. The influence of coercive pressure on the institutionalization of KM strategies in AROs in East Africa has remained unstudied within the literature on institutional pressures. The AROs in East Africa are established so that they depend on funding agencies and regulators. However, previous studies had not sufficiently examined this area. Concerning coercive pressure, resources and mandate requirements were identified as indicators. Consistently, literature shows that organizations are likely to be influenced by other organizations with a mandate over them or those that provide resources. Thus, hypothetically, the extent of coercive pressure experienced by organizations has a likelihood of influencing their strategic decision-making. This study hypothesized and examined the extent of the influence of coercive pressure by hypothesis H1c.

Hypothesis (H1c): The extent of regulative or coercive pressure an organization experiences is likely to determine the level of influence on its strategic decision making to institutionalize (adopt, implement and entrench) KM strategies.

Intervening Variable: Strategic Decision-Making

In this study, Strategic Decision-Making (SDM) is used to explain causal relationship between the independent variables (cognitive, normative and regulative pressures) and the dependent variable (institutionalization of KM strategies in AROs in East Africa). Strategic decision-making (SDM) can be an instantaneous or continuous course of action involving several steps or phases. Organizations make definite considerations

of the available choices or alternative solutions. Since organizations are managed and run by people, SDM consists of evaluating options, considering alternatives and taking up the necessary actions or engaging in practices (Nooraie, 2012). In general, organizations are operated through decisions such as plans, systematic activities and controls (Ulrich, 2004). The influence of external pressures on strategic decisions making can determine how a given course of action and practice is likely to be executed. In this regard, through strategic decision-makers, organizations frequently experience numerous pressures from external sources to make decisions concerning specific choices or alternative solutions to problems. Consistently, a review of prior studies revealed external pressure on the strategic decision-making of AROs in East Africa (Leeuwis *et al.,* 2018; Banerjee *et al.,* 2019). For instance, Ulrich (2004) indicated that external pressures influence organizations' execution of strategies. The author also argued that strategic decisions through decision-makers, directly and indirectly, affect organizational actions. For example, strategic decisions such as alternatives or choices to implement organizational strategies are influenced by external pressures.

In organizational studies, scholars have applied institutional theory to conceptualize the influence of external pressures on strategic choices, for example, the adoption of IS initiatives within and across organizations (Krell et al., 2016). For instance, Orlikowski and Barley (2001) found that external pressures can enable or constrain organizations' decisions and actions. Also, Mignerat and Rivard (2009) found that macro-level pressures' influence positively affected organizational decision-making processes. They argued that external pressures from the organizational business environment had a strong influence on IS's adoption in organizations. Other studies found that the strategic decision-making process to accept a strategy is strongly influenced by macro-level pressures (Delmas & Toffel, 2010; Nooraie, 2012).

Additionally, Johnston (2013) stated that macro-level pressures could significantly impact the decision-making process of organizations. However, Nooraie (2001) indicated that despite the number of studies on strategic decision-making in organizations, coherent articulation of factors influencing organizations' strategic

decision-making processes remained unexplored. These assertions also apply in the case of the institutionalization of KM strategies in East Africa.

Consistently, Kurnia et al. (2017) found that organizational context was a key factor influencing organizations' strategic decision-making process. In their study, the context includes external organizational pressures such as cognitive, normative and coercive forces. The authors also established that a systematic conceptualization of contextual variables was lacking. In turn, there is an incomplete and inaccurate view of studies that have understood the influence of external pressure on strategic decision making in organizations. Furthermore, Kurnia et al. (2017) argued that studies investigating aspects of SDM had adopted an incremental approach to theory development, and their focus on contextual variables has been limited. These gaps have led to the inconsistent conceptualization of variables. Therefore, studies need to identify the critical contextual factors that influence the strategic decision making of AROs. This approach enabled this study to describe how practices such as KM strategies have been institutionalized in organizations.

Shepherd and Rudd (2014) conducted a literature analysis and found that actions do not necessarily occur out of a formal decision process but can respond to external pressure. The authors argued that organizations could take a course of action without a systematic decision-making process under such circumstances. Also, other prior studies made similar assertions. For instance, Mintzberg and Waters (1990) argued that understanding SDM processes in organizations has remained a challenge for decades. However, Pettigrew (2003) dismissed these arguments and emphasized that researchers should be guided by the ontology, philosophy and research questions of the study when conceptualizing strategic decision making as a variable in a study. In the literature analysis conducted by Christofi et al. (2019), the authors found that it is vital to examine the execution of strategies through micro-level organizational factors such as strategic decision-making. This is because prior studies established that strategic decision-making had influenced the adoption of innovations in organizations.

Consistently, Shafie et al. (2017) recommended that studies test and confirm the relationship between external organizational factors and strategic decision-making in organizations. The authors further found that there are limited studies that have examined the intervening effect of strategic decision-making on organizational outcomes such as the institutionalization of KM strategies. Besides, the authors asserted that such a relationship is also not well explained in extant literature. Drawing from this gap, the authors proposed a model for explaining the effect and impact of contextual factors on strategic decision making. They also tested the extent to which the decision-making process's effect as a moderating variable enhances the quality of decisions on a given organizational outcome. However, they noted the need to validate and carry out further studies in this area. While Shafie et al. (2017) developed and tested hypotheses concerning the strategic decision-making and contextual factors, they did not conceptualize SDM as an intervening variable. The authors examined its moderating effects and not intervening effects.

Similarly, they did not distinguish external and internal factors independently but conceptualized the two perspectives as contextual factors. This perspective cannot sufficiently describe and explain the distinct effects of external (macro) factors on micro (internal) factors. Consequently, conceptualizing and analyzing the external and internal factors as contextual factors cannot sufficiently bring out the distinct effects of macro factors (independent variable) and the superseding effects (intervening variable) on other variables such as the moderator variables.

Christofi et al. (2019) identified SDM as a key theme, especially in providing insights into the relationship between external factors through organizational leadership and top management. The authors also analyzed the ultimate effect on the success of practices or initiatives in organizations. Simultaneously, authors have made significant progress in analyzing how macro-level pressures influence SDM on different organizational strategies. However, the intervening effect of SDM on the success of practices in organizations is not presented. By conceptualizing strategic decision-making as the intervening variable, this study analyzed and explained the relationship between external pressures and the intervening effect of strategic decision making of

AROs in East Africa to institutionalize KM strategies. This study hypothesized and tested hypothesis H1d to examine the influence of SDM on institutionalization of KM strategies.

Hypothesis (H1d): Strategic decision making in an organization influences institutionalization (adoption, implementation and entrenchment) of KM strategies.

Moderating Variables: Organizational Leadership

In strategy literature, upper echelon theory has been applied as a prominent theoretical framework when analyzing the effects of organizational leadership on diverse performance outcomes (Abatecola & Cristofaro, 2018). Hambrick and Mason (1984) developed a model and argued that the judiciousness of leadership in organizations describes their role in strategic choices in organizations. Incidentally, the interpretation of circumstances and options prevailing in the organization is influenced by the experiences, values, and personalities of organizational leadership effected through strategic decisions (Hambrick & Mason, 1984). Therefore, it is essential to examine the organizational outcomes using the upper echelon theory as a lens since organizational leadership moderates such effects.

The significance of organizational leadership in strategic decision making and directing the organization in a changing environment can be explained by examining organizational leadership (Carmeli et al., 2016). This is because, through strategic decision-making, the organizational leadership influences the direction, arrangement, and perspective of the organization as they respond to requirements from the external pressures leading to specific organizational outcomes. However, Hambrick (2007) argued that researchers have overlooked aspects of conceptualization or theorization of the inner processes that lead to organizational outcomes. Carmeli et al. (2016) highlighted the need for studies to examine the micro-relationship processes that can describe and explain organizational leadership's role in strategic decision-making and the processes used to achieve the set goals in the organizations. The authors also emphasized the need for a more extensive discourse to understand the relationship between micro and macro-level perspectives in strategy studies concerning the role of

organizational leadership. In this regard, the authors argue that the underlying pressures exerted upon the micro-relationships, such as strategic decision-making, influence organizational strategy execution through organizational leadership or the executive team (Carmeli et al., 2016). While the findings are significant, the authors did not examine the moderating effect of organizational leadership between strategic decision-making and institutionalization of organizations' practices.

Drawing from the upper echelon theory concepts, organizational leadership influences organizations' strategic direction and outcomes (Dimitratos et al., 2011). In this study, organizational leadership was conceptualized as a moderator variable, whose indicators are competency in KM strategy initiatives and supervision. The aim was to test and examine the moderation effect of organizational leadership. This was achieved by testing hypothesis H1e.

Hypothesis H1e Organizational Leadership in an organization moderates the influence between strategic decision-making and institutionalization (adoption, implementation and entrenchment) of KM strategies.

Moderating Variables: Top Management Support
Top management support has been described as the extent to which high-ranking management officers or the executive demonstrate commitments to organizations' actions, activities, and undertakings (Lemmerer et al., 2015). This can be seen in providing all the necessary support for the different initiatives carried out in the organization. Sibanda & Von Solms (2019) explained top management support as the extent to which senior officers in the organization understand the concepts and benefits of adopting a new IS solution or innovation. Studies have highlighted the importance of top management's commitment and support to the organization's different KM activities (Okoronkwo, 2018). The extent of commitment/dedication and support provided by top management in an organization facilitates KM processes.

In the broader context of IS strategic planning, Kearns (2006) showed that top management support had a significant and robust relationship with IS strategy execution. The study also found that top management support increased where

organizations were under some form of pressure. The study also associated high top management support with the extent to which external pressure was exerted on organizations from the operating environment. Similarly, prior studies like that of Boynton et al. (1994) found that top management support was a critical and dominant factor in explaining different aspects of IS strategy execution in organizations. Consistently, Al Shaar et al. (2015) examined the mediation effect of top management support and confirmed that top management support influenced the establishment of structures in organizations concerning adopting and implementing a new IT solution or innovation. The effect was found to take place through accurate decisions and timely flow of information from the top management.

Another study by Iqbal et al. (2015) confirmed that through rational decisions, top management support moderates the relationship between different factors, for instance, leadership and project success in organizations. Kumar and Rao (2015) found that top management support facilitated and shaped organizational innovation-related strategies and decisions. Similarly, Aremu et al. (2020) study findings confirmed that top management support moderated the relationship between IT solutions and organizations' performance. Therefore, it can be seen that studies have conceptualized and highlighted the various moderating effects of top management support on the adoption and implementation of IS solutions and innovations in organizations.

A critical assessment and analysis of studies indicated that examining the effect of organizational top management support on an organization's practices and performance has been noted as necessary (Boynton et al., 1994; Kumar & Rao, 2015; Alsahli, 2018; Sibanda & von Solms, 2019; Aremu et al., 2020). For instance, studies have shown that examining the observable characteristics of top management support and understanding its effects can explain the relationship between macro-level influences and strategic organizational practices (Hakan et al., 2011; Yamak et al., 2014). Using concepts from upper echelon theory, this study conceptualized top management support as one of the moderator variables to examine the relationship between the strategic decision-making and institutionalization of KM strategies in AROs in East Africa. Drawing from the literature on upper echelon theory and

research, the effects of top management support has shown implications on the extent of organizational performance in diverse IS-related initiatives.

Using concepts from upper echelon theory, this study conceptualized the provision of resources, commitment and quality of decision making as the indicators for analyzing the effects of top management support for AROs in East Africa to institutionalize KM strategies. This study presumed and hypothesized that top management's support was associated with the extent of adoption, implementation, and entrenchment of KM strategies in AROs in East Africa. From a practice perspective, the extent of external influence exerted on organizations' strategic decision-makers can be moderated by the resource provision, commitment, and quality of top management decisions to institutionalize KM strategies. Boonstra (2013) provided a framework for defining top management support for functional and supportive behaviors, including their dynamic character. The author argued that high-ranking managers must be flexible in implementing a new system by adjusting their supportive actions as required. While the author recommended the framework for use by discourses evaluating top management support in various contexts, the authors did not conceptualize top management support as a moderating variable.

Concerning IT systems, Boonstra (2006) reported that top management support strongly influenced implementation processes through active involvement, decisions, resource provision and motivation. Despite this critical finding, studies have not conceptualized or examined the moderating relationship of top management support between strategic decision-making and institutionalization of KM strategies in organizations. Thus, this study conceptualized, hypothesized and analyzed the direct and indirect effect of top management support between strategic decision-making and institutionalization of KM strategies in AROs in the East Africa context. This was achieved through hypothesis H1f.

Hypothesis (H1f): Top management support in an organization moderates the influence between strategic decision making and institutionalization (adoption, implementation and entrenchment) of KM strategies in practice.

2.11.5 The Study Conceptual Framework Diagram

Institutionalization as redefined by Hirst (2010) to mean the process of adoption, implementation and entrenchment, it has presented an expansion by including concepts from Strategy-as-Practice and Upper Echelon theories as shown in figure 6.

Regarding practice, adoption involves the formal decision-making process to accept a practice. Implementation is the process of implementing the practice, and entrenchment is the process of continued use and continuous spread of the practice (Hirst, 2010). This study analyzed institutionalization processes by linking process analysis to context. Additionally, the developed conceptual framework provided concepts and their relationship for undertaking a comparative analysis by comparing different contexts of three East Africa countries (Kenya, Uganda, and Tanzania).

As regards the extent of macro-level factors influencing institutionalization KM strategies in AROs in these countries, this study addressed these concerns through seeking to examine the factors influencing institutionalization of KM strategies in AROs in East Africa. These factors were included in the conceptual framework.

The institutional theory was identified as one of the theoretical lenses to provide important constructs and concepts for conceptualizing the factors influencing institutionalization of KM strategies and institutionalization processes. For instance, Greenwood et al. (2014) highlighted institutional theory concepts that are important for studies examining the effects of the macro-level pressures on organizational practices. The conceptual framework shown in Figure 6 applied the concepts of cognitive, normative and regulative pressures and their indicators to conceptualize the independent variables.

The theory has been consistently applied due to its conceptual richness and dominant approach in investigating the effects of external pressures on organizational practices and actions (Currie, 2009; Greenwood et al., 2017). In this regard, the independent variables, indicators, assumptions and institutionalization processes in the conceptual framework have been drawn from institutional theory concepts. To ensure an adequate

description of the variables and their relationships, the independent variables and their indicators have been described as depicted in Figure 6.
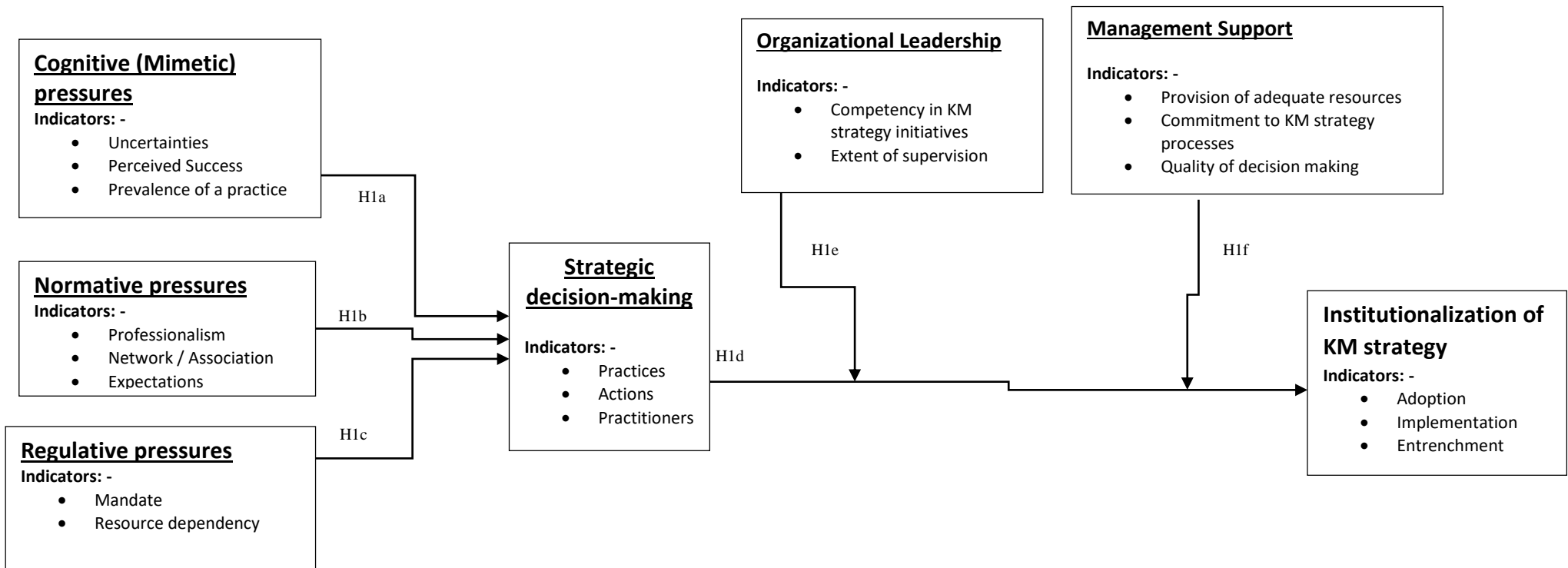
Figure 6: The study conceptual framework diagram

The tenets and concepts from the strategy-as-practice theory were applied to conceptualize the intervening variables. The study identified strategic decision-making as the intervening variable. When it comes to institutionalization, the institutional pressures exerted on organizations from the external environment are likely to influence the strategic decision-making process. The indicators are the actual actions, practices and practitioners.

This study used upper echelon theory concepts to conceptualize moderating variables. To this end, organizational top management support and leadership are conceptualized as the moderating variables. The macro-level pressures are assumed to influence organizations' strategic decisions, and therefore top management support and organizational leadership moderate the relationship between the strategic decision-making process and institutionalization.

The conceptual framework illustrates the variables, indicators and relationships between institutionalization of KM strategies (Dependent Variable), macro-level pressures (independent Variables), and intervening and moderating variables. The macro-level pressures (cognitive, normative and regulative) were hypothesized to influence strategic decision-making processes (actions, practices and practitioners) of AROs in East Africa to institutionalize KM strategies. Similarly, strategic decision-making was hypothesized to intervene in the institutionalization of the strategies. Equally, organizational leadership and top management support were hypothesized to moderate the influence between strategic decision-making and institutionalization of KM strategies.

2.12 Summary of Literature Review

Despite the rapid growth in literature, the concept of institutionalization of KM strategies in organizations is understudied (Hirst, 2010; Sandhawalia & Dalcher, 2011; Kushwaha & Rao, 2015; Handzic, 2017). While studies have expanded neo-institutional theory and recommended linking process analysis to context with a specific focus on organizational level analysis, the concepts are not sufficiently used in extant literature. Different documents have highlighted several constraints facing

institutionalization of KM strategies. Some of the gaps include scant policies and leadership, knowledge loss and low levels of translation, external interferences and weak organizational readiness (Dwivedi et al., 2011).

Institutionalization can be defined to refer to the process of adoption, implementation and entrenchment (Hirst, 2010). Although the analysis showed that some studies have focused on the specific aspects of practice, process and context, few studies explored the concept of adoption, implementation and entrenchment, nor analyzed their inter-relationships. While some studies attempted to uncover the factors influencing the adoption and implementation of KM strategies, a more profound articulation of such factors from a practice and process perspective lacks the extant literature. As a concept, entrenchment has not been studied or mentioned in any of the studies reviewed. The literature review process has shown that there has not been enough research to provide the required in-depth knowledge to understand how AROs have institutionalized KM strategies in practice. This situation has limited the AROs and the KM community's ability to identify critical learning and improvement areas. Previous studies have not exhaustively explained the key processes and practices that institutionalization of KM strategies should consider.

Similarly, comparative analysis studies that have compared similar or different contexts regarding institutionalization processes and practices of KM strategies have not been found in extant literature. A conclusion is drawn from the literature review findings that micro-process analysis of institutionalization of KM strategies at the organizational level had previously not been adequately explored. Moreover, until the time of this literature review, it had not been known how KM strategies are adopted, implemented and entrenched in organizations. Notably, the processes and practices, including day-to-day activities to show how KM strategies have been institutionalized in AROs, have not been sufficiently discussed in the literature. Yet, studies and unpublished reports have reported that AROs are facing difficulties in these areas (Hyman et al., 2017).

From the literature analysis, it is clear that institutionalization of KM strategies in organizations from a process and practice perspective is mainly unstudied, and not much is known or discussed in extant literature. Hirst (2010) study provided an understanding of how theorization affects the formation of KM practices such as KM strategies through specification and justification. Unfortunately, this expanded theorization concept of institutionalization has not been adopted or used in extant literature. Subsequently, while Hirst (2010) study expanded neo-institutional theory and recommended that subsequent studies link process analysis to context with a specific focus on organizational level analysis, the concepts have not been used by existing studies.

Several studies have highlighted the factors influencing the adoption and implementation of KM strategies in different organizations and contexts (Yang, 2010; MohdZin & Egbu, 2010; Jalil, 2012; Choe, 2014; Zaher, 2015; Mangiarotti & Mention, 2015; Dewah & Mutula, 2016). Regrettably, none of the studies examined the extent to which external pressures influence organizations' strategic decision-making process.

CHAPTER 3: RESEARCH METHODOLOGY

This chapter presents discussions on the ontological and epistemological perspectives of the study. It also discusses the philosophical assumptions and tenets as well as the research approach and methods. The pragmatism paradigm, as a philosophical stance, is discussed. The pragmatism paradigm is the most appropriate approach in this study, as informed by the research questions. A case study design is discussed as a proper research strategy. Mixed methods, including different data analysis techniques, are also presented. Additionally, sampling techniques and how data was collected and analyzed are also discussed. The section is concluded with a brief discussion on reliability and validity.

3.1 Research Philosophy

A paradigm refers to a set of concepts, assumptions, and beliefs governing a specific scientific community's research activities and practices (McGregor & Murnane, 2010; Creswell & Creswell, 2017). It guides the research process and provides a study with lenses for viewing the domain being studied (Morgan, 2007; Creswell & Clark, 2011; Kankam, 2019). Different research paradigms are associated with underlying assumptions and methodologies (Orlikowski & Baroudi, 1991; Myers & Klein, 2011). This is because each research paradigm has a set of beliefs.

Previous studies have indicated that adopting a research paradigm improves the study's credibility and generalizability (Kankam, 2019). Still, the application of a paradigm depends on the research topic, questions, and empirical situation. Therefore, apart from philosophical assumptions, a research study should consider the observed case's practical realities and interpretation of the findings.

In the IS discipline, pragmatism, interpretivism, positivism and post-positivism are the most applied research paradigms, even though others such as critical realism continues to emerge. While different studies have adopted different research paradigms, researchers need to be cautious with each paradigm's strengths and weaknesses to choose the appropriate paradigm (Creswell & Creswell, 2017; Kankam, 2019).

This study adopted a pragmatism paradigm as a philosophical stance. Proponents of pragmatism have argued that it is a philosophical viewpoint where the research question is the central epistemological and ontological element of the study (Saunders& Lewis, 2012; Scott, 2016). This perspective is essential. For instance, Krauss (2005) argued that a paradigm impacts a study since it describes how it is conducted—in this line, adopting pragmatism as the study's philosophical stance enabled the research process to answer the research questions comprehensively. Thus, the objective of choosing the pragmatism paradigm was to allow this study to understand the phenomena under investigation by not focusing on antecedent conditions but allowing facts and concerns to arise from the study's context - worldview. Leavy (2017) emphasized that allowing a study to observe the worldview guides the researcher to experience, examine, and reflect on the studied domain. Additionally, scholars argue that pragmatism emphasizes shared meanings and joint actions and relies upon the belief that theories can be contextualized and generalized by analyzing the empirical situation (Creswell, 2013). Further, Tran (2016) argued that pragmatism provides studies with the ability to convert explanations into theories and evaluate the theories in an empirical situation.

Pragmatism is based on the belief that describing concepts provides significance and application by linking data and theory (Scott, 2016; Morgan, 2007). Thus, pragmatism enabled this study to work side by side between qualitative and quantitative data (Tran, 2016), a position that other paradigms are unable to get along. In this context, scholars argue that the pragmatic stand enables a combination of quantitative and qualitative research methods in a single study by allowing an application of a research technique that suits a research question as may be found appropriate (Guthrie, 2010; Treanor, 2017). Consistent with previous studies' assertions, applying different methods and evaluating their effectiveness based on the research question is critical, as attaining objectivity and subjectivity are valid possibilities when conducting research (Biddle & Schafft, 2015; Tran, 2016; Scott, 2016).

3.2 Research Design

The study adopted a concurrent mixed-method design. A research design is fundamentally guided by the research questions (Baran, 2020). Studies contend that a research design's quality is critical for examining the philosophical assumptions that underpin a research study (Kumar& Phrommathed, 2005; Creswell, 2013; Wright et al., 2016). While philosophical beliefs are concerned with ontological and epistemological aspects, aligning the research paradigm with the research approach and specific data collection, analysis, and interpretation is a strategic requirement in the research design process (Creswell et al.,2006; Thornhill et al., 2009; Wright et al., 2016). For instance, Creswell (2013) emphasized the importance of specifying the research approach, procedures for data collection, analysis, interpretation, and presentation of results as critical aspects of the research design.

In this context, this section explains the research design by aligning what the study found out through answering the research questions, research approach used, the research strategy employed, and data collection and analysis techniques (specific tools used). The elucidation of the research design has provided a step-by-step approach to the entire research process, reduced ambiguity of research results and possible errors. The next section discusses the different aspects of research design in detail. Figure 7 is an illustration of the different aspects of design.
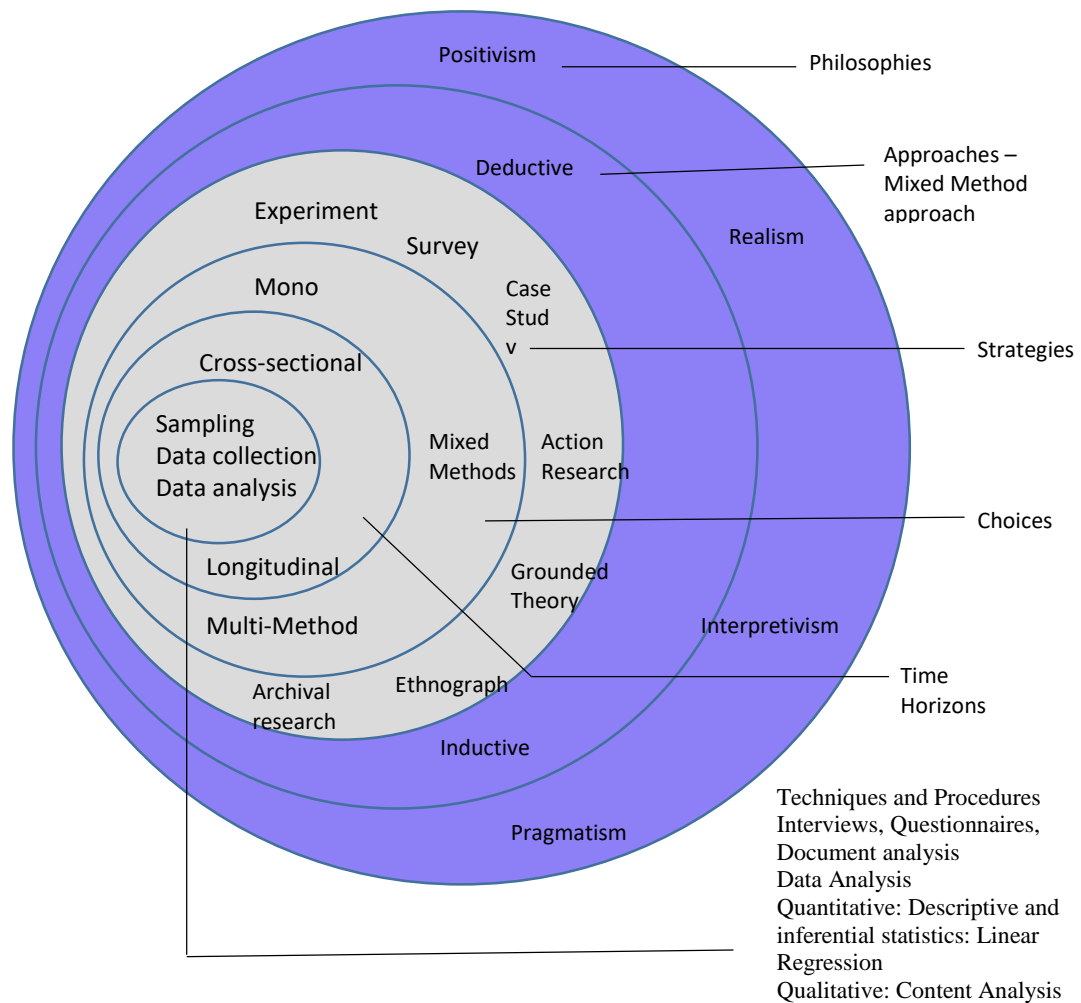
Figure 7: An Illustration of Research Design Framework (Sekaran and Bougie, 2016)

This study uses an explanatory design since the subject of institutionalization of KM strategies is not well researched and the need to generate a better researched model for understanding the topic. Akhtar, (2016) argues that an explanatory research design is

used to formulate a problem for specific investigations, especially when the area of study is not a well identified subject. In addition, the explanatory research design suitable for studies seeking to understand or examine the causal factors about a phenomenon of interest. As shown in the conceptual framework section this study seeks to examine the relationship between variables while determining cause and effect of those factors. For instance, in this study the research question two specifically seeks to find out factors influencing institutionalization of KM strategies in AROs in East Africa and to exaplain why and how they influence institutionalization. Further, hypotheses set in this study suit an explanatory research design. In an explanatory research design, the hypotheses test the relationship between two or more variables that has some particular effect by focusing on determining aspects of correlation.

3.2.1 Research approaches

Studies have used different methods when investigating a phenomenon of interest in a study (Leech & Onwuegbuzie, 2009; Creswell & Creswell, 2017). Other studies have also argued that the mixed-method supports the description of concepts that emerge from data and explanation, argumentation, and generalization of observations (Johnson & Onwuegbuzie, 2004; Creswell & Creswell, 2017). Additionally, it allows collecting multiple data types (quantitative and qualitative data), which is a fundamental principle in obtaining useful answers based on the research question. All different forms of data have been collected and analyzed concurrently.

The choice of the most appropriate research approach depends mainly on the research questions to be answered. Therefore, this study employed mixed methods (qualitative and quantitative techniques), a mixture of deductive and inductive for different research questions. Mixed research methods were used to examine the historical, contextual and other aspects concerning how KM strategies are institutionalized in AROs in East Africa. Generally, the quantitative approach focuses on hypothesis testing, while the qualitative approach was used to inductively generate insights from data (Wright et al., 2016; Creswell& Creswell, 2017)). As supported by the study's philosophical stance of the beliefs of the pragmatism research paradigm, mixed

research methods were employed to address the research problem and answer some of the research questions (Scott, 2016; Morgan, 2007).

In this study, for the quantitative approach, the study employed a deductive logic starting with conceptualizing concepts, variables and indicators drawing on arguments from different theories that resulted in the formulation of a hypothesis for testing, as shown in the conceptual framework. The study used inductive logic for the qualitative approach, starting with concepts and suggestions emerging from data that resulted in themes and numerous research findings and discussions for the different research questions. This approach builds up to a description of concepts, explanatory models and frameworks, and theory extension.

In this line, both quantitative techniques have been used to answer different questions. For instance, research questions one and two have been answered using both methods, while research questions three and four have been answered using the qualitative approach.

3.2.2 Research Strategy

Research strategy provides ways of undertaking research and employing different methods for gathering data and information. This study used a case study and survey as the research strategies. The choice of case study as the research strategy enabled the research to find practical details of how KM strategies are institutionalized in AROs in East Africa from different perspectives. When using a case study as a research strategy, the selection of context and participants must be aligned with the purpose of the research and the research questions (Peel, 2020). This strategy is recommended where the phenomenon and context are closely related. Additionally, it involves an all-encompassing method with a specific design to data collection and data analysis approaches. This is because a case study is useful for descriptive and explanatory studies.

A case study is considered an in-depth and detailed examination of one or more cases regarding a phenomenon of interest such as organizations, groups, individuals, events, processes, or activities within a real-life context (Ledford & Gast, 2018). It involves

examining a phenomenon in its natural setting and takes on multiple data collection methods from different entities such as individuals, groups, and organizations (Dubé & Paré, 2003; Eisenhardt, 1989; Eisenhardt & Graebner, 2007; Orlikowski & Baroudi, 1991). A survey was also conducted using a questionnaire to enable the study to test the significance and associations between the various factors statistically.

(a) Case Study Research Strategies

Studies assert that the case study research strategy is essential in capturing the studied problems' practical perspectives and enables practitioners' knowledge to emerge (Shishkov, 2020). Case study research can be defined as an intensive study aiming to generalize a single unit or several units to capture practical perspectives of the phenomenon investigated (Shishkov, 2020). It involves an intensive, systematic inquiry of either a single unit or group of units with the ability to examine detailed data relating to several variables. It is mostly used for an empirical investigation of a phenomenon of interest within its real-life context (Paré & Elam, 1997; Yin, 2011; Eisenhardt& Graebner, 2007).

This study employed a case study strategy and studied multiple cases of AROs in East Africa. Studies argue that the use of multiple cases can provide in-depth, rich, and robust data to support a descriptive, explanatory or detailed discussion as well as interpretation of study results (Creswell et al., 2017; Peel, 2020). The use of multiple case studies was chosen to enable the study to make an in-depth explanation of the findings on key variables studied. It also avoids possible criticisms for lack of cross-referenced data, ensuring credibility in the research process. The use of multiple cases or data sources, for instance, multiple AROs in multiple East African countries (Kenya, Uganda and Tanzania), allowed this study to obtain rich and in-depth data. This proved useful during analysis, comparison and triangulation of findings and provided evidence for confirming the posited claims.

While different descriptions of case studies exist, an explanatory case study seeks to explain how events occurred in a real setting (Yin, 2011), for instance, how institutionalization of KM strategies takes place in practice in the context of AROs in East Africa. In this study, the case study strategy was considered suitable due to its ability to obtain data from a single case and multiple cases/sources. This was important for the triangulation of the results. It also allowed an understanding of the dynamics in the different AROs and countries, which proved suitable during explanation, discussions and conclusion of study findings. For instance, in research question three, the use of a case study enabled understanding of the processes of institutionalization of KM strategies within a practical setting. Besides, it was useful in relating the findings from data to extend the processes of institutionalization. This provided a new contribution to institutionalization for institutional theory literature.

(b) Survey Method

This study also used survey research method to collect data from a defined population by using a questionnaire to answer specific research questions. The data collection instruments were in the form Likert scale.

(c) Pre-Study

Before the actual data collection, a pre-study was undertaken to test validity, reliability and applicability of the questionnaire and the KII interview instrument. The questionnaire, key informant interview and interview protocol were pretested with seventeen respondents in the three countries. This process offered the study an opportunity to test the data collection instruments and procedures, which informed the refinement of the instruments and data collection methods. The data was analyzed and results from the pre-study submitted to two professors for review. After their review, discussions and informed comments, the final questionnaire and KII interview instrument were developed and administered. Besides, the findings from the pilot study highlighted areas for further improvement. For instance, it led to further probing questions that were used in the final data collection process.

3.2.3 Data Collection Methods

The primary quantitative data were collected using a questionnaire tool, and qualitative data was collected using face-to-face interviews. The observation technique was used to study KM strategy processes. The document review method was used to analyze the strategy documents, annual audit, and review reports collected, read, and examined. Data collection is the process of systematic gathering and measuring information on variables of interest to enable a researcher to answer research questions through hypotheses testing and other data collection methods and evaluate obtained outcomes (Al-Najran & Dahanayake, 2015).

Typically, a case study strategy allows for a combination of data collection methods in a research study (Yin, 2011; Creswell et al., 2017; Peel, 2020). This study used primary qualitative methods through Key Informant Interviews (KIIs) and quantitative methods using a questionnaire. These data collection methods were supplemented with observations and a review of documents. The use of multiple data sources was to enable triangulation of the data and substantiation of research findings. Field notes were used to provide a means of recording quotes that were to be used in data analysis. The notes allowed the researcher to record and preserve the respondents' key quotations about the actual settings.

The data collection instruments were pretested for validity, reliability and ethical responsibility, and acceptability of the research process. Permission was sought from the management of the selected AROs before data collection was started. Consent from participants was obtained, and details of use of data were provided.

(a) Interviews

Interviews are useful in obtaining a rich data set and can generate contextual, diverse data (Schultze & Avital, 2011). This study used key informant interviews with different participants. The use of interviews as a data collection method enables data from those experienced in the problem domain (Ritchie et al., 2013; Miller & Glassner, 2011). Open-ended and close-ended interview questions were used to obtain data

based on the research questions. Adopting interviews ensured that the study obtained a rich data set that is contextual and diverse (Schultze & Avital, 2011).

The use of key informant interviews provided the study with quality information within a short period. Studies emphasized that KIIs can be used either as an isolated technique or in conjunction with other methods (Marshall, 1996). This study was necessary since KM is a new concept and institutionalization of KM strategies in AROs in East Africa has not been well studied. In this respect, there are not so many respondents possessing an in-depth understanding of the subject.

The Key Informant Interviews addressed concepts relevant to the research questions during the discussion with organizations' executives and subject matter experts. KII was implemented using KM semi-structured questionnaires and respondents provided detailed accounts of the concepts of interest. For instance, existing characteristics and gaps in KM strategies. The respondents provided the required mainly by drawing from their direct involvement, experience, and KM strategy challenges. The study sought explanations from the respondents on specific features of the strategies reported as essential to generate reflective data for determining the required information. The purpose of KII was to gather information on:

KM strategy characteristics: critical features of the strategy, what is lacking, and what should be done differently.

Scope of the strategy: what and how tools or techniques, components, elements, structure and management or governance are outlined in the strategy; and

Factors influencing institutionalization of KM strategies, critical processes in terms of activities and practices;

Challenges: key constraints or difficulties concerning the strategy processes and essential suggestions and considerations that can guide KM strategies' effective institutionalization.

Qualitative data collection was conducted onsite solely by the researcher. The interviews' duration ranged from 30 minutes to 45 minutes for the questionnaire.

Qualitative interviews started with general questions, moving on to more specific questions on the topic of study and lasting approximately 45 minutes on average. Prior visits were undertaken in some of the organizations to plan for interviews and collect secondary data. The researcher recorded, transcribed, edited, and stored in a database the KII interviews.

(b) Questionnaires

A questionnaire is a self-reporting data collection instrument that allows each research participant to fill out the questions' answers. A field approach was used to administer the questionnaire through an in-person interview by the researcher and four research assistants for each country. The use of research assistants from each country ensured that these people were knowledgeable about AROs and countries' contexts and acceptable to the respondents. This minimized biases that could arise. The study administered questionnaires to the selected participants. The questionnaire was designed on a five-point Likert scale from 1, extremely low, to 5, which is extremely high. Open-ended and closed-ended questions were used with predetermined quantified possible answers to find out the participant's view. On the other hand, open-ended questions allowed the respondents to provide answers in their own words and reveal their opinions. The open-ended questions offered new information that could have been missed in the closed-ended questions. Open-ended questions provided this study with an opportunity to capture new information that could have been limited by the researcher's preconceptions. Structuring the questionnaire and the use of a rating scale enabled different analysis techniques to be used efficiently. The research assistants were trained on the interview protocol to be followed and how to administer the questionnaire.

(c) Document Review

Document analysis is a systematic study of organizational records and involves reviewing documents to obtain data. Document examination can help confirm or refute theoretical claims (Cassell & Symon, 2004). This study considered this method necessary to support explanations of concepts that emerged from data. This study reviewed the KM strategies, policies, annual reports, audit reports and other relevant

documents in some of the AROs in East Africa. The method was useful in capturing and identifying some of the overreaching thematic areas of interest. Previous studies have applied this method mainly in data coding and theme identification (Fereday & Muir-Cochrane, 2006).

The researcher used this method was limited to supporting explanations of concepts that emerged from data and personally reviewed the different relevant documents. This is because KM strategy documents and other related documents vary from one ARO to another. Due to this inconsistent nature of documents, the method was limited to corroborating findings and observations and to advance empirical knowledge and understanding. Additional data was collected from websites and other publicly available information.

(d) Observation

This method provided the opportunity for interaction with domain experts and an assessment of the actual setting. The objective of this method was to the researcher gain a better understanding on the actual constraints the domain experts were experiencing in actual setting. This was mainly through meetings where observations were made to uncover additional information relevant to the research questions. For instance, the reactions of the respondents when articulating or accessing information on the characteristics of KM strategies was observed. The participants also performed demonstrations on the processes and systems. These events and meetings were audio-recorded, and the researcher took notes to capture events. This method provided the study with the opportunity to refine the findings, considering the practical realities observed on the ground.

3.2.4 Ensuring Reliability and Validity Measures

To ensure consistent and plausible data was collected, the research assistants cross-checked the responses for validity before the data was submitted. Besides, interview questions were carefully constructed to ensure that the right information was obtained from the participants. Furthermore, competency and level of knowledge were considered when selecting the participants.

For the quantitative part, in testing reliability and measuring the internal consistency of the questionnaire, the Cronbach Alpha test was used and a value between 76.5% to 94.3% for the different domain items was obtained which is above the recommended cut-off point of 0.7. The internal consistency of items within a domain was assessed using Cronbach's Alpha. The approach has been used in many studies to measure internal consistency to test how closely a set of items are related as a group (Cronbach, 1951; Vaske et al., 2017; Som et al., 2017).

3.3 Sampling Population and Procedure

This study ensured that the population from which the samples were drawn and the domain in which the research was undertaken were relevant (Eisenhardt, 1989; Yin, 2011; Creswell& Creswell, 2017; Peel, 2020). Sampling is a process of selecting a comparatively small number of a representative subset from a pre-defined population to serve as a data source or subjects in a study (Wilson, 2016). Scholars suggest specific sampling guidelines in designing a sampling strategy or scheme.

It is argued that there should be a logical flow between the conceptual framework and sampling scheme and in line with the study research questions (Onwuegbuzie & Teddlie, 2003). Additionally, it is essential to ensure that sampling is consistent with the study's conceptual thinking. In this study, data gathering focused on the research questions as well as the set of hypotheses. The sampling scheme was guided by ensuring a reasonable means of answering the research questions was obtained. To achieve this, the scope of data collected was adequate to answer the research questions, generate enough data, and produce a detailed or textured description. Also, the need to draw credible inferences and explanations from data guided the sampling design. The study ensured that the sample design met the degree of assurance that all required data were accessible. This was important for the generalization of study conclusions to other populations or settings such as other research organizations and contexts. To achieve these goals, the sample design ensured representation.

3.3.1 Population and sample size calculation for quantitative study

The population for the whole study was all AROs in East Africa, both public and private. The sample size for the quantitative part of the study was calculated using the following formula:

$$n = \frac{Z^2 \times p(1-p)}{d^2}$$

Where n is the required sample size, Z is the critical value of standard normal distribution corresponding to a level of confidence at a specified level of significance, p is the expected proportion of KM institutionalization and d is the desired precision. For this study, Z, i.e., level of significance, was taken as 5%, p as 50% level of institutionalization of KM strategies in AROs. The desired precision d was taken as 5%. n, the sample size was 384 based on the above assumptions. However, there was oversampling to enable the study to undertake the country-level analysis. Therefore, the total sample obtained was 1152. The number was randomly divided among all the selected organizations based on organizational size. First, a list of all AROs in EA was developed. A preliminary study of the organizations was undertaken to determine if an organization has a KM strategy or plan.

Stratified random sampling was applied, with representation across different categories (public, private, international and local). Table 5 shows the organizations, sample population and sample size for each country and organization. The number was proportionately divided among the organizations based on the size and number of officers with the desired qualities.

Table 5: A description of the organizations, the sample population and sample size

Organization	Population	Sample size
Kenya (360)		
African Women in Agricultural Research and Development-AWARD	7	4
International Maize and Wheat Improvement Center (CIMMYT)	6	4
Food and Agriculture Organization of the United Nations (FAO)	20	18

International Crops Research Institute for the Semi-Arid Tropics (ICRISAT)	7	5
International Livestock Research Institute (ILRI)	16	14
International Center for Tropical Agriculture (CIAT)	8	6
International Centre of Insect Physiology and Ecology (ICIPE)	19	17
International Potato Centre (CIP)	7	5
Kenya Agricultural and Livestock Research Organization (KALRO)	230	207
Kenya Forestry Research Institute (KEFRI)	70	67
Kenya Marine & Fisheries Research Institute (KMFRI)	34	31
World Agroforestry (ICRAF)	8	6
Uganda (367)		
Abi Zonal Agricultural Research and Development Institute	8	5
Association for Strengthening Agricultural Research in Eastern and Central Africa (ASARECA)	1	1
CAB (Centre for Agriculture and Bioscience) International	1	1
International Center for Tropical Agriculture (CIAT)	6	4
Coffee Development Organization (CDO)	34	31
Cotton Development Authority (CDA)	4	2
Dairy Development Authority (DDA)	25	23
World Agroforestry (ICRAF)	8	5
International Livestock Research Institute (ILRI)	15	13
Kabarole Research Center (KRC)	30	27
National Agricultural Research Organization (NARO)	250	239
National Forestry Authority (NFA)	15	13
National Organic Agricultural Movement of Uganda (NOAMU)	14	12
Uganda National Farmers' Association (UNFA)	10	8
Tanzania (348)		
International Center for Tropical Agriculture (CIAT)	1	1
Farm Radio International	8	5
Food and Agriculture Organization of the United Nations (FAO)	6	4
International Livestock Research Institute (ILRI)	4	3
International Crops Research Institute for the Semi-Arid Tropics (ICRISAT)	1	1
International Institute of Tropical Agriculture (IITA)	7	5
International Potato Centre (CIP)	4	2
Mbegani Fisheries Institute Research Division	10	7
Ministry of Agriculture - Research Division	8	5
Tanzania Agricultural Research Institute (TARI)	245	239

Tanzania Coffee Research Institute (TACRI)	9	4
Tanzania Fisheries Research Institute (TAFIRI)	40	31
Tanzania Forestry Research Institute (TAFORI)	15	10
Tanzania Livestock Research Institute (TALIRI)	20	17
Tanzania Wildlife Research Institute (TAWIRI)	5	3
The Jane Good Goodall institute	7	4
The World vegetable center	18	15
Tropical Pesticides Research Institute	5	3
World Agroforestry Centre (ICRAF)	6	4
Zanzibar Agricultural Research Institute (ZARI)	16	12
Zanzibar Fisheries Research Institute (ZAFIRI)	5	2
Zanzibar Livestock Research Institute (ZALIRI)	5	4
Total	1306	1152

Table 5 shows the target sample population's distribution totaling 1,152 from the three countries and 48 AROs in East Africa; Kenya had 12, Uganda had 14 and Tanzania had 22 respectively. Quantitative data was collected from 48 AROs in East Africa, and 1,075 responded with a response rate of 93.3%.

3.3.2 Population and Sample Size for the Qualitative study

For the qualitative part, the selection of cases was guided by the need to satisfy theoretical sampling reasons rather than statistical. A purposive sampling technique was used to identify the sample target population for this study. First, a list of all AROs in EA was generated to form a sampling frame. The list was then classified as public and private AROs. The selection of participants for data collection was based on the role and knowledge in the organization's institutionalization of the KM strategy.

For qualitative data collection, 23 AROs were selected out of 48 AROs from Kenya, Uganda and Tanzania. Data was collected from 22 AROs and a total of 80 respondents participated in the interview. In one AROs the domain experts were unavailable and therefore it was not possible to undertake the interview in the organization. Preliminary desk review and consultations within the agricultural network were instrumental in identifying and access to the senior management (executives), many of whom had either participated in the KM strategy processes or interacted with the strategy as practitioners. The availability of the subject experts and executives and their willingness to undertake the interview was used as the criteria for selecting the AROs

and the respondents. Additional information was obtained from organizations providing oversight role and donor support organizations.

The interviewees' selection was based on illuminating concepts, developing a deeper understanding of the subject, and responding extensively to the questions. Interviewees met the following sampling criteria (Eisenhardt et al., 2016): They (a) were responsible for influencing the initiation, development and execution of the strategies as well as the provision of strategic direction, (b) had the expert knowledge and/or authority to operationalize the strategy and (c) had a general interaction with the strategy, experience and responsibility to support its execution. The interviews were conducted between September 2019 and February 2020. The domain subject experts were from Data/ICT, Policy/Communications, Knowledge Management, Monitoring and Evaluation, Library, Capacity development and selected research scientists. Senior management or executives held positions of director, deputy director and KM director and had knowledge on the subject or had played a vital role in the strategy process.

3.4 Data Analysis

Data analysis took place after all the data (quantitative and qualitative data) had been collected (Onwuegbuzie & Teddlie, 2003). Following the adoption of a mixed-method approach in analyzing data, quantitative and qualitative analytical techniques were used concurrently. However, two main foundations (i.e., representation and legitimation) for conducting mixed-method data analysis are considered. Onwuegbuzie and Teddlie (2003) define representation as the "ability to extract adequate information from the underlying data" and legitimation as "validity of data interpretation." The authors argue that using a mixed-method for data analysis is a more affluent and comprehensive analytical technique than standalone data analysis techniques. This is because it enables the researcher to understand the studied phenomenon better and apply quantitative and qualitative analysis techniques. This enhances the generation of extra meaning and quality interpretation from data.

3.4.1 Statistical Data Analysis

The study adopted descriptive and inferential data analysis methods in assessing quantitative objectives. Descriptive statistics were used to analyze the data to describe or summarize the collected data for different items and characterize the study sample. Responses to each domain item were summarized in terms of frequency and percentages. The domain scores were generated by summing the responses of all domain items for further analysis. The scores for adoption, implementation, entrenchment, and overall institutionalization of KM strategy were transformed to a scale of 0-100 to have a percentage like interpretation. Boxplots were used to assess the distribution of scores.

The internal consistency or reliability of domain items was assessed using Cronbach's alpha. The reliability of any given measurement refers to the extent to which it is a consistent measure of a concept. Cronbach's alpha is one way of measuring the strength of that consistency. A simple correlation among variables was determined to provide an initial evaluation of multicollinearity's possible existence in regression analysis. A linear regression approach was used to assess the association among the study variables.

Path analysis was performed to assess both mediation and moderation analysis of different hypotheses and establish both direct and indirect effects. Linear regression and path analysis were used because the variables to be tested were measured on a Likert-scale and transformed to a continuous scale. Mediation analysis tests whether the independent variable's effects on the dependent variable operate through a third variable called the mediator. In this way, mediators explain the causal relationship between two variables or how the relationship works. Moderation analysis tests whether a variable affects the direction and/or strength of the relationship between an independent variable and a dependent variable. In other words, moderation analysis tests for interactions that affect relationships between variables. More description of linear regression and path analysis is provided in the following sections.

3.4.2 Linear Regression Analysis

This approach involves using or constructing a prediction model to analyze the correlations between independent variables and the dependent variable (Pun et al., 2019). This study used regression analysis to explore the relationships between multiple different measures identified in the conceptual framework. Since many independent variables are influencing the dependent variable, a multiple linear regression analysis is thus proposed. Both simple (univariate) linear regression and multiple (multivariate) regression will be used to explore the relationships among variables. First, the independent effect of a variable on the dependent variable is assessed using simple linear regression. Secondly, the effect of a variable controlling other factors is assessed using multiple linear regression analysis. Also, in multiple linear regression, this study assessed the direction of effect of a variable on the dependent variable (i.e., changing from positive to negative or vice versa).

3.4.3 Path Analysis

Path analysis is a multiple regression analysis used to evaluate causal models by examining the relationships between a dependent variable and two or more independent variables simultaneously (Pedhazur, 1982; Wuensch, 2017). The approach's objective is to estimate both the magnitude and significance of causal connections between variables to better understand the causal relationships. The technique involves drawing a diagram that serves as a visual representation of the relationships between/among variables. Unlike general linear regression, path analysis requires the researcher to specify relationships among all the independent variables, which results in a model showing causal mechanisms through which independent variables produce both direct and indirect effects on a dependent variable.

For this research, it was hypothesized that macro-level (mimetic, normative and regulative) factors have a direct effect on Strategic decision-making to institutionalize KM strategies. It was also hypothesized that SDM has a direct effect on institutionalization. Besides, the organization leadership and top management support have a direct impact on institutionalization of KM strategies and an indirect effect through strategic decision making.

3.4.4 Factor Analysis

Participant characteristics were presented by the use of frequencies and percentages for categorical variables. A generalized structural equation modeling was used to determine how the indicators influenced their respective indicators as per the study hypothesis. This was accomplished by using factor loadings that had eigenvalues of greater than 1, rotation of the factor loading by maximizing on its variance, and later generation of predictive indices. A multivariate regression model was then conducted on the independent variables to determine factors associated with KM strategies' institutionalization. A p-value of less than 0.05 was statistically significant. Data were analyzed using Stata version 14.2.

3.4.5 Content Analysis Method

Qualitative data analysis was conducted using content analysis as the analytical technique (Cho & Lee, 2014), and NVivo software was used in the data management and analysis process. Data was transcribed and transcripts were read and summarized into concepts (Eisenhardt et al., 2016). The data was entered in thematically coded categories, based on the data collection tool and emerging themes. The themes were compared across the respondents and organizations to establish the range and similarities of the participants' perceptions, experiences and views. Narrative texts were applied around the themes, with verbatim quotes used to illustrate the text and effectively communicate its meaning. The relationships between the codes were identified and reviewed, resulting in several concepts and themes for different research questions. The findings were then compared to previous studies to identify where and how actual knowledge in the field was represented and what extensions to the research had been made. Several themes emerged during the initial analysis but were subsequently reduced to study results through abstraction and continuous comparison processes to ensure particularity and alignment with literature constructs.

3.4.6 Within-Case Data Analysis

The process of analysis of data from multiple cases involved within-case analysis and cross-case analysis. The within-case analysis was used to establish the findings within a single case. The within-case analysis was undertaken to provide an in-depth analysis

of key concepts and results within each of the selected cases. The within-case analysis was used to determine the concepts, processes and findings or patterns in a single case (Gerring, 2006; Mills et al., 2009; Stake, 2013). This process provided the study with the opportunity to prepare a detailed description and explanation of the findings. The reason for the within-case analysis is to provide uniqueness and commonality with other analyzed cases. This approach enabled thorough analysis of single cases, identifying emerging unique concepts, attributes and patterns in real-life concerning AROs in East Africa and each specific country.   Also, undertaking the analysis for a single case was useful in enabling the study to cope with the large volume of data collected.

3.4.7 Cross-Case Data Analysis

A cross-case analysis was used to examine concepts, themes and findings based on similarities and differences among AROs and countries where the study was undertaken. It compared significant concepts and themes and identified categories of elements common to all the selected cases (Stake, 2013). It was also useful in identifying variations around findings. All the cases were combined and considered whole, with similarities and differences between the concepts and findings of each case examined.

Cross-case analysis was used to analyze the extent of institutionalization of KM strategies in AROs in East Africa as a whole by considering the similarities and differences between the levels of adoption, implementation and entrenchment of each of the three countries. For instance, the extent of adoption, implementation and entrenchment of each of the three countries were established and compared. Besides, the factors influencing institutionalization of KM strategies in AROs in the three countries were also compared and presented.

CHAPTER 4: FINDINGS AND DISCUSSIONS

This chapter provides results and discussions for the different research questions in this study. All four research questions have been answered and discussed. The analysis results of both quantitative and qualitative data for each of the research questions and the analysis findings are presented. The study's research questions are used to guide the presentation of the results. The overall research question is: How are KM strategies institutionalized in agricultural research organizations in East Africa?

4.1 Descriptive Statistics

For quantitative data analysis, a descriptive statistic was used as an analytical technique. Quantitative data was collected from 48 AROs in East Africa. As explained in Chapter Four, the sample size was 384 for each country to enable the study to undertake the country-level analysis. The total sample size was 1,152, and 1,075 responded, a response rate of 93.3%. For qualitative data collection, 23 AROs were selected, but the interviews were conducted in 22 with a response rate of 95.7%, accessing a total of 80 respondents. Descriptive statistics have been used to analyze the demographic data, summarize the responses and distribution scores.

(a) Respondent's characteristics

The demographic characteristics of the respondents are presented in terms of gender and age group. Table 6 shows the frequencies and percentages of the respondents concerning gender.

Table 6: The gender of the respondents

Gender	Frequency	Percent
Female	399	37.1
Male	657	61.1
Did not declare their gender status	19	1.8
Total	1,075	100

In terms of gender distribution, the percentage of male respondents was 61.1%, the female was 37.1 %, and those who did not declare their gender status was 1.8%, as shown in Table 6.

(b) Distribution of the respondents' age

The age groups ranged between 21 and 65 and the different categories are shown in figure 8.
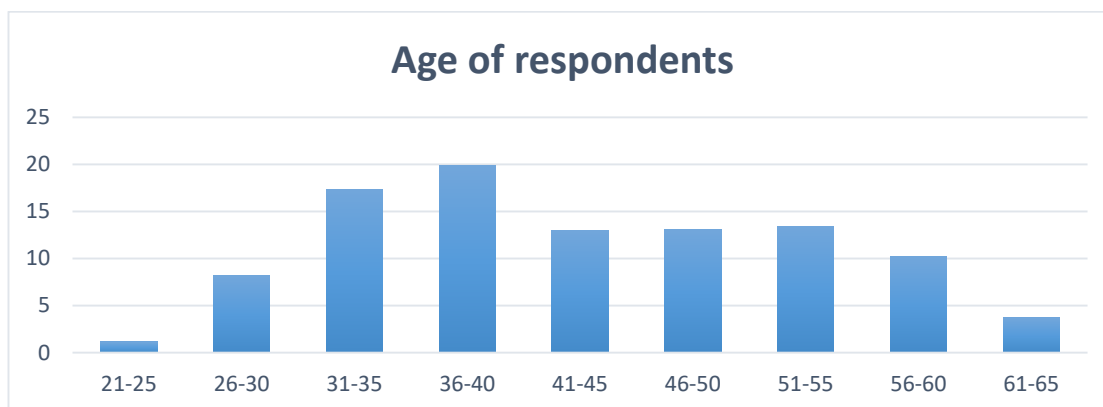
Age of respondents

Figure 8: Distribution of the age of the respondents

The age of the youngest respondent was 21 years and the oldest was 65 years. The results indicate that most of the respondents were between 36 and 40 years, whereas those whose age group was between 21 and 25 years were very few.

(c) Sources/initiators of KM strategies in AROs in East Africa

During the quantitative interviews, the sources of KM strategies in AROs were examined. The quantitative results data collected from 1,075 respondents in AROs in East Africa indicated that KM strategies are mostly externally initiated and driven. In most cases, they are developed in other countries, as shown in Table 7.

Table 7: The source of strategy initiation, drive, and development of KM Strategy

Initiator/driver/supporter/developer of KM strategy	Category	Frequency	Percent
Donors	External source	254	23.6%
Government	External source	141	13.1%
AROs local office	Internal source	211	19.6%
CGIAR Global Headquarters	External source	402	37.4%
Organization(s) providing oversight	External source	21	2%
Other similar external organization(s)	External source	34	3.2%
Not Sure	Not sure	12	1.1%
Total		**1,075**	**100%**

Source: Study quantitative data

Table 7 shows the different sources that initiate, drive, develop, and support these organizations' strategies. Concerning the origin of KM strategies in AROs in East Africa, 23.6% are donor initiated, driven and sponsored, 13.1% government, 37.4% global head offices, 19.6% are from local office sources, 3.2% other external AROs, 2% oversight organization while 1.1% were unsure. Overall, 79.3% of KM strategies in AROs in East Africa are externally initiated, driven and supported.

4.2 Validity and Reliability measures

Quantitative data reliability testing was undertaken (see Table 8), measuring the consistency of the results. The Cronbach Alpha test was used and a value above the recommended cut-off point of 0.7 was obtained. The internal consistency of items within a domain was assessed using Cronbach's Alpha. The approach has been used in many studies to measure internal consistency to test how closely a set of items are related as a group (Cronbach, 1951; Vaske et al., 2017; Som et al., 2017). As shown, all the domain items were correlated based on alpha values, and the obtained results were above the recommended cut-off point of 70% (i.e., between 76.5% to 94.3%).

4.3 Characteristics of KM strategies in AROs in East Africa

A KM strategy's characteristics have been noted as a set of indicators and measures of development and implementation processes that can be used to assess the strategy's effectiveness and relative quality (Chofreh et al., 2018). Table 8 shows the key concepts obtained from data, translated into themes, and used to describe and explain the characteristics of KM strategies in AROs in East Africa.

The Research Question One states: What are the characteristics of KM strategies in AROs in EA? An empirical examination and explanation of KM strategies' key characteristics in AROs in EA, in terms of what exists, what does not exist, and why is presented. In line with this research question, five characteristics have been identified as existing in different KM strategies of the 22 selected AROs in East Africa, where the study was undertaken. Overall, 5 characteristics of KM strategies in AROs in East Africa were identified, namely: well-formulated, technology-focus, alignment, implementation process, and value proposition. Out of the five, technology-focus was

the most prevalent characteristic at 86.4%, followed by well-formulated at 77.3%, while alignment, implementation process, and value proposition were at 59.1% each.

4.3.1 Emerging Themes from data

The analysis of the data produced several concepts, where related concepts were categorized into themes. During the initial analysis, many themes emerged but were consequently reduced to five (5) through abstraction and continuous comparison processes to ensure particularity and alignment with literature constructs. The themes and characteristics of KM strategies are discussed since they are captured as a cluster of important meanings to the Research Question One.

4.3.2 Characteristics of KM strategies

From the analysis, it is evident that the characteristics of KM strategies in AROs in East Africa in every case organization were relatively similar to a reasonable extent, yet, differences were observed when comparing each characteristic concerning what was in existence across each case. The findings largely confirm the conceptual view presented and argued earlier in the research problem section, highlighting the need for coherent concept analysis on the content of KM strategies in AROs in East Africa, especially from practice and context perspectives. So far, it has been speculatively argued that KM strategies are critical to KM initiatives' success in organizations. The characteristics are indicators that evaluate the extent of coherent formulation, relative quality and institutionalization processes.

The analysis of the data produced several concepts. Related concepts were aggregated into themes. The themes provided distinct meanings but have been defined in relation to the research question, empirical data and conceptual literature. From the definition of the themes, the characteristics have been derived from answering the research question. Table 7 shows the key concepts, themes, and characteristics. Although the concepts emerged from qualitative data, the terms and definitions used are derived from the theoretical and empirical literature. Related concepts were aggregated into themes and the themes formed characteristics of KM strategies in AROs in East Africa.

Table 8: Theoretical and conceptual description of the themes forming characteristics of KM strategies in AROs in East Africa

Concepts	Theme	Theme Description	Characteristic	Source
Goals are well stated Objectives are defined Targets are realistic Strategy content is understandable	Strategy content clarity	The actual strategic direction, activities, and actions through which KM strategy is operationalized to achieve the desired goals.	Well-formulated	Fahey & Christensen, 1986; Andrews et al., 2009
Aspects of innovations and agility are included ICT application and use is central to the strategy The strategy is profound and responsive to adopting and using ICTs and innovations The strategy includes holistic approaches for knowledge needs identification and management	Technology-oriented strategy	A technology-oriented strategy is designed to predominantly adopt emerging technologies and innovations, along with specific ICT parameters. It includes aspects of creativity and technological changes	Technology-focus	Yu, Dong, Shen, Khalifa, & Hao, 2013; Chan, 2017).
KM strategy structure fits the organizational-wide strategic structure Internal and external components of KM strategy are aligned KM strategy is coherent, harmonized, and integrated	Strategy contextualization	Strategy alignment is also referred to as the overall consistency of the strategy. It is the extent to which the KM strategy mission, objectives, and plans are simultaneously aligned to other organizational strategic	Alignment	Kyobe, 2000; Furukawa et al., 2014

with the organizational-wide strategy		mission, objectives, and plans support		
Stakeholders/users oriented				
Resources and capabilities are organized and allocated	Strategy implementation	The plan of putting the strategy into action. It is the process through which KM strategy is translated into functional and operational targets.	Implementation process	Karlsson & Tavassoli, 2016; Shimengah et al., 2019
Communication plans are appropriately designed				
Activities and actions are well stipulated				
KM strategy policies are applicable				
Roles and responsibilities are stated				
Strategy operational plan is available				
A monitoring and evaluation plan is established				
Formulated objectives of the KM strategy have been achieved	KM Strategy value, success, or impact	Strategic value answers why the strategy exists and should be used by the organization. It leads to impact	Value Proposition	McIlrath, 2002; Kannabiran & Sundar, 2011
The evaluation process of the strategy is provided				
There is a link between each process/objective and measurement of success/impact				

Table 8 shows the identified concepts, themes and their description as well as the characteristics. The analysis, constant review and comparison of data resulted in the identification of five themes. Each theme is an aggregation of a number of concepts shown in figure 9. The themes are used to describe and explain KM strategies' key characteristics in terms of what exists and the gaps. The concept analysis shows the characteristics which were categorized from concepts as the key themes.

CONCEPTS	THEMES	CHARACTERISTICS OF KM STRATEGY	
• Goals are well stated • Objectives are defined • Targets are realistic • Strategy content is understandable	KM STRATEGY CONTENT	WELL-FORMULATED	
• Innovations and agility included • ICT application and use central • Responsive to ICTs and innovations • Holistic KM approaches	ORIENTED KM STRATEGIES	TECHNOLOGY FOCUS	
• KM strategy structure fit • Internal and external components aligned • Harmonization and integration through inclusion of KM management in planning	KM STRATEGY CONTEXTUALIZATION	ALIGNMENT	KM Strategy Characteristics / Relative Content Characteristics
• Resources and capabilities organized and allocated • Communication plans are properly designed • Activities and actions stipulated • Roles and responsibilities are stated	KM STRATEGY IMPLEMENTATION	IMPLEMENTATION PROCESS	
• Formulated objectives achieved • Evaluation process provided • Link between processes/objective and measurement	KM STRATEGY VALUE / IMPACT REALIZATION	VALUE PROPOSITION	

Figure 9: Characteristics of KM strategies conceptual framework

4.3.3 Concept Analysis

A concept analysis was undertaken from the study's data to examine what was in existence or lacking concerning characteristics of KM strategies. While the characteristics have been independently represented, the identified concepts are not discrete and potential overlaps are possible. The key concepts that emerged from data were categorized into themes, which are also discussed as the characteristics of KM strategies in AROs in East Africa.

It was observed that each organization's KM strategy had some characteristics and lacked some particular characteristics. In view of the analysis and results presented, observations were made concerning the existence and/or gap of characteristics in the KM strategies. From the results, the conceptual argument that the characteristics of KM strategies in AROs in East Africa had previously not been sufficiently articulated to provide the required understanding and explanations of their relative content was observed. The similarities, differences, and gaps in each of the different KM strategies' characteristics were observed and noted across each case (organization). Presented next are the five types of characteristics of KM strategies in AROs in East Africa derived through concept analysis and categorized as themes using inductively derived identification and data analysis process.

As summarized in Figure 11, they include: (i) Well-formulated, (ii) Technology-focus, (iii) Alignment, (iv) Implementation process, and (v) Value proposition.

(a) *Well-formulated*

In this study, a well-formulated means that the strategy has been established obtained, its objectives and ideas can be put into practice as described by a set of tasks aimed at bringing strategic improvement and progress to the individual users, organization and relevant stakeholders. It emerged from the strategy content theme. The theme is an aggregation of five concepts, namely the strategy goal, strategy objectives, strategy terms, understandable content and realistic targets. On this characteristic, 77.3% of the KM strategies had this characteristic, while 22.7% did not have it. A communication manager from one of the AROs in Tanzania explains, "*our organization's strategy has*

a clear goal and well-defined objectives including achievable targets." Formulating the strategy well was identified and emphasized as an important characteristic that is highly valued, and when formulating KM strategies, the concepts should be included. This kind of characteristic enabled some of the AROs to successfully institutionalize their KM strategy by providing achievable targets at each of the different adoption stages, implementation and entrenchment.

Additionally, it contributes to a better understanding of the goals, objectives and targets of a knowledge management strategy. A KM and communication manager from one of the AROs in Uganda explains, *"the strategy has considered key practical aspects. For instance, the purpose, objectives, and expected outcomes are well-stated, making the strategy's promotion to non-KM users very easy and simple. The strategy has realistic targets that have enabled users to deliver on the strategy's expectation at different times"*.

Furthermore, embracing this characteristic focuses the organizations on the standardization and coherent formulation of their strategies by considering organizational KM objectives, goals, and users' needs as inputs. This encourages realistic strategy development, which is also executable. The KM experts also highlighted that lack of this characteristic might have contributed to some of the challenges facing institutionalizing the organizations' strategies. Consistent with assertions of previous studies, the success of a KM strategy depends on its characteristics, for instance, how well it is formulated (Bailey & Clarke, 2000; Bettiol et al., 2011; Akram et al., 2015; Mantas,2017), respondents highlighted that lack of this characteristic inhibits organizations' ability to adopt or implement the strategy. Whereas previously this characteristic had been mentioned by other studies regarding its ability to enable the use and learning (Bailey & Clarke, 2000; Bettiol *et al.,* 2011; Akram *et al.,* 2015), the findings from this study have expanded the concepts and provided a better explanation of this characteristic. Since the study focused on a particular setting that is AROs in East Africa, the findings can be applied in other similar organizations or contexts. While the concepts may not fully describe and explain the effective formulation of a strategy, they encapsulate the key elements based

on empirical findings. Drawing from the study results, this study can confidently report that this characteristic is important and can enable an understanding of the strategy execution challenges.

(b) *Technology-focus*

Technology-focus refers to applying, using, and investing in specific technologies that support the organization's KM strategies' operationalization. It was formed from the technology-oriented theme. The theme is an aggregation of the use of innovations, strategy responsiveness to ICT and innovation, application and use of ICT concepts. On this characteristic, out of the 22 AROs where the interviews were undertaken, 86.4% of the KM strategies had this characteristic, while 13.6% of them did not have it. The technology-focus characteristic enables mainly the use and applications of specialized systems, tools and solutions by proactively focusing on specific aspects of ICTs in KM strategies. In principle, the strategy's content should highlight concepts such as adopting specialized systems and being responsive to new and emerging technologies. In one of the AROs in Uganda, a KM director explains, "*a good portion of the strategy highlights the importance of developing ICT systems such as information and knowledge hubs to manage knowledge effectively. The strategy has provision for adapting current and emerging ICTs along with the growing trends*".

This characteristic was also found to influence the institutional and cultural changes in organizations. The institutional and cultural changes were observed and identified as creative use of ICT and embedding ICT application aspects into KM strategy, with 86.4% citing these concepts as existing. In the organizations where the characteristic was present in the strategies, it was observed that the use and application of specialized ICT systems and solutions provided an enabling environment. There were also cases where ICT was mainly used and applied to solve specific knowledge management needs for internal and external users, such as sharing, exchanging, and processing organizational knowledge. An ICT Manager in one of the AROs in Kenya stated, "*the incorporation of ICT in the strategy has influenced the organization's changes. Through this principle, the organization moved to embrace approaches that are reflective of current times. Some of the changes that happened include the development*

of platforms that are digital to enable proper management of the organization's knowledge as well as information sharing and dissemination to internal and external stakeholders".

The technical and social aspects of ICT were the key drivers, principles and considerations that KM strategies incorporated. The results have demonstrated that technology is a key driver and enabler by combining diverse systems, tools and applications. A knowledge Curation manager explains, *"the strategy has considered ICT as a driver and enabler. It emphasizes the use of ICT tools; for example, the "Consortium Group (CG) Open Space digital platform" ensures that there is enhanced accessibility to the research knowledge. Open access is one of the desired outcomes and a game-changer for the strategy implementation process".* The study also observed that agility and adaptability of the strategies were key concepts of technology-focus. A KM publishing manager said, *"the principles of knowledge use and re-use, especially through the systems or applications that are agile, have been a key success. The strategy has provision to adopt new and emerging technologies. For instance, behavioral communications approaches are adequately stated. This has made our work of strategy implementation much easier and enriching".*

The results showed that using and applying ICT included KM systems, digital knowledge sharing and dissemination platforms, portals and hubs, and intranet and extranet. This characteristic is the most mentioned as existing in KM strategies in AROs in East Africa at 86.4% compared to the next one at 77.3%. A regional communication specialist explains, *"the strategy specifies how and where information and knowledge resources can be found and accessed through the use of ICT, digital tools and approaches. Technology is one of the important aspects of KM strategies that our organization has valued and practically adopted in most KM activities. I can confidently confirm that it has accelerated the implementation of the strategy in the organization".* It is evident that to institutionalize KM strategies successfully, key concepts focusing on application, agility and adaptability are essential. They should be included in the content of the strategy.

In previous literature, this characteristic's description has been limited to knowledge bases (Bettiol et al., 2011; Mantas, 2017). This study expands the concepts for describing and explaining this characteristic and points out its influence and ability to change an organization. It provided the strategies in AROs in East Africa with the opportunity to focus on sound and reflective approaches to emerging technologies. In formulating KM strategies' principles, technology-focus should be recognized and mainstreamed to create an opportunity for new technological advancement, both simple and more sophisticated ICT tools and solutions. Considering the technological advancement in the KM domain and the critical role of ICT, it is not surprising that this characteristic (technology-focus) is the most identified and incorporated in KM strategies in AROs in East Africa. Therefore, KM strategies should be designed in such a way (agile and adaptable) that multiple technologies can be employed as and when required.

(c) Alignment

The concept of alignment, also referred to as a strategic fit, is a key idea that has been widely discussed in theoretical literature (Ale *et al.,* 2014). Alignment is defined as the fit between the KM's priorities and activities and the overall organizational strategies. The main goal is to ensure that those of the entire organization support KM strategic priorities, capabilities, decisions, and actions by effectively integrating KM strategy activities into the core of the organization's processes. It emerged from the strategy contextualization theme. The theme is aggregated from the following concepts: KM strategy structure fit, internal and external component alignment, strategy harmonization and integration with organizational-wide strategies, the inclusion of KM strategy management in strategic planning, and the strategy is stakeholder/user-oriented. The findings have shown that the alignment is a core characteristic of KM strategies, but it was present in 59.1% of the strategies and lacking in 40.9% of the strategies. A KM consultant stated, *"the alignment supports KM functions to be aligned with the overall organizational strategic plan, goals and mission."* It is evident that a good percentage (40.9%) of KM strategies in AROs are not correctly aligned and the concepts have not been included.

The alignment characteristic facilitates inclusiveness with the broader organizational strategic vision, direction and plan. The inclusivity dimension is derived by aligning the KM strategy to the shared vision (Levy et al., 2001; Thevenet & Salinesi, 2007; Pollard & Morales, 2015; Pratt et al., 2019). Some of the desired ideas mentioned included user-oriented approaches, engagement of all relevant and interested parties, and support from the overall organizational strategy initiative. A principal research scientist from Kenya explains, *"the strategy is aligned to agricultural sector policies. This approach is a departure from conventional thinking, where KM strategy has been treated purely as a departmental strategy. The non-inclusivity made it difficult to put the strategy into the wider organizational activities and strategic vision. The alignment has removed the disorder both at the organization's and sectorial levels".* It is evident that alignment is a key characteristic which is required to be in KM strategies and lack of it has impeded institutionalization of the strategies. An ICT officer said, *"the strategy activities are not integrated with other activities in the organization and this has led to fewer actions being taken up in the organization."* It was observed and reported that since some KM strategies were not aligned with the policies and guidelines of the organizational and sectorial strategies, conflicts during the implementation of such strategies due to lack of well-defined activities, roles, and responsibilities, as well as limited use of the strategies to support the KM plans in the organization. These findings are consistent with assertions from previous studies, which have argued that the purpose of aligning KM strategies with organization-wide strategies is to positively influence the strategic outcome (Wu et al., 2015; Akram *et al.,* 2015), such as the institutionalization of the strategies in the organization.

From the results, it can be seen that each ARO has its organization-wide strategy, and to formulate a KM strategy that is aligned with the organization-wide or sector-wide strategies, there is a need to analyze the operating environment within which the ARO is operating in. The characteristic of alignment has been explained. Specifically, the link between KM strategy and the overall organizational strategy or other related strategies has been identified and can be achieved by aligning KM strategies into the

strategic perspective of the organization. While the characteristic has not been widely discussed in previous literature, Akram *et al. (*2015) identified its contribution to the strategy's core activities for more significant impact and value realization. A KM manager in one of the organizations in Kenya affirmed: *"the key elements of the strategy enables a connection between users and the strategy content and creates a linkage amongst users within and outside the organization."* Examining and improving understanding of the characteristic of alignment can describe and explain whether the strategy is aligned or misaligned with the broader goals of organizational strategic direction and users' and stakeholders' centricity. This study concurs with previous literature and argues that aligning KM strategy to other organizational strategies makes implementation less complicated, stimulates demand, and facilitates better integration of the strategy into the organizational activities (Akram *et al.,* 2015).

In general, prior studies have discussed KM strategies' alignment as the extent to which the KM mission, objectives, and plans support the ones stated in organization-wide strategy. Unfortunately, many organizations have ignored this characteristic due to the independent nature of planning by either KM strategy or organization-wide strategy (Pour *et al.,* 2019). Additionally, the authors argued that most studies have separately considered the various KM strategic alignment dimensions. Some of the areas that have been examined include technological and process considerations and relational models between KM strategy and other organizational strategies. This has led to theoretical and empirical gaps. Considering the diversity of the users, stakeholders, and strategic vision of different organization-wide strategies, aligning and ordering KM strategies' activities and functions along these requirements should incorporate all these concepts. This is because users can be internal or external. Therefore, for a KM strategy to ensure it has this characteristic of alignment, it must provide its priorities, activities, and functionalities that are user-oriented and fitted within the stakeholders' requirements and aligned with other broader organizational strategies. This study has expanded the concepts that can be used to describe this characteristic in KM strategies' content and the implementation process.

(d) *Implementation processes*

Implementation processes characteristic refers to the approach and intentionality of plans that guide the implementation of KM strategies, including social processes through which different interventions are put into action in the organization. Implementation processes describe how KM strategies are implemented in an actual setting and what strategy content should contain for successful implementation. The domain subject experts (who were respondents) indicated the concepts they believed are essential for this characteristic. It emerged from the strategy implementation theme. This theme is aggregated from the following concepts: resources and capabilities organized and allocated, communication plans in place, strategy operational available, monitoring and evaluation plan established, well-defined activities, roles and responsibilities in the strategy and were aggregated to form strategy implementation theme. In turn, the strategy implementation theme formed this characteristic. In this study, 13 organizations indicated that these concepts existed in their KM strategies, constituting 59.1% of the organizations, while nine reported that it lacked in their strategies, comprising 40.9% of the organizations. An important aspect of this characteristic is the ability to enable the strategy to provide guidelines and best practices between different actors supporting the implementation process. A KM manager from one of the AROs in Uganda explains, *"the guidelines on how to undertake KM activities and targets are well explained, leading to an understanding of reporting requirements and strengthening the relationship amongst the target audience, knowledge users, both internal and external."*

This characteristic is mostly linked to the KM strategy implementation phase, a key part of a strategy's institutionalization. A senior data manager in ARO in Kenya explained, *"KM strategy implementation processes are well defined in the strategy. Top management's role is also well defined, and this has created interest from organizational leadership on the KM matter. This has enabled the organization to implement the strategy with fewer challenges".* It is also possible that for a KM strategy to be implemented easily and successfully, these concepts must be included in the strategies. For instance, clear communication and implementation plans create

an enabling environment. Similarly, well-defined activities, roles and responsibilities reduce ambiguity and confusion on tasks to be performed. This study observed and noted that this characteristic is at the heart of strategy success. The characteristic describes significant execution concerns. For instance, a strategy should have clear implementation frameworks and processes, well-defined activities, resource mobilization plans and good communication plans. A Monitoring and Evaluation (M&E) expert from an ARO in Uganda explains, *"KM activities are explicit and implementation framework well stated. Probably this is one of the reasons for success in the strategy implementation process", the implementation plan contains the results framework, which is key during evaluation and monitoring of the implementation progress.* Most of the subject experts said that the inclusion of these concepts in KM strategies is highly desirable for better planning and implementing a new KM initiative, such as a strategy. In cases where this characteristic was lacking, it was recommended that the characteristic is desirable and needed. A Communication manager stated, *"the strategy should cover all implementation aspects, including communication plans, who's responsible for the different areas of the implementation framework, resource management, and monitoring and evaluation schedule, quality assurance processes. This feature ensures that all aspects are implemented as envisioned and complement each other. It also ensures that all staff members/departments are aware of their roles and responsibilities in the implementation process, and to get the most out of the strategy through participating in its implementation"*. The results have shown that these concepts are critical for KM strategy formulation and institutionalization processes.

The concepts of implementation processes also emphasized evaluating the plans (i.e., for communication and implementation), activities, roles and responsibilities. While studies have indicated an exemplary performance, the process enables the interaction between different departments (Bettiol et al., 2011; Akram et al., 2015; Mantas, 2017). In AROs in East Africa, a number of their KM strategies (40.9%) did not have this characteristic. Similarly, extant literature has cited this characteristic as critical to the successful execution of the strategy (Bettiol *et al.,* 2011; Akram *et al.,* 2015; Mantas,

2017). For instance, Akram et al. (2015) and Mantas (2017) identified implementation processes as a dominant characteristic that determines the failure or success of the implementation of KM strategies in organizations. Although this characteristic is essential, this study observed cases where the strategies have not paid much attention to it and had less inclination to organizational needs and contextual realities. The results indicated cases where KM strategies lacked this characteristic, for instance, lack of implementation plan. In these cases, it was reported that most of the staff were not adequately prepared or knowledgeable on strategy implementation processes. Furthermore, where the communication plan was unclear, there was poor continuity due to staff attrition.

(e) ***Value proposition***

In this study, a value proposition justifies the strategy's existence, ultimately leading to strategic impact and value realization. It comprises the quality, state, and appropriateness of the KM strategy that is generally agreed upon among its users. It involves the extent to which the strategy is appropriate and suitable for intended use or purpose, such as improving the organization's strategic decision-making process. This characteristic was formed from the KM strategy value/success/impact theme. The aggregated concepts to form the theme include: formulated objectives achieved, an evaluation process is provided, and strategy policies are applicable and the link between each process/objective and success/impact measurement. This characteristic was found to be inadequately addressed in many KM strategies of AROs in East Africa. A senior research scientist from one of the AROs in Kenya explains, "*the strategy's content and scope are limited. The strategy mainly focuses on knowledge sharing and does not consider some of the critical users' needs and aspects, for instance, preservation of organizational knowledge to ensure that institutional memory is maintained for future development and generations has never been considered for years*".

Challenges in strategy formulation in AROs in East Africa are responsible for the inadequate attention paid to the strategy's value. A KM manager from one of the AROs

in Tanzania asserts, *"the strategy is not demand-driven but supply-driven. The strategy has not considered user demand and requirements but assumes users' needs are known and obvious. It is important to have a strategy for users and not for the strategy formulators".* Another senior scientist from one of the AROs in Kenya explains, *"the strategy has a broad perspective. This is because the strategy has not included all the necessary local needs. Therefore, it does not highlight the key areas to caution against based on internal experiences and lessons learned from other sectors or regions".*

The inadequate consideration paid to the value that the strategy provides is uncovered in this study highlights the need for AROs in East Africa to shift attention to coherent KM strategy formulation and consideration of the key concepts of this characteristic of their strategies. Contributing to theoretical discussions in this perspective, Mantas (2017) underscored the importance of coherence in strategy formulation. This study's results affirm the need for AROs in East Africa to take this concern seriously. Findings from this study support the view that constant, unending strategic reforms and demands from external stakeholders experienced by AROs in East Africa have led to supply-driven strategies (Leeuwis et al., 2018). Previous studies have also argued that the external demands for strategic reforms have not considered KM strategies' internal priorities, organizational needs, and mandate in AROs (Leeuwis et al., 2018; Banerjee et al., 2019). Consistently, an earlier assertion by Leeuwis et al. (2018) indicated that AROs have been experiencing urgent and pressing external calls from external donors to put a concerted effort on attaining impact from agricultural scientific knowledge. They argued that the demands had disregarded internal strategic needs, and this situation has led to unbalanced interest from funders of KM strategies and the execution processes in these organizations (Banerjee et al., 2019). This may have affected the practitioners' attention.

This study has expanded the concepts of the value proposition as a critical characteristic of KM strategies. This is a new contribution since previous studies have not discussed this characteristic and the concepts in detail. Bailey and Clarke (2000) attempted to discuss it but did so very loosely and without theoretical and empirical standpoints.

4.4 Quantitative Factors influencing institutionalization of KM strategies in AROs in East Africa

The research question two states: What factors influencing the institutionalization of KM strategies in AROs in EA? This section describes the analysis of factors influencing institutionalization of KM strategies in AROs in East Africa. Institutionalization has been analyzed in terms of adoption, implementation and entrenchment of KM strategies in the context of AROs in East Africa. Adoption refers to the formal decision-making process to accept a given practice, implementation is the process of putting the practice into use, also referred to as the execution process, and entrenchment is the process that allows the persistent use and continuous spread of the practice.

4.4.1 Introduction

In this study, institutionalization of KM strategies means the decision to accept to use, continue to use, and the persistent and wide use of these organizations' strategies. The results have been presented using the following dimensions: **Extent of Institutionalization**, **Macro-level Factors,** and **Organizational Micro-Level Factors** influencing institutionalization of KM strategies in AROs in East Africa. Besides, the results of regression analysis and path analysis, factor analysis is also presented. Regression analysis was used to explore the relationships between different multiple measures identified in the conceptual framework while path analysis was used to evaluate causal models by examining the relationships between the dependent variable and two or more independent variables simultaneously (Pedhazur, 1982; Wuensch, 2017). Subsequently, a more detailed look at the variables' factors and qualitative analysis using KII for triangulation is also presented.

The Extent of Institutionalization is covered under the following dimensions: Adoption, Implementation and Entrenchment. **Macro-level Factors Influencing Institutionalization of KM strategies are organized into the following categories:** Mimetic (cognitive) level, Normative and Regulative (Coercive) factors. **Micro-level Factors Influencing Institutionalization of KM strategies** are presented under the

headings of Strategic Decision Making, Organizational Leadership and Management Support.

4.4.2 Internal Consistency Reliability

The internal consistency of items within a domain was assessed using Cronbach's Alpha. The approach has been used in many studies to measure internal consistency to test how closely a set of items are related as a group (Cronbach, 1951; Vaske *et al.,* 2017). It is considered a suitable measure of internal consistency -coefficient of dependability- when using Likert scale questions in a questionnaire and obtaining a scale from the responses (Som *et al.,* 2017). Table 9 shows the Cronbach Alpha reliability measures for the different dimensions based on the study's data.

Table 9: Domain items correlation using Alpha

	Number of Items	Alpha in %
Institutionalization of KM strategy	25	93.0%
Institutionalization Adoption	12	83.5%
Institutionalization Implementation	4	76.5%
Institutionalization Entrenchment	9	89.4%
Mimetic (cognitive) Factors	9	88.2%
Normative Factors	9	91.4%
Regulative Factors	6	89.6%
Strategic Decision Making	12	91.3%
Organizational Leadership	6	92.5%
Management Support	9	94.3%

As shown in Table 9, all the domain items were correlated based on alpha values, and the obtained results were above the recommended cut-off point of 70% (i.e., between 76.5% to 94.3%). This shows that the reliability test was high, and the items' internal consistency was above the recommended level. A score for each domain was created for every observation for which there was a response to at least one item. The summative score is divided by the number of items over which the sum has been calculated.

4.4.3 Responses on the extent of institutionalization of KM strategies in AROs in East Africa

In the context of this study, the extent of institutionalization means the level to which KM strategies have been institutionalized. This study also identified the macro-and micro-level organizational factors associated with institutionalization of the strategies in AROs in East Africa. The results on the extent of institutionalization are presented in terms of adoption, implementation and entrenchment. The responses were evaluated using a five-point Likert Scale ranging from "Extremely low" with a score of 1 to "Extremely High" with 5. Therefore, institutionalization has the following three dimensions: adoption, implementation and entrenchment. Table 10 summarizes the response in terms of frequencies and percentages for each of the different KM strategies levels.

Table 10: Summary of Responses on Extent of Institutionalization of KM Strategies in AROs in East Africa

	Extremely Low	Low	Neither	High	Extremely High
Extent of Adoption of KM strategies					
Extent of adoption of KM strategy	60(5.6%)	443(41.2%)	415 (38.6%)	139 (12.9%)	18 (1.7%)
Level of acceptance when KM strategy was first introduced	61(5.7%)	337 (31.3%)	446 (41.5%)	147 (13.7%)	38 (3.5%)
Level of staff involvement in the development of KM strategy	51(4.7%)	329 (30.6%)	422 (39.3%)	201 (18.7%)	72 (6.7%)
Extent organizational goals and objectives increase adoption of KM strategy	79(7.3%)	469 (43.6%)	412 (38.3%)	97 (9.0%)	18 (1.7%)
Extent of institutional support for introduction of KM strategy	89(8.3%)	455 (42.4%)	378 (35.2%)	134 (12.5%)	18 (1.7%)
Extent of pre-conditions which are set for your organization to support KM strategy	82 (7.6%)	404 (37.7%)	426 (39.7%)	145 (13.5%)	16 (1.5%)
Extent of risk assessment when introducing KM strategy	46 (4.3%)	313 (29.2%)	491 (45.8%)	197 (18.4%)	24 (2.2%)

Extent the priority is given to KM strategy	95 (8.9%)	412 (38.4%)	405 (37.8%)	147 (13.7%)	13 (1.2%)
Extent put in place means to handle issues/challenges arising from introducing KM	57 (5.3%)	362 (33.8%)	486 (45.3%)	151 (14.1%)	16 (1.5%)
Extent your organization transforms decisions from knowledge into practice	73 (6.8%)	429 (40.0%)	428 (39.9%)	131 (12.2%)	11 (1.0%)
Extent the organization have put in place necessary arrangements for KM strategy acceptance	67 (6.3%)	418 (39.0%)	464 (43.3%)	106 (9.9%)	17 (1.6%)
Overall	**8 (0.8%)**	**79 (7.3%)**	**415 (38.6%)**	**518 (48.2%)**	**55 (5.1%)**
Implementation					
The extent of implementation (i.e. continued use) of KM strategy	58 (5.4%)	400 (37.3%)	472 (44.0%)	128 (11.9%)	14 (1.3%)
Extent of training and resource acquisition to support continued use of KM	89 (8.3%)	388 (36.2%)	404 (37.7%)	160 (14.9%)	32 (3.0%)
Extent your organization integrated KM strategy into other organizational strategies	61 (5.7%)	391 (36.5%)	429 (40.0%)	175 (16.3%)	16 (1.5%)
Extent of organization's commitment to identifying factors that affect use of KM	64 (6.0%)	415 (38.7%)	421 (39.3%)	153 (14.3%)	19 (1.8%)
Extent of using practical approaches to ensure or support continued use of KM	103 (9.6%)	392 (36.6%)	402 (37.5%)	151 (14.1%)	24 (2.2%)
Overall	**23 (2.1%)**	**205 (19.1%)**	**626 (58.2%)**	**206 (19.2%)**	**15 (1.4%)**
Entrenchment					
Extent of entrenchment (i.e. widespread use) of KM strategy	42 (3.9%)	345 (32.1%)	480 (44.7%)	178 (16.6%)	30 (2.8%)
Extent your organization processes support	54 (5.0%)	372 (34.6%)	461 (42.9%)	172 (16.0%)	16 (1.5%)

widespread use and stability of KM					
Extent your organization has achieved satisfactory results from KM	40 (3.7%)	285 (26.5%)	510 (47.4%)	217 (20.2%)	23 (2.1%)
Extent would you say KM strategy practices have become a routine	60 (5.6%)	320 (29.8%)	452 (42.0%)	211 (19.6%)	32 (3.0%)
Extent that actions and actors of KM strategy are widespread	63 (5.9%)	333 (31.0%)	445 (41.4%)	204 (19.0%)	29 (2.7%)
Extent your organization has gained a shared history of joint utilization of KM	45 (4.2%)	279 (26.0%)	478 (44.5%)	243 (22.6%)	29 (2.7%)
Extent your organization has availed resources to facilitate KM activities	54 (5.0%)	309 (28.8%)	460 (42.9%)	208 (19.4%)	42 (3.9%)
Extent your organization has established resources to make KM strategy simpler	41 (3.8%)	315 (29.4%)	462 (43.1%)	220 (20.5%)	35 (3.3%)
Extent your organization is supporting long term retention of KM strategy	71 (6.6%)	349 (32.5%)	455 (42.4%)	174 (16.2%)	24 (2.2%)
Overall	**29 (2.7%)**	**350 (32.6%)**	**571 (53.1%)**	**123 (11.4%)**	**2 (0.2%)**
Overall extent of Institutionalization	**14 (1.3%)**	**120 (11.2%)**	**540 (50.2%)**	**363 (33.8%)**	**38 (3.5%)**

Table 10 shows a summary of the responses to the questionnaire items that sought to examine and measure the extent of institutionalization of KM strategies in East Africa. The frequencies and percentages of extremely low and low are combined and those of high and extremely high. The results are as follows: on adoption, out of the 1075 respondents, 8.1% of the respondents indicated that the extent of adoption of KM strategies was low, 38.6% indicated it was neither high nor low and 53.3% indicated that the extent of adoption was high. It can, therefore, be inferred that the extent of adoption of KM strategies in AROs in East Africa has been generally high. On

implementation, 21.2% indicated that the extent of implementation of KM strategies was low, 58.2% indicated it was neither high nor low and 20.6% indicated that the extent was high. Therefore, it can be inferred that the extent of implementation of KM strategies in AROs in East Africa has generally been between high and low. 35.3% indicated that the extent was low for entrenchment, 53.1% indicated it was neither high nor low, while 11.6% indicated that the extent was high. Therefore, it can be inferred that the extent of entrenchment of KM strategies in AROs in East Africa has been generally neither high nor low. Overall, the extent of institutionalization –adoption, implementation and entrenchment- 12.5% of the respondents indicated the level was low, 50.2% indicated the extent was neither high nor low, while 37.3% indicated it was high.

The results of overall institutionalization of KM strategies in AROs in East Africa can be visualized using the graph shown in Figure 10.
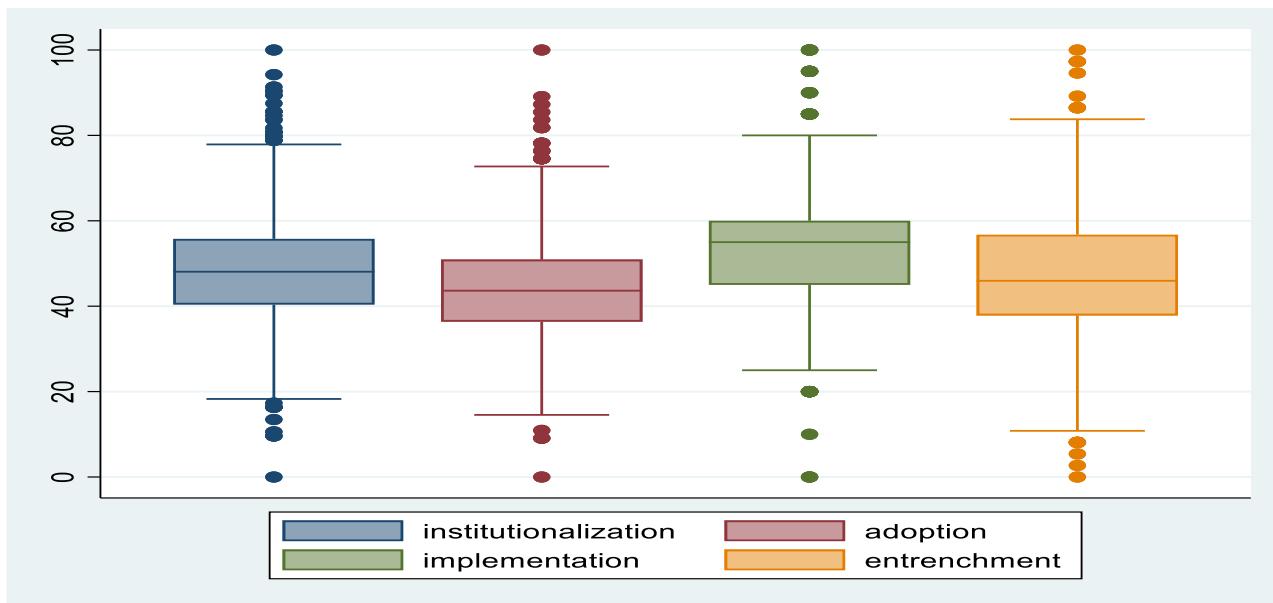
Figure 10: Summary of distribution score of institutionalization KM strategies in AROs in East Africa

The results show that the median score for adoption was 43.6, implementation 55.0 and entrenchment 45.9. The median score for the overall extent of institutionalization of KM strategies in AROs in East Africa was 48.1. This shows that the median for

implementing KM strategies was higher than the median for adoption and entrenchment scores. Comparing adoption and entrenchment, the score for entrenchment was slightly higher than that of adoption. The adoption of KM strategies in AROs in East Africa is lower, followed by entrenchment. Therefore, institutionalization elements can be ranked in descending order, thus: implementation, entrenchment, and adoption. In general, it is clear that most of the strategies have been put into continuous use (implementation), but acceptance (adoption) and widespread or persistent use (entrenchment) is low.

4.4.4 The extent of institutionalization of KM strategies for Kenya, Uganda and Tanzania

This section presents country-wise results on the extent of institutionalization of KM strategies in East African countries, namely Kenya, Uganda and Tanzania. The results are first presented per country, after which a comparison is made. Figure 11 shows the results for Kenya.
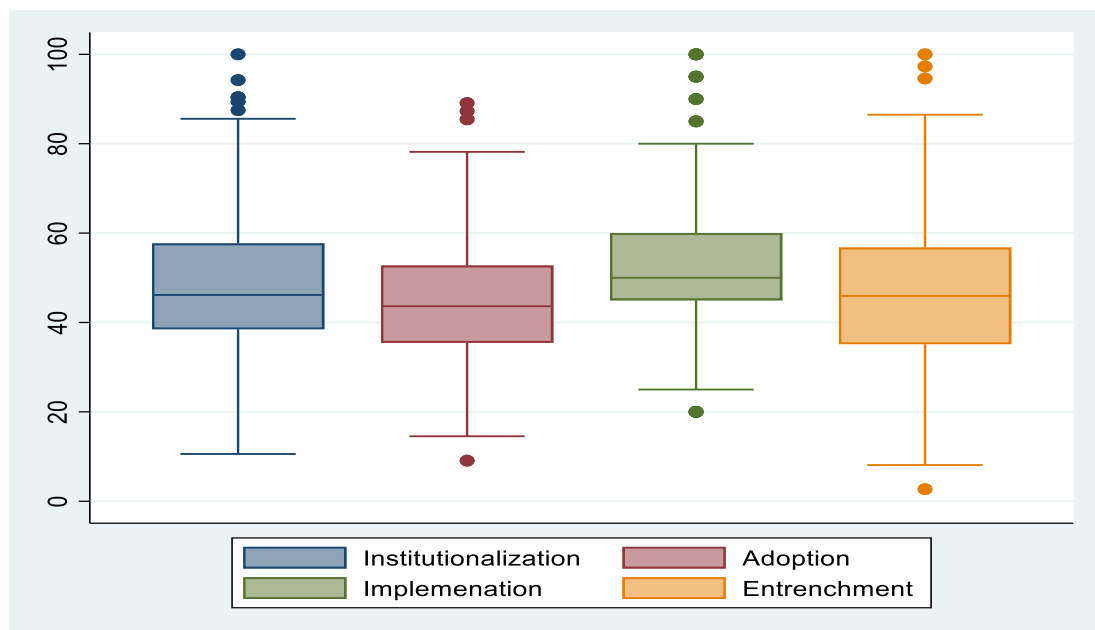
Figure 11: Extent of institutionalization in AROs in Kenya

The overall level of institutionalization was found to be below 60%. The extent of institutionalization of KM strategies for AROs in Kenya showed that implementation was highest at 60%, followed by entrenchment at 58%, and lastly, adoption at 50%.

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The results for the extent of institutionalization of KM strategies in AROs in Tanzania are shown in Figure 12.
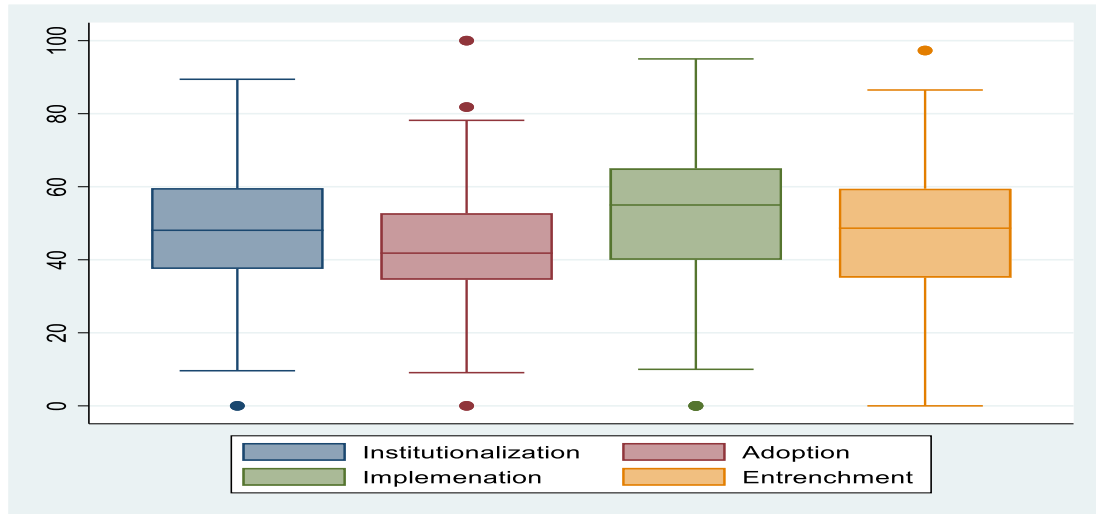
Figure 12: Extent of institutionalization for AROs in Tanzania

The overall level of institutionalization was found to be at 60%. The extent of institutionalization of KM strategies for AROs in Tanzania showed that implementation was highest at 64%, followed by entrenchment at 60%, and lastly, adoption at 52%. The results for the extent of institutionalization of KM strategies in AROs in Uganda are shown in Figure 13.
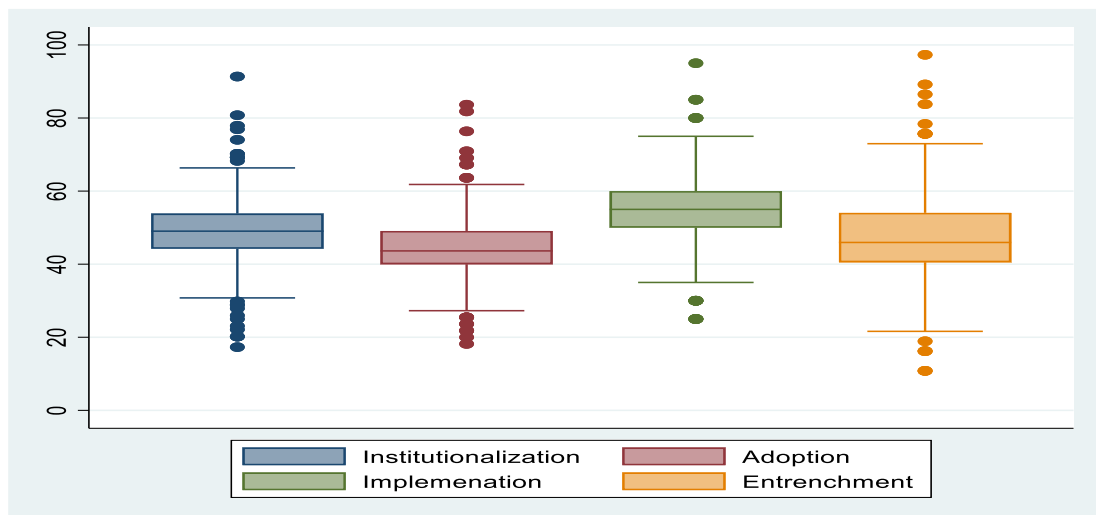
Figure 13: Extent of institutionalization for AROs in Uganda

The overall level of institutionalization was found to be at 52%. The extent of institutionalization of KM strategies for AROs in Uganda showed that implementation

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was highest at 60%, followed by entrenchment at below 56% and then adoption at 48%.

Among the three dimensions, implementation had the highest extent of institutionalization, followed by entrenchment and adoption in that order for the three countries. Overall, the extent of institutionalization of KM strategies was highest in Tanzania, followed by Kenya and Uganda in that order.

The results have shown that the extent of implementation and entrenchment of KM strategies was higher than adoption. These results contradict the natural expectation. It is generally expected the strategy should be first adopted, then implemented and after that entrenched. The low adoption rate is an indication that AROs in East Africa have been implementing KM strategies due to influence from the external pressures, but understanding and appreciating the value of the strategies by the majority of the users remains low. Consistently, previous studies have shown that AROs in East Africa have been under increased scrutiny to search for ways of translating scientific research knowledge into innovation and impact (Banerjee et al., 2019). These pressures may have contributed to the high extent of implementation and entrenchment of KM strategies, regardless of whether they have been accepted or adopted in practice. Studies have further confirmed that AROs have been responding to external pressure for fear of losing funding (Leeuwis et al., 2018; Banerjee et al., 2019), and as a result, they might have institutionalized KM strategies, but the activities involved in the espoused practices are not applied in the actual setting. For instance, Leeuwis et al. (2018) showed that these demands had influenced the strategic decision-making processes of AROs as a response to the pressures. Therefore, it is possible that AROs have been implementing KM strategies as a response to external pressures but have not fully adopted the strategies.

4.4.5 Description of External Pressure factors influencing institutionalization of KM strategies

The results on responses are presented in terms of Mimetic (cognitive) factors, Normative and Regulative (Coercive pressures). The responses were evaluated using a five-point Likert Scale ranging from "Extremely low" to "Extremely High." Table

11 shows a summary of the responses in terms of frequencies and percentages for each of the different pressure factors.

Table 11: Summary of Responses on Influencing Factors

	Extremely Low	Low	Neither	High	Extremely High
Mimetic (cognitive) Pressure					
Extent uncertainty in the business environment influence Adoption	99(9.2%)	427(39.7%)	407(37.9%)	121(11.3%)	21(2.0%)
Extent uncertainty in the business environment influence Implementation	78(7.3%)	403(37.5%)	426(39.6%)	143(13.3%)	25(2.3%)
Extent uncertainty in the business environment influence Entrenchment	66(6.1%)	357(33.2%)	460(42.8%)	163(15.2%)	29(2.7%)
Extent Perceived Success of other organizations on Adoption	104(9.7%)	441(41.0%)	386(35.9%)	126(11.7%)	18(1.7%)
Extent Perceived Success of other organizations on Implementation	74(6.9%)	394(36.7%)	456(42.5%)	131(12.2%)	19(1.8%)
Extent Perceived Success of other organizations on Entrenchment	67(6.2%)	353(32.8%)	466(43.3%)	163(15.2%)	26(2.4%)
Extent Prevalence of KM Strategy activities in other organizations influence Adoption	92(8.6%)	406(37.8%)	402(37.4%)	163(15.2%)	12(1.1%)
Extent Prevalence of KM Strategy activities in other organizations influence Implementation	56(5.2%)	375(34.9%)	461(42.9%)	168(15.6%)	15(1.4%)
Extent Prevalence of KM Strategy activities in other organizations influence Entrenchment	59(5.5%)	345(32.1%)	436(40.6%)	216(20.1%)	19(1.8%)
Overall	**16 (1.5%)**	**228 (21.2%)**	**642 (59.7%)**	**182 (16.9%)**	**7 (0.7%)**
Normative Pressure					
Extent Level of professionalism in the organization influence Adoption	206(19.2%)	428(39.8%)	292(27.2%)	131(12.2%)	18(1.7%)

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Extent Level of professionalism in the organization influence Implementation	153(14.2%)	422(39.3%)	353(32.8%)	131(12.2%)	16(1.5%)
Extent Level of professionalism in the organization influence Entrenchment	129(12.0%)	393(36.6%)	361(33.6%)	172(16.0%)	20(1.9%)
Extent Requirement(s) resulting from associations influence Adoption	155(14.4%)	473(44.0%)	289(26.9%)	143(13.3%)	15(1.4%)
Extent Requirement(s) resulting from associations influence Implementation	113(10.5%)	431(40.1%)	400(37.2%)	117(10.9%)	14(1.3%)
Extent Requirement(s) resulting from associations influence Entrenchment	104(9.7%)	388(36.1%)	388(36.1%)	175(16.3%)	20(1.9%)
Extent Expectations from the industry standards influence Adoption	164(15.3%)	431(40.1%)	324(30.1%)	148(13.8%)	8(0.7%)
Extent Expectations from the industry standards influence Implementation	133(12.4%)	407(37.9%)	398(37.0%)	128(11.9%)	9(0.8%)
Extent Expectations from the industry standards influence Entrenchment	128(11.9%)	363(33.8%)	403(37.5%)	170(15.8%)	10(0.9%)
Overall	**12 (1.1%)**	**222 (20.7%)**	**504 (46.9%)**	**309 (28.7%)**	**28 (2.6%)**
Regulative Pressure					
Extent Regulation requirements influence Adoption	199(18.5%)	414(38.5%)	304(28.3%)	131(12.2%)	27(2.5%)
Extent Regulation requirements influence Implementation	158(14.7%)	399(37.2%)	366(34.1%)	128(11.9%)	23(2.1%)
Extent Regulation requirements influence Entrenchment	145(13.5%)	362(33.7%)	374(34.8%)	167(15.5%)	27(2.5%)
Extent Resource dependency influence Adoption	224(20.8%)	429(39.9%)	285(26.5%)	123(11.4%)	14(1.3%)
Extent Resource dependency influence Implementation	210(19.5%)	396(36.8%)	349(32.5%)	104(9.7%)	16(1.5%)
Extent Resource dependency influence Entrenchment	185(17.2%)	373(34.7%)	354(32.9%)	143(13.3%)	20(1.9%)
Overall	**16 (1.5%)**	**191 (17.8%)**	**454 (42.2%)**	**348 (32.4%)**	**66 (6.1%)**

When the frequencies and percentages of extremely and low are combined as well as those of extremely high and high, the results are as follows: In the case of mimetic or cognitive pressure, 22.7% of the respondents indicated that the extent of mimetic was low, 59.7% indicated it was neither high nor low and 17.6% indicated that the extent of this pressure was high. It can be seen that the percentage of respondents indicating a low extent of mimetic pressure is higher than the percentage of respondents indicating a high extent of mimetic pressure. Therefore, the pressure to imitate other AROs in institutionalization of KM strategies is low.

For normative pressure, 21.8% indicated that the extent of the pressure was low, 46.9% indicated it was neither high nor low and 31.3% indicated that the extent of the pressure was high. It can be seen that the percentage of respondents indicating a high extent of normative pressure is higher than the percentage of respondents indicating a low extent of normative pressure. Therefore, the pressure to comply with requirements from the environment to institutionalize KM strategies is high.

On regulative or coercive pressure, 19.3% indicated that the extent of the pressure was low, 42.2% indicated it was neither high nor low while 38.5% indicated that the extent of the pressure was high. It can be seen that the percentage of respondents indicating a low extent of regulative pressure is higher than the percentage of respondents indicating a high extent of regulative pressure. Therefore, the pressure exerted on AROs by organizations they depend upon or dominant organizations to institutionalization of KM strategies is high.

It can be seen that the extent of mimetic pressure on institutionalization of KM strategies is low whereas the extent of normative and regulative pressures is high. The extent of regulative pressure was higher compared to normative as it had a high extent of 38.5% whereas normative pressure had a high extent of 31.3%.

4.4.6 Description of intervening and moderating effect of Strategic Decision Making, Organizational Leadership and Top Management Support on Institutionalization of KM Strategies

The results are presented in terms of factors related to Strategic Decision Making, Organizational Leadership and Top Management Support. The responses were

evaluated using a five-point Likert Scale ranging from "Extremely low" to "Extremely High." Table 12 shows a summary of the responses in terms of frequencies and percentages.

Table 12: Summary of Response of mediation variables (intervening and moderating) variables

	Extremely Low	Low	Neither	High	Extremely High
Strategic Decision Making					
Extent Strategy practices influence Adoption	152 (14.1%)	431(40.1%)	326(30.3%)	153(4.2%)	13(1.2%)
Extent Strategy practices influence Implementation	122(11.3%)	409(38.0%)	389(36.2%)	140(13.0%)	15(1.4%)
Extent Strategy practices influence Entrenchment	109(10.1%)	381(35.4%)	376(35.0%)	187(17.4%)	22(2.0%)
Extent Concrete strategy activities taking place influence Adoption	193(18.0%)	421(39.2%)	311(28.9%)	139(12.9%)	11(1.0%)
Extent Concrete strategy activities taking place influence Implementation	157(14.6%)	383(35.6%)	404(37.6%)	118(11.0%)	13(1.2%)
Extent Concrete strategy activities taking place influence Entrenchment	139(12.9%)	368(34.2%)	391(36.4%)	159(14.8%)	18(1.7%)
Extent external Practitioners of KM strategy Adoption	76(7.1%)	375(34.9%)	406(37.8%)	193(18.0%)	25(2.3%)
Extent external Practitioners of KM strategy Implementation	54(5.0%)	333(31.0%)	465(43.3%)	194(18.0%)	29(2.7%)
Extent external Practitioners of KM strategy Entrenchment	47(4.4%)	297(27.6%)	448(41.7%)	248(23.1%)	35(3.3%)
Extent internal Practitioners of KM strategy Adoption	193(18.0%)	440(40.9%)	283(26.3%)	146(13.6%)	13(1.2%)
Extent internal Practitioners of KM strategy Implementation	144(13.4%)	415(38.6%)	363(33.8%)	135(12.6%)	18(1.7%)

Extent internal Practitioners of KM strategy Entrenchment	142(13.2%)	393(36.6%)	347(32.3%)	169(15.7%)	24(2.2%)
Overall	**15 (1.4%)**	**241 22.4%)**	**573 53.3%)**	**237 (22%)**	**9 (0.8%)**
Organizational Leadership					
Extent Effective supervision from the organizational leadership influence Adoption	198(18.4%)	443(41.2%)	294(27.3%)	131(12.2%)	9(0.8%)
Extent Effective supervision from the organizational leadership influence Implementation	181(16.8%)	413(38.4%)	348(32.4%)	124(11.5%)	9(0.8%)
Extent Effective supervision from the organizational leadership influence Entrenchment	153(14.2%)	407(37.9%)	347(32.3%)	151(14.0%)	17(1.6%)
Extent Competency in the organizational leadership influence Adoption	221(20.6%)	454(42.3%)	271(25.2%)	117(10.9%)	11(1.0%)
Extent Competency in the organizational leadership influence Implementation	186(17.3%)	437(40.7%)	330(30.7%)	109(10.1%)	12(1.1%)
Extent Competency in the organizational leadership influence Entrenchment	168(15.6%)	398(37.1%)	341(31.8%)	145(13.5%)	22(2.0%)
Overall	**14 (1.3%)**	**180 16.7%)**	**439 40.8%)**	**357 33.2%)**	**85 (7.9%)**
Management Support					
Extent Provision of adequate resources influence Adoption	270(25.1%)	391(36.4%)	270(25.1%)	123(11.4%)	21(2.0%)
Extent Provision of adequate resources influence Implementation	261(24.3%)	364(33.9%)	323(30.0%)	107(10.0%)	20(1.9%)
Extent Provision of adequate resources influence Entrenchment	250(23.3%)	361(33.6%)	283(26.3%)	153(14.2%)	28(2.6%)
Extent Commitment to KM strategy processes influence Adoption	239(22.2%)	433(40.3%)	284(26.4%)	110(10.2%)	9(0.8%)

Extent Commitment to KM strategy processes influence Implementation	215(20.0%)	404(37.6%)	346(32.2%)	99(9.2%)	11(1.0%)
Extent Commitment to KM strategy processes influence Entrenchment	202(18.8%)	387(36.0%)	340(31.6%)	130(12.1%)	16(1.5%)
Extent Quality of decision-making on KM strategy matters influence Adoption	244(22.7%)	470(43.7%)	248(23.1%)	103(9.6%)	10(0.9%)
Extent Quality of decision-making on KM strategy matters influence Implementation	206(19.2%)	428(39.8%)	323(30.0%)	106(9.9%)	12(1.1%)
Extent Quality of decision-making on KM strategy matters influence Entrenchment	196(18.2%)	410(38.2%)	325(30.3%)	126(11.7%)	17(1.6%)
Overall	**14 (1.3%)**	**194 (18%)**	**417 38.8%)**	**375 34.9%)**	**75 (7%)**

When the frequencies and percentages of extremely low and low are combined as well as those of extremely high and high, the results are as follows: For strategic decision making, 23.8% of the respondents reported the extent influence as low (combining low and very low), 53.3% reported it was neither high or low while 22.8% respondent the extent of influence to be high (combining high and very high). It can be seen that the extent of influence of strategic decision-making on institutionalization of KM strategies is low.

In organizational leadership, 18% of the respondents indicated that the extent of influence was low (combining low and very low), 40.8% indicated it neither low nor high. In comparison, 41.1% indicated it was high (combining high and very high). Therefore, it is evident that the extent of organizational leadership's influence on institutionalization of KM strategies was high.

For top management support, the responses were as follows: 19.3% low (combining low and very low), 38.8% neither high nor low, and 41.9% high (combining high and very high). The extent of influence of top management support was high on institutionalization of KM strategies.

It can be seen that the extent of strategic decision-making on institutionalization of KM strategies is low whereas the extent of organizational leadership and top management support is high. The extent of top management support was marginally higher than to organizational leadership as it had a high extent of 41.9%, whereas organizational leadership had a high extent of 41.1%.

4.4.7 Associations between the different variables using Regression Analysis

The associations between the different variables were assessed using multiple linear regression analysis to test for relationships. Correlations among the variable have been shown and explained in the subsequent sections.

(i) Correlation Matrix Analysis

A correlation matrix analysis was performed to find out if the variables were related. In the case of multicollinearity and over-parameterization issues that could substantially affect coefficient estimates, measures can be taken to circumvent such challenges. Table 13 presents the correlation matrix for all the variables considered in this study. The values closer to 1 show a strong positive correlation, while values closer to zero show a weak correlation. To determine the correlation coefficient's significance, a test to check whether the coefficient is significantly different from zero is used. The correlation coefficients of all the variables have been shown, and the results show that all the variables were positively and significantly correlated with each other.

Table 13: Correlation among the different variables as depicted in the conceptual framework of the study

	Institutionalization of KM	Adoption	Implementation	Entrenchment	Mimetic pressure	Normative pressure	Regulative pressure	Strategic Decision Making	Organizational Leadership	Top Management Support
Institutionalization of KM Strategies	1.00									
Adoption	0.92	1.00								
Implementation	0.86	0.71	1.00							
Entrenchment	0.92	0.72	0.75	1.00						

Mimetic pressure	0.39	0.35	0.38	0.36	1.00				
Normative pressure	0.33	0.27	0.35	0.31	0.67	1.00			
Regulative pressure	0.28	0.23	0.26	0.28	0.53	0.64	1.00		
Strategic decision Making	0.42	0.34	0.39	0.42	0.57	0.69	0.66	1.00	
Organizational Leadership	0.37	0.33	0.33	0.35	0.49	0.62	0.57	0.71	1.00
Top Management Support	0.30	0.26	0.28	0.30	0.45	0.58	0.54	0.66	0.74	1.00

The results show that there is a positive relationship between each of the independent variables - mimetic, normative and regulative- pressures, strategic decision making (intervening variable), organizational leadership and top management support (moderating variables) and institutionalization of KM strategy – adoption, implementation and entrenchment- (dependent variable). The analysis also shows a positive but generally low correlation between all the variables. This implies low multicollinearity among the variables.

4.4.8 The Relationship between the Variables: Multivariate Regression Analysis
The relationship among the variables was explored using Linear Regression analysis (univariate and multivariate) before assessing them using the path analysis. This analysis answered the research question: what factors influence institutionalization of KM strategies in AROs in East Africa?

(a) The extent of influence of Mimetic, Normative and Regulative pressures on strategic decision making (hypotheses H1a, H1b and H1c)

First, the associations between the cognitive/mimetic, normative and regulative/coercive pressures (independent variables) on one hand and strategic decision-making (intervening variable) on the other hand were explored and tested. The association between cognitive/mimetic, normative and regulative/coercive pressures and Strategic Decision Making was captured by testing the three hypotheses (H1a, H1b and H1c) as shown in Table 14.

Table 14: The extent of influence of Mimetic, Normative and Regulative pressures on strategic decision making

	Multivariate			
	Coef.	p-value	[95% Conf.]	
Mimetic pressure	0.15	0.000	0.10	0.21
Normative pressure	0.34	0.000	0.29	0.40
Regulative pressure	0.30	0.000	0.25	0.34

The results of each of the associations are explained next.

(b) The association between Mimetic Pressure and Strategic Decision Making

The testing of the association between mimetic pressure and strategic decision-making was done using hypothesis H1a. Hypothesis H1a states: *The extent of mimetic pressure experienced by an organization is likely to determine the level of influence on its strategic decision making to institutionalize (adopt, implement and entrench) KM strategy.* The results have shown that mimetic pressure had a significant and positive influence on the strategic decision making of AROs to institutionalize KM strategies with a p-value of 0.000. A level of significance of 5% was used. The results are consistent with the findings of previous studies. For instance, a study by Sucahyo et al. (2016) found out that mimetic pressure had a significant influence on organizations' strategic decision-making to adopt KM practices. Krell et al. (2016) also found that mimetic pressure impacted organizations and, in turn, impacted the successful adoption of IS-related strategies. The authors identified uncertainty as one of the mechanisms or indicators that was associated with mimetic pressure. Uncertainty was

largely evidenced in cases where organizations had insufficient information to solve the problems they faced with the execution of strategies. This indicator was also observed as an influence where other similar organizations had resolved similar problems. Consistently, earlier proponents of institutional theory conceptualized the influence of mimetic pressure as one of the external pressures that impact the decisions, actions, and activities of organizations (DiMaggio & Powell, 1983).

The operating environment for AROs in East Africa has faced numerous unpredictable conditions such as changing climate, diverse demands for impact from agricultural research knowledge, and constant and unending strategic reforms. These types of uncertainties prevailing within the environment may have influenced the decision-making process of AROs to believe in each other's activities. In comparison, the influence of perceived success and prevalence of KM practice has not been discussed in the literature concerning the study context. This study tested their influence and confirmed that they positively and significantly influence institutionalization of KM strategies in AROs in East Africa.

(c) The Association between Normative Pressure and Strategic Decision Making
The testing of the association was done using hypothesis H1b. Hypothesis H1b states: *The extent of normative pressure experienced by an organization is likely to determine the level of influence on its strategic decision making to institutionalize (adopt, implement and entrench) KM strategy.* The results showed normative pressure has a significant and positive influence on the strategic decision making of AROs to institutionalize KM strategies with a p-value of 0.000. A level of significance of 5% was used.

Previous studies have consistently shown that normative pressure often originates from interactions with the external environment, such as customers, professional bodies, and demand for competitiveness with fellow organizations (Topi & Tucker, 2014; Leeuwis et al., 2018; Banerjee *et al.,* 2019). These demands and requirements influence the strategic decision making of organizations, including AROs. These findings are in line with previous studies. For instance, Al-Mahruqi et al. (2017)

conducted a literature analysis on papers published between 1997-2016, focusing on factors influencing the adoption and implementation of KM processes organizations, and the results confirmed that organizations have been experiencing normative pressure.

In East Africa, AROs are looked upon to conduct their business operations (scientific research) with utmost professional standards and they are subjected to constant audits and professional certifications. Besides, users of agricultural research knowledge have high expectations. These anticipations have steered AROs to be dedicated and enthusiastic toward the institutionalization of their KM strategies. The results are in line with previous studies. For instance, Leeuwis *et al.* (2018) highlighted that AROs in developing countries have been experiencing constant pressure to demonstrate agricultural research knowledge's impact and value. These pressures have resulted in the implementation of KM strategies as a way of meeting the requirements and expectations. In line with the theoretical and empirical literature findings, this study confirms that the institutionalization of KM strategies in AROs in East Africa is influenced by normative pressure through professional requirements, expectations from users, and interactions within the field or domain (networks).

(d) The Association between Regulative Pressure and Strategic Decision Making
The testing of the association was done using hypothesis H1c. Hypothesis H1c states: *The extent of Regulative pressure experienced by an organization is likely to determine the level of influence on its strategic decision-making to institutionalize (adopt, implement and entrench) KM strategy.* The results showed that regulative pressure has a significant and positive influence on the strategic decision making of AROs to institutionalize KM strategies with a p-value of 0.000. A level of significance of 5% was used.

Previous studies have revealed that policy directions, compliance requirements and donor demands have contributed to coercive pressure (Bentley et al., 2011; Chhokar et al., 2015; Leeuwis et al., 2018; Banerjee et al., 2019). For instance, a study by Chhokar et al. (2015) highlighted that the requirement to comply with external policies

contributes to regulative pressure and impacts decisions to institutionalize KM strategies in organizations.

The results agree with previous studies. For instance, a study by Leeuwis *et al.* (2018) highlighted that AROs in East Africa have remained susceptible primarily to unending policy reforms, unrealistic expectations, and ever-growing pressure from the donor community. Bentley *et al.* (2011) found out that external policies have influenced the agricultural institutions in developing countries. The authors also indicated that the donor interests continue to influence the institutionalization of KM strategies regardless of the actual conditions on the ground. Leeuwis et al. (2018) emphasized that the unending reforms, unrealistic expectations, and ever-growing demands from the donor community have exerted pressure on AROs in developing countries, such as East Africa, to execute KM strategies. A study by Banerjee et al. (2019) confirmed that AROs are under increased scrutiny by their funders to search for ways of translating research knowledge into innovative uses and impact. Therefore, coercive pressure, especially from the resource-dependent upon organizations, influences the institutionalization of KM strategies in AROs in East Africa.

Therefore, mimetic, normative and regulative pressures were significantly and positively associated with the strategic decision-making process.

(e) Associations between Strategic, Organizational Leadership and Top Management Support and Institutionalization of KM strategies (hypotheses H1d, H1e and H1f)

This section studies the association between strategic decision-making and institutionalization of KM strategies. The section also examines the moderating effect of organizational leadership and top management support on the association between strategic decision-making and KM strategies' institutionalization (Table 15).

Table 15: The Relations between Strategic Decision Making, Organizational Leadership and Top Management Support and Institutionalization of KM strategies in AROs in East Africa.

	Coef.	p-value	[95% Conf.]	
Adoption				
Strategic decision	0.19	0.000	0.12	0.26
Organizational lead.	0.13	0.000	0.07	0.19
Top Management support	-0.02	0.424	-0.08	0.04
Implementation				
Strategic decision	0.33	0.000	0.25	0.42
Organizational	0.10	0.011	0.02	0.18
Top Management support	-0.02	0.574	-0.09	0.05
Entrenchment				
Strategic decision	0.34	0.000	0.26	0.41
Organizational lead.	0.10	0.006	0.03	0.17
Top Management support	-0.02	0.540	-0.09	0.05
Institutionalization				
Strategic decision	0.27	0.000	0.20	0.33
Organizational lead	0.11	0.000	0.05	0.17
Top Management support	-0.02	0.448	-0.08	0.04

(f) The Association between Strategic Decision Making and Institutionalization of KM strategies

The testing of the association was done using hypothesis H1d. Hypothesis H1d states:

Hypothesis (H1d): Strategic decision making in an organization influences institutionalization (adoption, implementation and entrenchment) of KM strategy in practice. The results showed that strategic decision-making has a significant and positive intervening effect on the institutionalization of KM strategies in AROs in East Africa with a p-value of 0.000 at a level of significance of 5%. However, since the institutionalization of KM strategies is a combination of the sub-variables of adoption, implementation, and entrenchment, there was a need to drill deeper to the sub-variables level and determine their relationship with strategic decision-making. The results showed that strategic decision-making has a positive and significant influence on adoption with a p-value of 0.000, implementation with a p-value of 0.000, and entrenchment with a p-value of 0.000 at a 5% level of significance. Previous studies consistently identified strategic decision-making as an influential critical factor in the institutionalization processes in organizations (MohdZin & Egbu, 2010; Choe, 2014; Zaher, 2015; Mangiarotti & Mention, 2015; Dewah & Mutula, 2016). Other scholars

have argued that organizations are complex, interactive and dynamic, and therefore, strategic decisions made concerning KM practices significantly influence their institutionalization (Zandiy, 2017).

(g) The Association between Organizational Leadership and Institutionalization of KM strategies

The testing of the association was done using hypothesis H1e. Hypothesis H1e states*: Organizational Leadership in organization moderates the influence between strategic decision-making and institutionalization (adoption, implementation and entrenchment) of KM strategies in practice.* The results showed that organizational leadership had a significant and positive influence on the institutionalization of KM strategies in AROs in East Africa with a p-value of 0.000 at a level of significance of 5%. Similarly, at the sub-variable level, organizational leadership had a positive and significant influence on adoption with a p-value of 0.000, implementation with a p-value of 0.000, and entrenchment with a p-value of 0.000 at a 5% level of significance. Narikae et al. (2017, p.14), for instance, stated, "Organizational Leadership has a significant influence in the strategy implementation." The authors confirmed that organizational leadership is both an influential factor, transformational, and directly impacts KM initiatives.

(h) The Association between Top Management Support and Institutionalization of KM strategies

The testing of the association was done using hypothesis H1f. Hypothesis H1f states: *Top management support in organization moderates the influence between strategic decision-making and institutionalization (adoption, implementation and entrenchment) of KM strategies in practice.* The results showed that top management support was not significant, with a p-value of 0.448. A further test at the sub-variables level revealed that top management support was not significant with a p-value of 0.424, 0.574, and 0.540 on adoption, implementation, and entrenchment, respectively. At a level of significance of 5%, all the p-values are higher than the significance level of 0.005. A factor analysis further confirmed that top management support was not significant, with a p-value of 0.452. Previous studies have not investigated top

management's influence on strategic decision-making concerning the institutionalization of KM strategies. However, concerning the implementation of information systems in general, Andarwati *et al.* (2018) found that top management had a significant influence on organizations' decisions. This study found that top management support has a significant direct effect on strategic decision-making and indirectly on the institutionalization of KM strategies (see Table 15 and 16). This shows that top management support is part of strategic decision-making and organizational leadership, explaining why it was not significant. The results are consistent with the findings by Christofi et al. (2019). The authors confirmed that strategic decision-making could explain the relationship between external factors through executives' roles: organizational leadership and top management support. The results imply that top management support is part of the organizational decision-making process and leadership

4.4.9 Conceptual Relationships using Path Analysis: Direct and Indirect Effects

In this study, path analysis was used to determine the relations between strategic decision-making (intervening variable), organizational leadership and top management support (moderating variables) and institutionalization of KM strategies (dependent variable).

(a) Direct effects among all the variables

Table 15 shows the results of the direct effects on all the variables. Direct relationships are estimates when using linear regression, path analysis, and structural equation models to analyze complex relationships among variables. They are relationships in which one variable leads to another without any intervening variable and is useful in establishing whether a relationship exists between variables that are situated in two or more domains (a cross-domain relationship).

Note: Below, each variable is shown in bold and the variables which affect it are shown together with the estimated quantification of the effects.

Table 16: Direct effects among all the variables

	Coef.	p-value	[95% Conf.]	
Strategic Decision Making				
Mimetic pressure	0.11	0.000	0.06	0.16
Normative pressure	0.18	0.000	0.13	0.23
Regulative pressure	0.19	0.000	0.15	0.23
Organizational leadership	0.23	0.000	0.19	0.28
Top management support	0.14	0.000	0.10	0.18
Institutionalization of KM strategy				
Strategic decision making	0.27	0.000	0.20	0.33
Organizational leadership	0.11	0.000	0.05	0.17
Top management support	-0.02	0.447	-0.08	0.03

As shown in Table 16, mimetic, normative and regulative pressures (independent variables), organizational leadership, and top management support (moderating variables) had a positive and significant direct effect on strategic decision making with a p-value of 0.000 for all the variables. At a level of significance of 5%, all the p-values are less than the significance level of 0.005. Similarly, strategic decision-making and organizational leadership had a positive and significant direct effect on institutionalization of KM strategies in AROs in East Africa with a p-value of 0.000 for all the variables. At a level of significance of 5%, all the p-values are less than the significance level of 0.005. However, top management support was not significant, with a p-value of 0.447 at a significance level of 5%. The p-value was higher than 0.005. The results confirm that top management support directly affects the strategic decision but not the institutionalization of KM strategies in AROs in East Africa. The findings are consistent with regression analysis results that showed that top management support is not significant, as shown in Table 7 (with a p-value of 0.448). It was also not significant at the different levels of institutionalization of adoption (p-value=0.424), implementation (P-value=0.574) and entrenchment (p-value=0540).

(b) Indirect effects among all the variables

Indirect relationships are estimates in which one variable leads to another through mediated variable(s) and require two or more relations to link separate domain areas within the reference phenomenon studied. Unlike direct relationships, they are implicit in the model.

Table 17 shows the indirect effects between the independent variables, an intervening variable, and moderating variables and the dependent variable.

Table 17: Indirect effects among all the variables

	Coef.	p-value	[95% Conf.]	
Institutionalization of KM strategies				
Mimetic pressure	0.03	0.000	0.02	0.05
Normative pressure	0.05	0.000	0.03	0.07
Regulative pressure	0.05	0.000	0.03	0.07
Organizational leadership	0.06	0.000	0.04	0.08
Top management support	0.04	0.000	0.02	0.05

Note: Each variable is shown in bold and the variables which affect it are shown together with the estimated quantification of the effects.

As shown in Table 17, the results of indirect effects show that mimetic, normative, regulative and organizational leadership and top management support had an indirect effect on institutionalization of KM strategies in AROs in East Africa with a p-value of 0.000 for all the variables. At a level of significance of 5%, all the p-values are less than the significance level of 0.005.

Further, factor analysis was used to determine the independent latent variables. That is the interdependencies between the observed variables were used to reduce the set of variables in the dataset. The reduced variables were subjected to regression analysis using structured Equation Modelling (SEM). Organizational leadership and top management support were measured directly to institutionalization of KM strategies as moderating variables in the multivariate regression model using SEM. The results of the path coefficients are presented in Table 18 and Figure 14.

Table 18: Path coefficients of all the variables

Hypothesis	Path from	Path To	Path coefficient
H1a	Cognitive	Strategic decision making	0.22
H1b	Normative	Strategic decision making	0.51
H1c	Regulative	Strategic decision making	0.55
H1d	Strategic decision making	Institutionalization of KM strategies	0.19
H1e	Organizational Leadership	Institutionalization of KM strategies	0.17
H1f	Top management support	Institutionalization of KM strategies	-0.325

(c) Path Analysis and the Relationship of the variables in a path diagram

This section shows all the relationships together using diagrammatical representation for all the three countries combined. Path analysis was used to determine the relationships among the variables. Figure 14 illustrates the relationships between all the variables and institutionalization of KM strategies in AROs in East Africa.
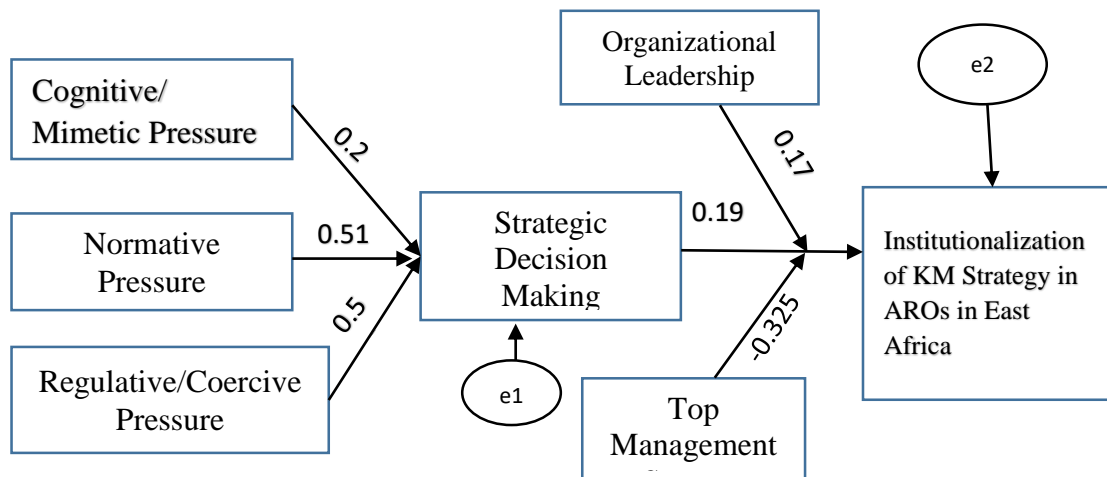
Figure 14: Path Diagram

The path diagram shows a positive relationship between mimetic, normative, regulative pressures on one hand and strategic decision-making. Similarly, a positive relationship exists between strategic decision-making, organizational leadership and institutionalization of KM strategies. However, there is a negative relationship between top management support and institutionalization of KM strategies. This shows that there is a positive moderating effect of organizational leadership on the relationship between strategic decision-making and institutionalization of KM

strategies. Therefore, organizational leadership is significant in explaining institutionalization of KM strategies in AROs in East Africa. Also, organizational leadership is significant in moderating the effect of strategic decision-making on institutionalization since the effect is positive. While top management support is significant in explaining the moderating effect between strategic decision-making and institutionalization of KM strategies, the effect is negative.

A more in-depth path analysis on direct and indirect confirms that mimetic, normative and regulative pressures are significant in explaining strategic decision making. Similarly, strategic decision making and organizational leadership are significant in explaining institutionalization of KM strategies. When direct and indirect effects were tested, the results show that organizational leadership and top management support directly influenced the strategic decision-making of AROs in East Africa to institutionalize KM strategies. However, top management does not directly influence institutionalization of KM strategies in AROs in East Africa, but it indirectly influences through the strategic decision-making process, as shown in Tables 15 and 16. As discussed earlier top management support is part of strategic decision-making and organizational leadership, and therefore, this can explain these results. The results have shown that the empirical data supports the conceptual framework's assumptions and confirms that the theories can explain the phenomenon studied.

4.4.10 Factor Analysis using Generalized Structural Equation Modelling

A generalized structural equation modeling (SEM) was used to determine how variables influenced their respective indicators as per the study hypothesis. This was accomplished by using factor loadings that had eigenvalues of greater than 1, rotation of the factor loading by maximizing on its variance and later generation of predictive indices. The results containing details of factor loading and rotation of the factor loading analysis are provided in Appendix 1.

After that, a multivariate regression model was conducted on the independent variables to determine factors influencing/associated with institutionalization of KM strategies. A p-value of less than 0.05 was considered to be statistically significant at a 5%

confidence level. The data were analyzed using Stata version 14.2, and the results are shown in Table 19.

Table 19: Summary of factor analysis results using structural equation modelling

Indicator	Coefficient	95% CI	p-value
Cognitive Pressure Indicators			
Uncertainty	1		
Perceived success	1.77	1.52 - 2.01	<0.001
Prevalence of practice	0.89	0.76 - 1.02	<0.001
Normative Pressure Indicators			
Professionalism	1		
Network/Association	0.99	0.93 - 1.05	<0.001
Expectation	0.99	0.94 - 1.05	<0.001
Regulative Pressure Indicators			
Mandate requirement	1		
Resource dependency	1.08	0.98 - 1.17	<0.001
Mediation (intervening and moderating) variables Indicators			
Strategic decision making	0.14	0.06 - 0.22	0.001
Organizational Leadership	0.09	0.01 - 0.18	0.032
To management support	0.03	-0.05 - 0.11	0.452

As shown in Table 19, the results of factor analysis show that all indicators of cognitive/mimetic, normative and coercive/regulative pressures were significant in influencing the strategic decision-making of AROs in East Africa to institutionalize KM strategies. The results also show that strategic decision-making significantly influenced institutionalization of KM strategies in organizations. Organizational leadership had a significant moderating effect between strategic decision-making and institutionalization of KM strategies, but top management support was not significant. The results are consistent with those of multivariate regression analysis.

4.4.11 Path Analysis for each of the East African countries: **Kenya, Tanzania and Uganda**

This section shows the relationships among all variables on institutionalization KM strategies for each of the countries. The results are presented in Table 20.

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Table 20: Relationship among variables for each of the East African Countries (Kenya, Uganda and Tanzania)

	Kenya				Tanzania				Uganda			
Direct effect	Coef.	P>z	[95% Conf.		Coef.	P>z	[95% Conf.		Coef.	P>z	[95% Conf.	
Strategic Decision Making												
Mimetic	0.13	0.003	0.04	0.21	0.16	0.000	0.08	0.25	0.04	0.426	-0.06	0.13
Normative	0.15	0.001	0.07	0.24	0.14	0.004	0.05	0.24	0.19	0.000	0.10	0.28
Regulative	0.23	0.000	0.16	0.31	0.17	0.000	0.10	0.23	0.18	0.000	0.11	0.25
Organizational leadership	0.34	0.000	0.26	0.42	0.26	0.000	0.18	0.35	0.11	0.002	0.04	0.19
Top management support	0.06	0.107	-0.01	0.14	0.13	0.001	0.05	0.21	0.22	0.000	0.15	0.29
Institutionalization of KM strategy												
Strategic decision making	0.31	0.000	0.20	0.43	0.30	0.000	0.17	0.43	0.18	0.000	0.08	0.27
Organizational leadership	0.16	0.008	0.04	0.28	0.12	0.053	0.00	0.25	0.06	0.109	-0.01	0.13
Top management support	-0.01	0.810	-0.12	0.09	0.01	0.890	-0.11	0.12	-0.01	0.744	-0.09	0.06

Indirect effect	Coef.	P>z	[95% Conf.		Coef.	P>z	[95% Conf.		Coef.	P>z	[95% Conf.	
Institutionalization of KM strategy												
Cognitive	0.04	0.010	0.01	0.07	0.05	0.005	0.02	0.08	0.01	0.437	-0.01	0.02
Normative	0.05	0.004	0.02	0.08	0.04	0.016	0.01	0.08	0.03	0.006	0.01	0.06
Regulative	0.07	0.000	0.04	0.11	0.05	0.001	0.02	0.08	0.03	0.003	0.01	0.05
Organizational Leadership	0.11	0.000	0.06	0.15	0.08	0.000	0.04	0.12	0.02	0.018	0.00	0.04
Top management support	0.02	0.123	-0.01	0.05	0.04	0.010	0.01	0.07	0.04	0.002	0.01	0.06

(i) Results of Path Analysis for Kenya

In Kenya's case, the results showed that mimetic, normative and regulative pressures have a positive and significant effect on strategic decision-making of AROs in Kenya to institutionalize KM strategies all had p-values of <0.05. Organizational leadership had a direct positive and significant effect on explaining the relationship between strategic decision-making and institutionalization of KM strategies in AROs in East Africa. It a p-value of 0.000, but top management support was not significant as it a p-value of 0.107 at a 5% significance level.

Organizational leadership had a positive and significant moderating effect on the relationship between strategic decision-making and KM strategies' institutionalization. It had p-values of 0.008. However, top management support did not significantly affect institutionalization of KM strategies as it had a p-value of 0.107 at a 5% level of significance.

The indirect relationship was also assessed, and all the factors were significant as all the p-values were <0.05 except top management support, as it had a p-value of 0.123 at a 5% level of significance.

(ii) Results of Path Analysis for Tanzania

For Tanzania, the results showed that mimetic, normative, and regulative pressures positively and significantly affect the strategic decision-making of AROs in Tanzania to institutionalize KM strategies.

Unlike in Kenya, organizational leadership and top management had a positive and significant moderating effect in explaining the relationship between strategic decision-making and institutionalization of KM strategies. They had p-values of 0.000 and 0.001, respectively, at a 5% level of significance.

Strategic decision-making had a direct positive and significant effect on institutionalization. In contrast, organizational leadership and top management support did not significantly affect institutionalization of KM strategies as they had p-values of 0.053and 0.890, respectively, at a 5% level of significance.

The indirect relationship between all the variables and institutionalization of KM strategies in AROs in East Africa was also assessed and it was found that they all had a positive and significant influence as all the p-values were <0.05 at a 5% level of significance.

(iii) Results of Path Analysis for Uganda

In Uganda's case, the results showed that normative and regulative pressures positively and significantly affect the strategic decision-making of AROs in Kenya to institutionalize KM strategies. However, cognitive/mimetic pressure does not have a significant relationship with strategic decision-making as it has a p-value of 0.426 at a 5% level of significance.

Organizational leadership and top management support have a positive and significant moderating effect on the relationship between strategic decision-making and KM strategies' institutionalization.

Strategic decision-making had a direct positive and significant effect on institutionalization. Still, organizational leadership and top management support did not significantly affect institutionalization of KM strategies as they had p-values of 0.109 and 0.744, respectively, at a 5% level of significance.

The indirect relationship between all the variables and institutionalization of KM strategies in AROs in East Africa was also assessed and it was found that regulative pressure, organizational leadership and top management support had a positive and significant influence. Their p-values were <0.05 at a 5% level of significance. However, cognitive pressure and normative were not significant. They had p-values of 0.437 and 0.006, respectively, at a 5% level of significance.

4.4.12 Multivariate Regression Analysis for each country: **Kenya, Tanzania and Uganda**

The multivariate regression analysis for each country is shown in Table 21.

Table 21: Multivariate Regression Analysis Results for each country

	Kenya		Tanzania		Uganda	
	Coef [95% CI]	p-value	Coef [95% CI]	p-value	Coef [95% CI]	p-value
Strategic Decision Making						
Cognitive Pressure	0.19 [0.10-0.29]	0.000	0.18 [0.08-0.28]	0.000	0.07 [-0.03-0.18]	0.161
Normative Pressure	0.28 [0.18-0.38]	0.000	0.34 [0.23-0.44]	0.000	0.35 [0.26-0.44]	0.000
Regulative Pressure	0.35 [0.26-0.44]	0.000	0.26 [0.19-0.33]	0.000	0.27 [0.20-0.35]	0.000
Institutionalization of KM strategy						
SDM	0.31 [0.17-0.44]	0.000	0.20 [0.05-0.36]	0.009	0.12 [0.02-0.22]	0.023
OL	0.17 [0.05-0.28]	0.006	0.11 [-0.02-0.23]	0.101	0.02 [-0.05-0.09]	0.556
TMS	-0.02 [-0.12-0.08]	0.705	0.02 [-0.09-0.14]	0.707	-0.04 [-0.11-0.04]	0.340

Note:
SDM = Strategic Decision Making
OL = Organizational Leadership
TMS = Top Management Support

As shown in Table 21, the multivariate regression analysis results for each country show that mimetic, normative and regulative had a significant influence on strategic decision-making of AROs in Kenya and Tanzania to institutionalize KM strategies but in the case of Uganda, cognitive pressure was not significant. The results are consistent with those of path analysis.

Strategic decision-making had a positive and significant influence on institutionalization of KM strategies in AROs in Kenya, Tanzania and Uganda. However, organizational leadership for Kenya while it was not significant in Tanzania and Uganda, respectively. Top management support was not significant for all the cases of Kenya, Tanzania and Uganda. The results are consistent with those of path analysis.

4.5 Qualitative Analysis of concepts related to factors influencing institutionalization of Knowledge Management Strategies in AROs in East Africa

The results show the concepts that emerged from qualitative data on factors influencing institutionalization of KM strategies in AROs in East Africa. The key concepts were identified from empirical data and conceptualized in line with extant literature. Related concepts were aggregated into different categories/themes, which in turn formed factors influencing institutionalization of KM strategies in AROs in East Africa.

The relationships between concepts, themes and factors are summarized at the end of this section in Table 28. The themes are an aggregation of a number of concepts, while the factors are refined from the themes. The themes provide meaning to a group of related concepts. The factors explain how institutionalization of KM strategies is influenced in the context of AROs in East Africa. The results are triangulated with the quantitative analysis results and the factors influencing institutionalization of KM strategies are discussed in the next section.

4.6 Triangulation of quantitative and qualitative results on factors influencing institutionalization of KM strategies in AROs in East Africa

This section outlines results obtained from quantitative and qualitative analysis for Research Question two: *What factors influence institutionalization of KM strategies in AROs in East Africa.* The findings were examined in line with the research question. After triangulation of quantitative and qualitative results, the following were identified as factors influencing institutionalization of KM strategies in AROs in East Africa:

(i) Cognitive or Mimetic Factors

As shown by the regression analysis results in Table 14, mimetic or cognitive pressure influences institutionalization of KM strategies in AROs in East Africa. Factor analysis was also carried out to assess the significance of the indicators (observed values) of cognitive pressures. Table 22 shows the results of factor analysis for cognitive

indicators. The uncertainty indicator was used as a reference category when assessing the influence of cognitive pressure. The results show that a unit increase of cognitive pressure increases perceived success by a factor of 1.77 (p<0.001) relative to uncertainty while the prevalence of practice by 0.89 (p<0.001), as shown in Table 22.

Table 22: Factor analysis using a generalized structured equation modeling on indicators of cognitive pressure

	Coefficient	95% CI	p-value
Cognitive pressure indicator			
Uncertainty	1		
Perceived success	1.77	1.52 - 2.01	<0.001
Prevalence of practice	0.89	0.76 - 1.02	<0.001

Further, the predicted regression scores for the cognitive variable indicators were plotted against the predicted score for strategic decision-making. The uncertainty, perceived success and prevalence of practice were directly proportional to the strategic Decision Making (SDM) scores, as shown in Figure 15. This shows that an increase in a predicted score of uncertainty, perceived success, and prevalence of practice resulted in increased strategic decision-making scores.
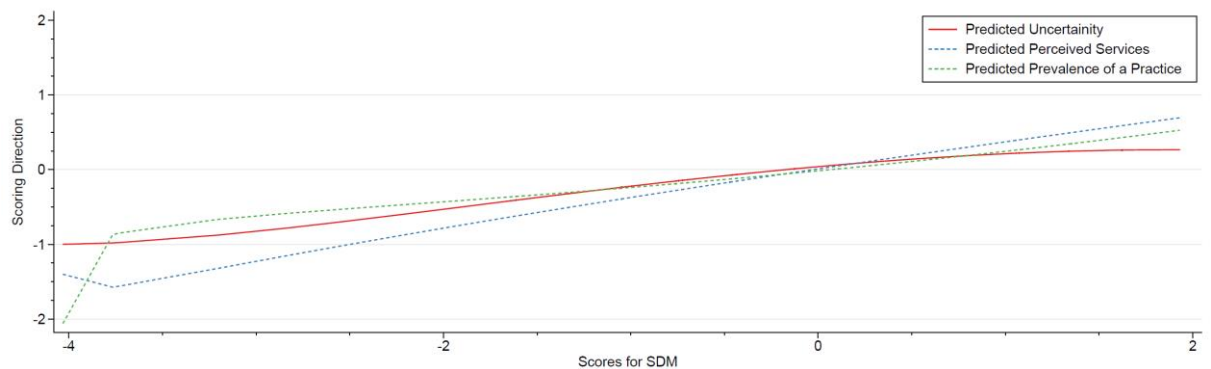
Figure 15: Predicted Indices based on Rotated Factor Loadings for Cognitive factors

As shown in Table 22, the result of cognitive pressure indicators, which were *uncertainty, the prevalence of KM strategy practices* and *perceived success of KM strategies in similar organizations* were significant. All had a p-value of less than 0.001. Therefore, all these indicators or observed values were significant in explaining the influence of cognitive pressure on strategic decision-making in institutionalizing KM strategies of AROs in East Africa (since all p-values were < 0.05).

The results are consistent with those found in IS literature. For instance, Krell et al. (2016) used institutional theory to examine mimetic pressure influence on IS adoption success. The authors found that organizations that lack confidence (uncertain) on how to solve a problem or perform an activity always imitate the activities and actions performed by a seemingly successful organization. Uncertainty is, therefore, a source of mimetic/cognitive pressure, which influences organizations' strategic decision-making.

While there are no studies that have examined the influence of cognitive/mimetic pressure on strategic decision-making of AROs in East Africa, in general, studies have found that cognitive pressure influences the decision-making process in an organization concerning IS adoption (Dang & Pekkola, 2019). For instance, the Mkhize (2017) study found that cognitive/mimetic pressure influences the adoption of inter-organizational information systems in South African organizations. The results confirm the assertions made by institutional theory proponents stating that mimetic pressure is influences organizations to institutionalize practices (Scott, 2008). Therefore, the following cognitive factors' influence is confirmed: uncertainty, perceived success, and prevalence of KM strategy practices in similar AROs.

From qualitative results, it emerged that ***KM strategies' perceived success in similar organizations*** influences KM strategies' adoption. This was called the ***similarity*** factor. A KM manager in one of the AROs in Kenya stated: *"The level of awareness created and level of confidence built or gained to adopt KM strategy in my organization was influenced by the perceived success of other CGIAR research institutions, particularly, the International Livestock Research Institute (ILRI) has received accolades and recognition as an example of an organization that has successfully adopted KM strategy within the association."* Referring to the implementation of KM strategies, a senior research officer from an international ARO in Tanzania explained, *"Perceived benefits of implementing the KM strategy in boosting the organization's reach and public exposure are among the main influences that made my organization to decide to implement the strategy. The perception of gaining value proposition or additional value that KM strategy promises to bring to*

the organization emanated as a result of the stories and reports we have received from or seen in other similar organizations or sister organizations".

Concerning entrenchment, the ***prevalence of KM strategies as a practice*** in some AROs was the primary source of influence. A communication manager from a public ARO in Uganda explained: *"the proliferation of KM systems in other AROs to manage tacit knowledge which has been elusive and challenging mainly on its codification elements, has influenced the extensive use of KM strategy in the organization. Indeed, other organizations that have employed robust systems to help them harvest, organize, and manage their knowledge influenced us by showing how we don't have a choice but join them. We realized that they had included modern ICT tools and innovations in their KM strategies as key principles. Besides, there are Community of Practice (CoP), which have constantly engaged us to ensure the strategy is widely in use".*

These results are consistent with findings from previous studies. For instance, Teo et al. (2003) stated that mimetic pressure influences organizations to adopt IS-related innovations, mostly when key decision-makers have observed that other organizations have successfully adopted and used the same innovations. Tingling and Parent (2002) looked at the influence of mimetic pressure on organizations when evaluating and choosing IT innovations. They found that organizational decision-makers prefer to imitate the choices made by other organizations as opposed to following internal recommendations. The authors indicated that decision-makers are often influenced by the choices made by other similar organizations.

Consistent with previous studies findings, this study found that strategic decision-makers in AROs in East Africa observe other organizations on how they present themselves or are shown or perceived by the public concerning how they have institutionalized their KM strategies. In turn, they are influenced by the extent of information they have on other organizations they observe or imitate. Therefore, the results confirmed that cognitive pressure is one-factor influencing institutionalization of KM strategies in AROs in East Africa.

(ii) Normative pressures

The regression analysis results have shown that normative pressure influences institutionalization of KM strategies in AROs in East Africa (see Table 14). The results of the factor analysis for normative pressure are shown in Table 23. The professionalism indicator was used as a reference when assessing the influence of normative pressure. The results show that for a factor increase in normative pressure, the network association (b = 0.99, p < 0.001) and expectation (b = 0.99, p < 0.001) had to increase by a factor of 0.99 respectively.

Table 23: Factor analysis using a generalized structured equation modeling on indicators of normative pressure

	Coefficient	95% CI	p-value
Normative pressure indicator			
Professionalism	1	-	
Network/association	0.99	0.93 - 1.05	<0.001
Expectation	0.99	0.94 - 1.05	<0.001

The predicted regression scores for the normative variable indicators were plotted against the expected score for strategic decision-making. The professionalism, network association and expectations were directly proportional to the SDM scores. As shown in Figure 16, an increase in the predicted scores for professionalism, network, and expectation resulted in an increase in strategic decision-making scores. This shows that AROs which had professional individuals had better strategic decision-making. Besides, AROs with high levels of relationship with each other were highly influenced in making decisions to institutionalize KM strategies. Similarly, an increase in stakeholder expectations increased strategic decision making to institutionalize KM strategies.
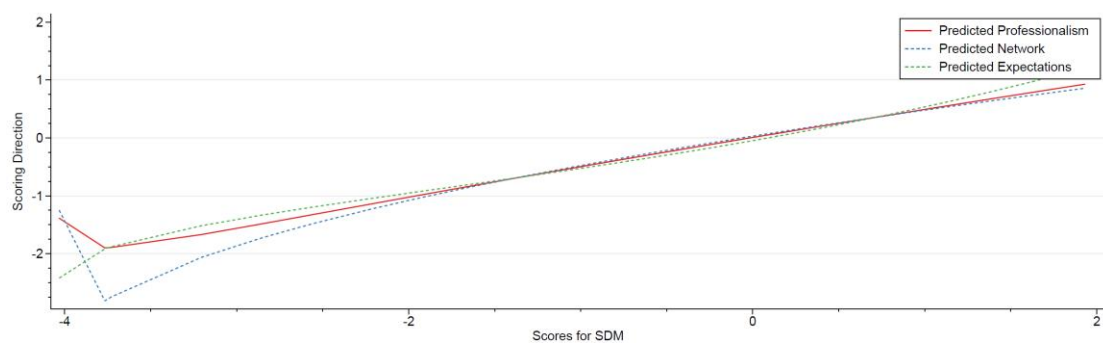
Figure 16: Predicted Indices based on Rotated Factor Loadings for Normative factors

As shown in Table 23, the factor analysis results further showed that *expectations, professionalism*, and **network associations** factors (observed values) were significant in explaining the influence of normative pressure on these organizations' strategic decision-making to institutionalize KM strategies. All of them had a p-value of 0.001 (all p-values were < 0.05). Previous studies have shown that the pressure to adhere to similar practices or standards influences organizations involved or undertook common activities (Cao et al., 2014; Lee et al., 2018). For instance, relationships and associations through networks are developed when organizations participate in organized forums. It has been found that collective expectations and professional consultation are some of the sources of normative pressure. In the context of AROs in East Africa, there are no studies that have examined these factors at the indicator level. However, the results of this study are consistent with the findings of other studies in other contexts. For instance, Grigorescu (2015) theorized and argued that normative pressure influences how decisions are made in organizations concerning adopting strategies. Other studies also found out that normative pressure was a significant factor in influencing mobile banking adoption in organizations in the Malaysian context (Amin et al., 2008).

Qualitative results further confirmed that normative pressure was experienced through compliance with standardization and external demands or requirements. This is similar to the factors identified from quantitative analysis, namely: *professionalism, stakeholders' expectations* and *association within the network*. The respondents indicated that normative pressure was experienced through shared professional values and beliefs (standards), which governed the strategic decisions or behaviors, expectations and procedures concerning institutionalization of KM strategy in the organizations. This is similar to *professionalism*. A country manager in an international AROs in Uganda describes *"following the intense pressure for institutional changes the organization has gone through in the last eight years, such as the need to acquire certifications. It has become a requirement to maintain a high*

level of professional standards in the organization; this requirement influenced the decision to adopt the KM strategy. Previously we were rated poorly by the evaluators since the organizational knowledge was not making any impact within and outside the organizations".

The results are consistent with findings by Silegren and Tuunainen (2017). The authors found that normative pressure strongly influenced the strategic management team's decisions in Oulu universities. The influence of normative pressure was experienced through the need to attain an academic profession such as accreditation/certification and expectations or social obligations from external stakeholders.

About **expectation**, a Deputy Director-General in one of the public AROs in Kenya asserted, *"by adopting KM strategy, the organization now has a guide that informs how we respond to the stakeholders' ever-growing demands from the stakeholders."* Similarly, normative pressure influenced implementation and entrenchment. Concerning **expectations from stakeholders**, a country manager in an international AROs in Kenya explains, *"there has been a concerted effort from our stakeholders especially partners and users of the organizational knowledge for us to demonstrate the impact of research knowledge and information, the pressure has been intense and continues to be so, and a result the organization doesn't have a choice but roll out or implement the KM strategy activities."*

While there are a limited number of studies that have examined the influence of normative pressure on institutionalization of KM strategies in the context of AROs in East Africa, studies have examined the influence of this pressure in other organizations concerning IS-related innovations. For instance, Liao (2018) found that normative pressure was experienced or revealed through professionalism or values and expectations from the organizational environment. Dang and Pekkola (2019) investigated factors influencing an enterprise architecture project's organizational change process. The authors found that normative pressure influences the decision-making process of enterprise architecture project activities in the organization. They stated that influence from normative pressure was mainly exerted through

professionalism and existing practices. Silegren and Tuunainen (2017) also found that normative pressure strongly influenced universities' strategic management decisions. The influence of normative pressure was experienced through academic professions such as accreditation/certification and expectations or social obligations. Therefore, the following normative factors are confirmed: professionalism, expectations from stakeholders and network relationships among AROs.

(iii) Regulative pressures

The regression analysis results showed that regulative pressure had a significant and positive influence on the strategic decision making of AROs in East Africa to institutionalize KM strategies (see Table 14). The results of the factor analysis for regulative pressure are shown in Table 24. The mandate requirement indicator was used as a reference category when assessing the regulative category. The results show that with a unit increase in regulative pressure, resource dependency increases by a factor of 1.08 ($p<0.001$) relative to mandate requirement

Table 24: Factor analysis using a generalized structured equation modeling on indicators of regulative pressure

	Coefficient	95% CI	p-value
Regulative pressure indicator			
Mandate requirement	1	-	
Resource dependency	1.08	0.98 - 1.17	<0.001

The predicted regression scores for the regulative variable indicators were plotted against the predicted score for strategic decision-making. The mandate requirements and resource dependency were directly proportional to the SDM scores, as shown in Figure 17. This indicates that an increase in mandate requirement and resource dependency resulted in increased strategic decision-making. Therefore, AROs that are subjected to high levels of mandate requirements and depended on resources from other organizations were highly influenced in deciding to institutionalize KM strategies.
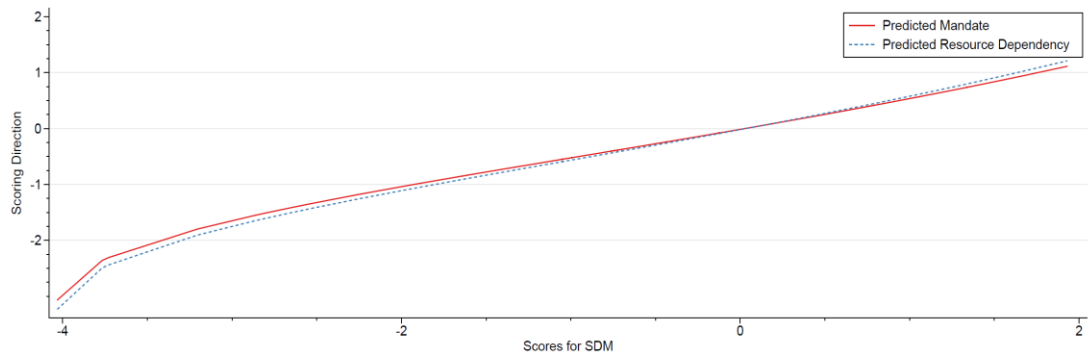
Figure 17: Predicted Indices based on Rotated Factor Loadings for Regulative factors

As shown in Table 24, the factor analysis results further showed that *resource dependency* and *mandate requirements* factors (observed values) were significant in explaining the influence of regulative pressure on strategic decision-making. All the factors had p-values of 0.001. The results are consistent with previous studies showing that organizations are often influenced to make specific decisions to institutionalize a practice due to influence from regulators or financial resource providers (Nurdin et al., 2012). While there are no studies that have tested these factors in AROs in East Africa, in general, studies have confirmed that organizations are subjected to coercive pressures. As a result, their strategic decision-making processes are influenced (Saeed, 2018). For instance, a study by Gholami et al. (2013) developed a conceptual model and hypotheses to empirically test the influence of coercive/regulative pressure on actions of senior management towards the adoption of Green IS. The results showed that coercive/regulative pressure significantly influenced senior management's decisions to adopt Green IS in the organizations where the study was conducted.

Qualitative results confirmed that AROs in East Africa rely on funds and resources from donors and development partners. As a result, they have been experiencing pressure to institutionalize KM strategies. Drawing from institutional theory literature, organizations that offer resource support exerts pressure on other organizations that rely on them for such support. This is *resource dependency,* which is often experienced through regulatory/coercive pressure. The respondents indicated that the activities and execution processes of KM strategies are not internally funded. Therefore, AROs depend on funds from donors and development partners to

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operationalize the strategies. A KM manager in a public ARO in Tanzania explains, *"funding for supporting the KM strategy activities is difficult to get, especially from internal sources or within the organization. As a result, we have been under pressure to implement the strategy not to meet the organizations' needs but those of the funders of the strategy".* In general, organizations must comply with conditions, rules and regulations set upon them by dominant organizations (Xiao et al., 2010). Prior studies have shown that dominant partners with resource or mandate privileges, for instance, governments, funders, and other mandated organizations, often influence the organizations' decisions that depend on them (DiMaggio & Powell, 1983; Topi & Tucker, 2014; Agrawal, 2013). Because organizations are subject to the governing or resource controlling organizations, the coercive pressure remains a crucial influence on organizations' strategic decision-making process (Oliver, 1991; Pennarola, 2016).

Besides, the decision to adopt, implement and entrench KM strategies are influenced mainly by the need to meet ***mandate requirements*** such as policy directives from governments and other oversight organizations. Mandate requirements and conditions accompanying financial support are also contributing to the coercive pressure. A senior scientist describes the situation as follows *"over the years, my organization has relied on donor funds, which come with different caveats and restrictions. This has not only impacted but influenced the way the KM strategy has been implemented".*

Resource dependency and mandate requirements lead to unbalanced interests and priorities from the organizations funding or supporting the implementation of KM strategies. A donor representative in Tanzania confirmed, *"we have always insisted to the government through the national line ministries that AROs must implement their strategies as per laid out deliverables and demands since there is a greater need for impact from agricultural research knowledge, which is currently lacking and absent."* These statements serve to confirm that donor dependency has led to regulative pressure. Although there are no studies that have examined the influence of coercive/regulative pressure, in other context studies, have found that coercive pressure influences the adoption of new technology initiatives such as the electronic data interchange systems and Electronic Medical Record (EMR) systems (Banerjee &

Bagha, 2014). The authors stated that coercive/regulative pressure was observed in organizations where the adoption of the new technology initiatives depended on the contribution and involvement of other organizations such as government agencies. For instance, the US government provided reimbursement incentives and specified advanced penalties for not adopting the new technologies such as the EMR systems within the agreed deadlines.

Therefore, the following normative factors are confirmed: resource dependency and mandate requirements.

From the results of factor analysis, it can be seen that all the three external or macro-level pressure or factors are significant in influencing the strategic decision-making process of AROs in East Africa to institutionalized KM strategies. When the results from regression, path and factor analyses were compared, all the macro-level pressures were confirmed to positively and significantly influence the strategic decision-making process of AROs in East Africa to institutionalize KM strategies.

(iv) Strategic Decision Making

In this thesis, strategic decision-making is defined as the decisions or a set of decisions that determine the strategic direction involving activities and actions and the experience or expertise of organizational decision-makers. The regression analysis results showed that strategic decision-making significantly influences institutionalization of KM strategies in AROs in East Africa (Table 15).

Table 25: Factor analysis for strategic decision-making indicators using a generalized structured equation modeling

	Coefficient	95% CI	p-value
Strategic Decision Making			
Cognitive	0.22	0.18 - 0.26	<0.001
Normative	0.51	0.46 - 0.56	<0.001
Regulative	0.55	0.50 - 0.60	<0.001

As shown in Table 25, there is a significant relationship between cognitive, normative and regulative pressures and strategic decision-making of AROs in East Africa as all the p-values are <0.001. The results show that a unit increase in each factor or variable results in a unit in strategic decision-making.

A factor analysis was carried out to confirm the effect of strategic decision making in explaining the influence between macro-level factors (cognitive, normative and coercive/regulative) pressures on institutionalization of KM strategies in AROs in East Africa. All the factors had p-values of <0.001. The organizational leadership indicator was used as a reference when assessing the moderating effect. The results show that for a unit increase in organizational leadership, top management support increases by a factor of 0.22 and 0.21(p<0.001), respectively, as shown in Table 26. The results show that both organizational leadership and top management support had a significant moderating effect. Strategic decision making is also significant in explaining the influence on institutionalization of KM strategies.

Table 26: The bivariate moderating effect of organizational leadership and top management support

Indicator	Coefficient	95% CI	p-value
Strategic Decision Making	0.22	0.16 - 0.28	<0.001
Organizational Leadership and Top management support	0.21	0.15 - 0.26	<0.001

The predicted regression scores for the indicators in strategic decision-making, organizational leadership and top management support were plotted against the predicted score for institutionalization of KM strategies. The results show that all the indicators were directly proportional to the institutionalization of KM strategies scores, as shown in Figure 18. This shows that an increase in strategic decision-making

resulted in an increase in institutionalization of KM strategies. Also, organizational leadership had an equal influence on AROs to institutionalize KM strategies.
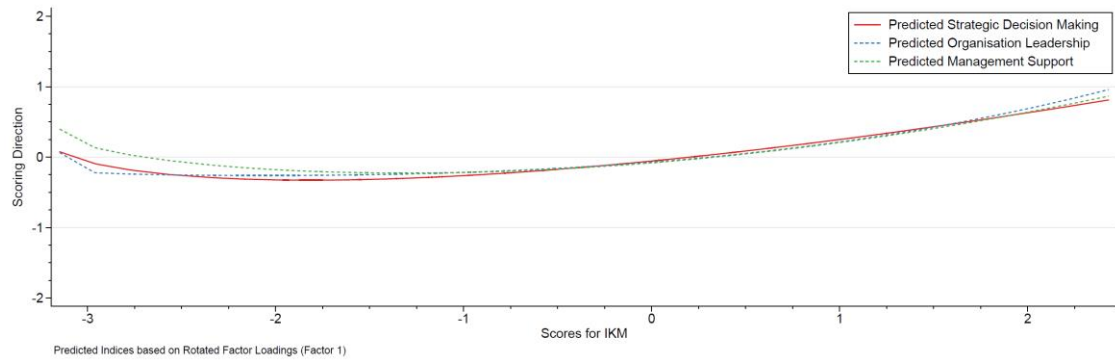

Figure 18: Predicted Indices based on Rotated Factor Loadings for intervening and moderating factors

As shown in Table 26, a statistical significance was observed on strategic decision-making (b = 0.14, p = 0.001), indicating that an increased influence in the strategic decision-making results in an increase in the institutionalization of KM strategies. However, when there is a strong influence from strategic decision-making and organizational leadership, top management support is not significant in moderating the influence. It had a p-value of 0.452, which is >0.05 at a 5% level of significance, as shown in Table 27. This is because top management support can be seen as part of strategic decision-making and organizational leadership.

Table 27: Multivariate regression for institutionalization of KM strategies

Indicator	Coefficient	95% CI	p-value
Strategic Decision Making	0.14	0.06 - 0.22	**0.001**
Organizational Leadership	0.09	0.01 - 0.18	**0.032**
Top management support	0.03	-0.16	0.452

These results are consistent with findings from previous literature. For instance, Ulrich (2004) indicated that the external environment influences organizations' execution of strategies. The author found that strategic decision-making processes through the decision-makers, directly and indirectly, affect the extent to which IS strategies are executed. Shepherd and Rudd (2014) conducted an analysis and found out that

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organizational actions by strategic decision-makers are undertaken in response to external environmental pressure.

Qualitative results showed that decisions by organizational strategic decision-makers influence adoption, implementation and entrenchment of KM strategies. The head of the KM department in a private AROs in Kenya explains, *"ordinarily execution of KM activities largely depends on senior management's decisions since they decide what activities are prioritized. Through such decisions, they influence what activities of the strategy are to be supported or implemented regardless of the actual situation on the ground"*. In this study, the concepts that were aggregated to form strategic decision making include internal realizations and experience from previous KM strategic undertakings.

Drawing from Strategy-as-practice theory concepts (Orlikowski, 2010; Asmuß, 2018), this study established that strategic decision-making influences institutionalization of KM strategies in AROs in East Africa. The results of this study are in line with the findings of Sayyadi (2019). The author indicated that the influence on an organization's strategic decision-making process effectively determines a strategy's execution. The scholar argued that organizations' strategic decision-making process is transformed by both external and internal factors, including organizational leadership. From these arguments and the findings of this present study, strategic decision-making influences the adoption, implementation and entrenchment of KM strategies. It can also explain the intervening relationship between mimetic or cognitive, normative and regulative or coercive pressures and institutionalization of KM strategies.

(v) Organizational Leadership

In this study, organizational leadership refers to the involvement, support and enablement of strategic activities, practices and processes. The results showed that organizational leadership influences institutionalization of KM strategies directly and indirectly through strategic decision-making. The results of factor analysis further confirmed that organizational leadership significantly influences institutionalization of KM strategies. All the observed values (indicators) were significant in explaining

organizational leadership's influence on institutionalization (adoption, implementation, and entrenchment) of KM strategies. Table 28 shows the results of the factor analysis.

Table 28: Factor analysis for moderating variables

Indicator	Coefficient	95% CI	p-value
Moderating variable: Organizational Leadership			
Competency in KM strategy	1	-	
Extent of supervision	0.84	0.62 - 1.06	<0.001
Institutionalization of KM strategies			
Strategic decision making	0.22	0.16 - 0.28	<0.001
Organizational leadership	0.21	0.15 - 0.26	<0.001

As shown in Table 28, this factor showed significant in explaining the moderating effect or relationship between strategic decision and institutionalization of KM strategies. All the factors had p-values of 0.001.

The qualitative analysis results also revealed that effective organizational leadership influences the adoption, implementation, and entrenchment of KM strategies in AROs in East Africa. Concerning adoption and implementation, the respondents indicated that effective organizational leadership resulted in enthusiasm for KM initiatives as well as acceptance of KM strategies. A KM Curation manager in an international ARO in Kenya explains, *"the KM leadership played a key role. Being a good champion and supporter, he ensured sufficient involvement from the organization's top management and leadership. In our organization, the role played by the organization's leadership especially the KM leader, highly influenced the KM strategy processes and also led to its success".* The head of the Data unit in an international ARO in Kenya explains, *"for many years, the KM strategy was in the shelves, it was until the organization engaged a competent and experienced KM leader. Effective KM leadership greatly influenced the implementation of the strategy".*

Over and again, effective leadership was identified as one of the key factors influencing entrenchment of KM strategies in AROs in East Africa. A country manager in an international ARO in Uganda affirmed, *"regardless of how excellent a*

KM strategy has been formulated or how good the strategy ideas and guidelines are, translating the ideas and following the guidelines is the most challenging task, and organizational leadership influences the actual realization of the goal of the strategy as well as the expected change. A concerted effort from the organizational leadership influences the KM strategy execution process". In this study, the concepts that describe effective organizational leadership are management support decisions, involvement and supervision, expertise and experience, championship, communication, commitment, motivation and coordination.

These findings are consistent with the conclusions of previous studies. For instance, Sayyadi (2019) revealed that organizational leadership influences KM strategy implementation and widespread use in many organizations. In general, the study findings agree with prior studies, which have shown that successful strategy execution is influenced by effective organizational leadership (Narikae et al., 2017; Sulistiyanto & Murtini, 2018).

While some of the hypothesized or conceptualized factors have been confirmed to influence institutionalization of KM strategies in AROs in East Africa, ***new factors emerged*** from the interviews as potential factors influencing institutionalization of KM strategies in these organizations. As shown in Table 11, ***adoption to ICTs*** and the ***quality of strategy content*** influence institutionalization of KM strategies.

(vi) Information and Communication Technologies Adoption

Qualitative results showed adaptation of ICTs significantly influences institutionalization of KM strategies in AROs in East Africa. The interviewees pointed out that the emergence of modern ICTs, KM, and communication systems such as collaboration software are concepts of ICT adaptation. For adoption of ICTS, a KM manager in international ARO in Kenya explains, *"the emergence and development of ICT systems and tools have been a key influence to the adoption and execution of KM strategy in my organization, for instance, open-access tools have created interest in applying the principles stated in the strategy. We started seeing great acceptance and use of the principles, policies, and guidelines of KM strategy after our organization*

adapted open-access platform". It was observed and reported that the application of ICTs enabled AROs to promote knowledge access and sharing within the organization and with external users who are key pillars of KM strategies. Concerning implementation and entrenchment, the respondents described how ICT played a crucial role in enhancing KM activities' actualization outlined in KM strategies. A Data manager in a public ARO in Kenya explains, *"the application of ICT systems has largely influenced the implementation KM strategy activities. Great use of the strategy was witnessed after KM platforms, communication tools, and collaboration software was deployed in the organization to support KM initiatives"*. The wide variety of digital tools, for instance, were used for external and internal communication and provided the collaboration platforms to users.

In previous studies, the application of ICTs has been highlighted with respect to the execution of KM strategies (Chan, 2017; Timonen, 2018), but not as a factor influencing its institutionalization. For instance, Chan (2017) indicated that ICT was one of the pillars that supports KM initiatives. The scholar cited that the application of ICT has driven the development of KM systems. This study shows that ICT adoption influences the adoption, implementation and entrenchment of KM strategies in AROs in East Africa. Therefore, this study underscores that ICT adaption influences institutionalization of KM strategies in AROs in East Africa. The result points to additional theoretical and practical contributions to the literature on factors influencing institutionalization of KM strategies in organizations.

(vii) The quality of KM strategy content

The results show that strategy content is a key determining factor in institutionalizing KM strategies in AROs in East Africa. It is an aggregation of the following concepts: (i) users' needs centricity (ii) quality content and formulation process. The respondents mentioned that these dimensions of strategy content influence adoption, implementation and entrenchment of KM strategies in their respective organizations. The quality and formulation process was observed and noted that it plays a critical role in adopting and implementing the strategy. A KM manager in an international ARO in

Kenya explains, "*the first assignment the KM manager Mr. Peter Ballantyne undertook when he took over the leadership of KM department in the organization was to re-formulate the strategy to improve on the quality. From the original broad KM strategy, which was complex to understand and implement, the strategy was broken down into implementable principles. This process greatly influenced not only the outcome but the adoption and implementation of the strategy. Because of this approach, our organization has been rated the best and our strategy is the best implemented and used within CGIARs. We recently received an award for having institutionalized our KM strategy*".

Concerning users' needs centricity and contextualization of the strategy, it was indicated that these dimensions lead to staff enthusiasm to adopt, implement and entrench the strategy. A KM curation manager from an international ARO in Tanzania describes, *"the previous KM strategies were not contextualized. It was very generic and failed to capture local need needs and context. As a result, it was difficult to adopt, implement and fully execute. On the contrary, the high adoption and implementation of the current strategy were influenced by the fact that it included the concerns which were raised by the users. It has also considered issues that are specific to the local context"*.

Drawing from extant literature, Manta (2017) appealed to organizations to ensure the quality of the content of KM strategies and the coherent formulation process. Previously, KM strategies content has not been mentioned as one of the factors influencing their institutionalization in organizations. While some studies have scarcely mentioned the concept of quality as an important aspect of KM strategy (Baporikar, 2014; Nan & Bang, 2018), they have not explained the concepts that can be used to describe the strategy content in detail. They have also not discussed and explained strategy content as an influencing factor in adopting KM strategies' adoption and entrenchment. Therefore, this study extends understanding of factors influencing institutionalization of KM strategies in AROs in East Africa.

Table 29 summarizes factors influencing KM strategies in AROs in East Africa as confirmed from quantitative and qualitative and those that emerged from qualitative data. This study has found out that seven factors influence institutionalization of KM strategies in AROs in East Africa. Quantitative data confirmed five of these factors as hypothesized and conceptualized in the study framework and triangulated by qualitative data, while two of the factors emerged from qualitative data. In answering research question two, qualitative data allowed concepts and themes to emerge from the data. This was important to help the study identify the factors influencing institutionalization of KM strategies, which had not been known or discussed in the extant literature.

Table 29: Summary of factors influencing institutionalization of KM strategies in AROs in East Africa

Confirmed from quantitative and qualitative data	Emerging from qualitative data
- Mimetic or cognitive pressures - Normative pressures - Regulative or coercive pressures - Strategic decision making - Organizational leadership	- Information and communication Technologies adaptation - Quality of strategy content

Conclusion

This study analyzed quantitative data using regression, path and factor analyses and qualitative data using content analysis. All the study hypotheses, as conceptualized in the study framework, were tested for confirmation. Quantitative results are presented and then triangulated with qualitative results. It has been observed that quantitative findings using regression analysis are consistent with factor analysis and qualitative results.

The results show that institutional factors (cognitive, normative and regulative pressures) conceptualized from institutional theory are confirmed as factors influencing institutionalization of KM strategies in organizations. However, the influence is through strategic decision making and is moderated by organizational

leadership. Besides, new factors emerged from the qualitative data as influences on institutionalization of KM strategies in AROs in East Africa.

The influence of macro-level factors on institutionalization of KM strategies is best explained through strategic decision making and organizational leadership. Some of these results and conclusions have not been found in extant literature. Therefore, the findings are a point for further investigation to explain the factors influencing institutionalization of KM strategies in organizations.

4.7 Processes of institutionalization of KM strategies in AROs in East Africa

This section answers research question three: *What are the processes of institutionalization of KM strategies in AROs in East Africa?* The study examined the processes of institutionalization of KM strategies within the 22 AROs in East Africa.

4.7.1 Processes of institutionalization of KM strategies

The results of this research question are purely from qualitative data analysis. Many concepts emerged from qualitative data concerning the processes of institutionalization of KM strategies in AROs in East Africa. As shown in Table 29, twenty-six concepts emerged from qualitative data for this research question. These were categorized into twelve themes, where five processes were identified from the themes. Several related concepts formed a theme, and in turn, several related themes formed a process. The concepts, themes and processes are shown in Table 30. The processes are discussed in the next section and are visually represented in Figure 19.

Table 30: The concepts and themes in institutionalization processes of KM strategies

CONCEPT	DESCRIPTION	THEME	PROCESS
Problem identification	Involved specifying the reasons that justified the strategy (i.e., why the strategy has been developed or initiated) and actions, activities, and practices that aim to influence the process's outcomes.	Initiation	Initiation
Formulation	Specifying the content of the KM strategy		
Re-formulation	Revising the content of the existing KM strategy		
Consultation and board/management approval	Present the strategy seeking high-level understanding and acceptance of the strategy for use. It lays a foundation to start piloting and launching activities.	Pilot/Launch	Adoption
Execution planning	Structures are formed to allow for seamless flow of actions, activities and practices into the various organizational departments or functional workgroups, teams, committees, and units.	Social structures and systems	
Setting priorities	Accurate identification of critical actions, activities and practices for prioritization and interventions.		
Induction	Sensitization, awareness creation and orientation programs including meetings	Communication	
Managing change	Communicating change and establishing change management and communication plans		
Piloting	The initial rollout of the strategy to key staff to communicate with the broader audience		
Strategic Alignment	Seeking support for the strategic activities and practices and ensuring a fit into organizational broader strategic vision and roles	Culture change	Implementation
Cultural integration	Changing organizational value and belief systems and other informal culture. Also, rolling activities for achieving an organizational cultural shift		

Consensus building	Engaging the relevant stakeholders and key staff and bringing them into a shared understanding and vision on the strategic vision.	Engagement	
Activity mapping	Translating ideas into action plan leading to practical application		
Championing	Identification of champions and key opinion leaders	Championship	
Management support	Seeking buy-in and wider support from key stakeholders to actualize the strategy execution	Management Support	
Stakeholder engagement	Organizing regular meetings and other relevant forums to engage in the activities, actions and practices.		
Availing resources	Mobilizing for resources, human and financial, to support the activities and plans		
Training	Organizational training programs, both formal and informal		
Developing ICT systems	Developing ICT infrastructure and KM systems	Technology	
Strategic impact/value	Strategic impact demonstrates why the strategy exists and the value it has brought to the organization	Compliance	Entrenchment
Enforcement	The wide use of standards, policies and guidelines through effective governance		
Transmission and maturity	Spread in use and full acceptance		
Evaluating the impact	Monitoring and evaluation, annual audits and review on performance		
Periodic reviews	Reviews and considerations always accompanied the need to change the strategy	Evaluation	End of strategy life
Exit planning and recommendations for next steps	A critical assessment of the periodic review and audit reports and considerations for ingesting a new life and end the life of the current strategy	Recommendations for change	

Table 30 shows the concepts and their description that emerged from the data. The themes that were categorized from concepts and processes developed grouping related themes in the context of institutionalization of KM strategies in AROs in East Africa. These processes of institutionalization and their interrelationships were also derived from the study. These processes, their interrelationships and their themes are visually shown in Figure 19.
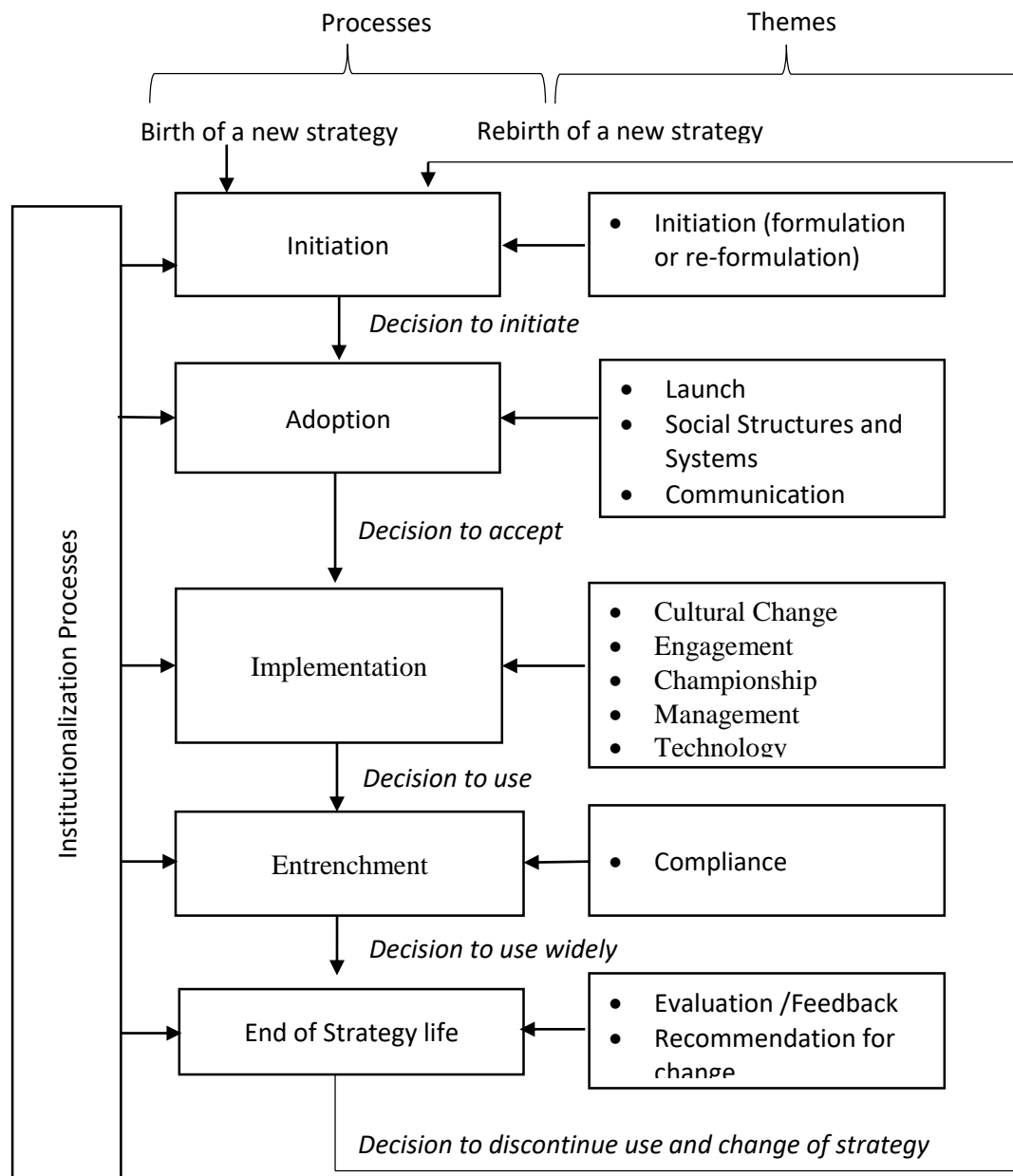

Figure 19: The Processes of Institutionalization of KM Strategies in AROs in East Africa

4.7.2 Description of the processes of institutionalization of KM strategies

The processes of institutionalization of KM strategies demonstrated in figure 19 are described and explained in the next section.

(i) Initiation process

In this study, the process of initiation refers to the birth of a new KM strategy or rebirth of an existing one. It is derived from the initiation theme aggregated from three concepts: problem identification, strategy formulation, and reformulation. It involves specifying the reasons that justify the activities, practices and content of the strategy. This process challenges the assumptions organization have held for a given period.

The process involves initiating strategy formulation and reformulation activities in the organization. A KM manager said, *"a critical process that is often unnoticed is the strategy's initiation. There is no KM strategy. There has to be some sort of a birthing process before the strategy can be adopted. For AROs with KM strategies, after a given period (say 5 or 10 years) depending on the set period of the strategy's life, the process is re-started again to put in a new strategy in place".* The findings showed that there are cases where a new strategy was formulated to replace an existing strategy; the initiation process proved extremely useful. It helped some AROs to review past experiences, especially practices and processes, critically. This indeed informed the following KM strategy activities and processes.

It was noted that the strategy practitioners, users and management were knowledgeable of this process regardless of whether it was acknowledged or followed as a practice in the current or past institutionalization processes. It was also noted that the process is important for organizational learning. A senior KM Curation manager said, *"going through a new process of rebirthing and re-formulating the KM strategy has helped us to identify some areas for learning and improvement in our practices and processes. These were mainly observations from the previous processes. We also identified practices that should be preserved as we institutionalize the new strategy".* Additionally, the respondents identified the documentation of lessons learned as an essential activity to inform the initiation process. Although this process has not been

discussed in the extant literature, this study identified it as the first and crucial process of institutionalization of KM strategies that shape and set the strategy into motion for adoption.

The initiation process was found to be inspiring for strategy users in AROs in East Africa, and this study recommends it as an enhancement of institutionalization processes of KM strategies in organizations. This is an example of a case in which the strategy is remolded to address users' internal requirements. It provides a better balance between external and internal factors that influence KM strategy formulation. Chinowsky and Carrillo (2007) emphasized the successful initiation of a KM strategy and asserted that it ensures a KM initiative progresses well. Other studies also found that a new KM strategy's successful institutionalization can be enhanced by drawing from past lessons (Luxmi, 2014; Alsabbagh *et al.,* 2017).

(ii) Adoption process

In this study, adoption has been defined as the formal process of accepting a KM strategy in the organization. The adoption process involves rational and social sequences through which the institutionalization of a KM strategy progresses, results in acceptance to put the strategy into practical use. Adoption process is an aggregate of six concepts (i) internal consultation and board/management approval (ii) formation of structures (iii) priority setting (iv) induction (v) change management and (vi) piloting. The concepts resulted in three themes: strategy launch, social structures or systems formation and communication. It was found that the process is mainly guided by KM leadership that works closely with different teams, groups and committees. The groups or committees were formed based on their knowledge and interest in KM matters. The members of these thematic working groups were selected, but in some cases, they volunteered to participate in the process. Their role was to support the process, coalesce and share information among stakeholders. They also acted as the link to the different participants or participating departments. It was observed and noted that the teams held brainstorming sessions with staff members and developed ideas they shared with the management for review and approval. A senior manager

explained: *"...in our case, the adoption process involved internal consultations and teams worked together to plan for the strategy launch. The launch plan was presented to the management for approval before communicating with the rest of the staff. Later on, we formed structures, set priority areas that led to the full launch and actual action. These activities led to the adoption of the strategy".*

The results showed that the process of adoption involves communicating with several stakeholders. A KM specialist described *"through face to face, email communication, meetings and established working teams and groups, the strategy was adopted, and goals were shared. These forums enabled the expectations of the staff regarding the adoption process to be obtained which in turn helped in improving the process".* A communication manager in an international ARO describes *"in my organization and within the CGIAR, the objective and activities required strategic communication, we employed a number of approaches such as SharePoint, Chimp, Flicker, Slide Share, Survey Monkey and Jot Form. It became apparent that strategic communication is key at the global level and national level".* It was observed that creating awareness sessions and sensitizations through departmental ideation processes which were achieved through effective communication formed critical aspects of the adoption process. It was also noted that in many cases, obtaining approvals from the Board of Management (BOM) ensured high prioritization, buy-in, and resource allocation. The thematic groups were instrumental in organizing induction programs along with the different focused themes through seminars, workshops, webinars, and conferences.

The findings have shown that adoption is an important process of institutionalization of KM strategies. This was confirmed in all the 22 AROs in East Africa, where the interviews were conducted. These findings are in line with previous studies that have applied institutional theory as a theoretical lens and have identified adoption as one of the institutionalization processes for accepting a KM practice in an organization (Hirst, 2010). To achieve the formal acceptance, several activities are undertaken, mainly face-to-face and electronic communication, meetings, and awareness creation sessions among the organization's members through established social systems. In another study, Alers-Tealdi (2015) applied institutional theory and explained that the adoption

process of KM practices involves establishing social structures and incentives for acceptance, such as training and communication. Although the findings of this study are consistent with results from previous studies, the concepts used to describe the adoption process have been expanded to include: (i) internal consultations and management or board approvals, (ii) formation of social structures, (iii) setting of priorities, (iv) induction program, and (v) change management. The concepts were categorized into three main themes, which are in the form of key activities: launch of the strategy, the formation of social structures and systems and communication. The concepts have been presented in the form of activities and practices that are critical to ensure adoption occurs. This is important since prior studies have highlighted that a sufficient understanding of critical activities is an important aspect of the adoption process for KM strategies in organizations (Xu et al., 2013). However, these studies have not presented the key activities of the adoption process.

(iii) Implementation process

An implementation process refers to the step that follows the decision to accept a KM strategy in an organization. It is an aggregate of nine concepts (i) cultural integration (ii) consensus-building (iii) activity mapping (iv) championing (v) management support (vi) stakeholder engagement (vii) training (viii) availing resources and (ix) developing ICT platforms. The concepts have been categorized into five themes (i) engagement, (ii) championship, (iii) cultural change, (iv) management structures, and (v) technology. The KM strategy implementation process involves engaging different stakeholders in detailed procedures and activities outlined in the strategy to obtain desired or expected results. These stakeholders include domain knowledge experts, technical team and management.

In many AROs, an implementation team was set up to bring together all the needed expertise and resources. A KM manager in an international ARO in Kenya said, *"...in our case, we formed an implementation team comprising key experts and thematic leaders. This was important because there was a need to have a committee to oversee the implementation and report progress to management"*.

Notably, the leadership theme was highlighted as one of the most critical aspects of the implementation process. It was observed that in AROs where the leadership was championing the institutionalization of KM strategy, high levels of strategy implementation were achieved. In many cases, the implementation process was under the direction and supervision of the head of the department or unit. The KM department's leadership guided the implementation of the KM strategy and ensured that the strategy was given the right priority in the organization. The results also revealed that championing the strategy increased the KM strategy's visibility within the organization and stakeholders. In some AROs, external specialists, consultants, and senior management or executives were involved as champions to highlight and prioritize the implementation process. A senior scientist in a public ARO in Kenya explains, *"the implementation process involved identifying and recruiting internal and external specialists to champion the strategy's implementation. Their involvement enhanced the use of the strategy in the organization"*.

Another critical aspect of the implementation process involves making provision for organizational to undertake cultural change. Cultural change was observed to intentionally modify the organizational cultures and social systems to enable continued use and practice of the strategy's principles. Some of the activities mentioned included integrating KM into the core organizational activities, including projects and departments, to ensure the KM strategy remained a key area of focus for each department. This was critical in enabling more frequent interaction among staff during the implementation process. It also ensured that the implementation of the strategy received support at all levels. A KM consultant said, *"the implementation process involved changing the organizational cultures to get people to apply the principles, guidelines, standards and policies. This change's essence was to ensure the organization gets people to use the strategy in the prescribed ways. Otherwise, the implementation process remains elusive"*.

There were clearly defined roles and governance arrangements in some AROs in East Africa regarding management structures. A KM manager from a public ARO in Tanzania describes, *"for our organization. The management established the*

organizational structures as part of the implementation process. The structures describe the implementation arrangement and modalities".

One more component of the implementation process involves the development and deployment of ICT systems and platforms. The study results established that creating ICT infrastructure and systems was necessary to implement KM strategies successfully. This is because using different ICT platforms ensures that users are engaged in the implementation process at every level. Besides, the ICT systems provide dynamic ways that ensure communication and engagement continue effectively. Some of the ICT systems and platforms include KM systems, internet and extranet systems, emails, websites, databases, knowledge repositories, knowledge hubs, and portals. In Kenya, an ICT officer in a public ARO said, *"developing ICT-based systems has been key in KM strategy's implementation process. For instance, internet connectivity, knowledge bases and social/collaboration innovation systems are part of the implementation process".* An ICT manager from an international ARO in Uganda describes *"development of ICT platforms and systems such as databases, CG space and wikis were part of the implementation process and have been useful in supporting the strategy implementation process."* Therefore, engagement or development of ICT systems is part and parcel of the implementation process of KM strategies in AROs in East Africa.

The results have shown that leadership, cultural change, engagement, management structures, and technology were essential themes in the KM strategy implementation process in AROs in East Africa. These results are consistent with the findings of previous studies. For instance, Zaher (2015) compared different types of management and leadership approaches and their influence on the implementation of KM strategies in organizations and found out that leadership played a critical role during the implementation process. In similar ways, Aagaard (2013) emphasized that effective leadership enhances KM strategies' implementation process in organizations.

MohdZin and Egbu (2010) assessed organizations' readiness level to implement a KM strategy and found that the implementation process involved engaging stakeholders,

effective leadership, creating management structures and aligning the strategy activities within other organizational activities. Therefore, the five themes that this present study identified are essential in explaining the implementation process. A previous study by Ceptureanu *et al.* (2017), while examining Romanian organizations in the energy sector, found that ensuring organizational cultural changes is an essential aspect of KM strategies' implementation process.

Although previous studies have highlighted some of these concepts and themes, they have not coherently provided a detailed description. They also had not identified the key activities which are critical to the KM strategy implementation process.

Thus, the implementation process is an essential and critical aspect of institutionalization of KM strategies in AROs in East Africa and enhances the realization of strategic objectives.

(iv) Entrenchment process

In this study, the entrenchment process is a critical component of institutionalization processes of KM strategies. It describes widespread and persistent use of the strategies in AROs in East Africa. It is an aggregate of four concepts (i) enforcing (ii) ensuring strategic relevance, (iii) transmission and maturity, and (iv) evaluating impact. The concepts were categorized into one theme referred to as compliance. The results found that compliance was critical for the process of entrenchment of KM strategies in AROs in East Africa.

The process of entrenchment of KM strategies involves enforcing the principles, guidelines, standards and procedures of the strategy. It was noted that in cases where the policies and guidelines have been enforced, the entrenchment process was also high. A KM Manager in an international ARO in Uganda said, *"the extent to which the policies and guidelines contained in the KM strategy have been applied is proportional to the use of the strategy, and the impact is correlated to the compliance level"*.

Similarly, some of the respondents mentioned strategic relevance as a concept that led to wide and persistent use. A KM Curation Manager in an international private ARO in Kenya explained, *"the use of the strategy increased and has remained consistently high in the organization from the time we as KM experts started demonstrating the strategy's value proposition. We started showing different output and impact levels quarterly to different researchers/scientists from their publications on open access journals and impact stories from the field. We correlated their output with how they complied or applied the guidelines and procedures in the KM strategy. As advocated for in the strategy, those who complied with creative commons licensing had a higher publication impact than those who did not. Also, those who had impact stories or lessons learnt were rewarded by the organization for complying with the policies and guidelines in the strategy. Afterward, the staff started asking for a copy of the strategy. We realized many scientists started applying the strategy's principles, specifically publishing more impact papers, reports on blogs and success stories in the organizational repository and open access journals. Importantly, the strategy was cited as a reference or source."*.

On transmission and maturity, the results found that increased compliance with the principles, policies, and guidelines of the strategies was correlated with the strategy's wide use. In AROs in East Africa, the strategy's widespread use was linked to an increased number of users who had complied. The impact of compliance by the users increased when individual users were recognized for complying. A country manager in a private ARO in Tanzania explains, *"complying with the principles outlined in the strategy is essential for strategy entrenchment. This brings the understanding that the strategy is an important guide and a master plan on how the organization manages its knowledge, and because of this we reward for compliance"*.

With regard to evaluating impact, the results have shown that monitoring and evaluation, annual audits and review on the performance of KM strategies were critical aspects of appraising the impact of the strategy. Appraising the impact of a strategy, in turn, reveals the extent of entrenchment. A monitoring and evaluation specialist from a private international ARO in Uganda had this to say *"for a long time the*

strategy was scarcely used. So we undertook an evaluation and a thorough review to look at the challenges leading to low usage. The findings informed an appraisal process of the strategy, which in turn proposed many considerations. This approach enabled management to focus on areas that needed attention...". While the process of KM strategies is vital in organizations, it has not been discussed in extant literature (Akuku et al., 2020).

In this study, the entrenchment process is an important part of institutionalization processes that explains the extent of KM strategies uses in AROs in East Africa. Although previous studies have not discussed entrenchment process concerning institutionalization of KM strategies, it is an important part of the process. However, institutional theory scholars have discussed the process as sedimentation or full-institutionalization (Tolbert & Zucker, 1983; Hirst, 2010). This study's findings concur with previous studies that have described the process as the stage where the practice is put into wide use and gains stability in an organization. Despite the recognition of this process, studies on this subject remain scanty. For example, Hirst's (2010) study found that the process of entrenchment needs further research to examine what happens and the impact of this level of institutionalization. This study has addressed this gap by identifying the concepts that can describe the entrenchment process, the key theme and external and internal factors influencing the process. It was noted that at this stage, institutionalization of KM strategies is characterized by being widespread across the organization over a given period.

The result also established that entrenchment of KM strategies in AROs in East Africa was higher than adoption but lower than implementation. Often, KM strategies are taken up as a response to external pressure. Therefore, entrenchment is a vital process of institutionalization of KM strategies that leads to the end-term evaluation process.

(v) End of Strategy life

In this study, the end-term strategy life process has been conceptualized as the stage where a KM strategy's usefulness reduces. It is an aggregate of two concepts: (i) periodic reviews, (ii) exit planning and recommendations for change. The concepts are

categorized into two themes, namely: evaluation and recommendations for change. In the context of AROs in East Africa, the results showed that after using the KM strategy for a given period, a new process emerges due to the end of the strategy's life. This shows the decline of the strategy. After some time, the strategy ends up not being used, hence its life comes to and.

The results showed that a critical assessment or review of the strategy is required in the end-term evaluation process. A KM manager in a private ARO in Kenya said, *"...the strategy is designed to serve for a given period. This period marks the life and usefulness of the strategy. In most cases, towards the end of this period, the strategy goes through a process I would call death or discontinue its use. This is more so because organizations are dynamic and KM processes must respond to organizations' changing nature. If the strategy doesn't die, then it becomes irrelevant and less impactful".* It can be seen that after a given period, the strategy must cease for a new strategy to be birthed.

In this study, it was found that failure to pay attention to the end-term evaluation process contributes to institutionalization challenges, for instance, decreased utilization of the strategy, especially where the pace of institutionalization varies from country to country, in the case of international AROs. A communication manager in a private international ARO in Uganda explains, *"currently, the KM strategy is not attractive to most staff. This is because it needs to be reviewed and changed. Still, we cannot do so since some of our sister organizations in other countries are behind in their strategy's execution process. The head office has insisted the review process will be done at a global level".* At this stage, the strategy is scarcely used. At this stage, there is a need to take up the opportunity to ingest new ideas to make the strategy dynamic.

The results also showed that exit planning and reviews are an essential concept. It enables a strategic and smooth transition from one version of the strategy to another. This activity is critical because as one version of a KM strategy ceases, there is a need to transition to a better or improved version of a new strategy. A KM specialist from a

private international ARO in Kenya said, *"in practice, a strategy has a life, and I will be apprehensive if the strategy doesn't transition to a new version or a complete overhaul of the existing strategy. This is why organizations must be careful to plan for the exit of every strategy. This is achieved by exit planning and reviewing the strategy, especially towards the end of its life. If a strategy gets entrenched and becomes stable for life, then something is wrong. A strategy must go through a process of end-term evaluation"*. It was observed that the end-term evaluation is essential and necessary.

The results found end-term evaluation as a new process that has not been studied previously. In this process, a review of the effectiveness, relevance and impact of the strategy is required. In several cases, it was observed and noted that reports and considerations from previous evaluations, reviews and audits on KM strategies are essential elements of this end-term evaluation process. The findings contained in these documents can inform organizations on the end-term evaluation process. This process is essential, just like the other processes of institutionalization. The work on the end-term evaluation process in this study provides theoretical and empirical frameworks for further studies and practice in the institutionalization of KM strategies in AROs and similar organizations or contexts.

In previous studies, institutionalization was presented as a sequence of processes. This study has gone a step further to show that institutionalization also has a cyclic character because the end-term evaluation of one version of a strategy ushers in initiating the next version of the strategy.

4.8 Considerations on how AROs in East Africa should institutionalize KM strategies in practice

This section presents research question four: *How should AROs in East Africa institutionalize KM strategies in practice.* In general, effective institutionalization of KM strategies can enhance KM initiatives and plans in organizations. Over time, the strategy can provide a guideline for the organization's success and competitiveness. Knowing how to institutionalize the strategy can ensure that KM activities are well structured, desirable, and part of an organization's culture and routine. However, in

the case of AROs in East Africa, there have been numerous challenges concerning institutionalization of KM strategies, and as a result, the success has been minimal.

The critical point to note is what AROs in East Africa ought to have done differently in the light of challenges they face with institutionalization of KM strategies in practice. This study has elucidated some findings that can be seen as part of different solutions to different challenges. The first research question looked at the characteristics of KM strategies in AROs in East Africa in terms of their relative quality and what exists and lacks.

From the results and discussion obtained from question one to three and are already presented in this chapter, it can be seen that AROs should pay attention to the quality of their KM strategies by ensuring that all the five key characteristics that have been identified are included in future KM strategies. Therefore, AROs should commit themselves to apply the key concepts that this study has identified and explained when formulating or reformulating their KM strategies in the future. This study also identified fundamental gaps in KM strategies that AROs in East Africa have institutionalized and why these gaps exist. Therefore, the attention of AROs in East Africa has been drawn on key areas that should address at least in this regard to the relative quality/ the content of their KM strategies.

Research question two also addressed specific factors that influence the different levels of institutionalization regarding adoption, implementation and entrenchment of KM strategies. The results showed that the extent of adoption was lower compared to implementation and entrenchment. This is an indication that the overall understanding of KM strategies is inadequate among AROs in East Africa. Therefore, AROs should improve the users' understanding to appreciate the value of KM strategies and accept using/applying the principles laid out in the strategies. Additionally, there are new factors that emerged from empirical data. This confirms that practitioners and scholars should pay more attention to adopting, implementing, and entrenching KM strategies.

The research question three addressed aspects of the processes of institutionalization of KM strategies. The results showed that AROs should follow the activities and

practices that are explained in chapter four. From the results, it can be seen that the process of initiation and end-term evaluation of the strategies are as key as other processes of adoption, implementation and entrenchment. However, these two processes are not always followed and the activities and practices that are associated with these processes are mainly missing in practice. Therefore, AROs in East Africa should note these findings and apply espoused activities and practices.

The answers to research question four provide considerations for how AROs in East Africa should institutionalize KM strategies in practice. Ideas and suggestions from the respondents inform these considerations. The proposed ideas are aggregated from the various emerging ideas/suggestions from KM strategy practitioners who participated in the study as respondents. Every emerging idea informs a consideration/recommendation. The emerging ideas are represented in Figure 20.
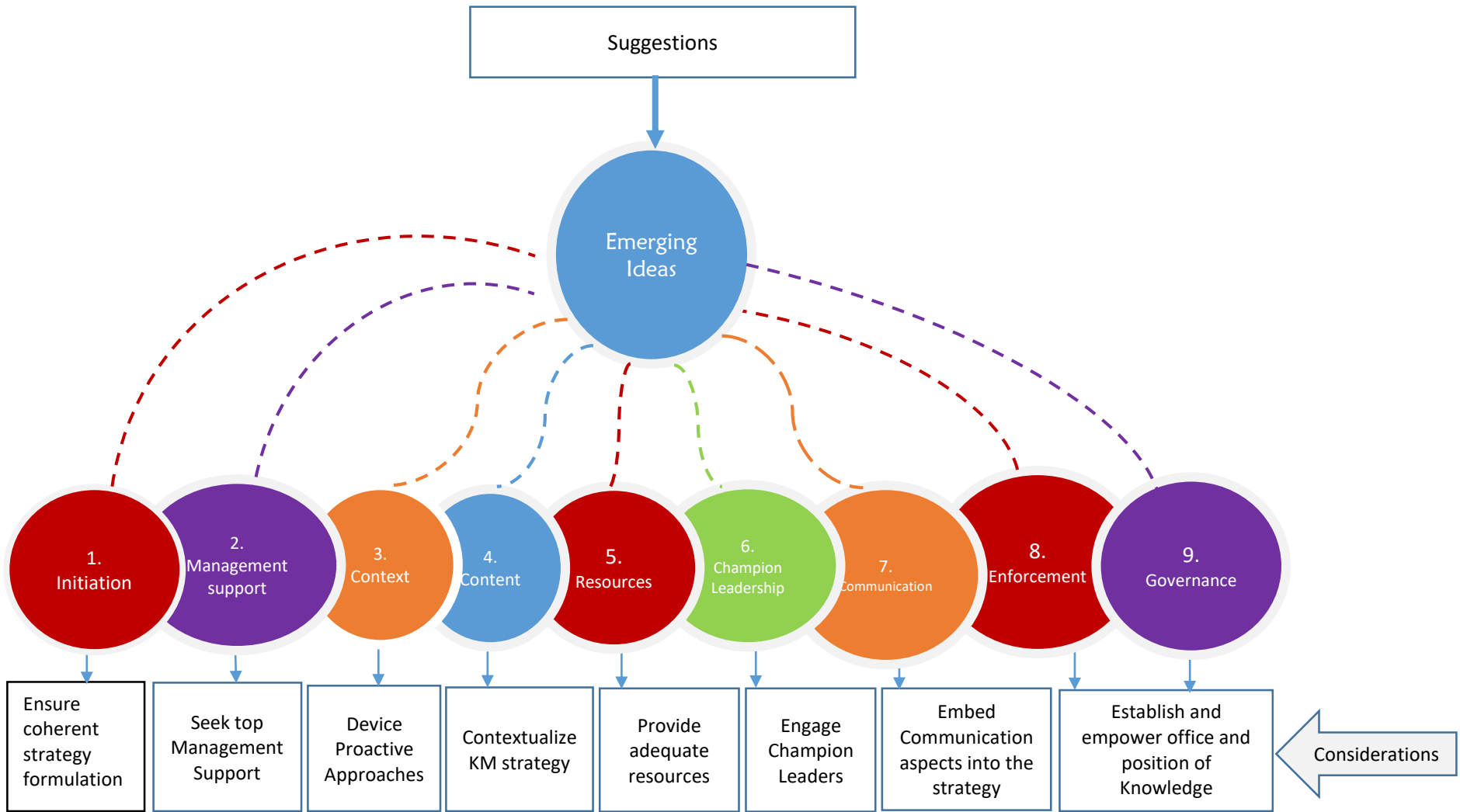
Figure 20: The emerging ideas and considerations

4.9 The details of the emerging ideas and considerations are discussed in the next sections.

Different and related suggestions are aggregated into emerging ideas, which in turn formed the consideration. The considerations represent commendations from practitioners on what AROs in East Africa should do differently to address the challenges they face in institutionalizing KM strategies. A detailed discussion is presented in the next section. The nine emerging ideas were summarized into eight considerations.

The findings show that many suggestions emerged from data aggregated into different emerging ideas and extend to form considerations. In practice, there is growing concern over what AROs should do differently to institutionalize KM strategies successfully. The considerations were informed mainly by practical constraints AROs have faced in the process of institutionalizing KM strategies. The strategic decision-makers in AROs in East Africa need to evaluate how adoption, implementation and entrenchment of their KM strategies should be undertaken.

The qualitative data analysis results provided eight considerations where three applied to all the levels of institutionalization (adoption, implementation and entrenchment) of KM strategies. These were: (i) ensuring coherent strategy formulation, (ii) mobilizing internal resources (iii) engaging champion or change leadership. The other five considerations were specific to either adoption, implementation, or entrenchment, or a combination of both. The next section explains and discusses the proposed eight considerations on how AROs in East Africa should adopt, implement and entrench KM strategies in practice.

(i) Ensure Coherent Strategy formulation

In this study, strategy formulation is defined as the process of developing the strategy. It emerged from two suggestions: (i) Clarity of content (ii) user-centricity. These suggestions were aggregated to strategy content as the proposed idea. The results showed that AROs in East Africa should change how KM strategies are formulated to ensure coherent content is achieved. The results showed that the users' and

stakeholders' involvement, needs, and expectations should be central to the strategy formulation process to improve acceptance levels. A communications director from an international ARO in Kenya describes, *"the strategy should be more user-centric by seeking to*

understand what the key needs and expectations of the users are and what are their knowledge needs while developing a business case."

In a private international ARO in Uganda, a KM officer said, *"the strategy should be demand-driven rather than supply-driven. There have been cases where users' involvement in existing and past strategies has been minimal, especially at the country level. In some cases, it has been assumed that the local office's user requirements are known and obvious or similar to global needs. This level of assumption inhibits acceptance and execution of the strategy and there is a need to do this differently when formulating the strategy"*.

It was observed and noted that, in many AROs in East Africa, KM strategies had been externally developed, driven, or initiated. As a result, most of the strategies development process or content has not considered user priorities or contextualized specific organizational goals, objectives, and purposes. A KM director in an international ARO in Kenya said, *"while we appreciate the support of external parties who have been helping in the development of the KM strategy my suggestion is that strategy development should be more internally driven than externally driven. Embracing the global dimension is good, but considering specific local context issues will ensure coherence in the content of the strategy"*.

The results revealed that AROs in East Africa should recognize the value of incorporating the users' needs to ensure a coherent strategy formulation process and develop strategy content that resonates with the organization's aspirations. In similar ways, previous studies have indicated that a coherent strategy formulation process is highly correlated to the quality of the strategy content (Mantas, 2017). This study emphasizes that AROs in East Africa and probably in other similar contexts should ensure a coherent strategy formulation process. To achieve this, it is important to

engage users, obtain their requirements, and contextualize the strategy to fit the organization's practical needs. In line with this, ensuring user needs are considered in the strategy being formulated. Other prior studies have alluded to similar suggestions arguing that coherent strategy formulation leads to appropriate content, successful implementation and ease of modification where necessary (Baporikar, 2014; Nan & Bang, 2018).

This study, therefore, affirms that AROs in East Africa should begin to put measures in place to ensure a coherent formulation of KM strategies. This consideration concurs with other scholars (Andrews *et al.,* 2009), arguing that strategy formulation is a political process and organizational actors may have conflicting views. Therefore, whether externally or internally initiated, supported, or driven, the KM strategy formulation process should consider the needs, priorities, and expectations of the strategy's users and implementers.

(ii) Provide adequate resources

In this study, resource provision is defined as the process and mechanisms of ensuring that the required resources are available to support KM strategies' activities and work. It emerged from three suggestions: (i) development of ICT systems, (ii) intentional commitment to resourcing mobilization (iii) adequate provision of resources and were categorized into a proposed idea called resources. The results showed that AROs in East Africa should guarantee the availability of resources to support KM strategy work (processes, plans and activities). This study found that financial resources can be internally or externally sourced, but the emphasis was put on internal resource mobilization to guarantee sustainable availability of resources and to be free from external influence during strategy institutionalization processes. An ICT officer in a public ARO in Uganda describes, *"allocating more funds to support the strategy's activities from own or internal sources is the direction the organization should take, having seen the challenges associated with external funding or sources. Resources for funding KM strategy from donors are project-based, which led to low use of the strategy, for instance, lack of funds to train users and create adequate awareness of KM strategy negatively impacted strategy implementation".*

Another vital resource that should be considered is the human resource, especially experts in the KM domain. An ICT officer in a public ARO in Kenya explains, *"the organization should employ more qualified staff in the Knowledge Management directorate. Currently, the department has less than ten staff against a total workforce of over 6,000 people. Besides, the staff in the KM department don't have the requisite qualifications and training. They are scientists in agricultural research fields. The leader has training in animal health science while the deputy is an agronomist and the rest of the staff are scientists. By their training and qualification, there is a skill and knowledge gap to support the strategy successfully"*. These results agree with previous literature (Bettiol et al., 2011; Mantas, 2017). The scholars emphasized that ensuring adequate and competent human resources is engaged in supporting KM strategies' activities. A Deputy Director-General in a public ARO in Uganda describes, *"the organization should streamline skill development and resources to facilitate wide use and sustainability of the KM strategy."* These findings support previous study considerations. For instance, Hu (2019) found that organizations, especially academic library staff, require technical skills in communication and management of internal knowledge as part of the efforts towards adopting KM strategies.

The results show that adequate resources should be allocated to support KM strategy adoption, implementation, and entrenchment to allow all activities to be carried out as planned. AROs in East Africa should use diverse approaches to ensure sufficient resources to institutionalize KM strategies. In this regard, AROs in East Africa should minimize external support reliance as the primary source of resources. They should look for ways to ensure that funds are internally available to drive the process and that the strategy is not influenced by external pressure. The results confirm that both financial and human resources are critical from the initial planning to the entrenchment phase of the KM strategy execution process (Bratianu et al., 2015). AROs should ensure the availability of resources to support the process, including hiring experts to drive the process.

(iii) Engage champion leaders

This consideration is derived from three suggestions (i) institutional structures formation (ii) taking internal lead (iii) inclusiveness were categorized into a proposed idea called champion leadership. The results show that AROs in East Africa should engaging experts as champion leaders. It was found that AROs should identify and allocate responsibility to a dedicated team of champion leaders who would then be tasked to drive the KM strategy institutionalization process. Also, AROs should identify the qualities associated with champion leadership, and they should ensure that engaged individuals are qualified. The respondents suggested that champions should also be identified from existing staff or top management members to push their KM agenda. It was recommended that champions be rewarded as this will help keep the strategy prioritized within the organization and give visibility to it with other stakeholders outside the organization. In an international ARO in Uganda, a KM officer had this to say, *"the organization should ensure the champions are recognized and rewarded."* A KM manager in an international ARO in Uganda said, *".... A community of Practice (CoP) has worked very well in other domains. It enables partnerships with other research organizations with whom to engage, share knowledge and practices. This process can help an organization identify and enrich the skills and knowledge of KM champions who can drive the implementation and entrenchment of the strategy".*

Previous studies have recommended identifying the right leadership as an essential point for KM strategies' success in organizations (Zaher, 2015; Dewah & Mutula, 2016). Martín-de *et al.* (2011) identified human factors such as champions as essential factors to support the implementation of KM strategies.

However, there has been no discussion in this area of champion leadership concerning KM strategies institutionalization in AROs in East Africa. Therefore, AROs in East Africa should identify and empower KM champions who can promote the visibility of the strategy internally and externally.

(iv) Devise proactive approaches

This consideration is derived from six suggestions (i) user needs assessment (ii) sensitization of users (iii) initial training (iv) defining and documenting processes (v) participatory planning and meetings and (vi) intentional communication. These suggestions were aggregated to a proposed idea called initiation.

The respondents indicated that their AROs in East Africa should consider devising proactive approaches for adopting KM strategies. Undertaking user needs assessment is one of the areas where AROs in East Africa have not done well, especially in developing and adopting KM strategies. Therefore, it was recommended that devising proactive approaches can advance the development and adoption of KM strategies. Planning approaches in AROs will stimulate interest and cultivate a favorable environment for developing and adopting the strategies, e.g., using intentional awareness creation sessions on KM objectives and relevant information about the strategy. A director in a private international ARO in Kenya said, *"when staff and stakeholders are involved in the initial stages, their ownership of the strategy is enhanced, thus increasing the likelihood of use. Awareness can be created through appropriate methods suitable for the organization, including training, workshops, retreats, webinars, emails, among other approaches".*

Another important suggestion was the need for a KM strategy approach where communication is embedded in daily operations. This was identified as the key to effective communication and awareness creation. A KM manager had this to say, *"the organization should consider embedded and intentional communication as part of the strategy. Further, they should consider demystifying the KM concepts to ensure everyone clearly understands KM's meaning and purpose.*

It was noted and observed that AROs in East Africa should devise a proactive approach for ensuring participatory planning and meetings for the KM strategy. A communication manager, a public ARO in Tanzania, said, *"the process of KM strategy implementation should involve as many individuals and departments as possible. Besides, organizations should avoid a top-down approach to the process and rather*

adopt bottom-up and participatory approaches that allow all people to contribute openly. This approach enhances buy-in from all staff, departments and stakeholders, and reduces the divide between knowledge producers and other staff". The proposal of a participatory process as one of the techniques of achieving a proactive approach was repeatedly mentioned. An executive director in a public ARO in Tanzania said "*the implementation of the KM strategy should be participatory, allowing all staff members and stakeholders to contribute and play their part in its success. This also ensures that there is no rift between departments and individuals and enhances the strategy's use. Therefore, my suggestion is that the organization should make the strategy implementation participatory to reduce elitist thinking often inherent in knowledge generators or custodians"*.

The results show that using different techniques and approaches can improve the adoption of KM strategies for AROs in East Africa. While Jennex (2006) indicated that effective approaches are important in improving the adoption of KM strategies in organizations, the scholar did not elaborate on how this can be achieved. In addition, previous studies have not studied this recommended idea and suggestions, as presented in this study. Therefore, this study suggests that AROs in East Africa consider devising proactive approaches in adopting their KM strategies and avoiding reactive approaches.

(v) Seek top management support

This consideration is derived from two suggestions (i) buy-in from management and users (ii) identification of change agents. The two suggestions were aggregated to form the management support idea that has been proposed. The results revealed that to develop, adopt and implement a successful KM strategy, the top management buy-in should be sought. Additionally, change agents should be identified. The respondents indicated that seeking the support of top management in organizations is important. A country manager in an international ARO in Kenya said, "*top management should be closely appraised on the KM strategy to ensure they support it and align it with the organization's overall goals and objectives. In addition, this would ensure the management buys into the strategy and supports its entrenchment. I*

suggest and recommend that the organization align the strategy to the rapidly changing environment and ensure top management is trained and supportive of the KM strategy processes".

The results show that identifying change agents at the early stage of the strategy's institutionalization leads to an internally driven process. Therefore, there is a need for AROs to identify the key staff in the organization who can facilitate the change management process. Change is a process that requires deliberate and dedicated efforts and resources to be achieved. A director in one of the public AROs in Tanzania affirmed, *"the organization should ensure they identify, support and facilitate individuals who will play the role of change agents for effective institutionalization of KM strategy."*

The consideration to seek top management support was seen to have the potential to improve the adoption and implementation of KM strategies in AROs in East Africa and enhanced buy-in from the organizational leadership. In the past, studies have explained why organizations should seek top management support as a key factor for strategy execution and success (Bettiol *et al.*, 2011; Mantas, 2017).

Previous literature has not discussed much how and why AROs should seek top management support in the institutionalization of KM strategies. This study's results affirm that one of the key areas AROs in East Africa should look at differently is to ensure top management support has been sought when institutionalizing their KM strategies. Seeking top management has the potential to drive strategy execution and ensure success for the organization.

(vi) Contextualize KM strategy

This consideration is derived from two suggestions (i) place the strategy into organizational context, (ii) users' understanding of the concepts and facts of the strategy. These suggestions were aggregated to a proposed idea called context. The results show that context is an essential idea for KM strategy development, adoption and implementation.

A sufficient understanding of the environment where the strategy is to be institutionalized ensures that the strategy is aligned with the local context. The idea of context-specific dimension was indicated as an area the AROs in East Africa should focus on concerning the specific contextual issues to a particular organization and country and not copied from other environments with different issues. A country manager in a private international ARO in Uganda had this to say, *"the organization should develop a new strategy that fits into the local context of Uganda, as the current one ignores the specific issues relevant and specific to the Ugandan situation. The context here is different from that of Europe, where the strategy was formulated. The failure to contextualize the strategy has repressed the acceptance and even use since staff often cite local issues which are not addressed in the strategy"*. The need for contextualization of KM strategies is particularly key for international AROs, which tend to have one KM strategy that applies to all their country and regional offices. One of the managers from an international private ARO in Uganda affirmed, "*they should develop a KM strategy that fits into the local context and this has been lacking for a long time."*

It was also suggested that institutional change management is one area AROs should improve on and do differently. A KM manager in a public ARO in Kenya said, *"in ARO in Kenya and extension other developing countries KM strategy is a new concept, traditionally we have managed the organization without a KM strategy. Therefore, there is a need to ensure historical institutional cultures are changed.*" This study observed inherent cultural issues that require change management for effective institutionalization of KM strategies. It also observed that the concept of KM strategy had not been fully integrated into the institutional culture of AROs in East Africa.

The results have revealed contextualization of KM strategies in AROs in East Africa as an essential area that can affect the adoption and implementation and lead to the strategy not achieving the intended purpose. Another critical view that previous studies have highlighted and supported is the suggestion for AROs in East Africa to contextualize their KM strategies as an aspect of relevance. Bailey and Clarke (2000) found that a KM strategy's relevance is positively associated with how the strategy has

been contextualized into the actual environment where it is to be implemented. The scholars emphasized that a KM strategy should positively transform an organization, but to achieve this, requires the strategy to be contextualized to fit into the organizational setting. Barley *et al. (2018) emphasized the importance of context in ensuring the organizations' requirements' practical or actual dynamic*s are included in the KM strategy.

From the findings, this study asserts that AROs should adequately consider both internal and external organizational environments in East Africa since the actual context is key to successfully adopting and implementing KM strategies.

(vii) Embed communication aspects into the strategy

This consideration is derived from two suggestions (i) intense communication and (ii) embedded communication. The suggestions informed the proposal of the idea called communication. This idea was the basis of the recommendation on embedding communication aspects into the strategy. It was suggested that communication is key and ARO should embed it in their KM strategies and the institutionalization processes. Intense communication refers to including or ensuring measurable and concentrated messaging of the strategy to create a deeper understanding and clarity of the goals and objectives. Embedded communication refers to providing strategic and purposeful communication to enhance institutionalization, especially the strategy's implementation.

The respondents identified that intense communication should be embedded into KM strategies and the adoption and implementation processes. The results showed that KM strategies in AROs in East Africa require intentional communication. The head of the KM department in an international AROs in Kenya said, *"there should be up to date ICT and communication systems to enable users to be regularly informed and have easy access to databases and other knowledge repositories. The use of ICT and communication platforms would promote awareness (through open access), which would result in higher and regular use of the strategy by staff and stakeholders. ICT*

Infrastructure should also be regularly maintained. Also, the strategy should follow a futuristic orientation model, considering the rapid changes in the environment".

The respondent emphasized that embedded communication should be outlined in the KM strategies. These include collaboration systems and other tools for managing organizational knowledge. An ICT manager in public AROs in Tanzania said, *"for successful adoption and implementation of KM strategy, there is a need to have deliberate, purposeful, and measurable communication plans embedded in the strategy and outlined as a key activity. This should include the use of collaboration software such as social media platforms, among others".*

The results show that communication is an essential subject of institutionalization of KM strategies, and AROs should ensure it is embedded. Embedded communication should include access to information about the strategy and the actual strategy by all users at all levels. This has been suggested as one of the important considerations AROs in East Africa should consider, especially during the KM strategy's adoption and implementation. The findings are consistent with findings from previous studies that have examined the implementation of KM strategies. Scholars have suggested that KM strategies should have transparent processes, implementation and good communication plans to guide the process (Bettiol et al., 2011; Akram et al., 2015; Mantas, 2017). For communication aspects to be embedded into the KM strategy, AROs in East Africa should pay attention to the strategy's formulation and include all the essential features that easily support the staff and stakeholders to get the necessary information regarding the strategy. In this study, suggestions have been presented on how AROs in East Africa should institutionalize their KM strategy with the inclusion of embedded communication as one of the considerations.

(viii) Establish and empower the office and position of Knowledge Management

This consideration is derived from the following suggestions (i) adherence to policies, guidelines and standards (ii) value proposition (iii) sustainability planning, and (iv) impact evaluation. The suggestions informed the enforcement and Governance as emerging ideas.

For reviewing and appraising performance, this idea was based on the need to ensure extensive application of KM strategy principles, which can be achieved by establishing and empowering KM's position and office.

The respondents indicated that enforcement of the policies, guidelines and standards as an essential action AROs in East Africa should improve on. It was suggested this could be achieved by ensuring that users of the strategies apply all relevant policies and other standard operating procedures. A Deputy Director-General from a public ARO in Kenya stated, *"on enforcing policies and guidelines, all policies and guidelines should be enforced at all levels and in all departments. These include regularly carrying out Monitoring and Evaluation (M&E) to learn the status of institutionalization, especially in terms of wide usage. This will enable the organization to make required adjustments and ensure that the strategy goals are met"*.

It was suggested that through M&E, AROs in East Africa would be able to show the value of the KM strategies in their organizations, and by doing so, the compliance will increase once the impact of the strategy can be seen or noticed by users. However, these efforts should be enhanced by the elaborate promotion of the strategy and comprehensive understanding, leading to its high use. A KM manager from a public ARO in Kenya had this to say, *"... there is a need to enforce the policies and guidelines as per the KM strategy. Then the same high standards should be held for all users, regardless of their staff grade or level"*. It was suggested that the strategy must demonstrate value for it to be entrenched. A KM manager in a private ARO in Tanzania said, *"...we have been working hard to demonstrate the strategy's value and this is something AROs must ensure is achieved otherwise, the strategy may be adopted and even implemented but may never be entrenched. The wide audience wants the value of the strategy, not just good principles or plans"*.

It was also suggested that publicity of the strategy is essential. A communication specialist in a private ARO in Tanzania said, *"the organization should have plans for*

the elaborate promotion of the strategy among users and stakeholders. This will enhance a deeper understanding of the strategy leading to high usage".

Developing and enforcing practical guidelines and policies to facilitate full institutionalization of KM strategies was proposed as something AROs in East Africa should take up. It was observed that for AROs in East Africa to achieve this consideration. In general, previous studies have found that KM strategy policies and programs require a primary coordination unit for smooth execution and to effectively achieve the intended purpose (Shah *et al.,* 2018). While studies focusing on this particular proposed idea of enforcement in AROs in East Africa lacks, in general, prior studies have recommended that organizations should develop and enforce KM strategies policies (Al Nabt *et al.,* 2018).

Thus, this study affirms that AROs in East Africa should ensure extensive application of the policies, guidelines, and other standard operating procedures in their KM strategies to guarantee the entrenchment of the strategies. This can be achieved through the establishment and empowering of the office and position of Knowledge Management.

The findings further indicate different key suggestions that were identified for governance. The respondents indicated that institutionalization of KM strategies should include sustainability planning, impact evaluation and reviews, or appraisals of the strategy's performance. Further, it was observed that *"the office and position of KM should be elevated and accorded authority and power to take the management responsibility of implementation processes such as impact and planning for sustainability"* (a KM manager in an international ARO in Uganda said). Additionally, a KM manager in a public ARO in Tanzania said, "*governance is important for any strategic endeavor including institutionalizing KM strategy. Some of the areas we have not embraced in the past and which I would like to suggest for my organization and other similar AROs are sustainability planning. This will ensure the strategy is successful throughout its life*". Secondly, ARO should undertake an impact evaluation to enable progress reporting and improvement in areas that are not well

institutionalized. This action will also ensure lessons learned are documented. Lastly, AROs should appraise the strategy's performance, preferably every quarter or yearly. The idea is to ensure that the set targets are met satisfactorily.

Similarly, an ICT officer from an international ARO in Kenya illustrated, *"regular review of the implementation and entrenchment processes should be undertaken to identify gaps and areas of improvement, and if necessary improve the KM strategy usage and purpose accordingly."* On monitoring and evaluation, A KM officer in an international ARO in Tanzania stated, "*the issue of who takes responsibility on KM strategy implementation remains a question to date in the organization. The head office oversees the process, but since they are not here, nobody has shown the strategy's impact, and no-one knows what is coming up next. These facts must be considered, and the organization establishes an office for KM with sufficient powers and resources since someone must be accountable and in charge"*.

The results revealed that KM strategies' implementation and entrenchment largely depend on establishing a KM office and position. The respondents emphasized that to achieve these suggested ideas AROs in East Africa should place a governance mechanism within the organization. The respondents indicated this would ensure that KM activities are performed as expected by all the departmental and individual users through a well-established and empowered office. An ICT officer from a public ARO in Kenya affirmed, *"the organization should make sure that KM's office is regarded and accorded all the support just like other core business offices such director of research, finance and ICT and human resources among others."*

The significance of these suggestions was confirmed by organizations that have established the KM office. A KM curation manager in a private international ARO in Kenya asserted *"from the time the organization created and empowered the office of the head of KM and also formed KM sub-committee at the management level reporting directly to the board on KM matters, implementation of the strategy has drastically improved. Resources are available and we have a leader who takes charge of our concerns and addresses them*".

Results also indicated that AROs in East Africa had not paid specific attention to the governance aspect, resulting from a lack of internal interest and drive on KM strategies matters. Therefore, this study recommends that the governance aspect is important and should be considered by AROs in east Africa. Lack of adequately instituted and empowered KM office is one of the main challenges AROs in East Africa face concerning institutionalization of KM strategies in practice.

The concern of responsibility and creating and establishing an office and position with sufficient authority was identified as very important, especially in this context of ensuring the intended impact from KM strategies in AROs in East Africa. From the study results, it can be seen that establishing an office or a committee at a senior management level with a mandate from the board proved a good model of governance for AROs in East Africa. A KM officer from an international private ARO affirmed *"having a representative who has authority and responsibility in the KM department at the level of a deputy director-general in the organization, but also close enough to the people has greatly contributed to implementation and moving forward the KM strategy agenda"*. The respondents associated governance with impact, sustainability, planning and accountability. A communication specialist had this to say, *"the organization management and board became convinced that we needed to elevate the KM office to a directorate level and KM officer to a director level, this was done to ensure KM activities especially the strategy doesn't fail."*

Although there are not enough studies that have discussed governance on institutionalization of KM strategies in AROs in East Africa and in general, Steyn's (2007) study indicated that inclusion of governance ensures sponsorship and funding of KM activities. Despite the low number of studies on this subject, it emerged as an important and common element in most AROs in East Africa concerning implementation and entrenchment of KM strategies.

The study finding proposed governance as an important consideration that AROs in East Africa should be considered in the planning for the institutionalization of KM strategies. The establishment and empowerment of the office and position of

Knowledge Management will facilitate sourcing for support and resources for the various activities stated in the strategy. The findings are consistent with the results of previous studies. Zyngier and Burstein (2006, p1), examining the role of governance in KM strategies, concluded that "the implementation of a KM strategy through such a framework ensures the delivery of anticipated benefits in an authorized and regulated manner."

It is also evident through these findings that AROs in East Africa should take particular interest to determine the required resources to establish a KM office and position based on their size, needs and priorities. These results also reflect the broad range of issues, such as assessing the strategy's impact on the organization. The findings indicate that establishing a KM office and position can support realizing a more significant impact on the implementation and entrenchment of KM strategies in practice. Therefore, AROs in East Africa should establish and empower the office and position of KM in their organizations.

CHAPTER 5: CONCLUSIONS AND RECOMMENDATIONS

This chapter presents a summary of findings, achievements, contributions and recommendations for the future. This study aimed to examine the institutionalization of Knowledge Management (KM) strategies in agricultural research organizations (AROs) in East Africa. In particular, the study focused on four research issues: the characteristics of KM strategies, factors influencing institutionalization of KM strategies, the processes of institutionalization and how AROs should institutionalize their KM strategies in practice.

5.1 Summary of Findings

The discussions presented in this chapter provide detailed findings guided by the overall research question: *How are KM strategies institutionalized in agricultural research organizations in East Africa.* The results and discussions are based on the specific research questions which the study sought to answer.

The first research question: *What are the characteristics of KM strategies in AROs in East Africa?* There were many findings. In previous studies, KM strategies have been examined as objects that organizations have or do not have, instead of scrutinizing their characteristics or relative quality and content. Over the years, AROs in East Africa have institutionalized KM strategies as part of the comprehensive strategic reforms program. Still, these efforts have not produced expected results, partly due to a lack of methodical examination of KM strategies' content. In line with this, the study applied a novel empirical examination and has presented explanations on the key characteristics of KM strategies in AROs in East Africa, in terms of what exists, what does not exist and why.

Additionally, it has identified the critical gaps in these strategies and elucidated what AROs in East Africa should do differently to coherently formulate and ensure the quality content of KM strategies in practice as part of the institutionalization process. The study found out that the main characteristics of KM strategies in AROs in East Africa are: well-formulated, technology-focus, alignment, implementation process and

value proposition. While the characteristics existed in KM strategies in the AROs in East Africa, there are cases where some of the characteristics were lacking in some strategies. For instance, it was established that in cases where value proposition characteristic was lacking, the main reason was due to unbalanced interests in strategy formulation between the demands from external stakeholders and internal needs. External demands came in the form of cognitive, normative and regulative pressures.

From the second research question: *What factors influence institutionalization of KM strategies in AROs in East Africa*, there were many findings.

The extent of adoption, implementation and entrenchment of KM strategies varies among the AROs in East Africa. Further, this variation is also seen at country level. This could be explained by the factors influencing institutionalization of KM strategies among AROs in the region.

Concerning the extent of adoption, which is the level of acceptance to use KM strategies, it appears that most AROs have been not quite acceptable to use the strategies with an overall average level of 43.6%. Tanzania is leading at 52% at the specific country level, while Kenya and Uganda are at 50% and 48%, respectively. Regarding how the KM strategies have been put into practical use (implementation), there were higher levels across the three East African countries at an average of 55%. Nevertheless, it can be seen that AROs need to do a lot to ensure that KM strategies are put into effective practical use to realize the intended goal. At the individual country level, Tanzania appears to be above the other two countries at a 64% level of implementation compared to Kenya and Uganda, both at 60%. On the extent to which AROs have entrenched or put their KM strategies into widespread and persistent use, the overall level is lower than that of implementation but higher than that of adoption across the three East Africa countries at an average of 45.9%. For specific countries, Tanzania has the highest entrenchment level at 60%, whereas Kenya and Uganda are 58% and 56%. Therefore, it appears that AROs in East African countries where the study was conducted have been putting their KM strategies into use, but the espoused practices have not been fully accepted due to some factors.

Institutional pressures (cognitive, normative and regulative) were confirmed to influence adoption, implementation and entrenchment of KM strategies in AROs in East Africa. It is worth noting that all the indicators of cognitive, normative and regulative pressures, namely: uncertainty; perceived success; the prevalence of a practice; professionalism; relationship within the network; stakeholders' expectations; regulatory requirements and resource dependence are all significant in explaining the factors influencing institutionalization of KM strategies in AROs in East Africa. The factors influence the strategic decision-making process of AROs, which in turn influences institutionalization of KM strategies. This relationship is further moderated by organizational leadership, which tends to enhance the relationship. Other emerging factors are ICT adaptation and the quality of the strategy content. These two factors had not been conceptualized initially but emerged from qualitative data.

This study also established that the extent of adoption, implementation and entrenchment varied from one country to another among the three East Africa countries of Tanzania, Kenya and Uganda. A summary is shown in Table 31. Tanzania had a high level of adoption, implementation and entrenchment compared to Kenya and Uganda. For the case of Tanzania, the ongoing institutional change in most sectors including agriculture is one possible reason for high level of institutionalization of KM strategies in AROs in the country. Other studies have provided empirical evidence showing that policy reforms are contributing to the positive changes in organizations in Tanzania (Trulsson, 2017). From institutional context in Tanzania, the author argues that policy reforms are essential for institutionalization of policies. In this context, it is possible that the institutional change driven by policy reforms has contributed to the high level institutionalization of KM strategies in AROs in Tanzania.

Table 31: The extent of institutionalization of KM strategies in the three East Africa countries

The extent of institutionalization	Tanzania	Kenya	Uganda
Adoption	52%	50%	48%
Implementation	64%	60%	60%
Entrenchment	60%	58%	56%
Overall institutionalization	60%	58%	52%

As shown in Table 31, despite evidence that the strategies have been implemented and put into wide use, practice adoption remained low. External pressures may have contributed to a higher extent of implementation and entrenchment of KM strategies regardless of the extent of users' acceptance. This claim is supported by findings of other previous studies (Leeuwis et al., 2018; Banerjee et al., 2019). Therefore, AROs in East Africa might have implemented KM strategies, but the activities involved in the espoused practices are not applied in the actual setting.

For research question three: *what the processes of institutionalization of KM strategies in AROs in East Africa are*, a number of findings were established. Five processes were arrived at, namely: initiation, adoption, implementation, entrenchment and end-of-Strategy life. The first and the last processes have not been discussed in extant literature but emerged from qualitative data. The comprehensive framework that emerged from the study can explain the relationships among these processes to institutionalize KM strategies in AROs in East Africa. The institutionalization processes focus more on actual activities and practices involved in different stages of institutionalization and highlight the importance of linking process analysis to context. This ensures that all the institutionalization processes of KM strategies are identified, described and explained, and provides evidence that the extant literature gap is bridged.

It is important to note that a number of concepts, themes and the relationships between the processes have been identified and explained. While extant literature has discussed institutionalization processes to include adoption, implementation, and entrenchment, this study derived initiation and end-strategy life processes as two key new institutionalization processes of KM strategies in AROs.

For research question four: *how should AROs in East Africa institutionalize KM strategies in practice? A* number of findings were established. This question's results are based on the realization that AROs in East Africa face practical limitations and challenges concerning institutionalization of KM strategies. Over time, AROs in East Africa have institutionalized KM strategies as part of their broad strategic reform agenda, but these efforts have not produced the expected results and desired goals. Effective institutionalization requires AROs to change their approaches and pay attention to eight critical considerations.

It was further established that the process of institutionalizing KM strategies needs to go through instigation, management support and contextualization. During instigation, the initial processes are established, including understanding the users' needs, clarity of processes, and participatory planning meetings. Management support is important for obtaining buy-in from the organizational leadership and identification of change agents.

Contextualization ensures strategic alignment, collaboration and institutional change are achieved. Similarly, AROs should ensure that KM strategy formulation is coherent, adequate resources are provided, champion leaders engaged, proactive approaches are devised, top management supported is obtained, KM strategy is contextualized, communication is embedded into the strategy, and the office of KM is established and required support provided. The considerations are summarized from the suggestions and emerging ideas are derived mainly from the domain experts in AROs in East Africa. This is mainly drawn from their experience with regard to the problems facing the effective institutionalization of KM strategies. It is worth noting that the proposed considerations are contextualized and practically generated from expressed thoughts of practitioners of the strategies.

While there may be no standardized recommendations or approaches to institutionalization of KM strategies for different organizations and contexts, the considerations provide practical directions on the areas AROs should observe and consider while institutionalizing KM strategies. Thus, these recommendations form a

theoretical basis for current and future institutionalization of KM strategies in organizations.

5.2 Conclusions

While researchers and practitioners in the IS domain have recognized the contribution of KM strategies to organizations, the extent of institutionalization of KM strategies in AROs in East Africa needs to improve to ensure that KM strategies' envisioned benefits are fully realized. As this study has shown, the overall extent of adoption, implementation, and entrenchment of KM strategies in AROs in East Africa ranges between 48% to 64%. These values indicate low and moderate levels of institutionalization. With this extent of institutionalization of KM strategies, AROs in East Africa are not benefiting as much as they could from the investments in KM strategies. Several factors contribute to the challenges faced by AROs in East Africa to institutionalize KM strategies effectively. Unfortunately, scholars have not focused on specific aspects of practice, process and context. Therefore, this study has paid adequate attention to these areas and further explored the ideas of adoption, implementation and entrenchment, and analyzed their inter-relationships. It is, therefore, clear that this has reduced this widening gap in extant literature.

While most KM strategies adopted by AROs in East Africa are externally driven or developed, these organizations have started to appreciate KM strategies' value and benefits. This can be concluded because the levels of implementation and entrenchment in AROs in all the East African countries are higher than those of adoption. External factors mainly drive adoption in the form of mimetic/cognitive, normative and regulative/coercive pressures. For instance, on the one hand, the donors and oversight organizations' requirements play a key role in influencing the adoption of the strategies. On the other hand, implementation and entrenchment are mainly driven by local players in these organizations. The strategic decision-makers need to focus on internal requirements and other contextual factors to formulate and adopt KM strategies. This study found out that internal factors also need to be considered, such as adopting ICTs to suit the institutionalized strategy. Management-related factors

such as strategic decision making and organizational leadership play a critical role over and above other internal/contextual factors, and therefore, they also need to be considered. Thus, both external and internal factors need to be considered in the strategic decision-making process of AROs in East Africa to institutionalize KM strategies.

Over and above the three processes of adoption, implementation, and entrenchment for institutionalization of KM strategies, this study found two new processes. These are initiation and end-of-strategy life. The initiation process is where a new strategy is formulated, or an existing one is re-formulated, then birthed or re-birthed. The end-strategy life process involves discontinuation of the strategy leading to feedback to the initiation process of the next cycle of strategic planning. In addition, the study developed activities and practices for each of the five processes. The study also established the linkage between and among processes. Therefore, it can be concluded that the KM strategy institutionalization process is both sequential and cyclic. AROs need to consider the cyclic nature of this process by taking into account feedback from the previous KM strategy and experience from its institutionalization. The activities and practices of each process need to be considered to make the institutionalization process more effective.

Consequently, this study's findings can contribute feedback for further refinement of the institutionalization process, leading to better results for the AROs in East Africa. Additionally, this study has provided sufficient and more profound articulation of external and internal factors influencing institutionalization of KM strategies from practice and context perspectives. This approach of linking a process analysis to a context with a specific focus on an organizational level analysis has expanded institutional theory's theorization. It further shows how theorization affects the formation of KM practices such as KM strategies through specification and justification of the key concepts. For instance, this study has successfully established KM strategies' key characteristics and recommended actions on the gaps, the main influencing factors, processes, and considerations for effective institutionalization of

KM strategies using AROs in East Africa as the context. With these, the organizations can evaluate their KM strategies further.

5.3 Research Contributions

This section covers contributions to theory, methodology, practice and policy.

5.3.1 Theoretical contributions

There are three main theoretical contributions derived from this study. The first is the conceptual framework shown in Figure 6 derived from literature and theoretical concepts from three dominant theories adopted in this study. The conceptual framework provides a theoretical foundation for identifying factors influencing institutionalization of KM strategies, studying the extent of institutionalization and the processes involved. This framework provides the theoretical descriptions and explanations of the key variables for examining the influencing factors, the different processes and the extent of institutionalization of KM strategies in AROs in the East African context. The framework also visually shows tested and confirmed relationships among the variables. The framework is also developed in a given context-AROs in East Africa- where a better implementation of KM strategies is required. Therefore, the conceptual framework can be used as a logical analytical and sensitizing device that integrates several concepts, variables and context (Kumar & Rao, 2015; Shad *et al.,* 2019).

The second theoretical contribution is a novel empirical description and an explanation of key characteristics of KM strategies in AROs in East Africa, as presented in Figure 11. The characteristics of KM strategies have not been studied exhaustively in the study context. Each characteristic has been linked with key concepts that can be used to identify these characteristics in a given KM strategy. These characteristics and their concepts can also be used to evaluate the relative quality of a KM strategy. This framework can be used for analyzing KM strategy problems experienced by organizations. Particularly, KM strategy's content/formulation, context/alignment, technology focus, implementation and impact.

The third theoretical contribution is a new model/framework for understanding the processes involved in the institutionalization of KM strategies and how they relate to each other, as shown in Figure 20 in Chapter Four. In previous studies, institutionalization has been presented as a sequence of three processes, namely adoption, implementation and entrenchment. This study has gone a step further to show that institutionalization consists of five processes and also cyclic in nature. The five processes are initiation, adoption, implementation, entrenchment and end-of-strategy life. Feedback from end-of-strategy life is used to inform the initiation process of the next version of KM strategy; hence, the cyclic nature. The framework contains activities and practices for each of the processes. It also shows relationships among the processes. This framework is important as it provides a reference for a better understanding of the KM strategy institutionalization process. It also supports using previous experiences and lessons to inform new KM strategy formulation and execution. This is especially important to KM strategy practitioners such as KM officers, organizational executives, KM monitoring and evaluation officers and communication officers, among others.

5.3.2 Methodological contribution

This study used mixed methods research to identify and integrate the various approaches for data collection and analysis. While the mixed-methods approach can help a study develop rich insights into the phenomena of interest that a single method cannot comprehensively comprehend, in the IS domain, there is a dearth of studies that have adopted mixed methods (Venkatesh et al., 2013; 2016). This is because scholars have largely ignored the benefits and repeated calls for studies to adopt mixed methods. Studies show that combining multiple methods is challenging to many IS scholars, mainly due to paradigmatic or philosophical assumptions (Venkatesh et al., 2016). However, methodological combinations in a single study can be achieved. The use of mixed-method proved a success for this study and allowed the research questions to remain the study's central epistemological and ontological element (Saunders et al., 2012; Scott, 2016). The use of multiple methods enabled a deeper understanding of the phenomena under investigation by not focusing on antecedent

conditions but allowed facts and concerns to arise from the context. The use of multiple data sources enabled the triangulation of the data and substantiation of research findings. This approach enabled this study to provide theoretically plausible findings to the research questions. It also provided the study with the opportunity to gain rich insights that enabled the development of novel theoretical and conceptual perspectives, as shown in the conceptual framework and models for research questions one to three and the prescriptive model for question four. The use of multiple data analysis techniques: Regression analysis, Factor analysis, Structural Equation Modelling, and Content analysis is a plausible methodological contribution.

5.3.3 Contribution to policy

Identifying suggestions and emerging ideas on what AROs should do differently is an important contribution to policy. The twenty-nine suggestions, nine emerging ideas and eight considerations. The emerging ideas could act as a base for analyzing how organizations in developing countries institutionalize their KM strategies. These suggestions, ideas, and considerations can be used as policy guidelines or recommendations on how to institutionalize KM strategies. In the area agriculture sector, there is a shortage of policies on KM strategies in AROs in East Africa. Therefore, there is a need to develop policy briefs on the same. The use of these suggestions, ideas and considerations can bring standardization to enable comparison among organizations that are institutionalizing KM strategies.

5.3.4 Practical contribution

In the past, KM strategy has been examined as objects that organizations have or do not have, without sufficient scrutiny of their practical content and relative quality. This study collected data from KM strategy practitioners and domain experts, which contributes to the practical nature of the work. This can help practitioners identify gaps and their effects on institutionalization of the strategies in a practical setting.

Secondly, this study has highlighted the importance of understanding the key characteristics of KM strategies and their relationships, which can feed the strategy formulation process. This is important for addressing practical challenges such as

unbalanced interests between external stakeholders and internal users. The idea of linking the study outcome to an empirical situation is slightly different and advanced in scope compared to what is currently found in extant literature.

5.4 Limitations of the study

This study has mainly focused on agricultural research organizations in the context of three East African countries. This context may have limited the findings due to commonality in operations and nature of establishment; hence their understanding and perceptions might be skewed in a specific direction. For example, the study took place in some organizations which have centers in each of the three countries. Future studies comparing the findings and contributions could uncover new interesting contributions and improve understanding of these contextual findings.

The use of mixed methods was permitted by the paradigm chosen. This was important in answering the research questions. However, all paradigms have limitations. Purely quantitative or purely qualitative methods could have different results. Therefore, using a different paradigm could elicit new insights that could have been missed due to paradigm limitations.

This study had two sets of questionnaires for research question two, where one tested the independent variables and the moderating variables directly. In contrast, the other tested the variables indirectly (see Appendix 4 and 5). While the questionnaire that asked direct questions on the independent and moderating variables could have introduced biases in responses, both questionnaires were analyzed independently, and the results showed the same pattern. However, future studies can carry out a more detailed analysis to test these results further. The results for the direct and indirect effects of all the variables are compared and presented. A summarized path diagram is shown in Appendix 7.

5.5 Recommendations

This study has identified some areas that scholars and practitioners can examine further concerning institutionalization of KM strategies as listed below:

This study's literature analysis established a lack of research or relevant literature on this topic. This study also noted that the subject had not attracted many studies over the years except in 2015. Equally, practitioners lack the necessary insight to recommend possible solutions to the challenges facing institutionalization of KM strategies. While this study has substantially addressed this widening gap in the literature, a single study cannot sufficiently address all the gaps. Therefore, future studies should try to find out why there is less research on the institutionalization of KM strategies and if this is related to the challenges organizations face in the field. Unpublished reports also indicate that while KM and KM strategies are fundamental to organizations, not much literature exists to illustrate how organizations have institutionalized KM strategies. This can be both theoretical and empirical research.

This study has addressed some of the concerns stating that KM strategy-related research has not paid attention to the practical issues that affect their day-to-day execution. This is in line with findings by Peppard et al. (2014), Handzic (2017), and Merkus et al. (2019). However, there are still gaps to be addressed. Although the findings from this study are numerous, as can be seen in Chapter Four, new research studies can uncover more empirical results based on the evidence presented in this study. This can improve the day-to-day execution of KM strategies.

On examining characteristics of KM strategies, this study's findings revealed key concepts, themes, and characteristics that form a theoretical and empirical basis for future studies. However, future studies should use the concepts presented in this study to develop and test a theoretical framework for analyzing the characteristics of KM strategies. The study also developed an overall conceptual framework with the key concepts at play in the institutionalization of KM strategies. There is a need for future studies to test further, assess, and evaluate these frameworks in different areas and dimensions. This can help in advancing knowledge in this area, which is already in need of more research.

This study has identified several gaps concerning institutionalization of KM strategies from the context of developing countries. A comparative study between developing

countries and developed countries or other sectors may help identify new concepts that may not have been included in this study. For instance, the factors influencing adoption, implementation, and entrenchment might not be the same in their own right. This is because adoption, which should precede implementation and entrenchment, is expected to be highest. However, in this study, it has the lowest presence. This could be because factors related to acceptance of KM strategies before they are implemented and subsequently entrenched have not been paid adequate attention. Therefore, there is a need to isolate the factors at different levels of institutionalization. The country context also needs to be considered in this process due to variation in the extent of adoption, implementation and entrenchment among Kenya, Uganda and Tanzania. This suggests that the strategic decision process of AROs in East Africa is key in ensuring the successful institutionalization of KM strategies through their actions, practices, and experience in strategy development and execution processes. There is, therefore, a need for the strategic decision-makers of AROs in East Africa to make the right decisions, take appropriate actions and acquire the right experience.

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Appendix 1: Refined Factor Loading

Factor	Normative	Uncertainty and Institutionalization of KM strategies (IKMS)	Cognitive: Perceived Success & Prevalence of Practice	Management: Organization Leadership & Top Management support	Regulative: Resource Dependency	Regulative: Mandate	Uniqueness
UN1	0.16	0.69	0.22	0.07	0.04	0.00	0.44
UN2	0.06	0.75	0.16	0.04	0.02	0.00	0.40
UN3	0.25	0.49	0.16	0.16	0.17	0.08	0.62
UN4	0.28	0.61	0.19	0.12	0.09	0.01	0.49
UN6	0.11	0.57	0.15	0.03	0.03	0.02	0.64
UN7	0.23	0.51	0.18	0.02	0.02	0.04	0.65
UN10	0.41	0.50	0.19	0.20	0.07	0.02	0.50
PS1	0.38	0.48	0.31	0.09	0.08	-0.03	0.51
PS2	0.05	0.23	0.43	-0.07	0.22	-0.04	0.71
PS3	0.29	0.27	0.54	0.11	0.15	-0.05	0.52
PS4	0.29	0.26	0.49	0.09	0.15	-0.08	0.57
PS5	0.37	0.27	0.45	0.15	0.11	-0.07	0.55
PS6	0.30	0.20	0.55	0.19	0.21	-0.01	0.48
PS8	0.19	0.17	0.64	0.07	0.13	0.06	0.50
PS9	0.00	0.21	0.51	-0.08	0.26	-0.06	0.62
PP1	0.15	0.21	0.67	0.11	0.08	0.08	0.46
PP2	0.20	0.19	0.67	0.08	0.12	0.12	0.43
PP3	0.36	0.25	0.49	0.15	0.05	0.15	0.52

PP4	0.20	0.18	0.57	0.12	0.08	0.20	0.55
PP5	0.21	0.14	0.68	0.16	0.06	0.19	0.41
PP6	0.17	0.13	0.66	0.12	0.08	0.21	0.46
PP7	0.19	0.13	0.63	0.15	0.07	0.18	0.49
PF1	0.62	0.21	0.22	0.26	0.08	0.11	0.44
PF2	0.71	0.23	0.16	0.28	0.12	0.08	0.32
PF3	0.65	0.28	0.22	0.21	0.11	0.11	0.39
PF4	0.69	0.25	0.16	0.22	0.10	0.09	0.37
PF5	0.53	0.22	0.34	0.16	0.15	0.05	0.51
PF6	0.69	0.12	0.24	0.28	0.15	0.10	0.34
PF7	0.69	0.16	0.24	0.17	0.16	0.07	0.38
PF8	0.63	0.19	0.21	0.19	0.23	0.03	0.43
PF9	0.59	0.15	0.24	0.22	0.24	0.10	0.46
PF10	0.64	0.13	0.18	0.24	0.22	0.08	0.44
NA1	0.37	0.15	0.43	0.22	0.13	0.27	0.52
NA3	0.38	0.11	0.45	0.19	0.17	0.27	0.51
NA4	0.50	0.10	0.37	0.22	0.13	0.30	0.45
NA5	0.51	0.11	0.31	0.28	0.18	0.31	0.43
NA6	0.47	0.11	0.37	0.21	0.18	0.28	0.47
EP1	0.53	0.15	0.22	0.25	0.19	0.28	0.48
EP2	0.52	0.08	0.19	0.26	0.25	0.30	0.47
EP4	0.45	0.09	0.26	0.22	0.27	0.22	0.56
MA1	0.27	0.14	0.31	0.19	0.29	0.48	0.46
MA2	0.34	0.11	0.20	0.25	0.29	0.47	0.46
MA3	0.37	0.10	0.17	0.27	0.30	0.51	0.40
MA4	0.35	0.08	0.21	0.29	0.25	0.53	0.41
MA5	0.16	0.09	0.17	0.15	0.41	0.39	0.60

MA6	0.15	0.02	0.14	0.25	0.51	0.33	0.52
RD1	0.31	0.04	0.10	0.33	0.58	0.12	0.43
RD2	0.30	0.05	0.13	0.25	0.65	0.11	0.40
RD3	0.28	0.06	0.21	0.23	0.53	0.23	0.48
RD4	0.09	0.04	0.21	0.18	0.62	0.07	0.52
RD5	0.17	0.11	0.26	0.21	0.58	0.07	0.51
RD6	0.16	-0.01	0.18	0.30	0.63	0.06	0.45
OL1	0.24	0.09	0.11	0.60	0.22	0.17	0.48
OL2	0.26	0.09	0.12	0.61	0.22	0.21	0.45
OL3	0.26	0.08	0.16	0.57	0.23	0.20	0.49
OL4	0.31	0.09	0.18	0.53	0.20	0.23	0.50
TMS1	0.27	0.04	0.09	0.57	0.43	-0.02	0.41
TMS2	0.15	-0.09	0.05	0.52	0.40	0.05	0.54
TMS3	0.17	0.06	0.10	0.70	0.13	0.05	0.44
TMS4	0.23	0.07	0.10	0.77	0.16	0.06	0.30
TMS5	0.27	0.07	0.11	0.75	0.15	0.05	0.33
TMS6	0.20	0.11	0.08	0.72	0.12	0.05	0.41
IKM1	0.27	0.63	0.15	0.08	0.05	0.02	0.50
IKM2	0.05	0.74	0.16	0.04	0.04	0.00	0.42
IKM3	0.07	0.77	0.12	0.02	0.06	0.03	0.39
IKM4	0.04	0.76	0.10	0.01	0.03	0.10	0.40
IKM5	0.14	0.74	0.13	0.05	0.02	0.10	0.40
IKM6	0.06	0.74	0.08	0.00	-0.02	0.08	0.43
IKM7	-0.01	0.77	0.09	0.02	-0.03	0.08	0.38
Variance	**8.77**	**7.78**	**7.09**	**6.09**	**4.42**	**2.47**	
Proportion	**0.24**	**0.21**	**0.19**	**0.17**	**0.12**	**0.07**	

Uncertainity

Principal factor analysis

Factor	Eigenvalue	Difference	Proportion	Cumulative
Factor1	4.69959	3.59712	0.4700	0.4700
Factor2	1.10246	0.25216	0.1102	0.5802
Factor3	0.85030	0.18649	0.0850	0.6652
Factor4	0.66381	0.02382	0.0664	0.7316
Factor5	0.63999	0.12262	0.0640	0.7956
Factor6	0.51737	0.09669	0.0517	0.8474
Factor7	0.42068	0.01763	0.0421	0.8894
Factor8	0.40305	0.03742	0.0403	0.9297
Factor9	0.36563	0.02853	0.0366	0.9663
Factor10	0.33710	.	0.0337	1.0000

LR test: independent vs. saturated: chi2(45) = 4129.71 Prob>chi2 = 0.0000

Factor 1 & Factor 2 have a minimum eigenvalue of 1

Variable	Factor1	Factor2	Uniqueness
UN1	0.7165	-0.3489	0.3650
UN2	0.7128	-0.4334	0.3040
UN3	0.7063	0.0094	0.5010
UN4	0.8062	-0.0775	0.3441
UN5	0.6322	0.0857	0.5929
UN6	0.6690	-0.2619	0.4838
UN7	0.6799	-0.0359	0.5365
UN8	0.4815	0.6371	0.3622
UN9	0.6395	0.5302	0.3099
UN10	0.7608	0.1502	0.3985

Rotation

Factor	Variance	Difference	Proportion	Cumulative
Factor1	3.55861	1.31518	0.3559	0.3559
Factor2	2.24344	.	0.2243	0.5802

LR test: independent vs. saturated: chi2(45) = 4129.71 Prob>chi2 = 0.0000

Variable	Factor1	Factor2	Uniqueness
UN1	0.7885	0.1152	0.3650
UN2	0.8331	0.0433	0.3040
UN3	0.5783	0.4056	0.5010
UN4	0.7098	0.3900	0.3441
UN5	0.4742	0.4269	0.5929
UN6	0.7003	0.1604	0.4838
UN7	0.5820	0.3533	0.5365
UN8	0.0391	0.7977	0.3622
UN9	0.2299	0.7983	0.3099
UN10	0.5441	0.5526	0.3985

Factor rotation matrix

	Factor1	Factor2
Factor1	0.8263	0.5632
Factor2	-0.5632	0.8263

The first factor explains more variation

Scoring for uncertainty

Scoring coefficients (method = regression; based on varimax rotated factors)

Variable	Factor1	Factor2
UN1	0.30419	-0.17562
UN2	0.34675	-0.23943
UN3	0.11937	0.09172
UN4	0.18135	0.03851
UN5	0.06740	0.13998
UN6	0.25141	-0.11611
UN7	0.13788	0.05458
UN8	-0.24081	0.53524
UN9	-0.15840	0.47404
UN10	0.05704	0.20377

Perceived success

Factor	Eigenvalue	Difference	Proportion	Cumulative
Factor1	4.76605	3.79808	0.4766	0.4766
Factor2	0.96796	0.14250	0.0968	0.5734
Factor3	0.82546	0.15687	0.0825	0.6559
Factor4	0.66859	0.09697	0.0669	0.7228
Factor5	0.57162	0.07312	0.0572	0.7800
Factor6	0.49850	0.00403	0.0499	0.8298
Factor7	0.49447	0.04146	0.0494	0.8793
Factor8	0.45301	0.04262	0.0453	0.9246
Factor9	0.41039	0.06645	0.0410	0.9656
Factor10	0.34394	.	0.0344	1.0000

LR test: independent vs. saturated: chi2(45) = 3997.00 Prob>chi2 = 0.0000

Variable	Factor1	Uniqueness
PS1	0.6559	0.5698
PS2	0.5675	0.6779
PS3	0.7669	0.4119
PS4	0.7481	0.4404
PS5	0.7607	0.4213
PS6	0.7854	0.3831
PS7	0.6508	0.5765
PS8	0.7031	0.5056
PS9	0.5928	0.6485
PS10	0.6333	0.5989

Scoring for perceived success

Scoring coefficients (method = regression; based on varimax rotated factors)

Variable	Factor1
PS1	0.13763
PS2	0.11907
PS3	0.16091
PS4	0.15696
PS5	0.15961
PS6	0.16479
PS7	0.13655
PS8	0.14753
PS9	0.12439
PS10	0.13288

Prevalence of a Practice

Factor	Eigenvalue	Difference	Proportion	Cumulative
Factor1	3.78816	3.56602	1.0443	1.0443
Factor2	0.22215	0.14533	0.0612	1.1056
Factor3	0.07681	0.13105	0.0212	1.1268
Factor4	-0.05424	0.05059	-0.0150	1.1118
Factor5	-0.10483	0.03293	-0.0289	1.0829
Factor6	-0.13775	0.02522	-0.0380	1.0449
Factor7	-0.16297	.	-0.0449	1.0000

LR test: independent vs. saturated: chi2(21) = 3773.00 Prob>chi2 = 0.0000

Factor loadings (pattern matrix) and unique variances

Variable	Factor1	Factor2	Factor3	Uniqueness
PP1	0.7056	0.2855	-0.0368	0.4192
PP2	0.7474	0.2583	-0.0373	0.3733
PP3	0.6627	0.0154	0.1700	0.5317
PP4	0.7049	-0.1022	0.1599	0.4672
PP5	0.7984	-0.1166	-0.0320	0.3479
PP6	0.7677	-0.1543	-0.1061	0.3756
PP7	0.7542	-0.1607	-0.0856	0.3980

```
     Factor   |   Variance   Difference       Proportion   Cumulative
   ----------+---------------------------------------------------------
    Factor1   |    1.80103     0.30313           0.4965       0.4965
    Factor2   |    1.49790     0.70972           0.4129       0.9095
    Factor3   |    0.78818        .              0.2173       1.1268
```

LR test: independent vs. saturated: chi2(21) = 3773.00 Prob>chi2 = 0.0000

Rotated factor loadings (pattern matrix) and unique variances

```
    Variable  |  Factor1   Factor2   Factor3   |  Uniqueness
   -----------+--------------------------------+------------
        PP1   |   0.3144    0.6522    0.2378    |   0.4192
        PP2   |   0.3592    0.6561    0.2593    |   0.3733
        PP3   |   0.3636    0.3788    0.4388    |   0.5317
        PP4   |   0.4680    0.3141    0.4638    |   0.4672
        PP5   |   0.6203    0.3931    0.3359    |   0.3479
        PP6   |   0.6538    0.3585    0.2615    |   0.3756
        PP7   |   0.6401    0.3417    0.2748    |   0.3980
```

Factor rotation matrix

```
              |  Factor1   Factor2   Factor3
   -----------+-------------------------------
    Factor1   |   0.6708    0.5992    0.4370
    Factor2   |  -0.6110    0.7805   -0.1324
    Factor3   |  -0.4204   -0.1782    0.8897
```

Scoring for prevalence of a practice (regression scoring)

```
    Variable  |   Factor1    Factor2    Factor3
   -----------+----------------------------------
        PP1   |  -0.11270    0.40788   -0.03016
        PP2   |  -0.09446    0.43641   -0.02399
        PP3   |  -0.03292    0.04285    0.28330
        PP4   |   0.05634   -0.05743    0.33124
        PP5   |   0.28301   -0.01009    0.07654
        PP6   |   0.34991   -0.03314   -0.06232
        PP7   |   0.31830   -0.04770   -0.01915
```

Professionalism

Factor	Eigenvalue	Difference	Proportion	Cumulative
Factor1	6.33696	5.58397	0.6337	0.6337
Factor2	0.75298	0.19466	0.0753	0.7090
Factor3	0.55832	0.13109	0.0558	0.7648
Factor4	0.42723	0.04803	0.0427	0.8075
Factor5	0.37920	0.02824	0.0379	0.8455
Factor6	0.35096	0.02155	0.0351	0.8806
Factor7	0.32940	0.01902	0.0329	0.9135
Factor8	0.31038	0.01215	0.0310	0.9445
Factor9	0.29823	0.04188	0.0298	0.9744
Factor10	0.25635	.	0.0256	1.0000

LR test: independent vs. saturated: chi2(45) = 7135.39 Prob>chi2 = 0.0000

Factor loadings (pattern matrix) and unique variances

Variable	Factor1	Uniqueness
PF1	0.7740	0.4009
PF2	0.8318	0.3080
PF3	0.8023	0.3563
PF4	0.8087	0.3460
PF5	0.7232	0.4770
PF6	0.8375	0.2986
PF7	0.8188	0.3295
PF8	0.7999	0.3602
PF9	0.7767	0.3967
PF10	0.7812	0.3898

Rotation of factors

Factor	Variance	Difference	Proportion	Cumulative
Factor1	6.33696	.	0.6337	0.6337

LR test: independent vs. saturated: chi2(45) = 7135.39 Prob>chi2 = 0.0000

Rotated factor loadings (pattern matrix) and unique variances

Variable	Factor1	Uniqueness
PF1	0.7740	0.4009
PF2	0.8318	0.3080
PF3	0.8023	0.3563
PF4	0.8087	0.3460
PF5	0.7232	0.4770
PF6	0.8375	0.2986
PF7	0.8188	0.3295
PF8	0.7999	0.3602
PF9	0.7767	0.3967
PF10	0.7812	0.3898

Scoring for professionalism

```
Scoring coefficients (method = regression; based on varimax rotated factors)
```

Variable	Factor1
PF1	0.12215
PF2	0.13127
PF3	0.12661
PF4	0.12762
PF5	0.11412
PF6	0.13216
PF7	0.12922
PF8	0.12622
PF9	0.12257
PF10	0.12327

Network/Association

Factor	Eigenvalue	Difference	Proportion	Cumulative
Factor1	4.32672	3.65635	0.6181	0.6181
Factor2	0.67037	0.13335	0.0958	0.7139
Factor3	0.53702	0.08471	0.0767	0.7906
Factor4	0.45231	0.03875	0.0646	0.8552
Factor5	0.41356	0.09828	0.0591	0.9143
Factor6	0.31528	0.03054	0.0450	0.9593
Factor7	0.28473	.	0.0407	1.0000

```
LR test: independent vs. saturated:  chi2(21) = 3861.67 Prob>chi2 = 0.0000
```

```
Factor loadings (pattern matrix) and unique variances
```

Variable	Factor1	Uniqueness
NA1	0.7649	0.4150
NA2	0.6585	0.5664
NA3	0.7955	0.3671
NA4	0.8325	0.3069
NA5	0.8070	0.3487
NA6	0.8200	0.3276
NA7	0.8115	0.3415

Rotation

Scoring for network(regression)

```
Scoring coefficients (method = regression; based on varimax rotated factors)
```

Variable	Factor1
NA1	0.17678
NA2	0.15220
NA3	0.18386
NA4	0.19241
NA5	0.18652
NA6	0.18952
NA7	0.18755

Mandate

Factor	Eigenvalue	Difference	Proportion	Cumulative
Factor1	3.62034	2.91588	0.6034	0.6034
Factor2	0.70447	0.20147	0.1174	0.7208
Factor3	0.50299	0.02369	0.0838	0.8046
Factor4	0.47930	0.08971	0.0799	0.8845
Factor5	0.38959	0.08629	0.0649	0.9494
Factor6	0.30330	.	0.0506	1.0000

LR test: independent vs. saturated: chi2(15) = 2779.79 Prob>chi2 = 0.0000

Factor loadings (pattern matrix) and unique variances

Variable	Factor1	Uniqueness
MA1	0.7761	0.3977
MA2	0.7980	0.3632
MA3	0.8229	0.3229
MA4	0.8252	0.3191
MA5	0.7200	0.4816
MA6	0.7105	0.4952

Rotation

Factor	Variance	Difference	Proportion	Cumulative
Factor1	3.62034	.	0.6034	0.6034

LR test: independent vs. saturated: chi2(15) = 2779.79 Prob>chi2 = 0.0000

Rotated factor loadings (pattern matrix) and unique variances

Variable	Factor1	Uniqueness
MA1	0.7761	0.3977
MA2	0.7980	0.3632
MA3	0.8229	0.3229
MA4	0.8252	0.3191
MA5	0.7200	0.4816
MA6	0.7105	0.4952

Factor rotation matrix

	Factor1
Factor1	1.0000

Scoring for mandate

Scoring coefficients (method = regression; based on varimax rotated factors)

Variable	Factor1
MA1	0.21437
MA2	0.22042
MA3	0.22729
MA4	0.22792
MA5	0.19887
MA6	0.19626

Resource Dependency

Factor	Eigenvalue	Difference	Proportion	Cumulative
Factor1	3.65434	2.94255	0.6091	0.6091
Factor2	0.71179	0.19628	0.1186	0.7277
Factor3	0.51551	0.08843	0.0859	0.8136
Factor4	0.42708	0.04628	0.0712	0.8848
Factor5	0.38080	0.07032	0.0635	0.9483
Factor6	0.31048	.	0.0517	1.0000

LR test: independent vs. saturated: chi2(15) = 2854.56 Prob>chi2 = 0.0000

Factor loadings (pattern matrix) and unique variances

Variable	Factor1	Uniqueness
RD1	0.7805	0.3908
RD2	0.8120	0.3406
RD3	0.7687	0.4090
RD4	0.7617	0.4199
RD5	0.7673	0.4113
RD6	0.7912	0.3740

Rotation

Factor	Variance	Difference	Proportion	Cumulative
Factor1	3.65434	.	0.6091	0.6091

LR test: independent vs. saturated: chi2(15) = 2854.56 Prob>chi2 = 0.0000

Rotated factor loadings (pattern matrix) and unique variances

Variable	Factor1	Uniqueness
RD1	0.7805	0.3908
RD2	0.8120	0.3406
RD3	0.7687	0.4090
RD4	0.7617	0.4199
RD5	0.7673	0.4113
RD6	0.7912	0.3740

Factor rotation matrix

	Factor1
Factor1	1.0000

Scoring for resource dependency

Scoring coefficients (method = regression; based on varimax rotated factors)

Variable	Factor1
RD1	0.21359
RD2	0.22221
RD3	0.21036
RD4	0.20843
RD5	0.20996
RD6	0.21650

Strategic decision making

Factor	Eigenvalue	Difference	Proportion	Cumulative
Factor1	3.23282	2.57393	0.6466	0.6466
Factor2	0.65889	0.18350	0.1318	0.7783
Factor3	0.47539	0.10505	0.0951	0.8734
Factor4	0.37034	0.10780	0.0741	0.9475
Factor5	0.26255	.	0.0525	1.0000

LR test: independent vs. saturated: chi2(10) = 2458.34 Prob>chi2 = 0.0000

Factor loadings (pattern matrix) and unique variances

Variable	Factor1	Uniqueness
SDM1	0.8352	0.3025
SDM2	0.8539	0.2708
SDM3	0.8424	0.2904
SDM4	0.7108	0.4948
SDM5	0.7689	0.4087

Rotation

Factor	Variance	Difference	Proportion	Cumulative
Factor1	3.23282	.	0.6466	0.6466

LR test: independent vs. saturated: chi2(10) = 2458.34 Prob>chi2 = 0.0000

Rotated factor loadings (pattern matrix) and unique variances

Variable	Factor1	Uniqueness
SDM1	0.8352	0.3025
SDM2	0.8539	0.2708
SDM3	0.8424	0.2904
SDM4	0.7108	0.4948
SDM5	0.7689	0.4087

Factor rotation matrix

	Factor1
Factor1	1.0000

Scoring for SDM

Scoring coefficients (method = regression; based on varimax rotated factors)

Variable	Factor1
SDM1	0.25834
SDM2	0.26415
SDM3	0.26058
SDM4	0.21986
SDM5	0.23785

Organization leadership

Factor	Eigenvalue	Difference	Proportion	Cumulative
Factor1	3.27278	2.56800	0.6546	0.6546
Factor2	0.70478	0.25272	0.1410	0.7955
Factor3	0.45205	0.12708	0.0904	0.8859
Factor4	0.32497	0.07955	0.0650	0.9509
Factor5	0.24542	.	0.0491	1.0000

LR test: independent vs. saturated: chi2(10) = 2637.45 Prob>chi2 = 0.0000

Factor loadings (pattern matrix) and unique variances

Variable	Factor1	Uniqueness
OL1	0.8386	0.2968
OL2	0.8680	0.2465
OL3	0.8618	0.2573
OL4	0.8189	0.3294
OL5	0.6346	0.5973

Rotation

Factor	Variance	Difference	Proportion	Cumulative
Factor1	3.27278	.	0.6546	0.6546

LR test: independent vs. saturated: chi2(10) = 2637.45 Prob>chi2 = 0.0000

Rotated factor loadings (pattern matrix) and unique variances

Variable	Factor1	Uniqueness
OL1	0.8386	0.2968
OL2	0.8680	0.2465
OL3	0.8618	0.2573
OL4	0.8189	0.3294
OL5	0.6346	0.5973

Factor rotation matrix

	Factor1
Factor1	1.0000

Scoring for leadership

Scoring coefficients (method = regression; based on varimax rotated factors)

Variable	Factor1
OL1	0.25623
OL2	0.26523
OL3	0.26332
OL4	0.25022
OL5	0.19391

Management support

Factor	Eigenvalue	Difference	Proportion	Cumulative
Factor1	3.50194	2.94381	0.7004	0.7004
Factor2	0.55813	0.17490	0.1116	0.8120
Factor3	0.38323	0.07309	0.0766	0.8887
Factor4	0.31013	0.06356	0.0620	0.9507
Factor5	0.24657	.	0.0493	1.0000

LR test: independent vs. saturated: chi2(10) = 3032.85 Prob>chi2 = 0.0000

Factor loadings (pattern matrix) and unique variances

Variable	Factor1	Uniqueness
TMS1	0.7352	0.4595
TMS3	0.8325	0.3069
TMS4	0.8925	0.2034
TMS5	0.8667	0.2489
TMS6	0.8489	0.2794

Rotation

Factor	Variance	Difference	Proportion	Cumulative
Factor1	3.50194	.	0.7004	0.7004

LR test: independent vs. saturated: chi2(10) = 3032.85 Prob>chi2 = 0.0000

Rotated factor loadings (pattern matrix) and unique variances

Variable	Factor1	Uniqueness
TMS1	0.7352	0.4595
TMS3	0.8325	0.3069
TMS4	0.8925	0.2034
TMS5	0.8667	0.2489
TMS6	0.8489	0.2794

Factor rotation matrix

	Factor1
Factor1	1.0000

Scores for management

Scoring coefficients (method = regression; based on varimax rotated factors)

Variable	Factor1
TMS1	0.20994
TMS3	0.23773
TMS4	0.25487
TMS5	0.24749
TMS6	0.24240

Institutionalisation for KM

```
Factor analysis/correlation                    Number of obs    =      1,063
    Method: principal-component factors        Retained factors =          1
    Rotation: (unrotated)                      Number of params =          7
```

Factor	Eigenvalue	Difference	Proportion	Cumulative
Factor1	4.54365	3.88223	0.6491	0.6491
Factor2	0.66142	0.16656	0.0945	0.7436
Factor3	0.49487	0.10295	0.0707	0.8143
Factor4	0.39191	0.04597	0.0560	0.8703
Factor5	0.34594	0.03704	0.0494	0.9197
Factor6	0.30890	0.05559	0.0441	0.9638
Factor7	0.25331	.	0.0362	1.0000

```
    LR test: independent vs. saturated:  chi2(21) = 4397.47 Prob>chi2 = 0.0000
```

Factor loadings (pattern matrix) and unique variances

Variable	Factor1	Uniqueness
Section2iT~o	0.7276	0.4706
Section2iiT~	0.8221	0.3241
Section2iii~	0.8409	0.2928
Section2iv~i	0.8304	0.3105
Section2vT~i	0.8226	0.3233
Section2vi~s	0.7806	0.3906
Section2vi~o	0.8097	0.3444

Rotation

```
Factor analysis/correlation                    Number of obs    =      1,063
    Method: principal-component factors        Retained factors =          1
    Rotation: orthogonal varimax (Kaiser on)   Number of params =          7
```

Factor	Variance	Difference	Proportion	Cumulative
Factor1	4.54365	.	0.6491	0.6491

```
    LR test: independent vs. saturated:  chi2(21) = 4397.47 Prob>chi2 = 0.0000
```

Rotated factor loadings (pattern matrix) and unique variances

Variable	Factor1	Uniqueness
Section2iT~o	0.7276	0.4706
Section2iiT~	0.8221	0.3241
Section2iii~	0.8409	0.2928
Section2iv~i	0.8304	0.3105
Section2vT~i	0.8226	0.3233
Section2vi~s	0.7806	0.3906
Section2vi~o	0.8097	0.3444

Factor rotation matrix

	Factor1
Factor1	1.0000

Scores for IKM
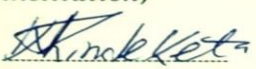
Scoring coefficients (method = regression; based on varimax rotated factors)

Variable	Factor1
Section2iT~o	0.16013
Section2iiT~	0.18094
Section2iii~	0.18508
Section2iv~i	0.18276
Section2vT~i	0.18104
Section2vi~s	0.17181
Section2vi~o	0.17821

Appendix 2: License to Conduct Research: NACOSTI

REPUBLIC OF KENYA

NATIONAL COMMISSION FOR SCIENCE, TECHNOLOGY & INNOVATION

Ref No: 232750

Date of Issue: **29/August/2019**

RESEARCH LICENSE

This is to Certify that Mr.. **Boniface Akuku** of University of Nairobi, has been licensed to conduct research in Nairobi on the topic: **Institutionalization of Knowledge Management Strategies in Agricultural Research Organizations in East Africa. for the period ending : 29/August/2020.**

License No: **NACOSTI/P/19/1240**

232750

Applicant Identification Number

Director General
NATIONAL COMMISSION FOR
SCIENCE,TECHNOLOGY &
INNOVATION

Verification QR Code

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Scan the QR Code using QR scanner application.

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Appendix 3: Research Permit for Tanzania (COSTECH)

UNITED REPUBLIC OF TANZANIA

TANZANIA COMMISSION FOR SCIENCE AND TECHNOLOGY
(COSTECH)

RESEARCH PERMIT

Permit No.	2020-067-NA-2019-384
Date	4th February 2020
Researcher's Name	Boniface Akuku
Nationality	Kenyan
Research Title	Institutionalization of Knowledge Management Strategies in Agricultural Research Organizations in East Africa
Research Area(s)/Region(s)	Dar es Salaam
Validity	From: 4th February 2020 to 3rd February 2021
Local contact/collaborator (*with affiliated institution*)	Dr. Geoffrey Mkamilo, Director General of Tanzania Agricultural Research Institute, mobile: +255 784795389, E-mail: fsr-se@kilimo.go.tz

PROGRAM OFFICER

DIRECTOR GENERAL

IMPORTANT REQUIREMENTS
- Research permit that involve collecting human, plant or animal materials / data that will be exported outside Tanzania must submit a signed Material Transfer Agreement (MTA), Data Transfer Agreement (DTA) between Tanzania host institution and the foreign counterpart. The MTA/DTA will indicate terms for collecting, storing/managing, transporting, disposal or returning of the materials/DATA to Tanzania after the closure of the research project.
- Any patent or intellectual property and royalty emanating from any research approved by the National Research Registration Committee (NRRC) shall be owned as stipulated in the research proposals and in accordance with the IP-policy of the respective research institutions.
- All researchers are required to report to a Regional Administrative Secretary (RAS) of the study area and present the introduction letter and activity schedule(plan) prior starting any research activity.
- All researchers are required to submit quarterly progress reports and all relevant publications made after completion of the research.
- All communications should be addressed to COSTECH Director General through rclearance@costech.or.tz; dg@costech.or.tz or +255222700749; +255 (022) 2771358. Terms and conditions of the permit are found at www.costech.or.tz

Appendix 4: Data Collection Instruments

Tool 1 Survey Questionnaire

Data Collection instrument

Objective of the study
This study aims to find out factors influencing adoption, implementation and entrenchment of knowledge management strategy in selected organizations. You were randomly selected and your participation is voluntary, but it is very important because you represent many other people in your organization. The information given will be handled with strict confidentiality. The interview will take about 20 minutes. Kindly confirm if you would like to participate in the study.

◯ Yes

◯ No

Definitions

Knowledge Management (KM) strategy is a framework that provides the building blocks designed to facilitate the achievement and improvement of KM goals in an organization. It provides a useful guide for managing organizational knowledge. Its goal is to ensure that organizational knowledge is made available and accessible on time for intended users.

Adoption involves the formal decision-making process to accept knowledge management strategy in the organization

Implementation is the process of executing (i.e. to continue to use) knowledge management strategy in the organization

Entrenchment is the process of persistent use and continuous spread of knowledge management strategy in the organization

Section1

BACKGROUND INFORMATION

1. Please kindly your brief personal details
a. Your Full Name:

b. Your Job Title:

c. Name of your Organization:

d. Your main role in the organization

e. Number of years you served in the organization:

f. Country:

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Gender and Age

g. **Your Gender:**

◯ Male   ◯ Female

h. **Which of the following is your age bracket**

◯ 21-25

◯ 26-30

◯ 31-35

◯ 36-40

◯ 41-45

◯ 46-50

◯ 51-55

◯ 56-60

◯ 61-65

i. **Does your organization have a Knowledge Management (KM) strategy?**

◯ Yes

◯ No

ii. **If Yes, who initiated or supported the development of the KM strategy?**

◯ Head office/CGIAR Headquarters

◯ Government policy directive

◯ Donors or resource depended upon organization(s)

◯ Organization(s) providing strategic or oversight responsibilities (e.g ASARECA, FARA, SDGS (CAADP framework), UN Governing Council)

◯ Similar organization we are working with within the network or association

iii. **If No, has your organization had or plan to have a KM strategy**

◯ Has had

◯ Has plan to have

iv. If 1 or 2 in Q3 above, who initiated, developed, or initiating or plans to develop the KM strategy

◯ Head office/CGIAR Headquarters

◯ Government policy directive

◯ Donors or resource depended upon organization(s)

◯ Organization(s) providing strategic or oversight responsibilities (e.g ASARECA, FARA, SDGS (CAADP framework), UN Governing Council)

◯ Similar organization we are working with within the network or association

Levels of KM Strategy Adoption, Implementation and Entrenchment

In a scale of 1-5, where 5=Extremely High and 1=Extremely Low, to what extent does your organization comply with the following statements?

Extent to which my organization complies	Extremely High (5)	High (4)	Neither low nor High (3)	Low (2)	Extremely Low (1)
i. The KM strategy/ policy/plan is well accepted in the organization	◯	◯	◯	◯	◯
ii. The KM strategy/policy/plan is well understood and easy to accept	◯	◯	◯	◯	◯
iii. The KM strategy/policy/plan is well understood and easy to use	◯	◯	◯	◯	◯
iv. The KM strategy/policy/plan is well understood and easy to share widely	◯	◯	◯	◯	◯
v. The KM strategy/policy/plan is in continuous use in the organization	◯	◯	◯	◯	◯
vi. The KM strategy has been communicated widely to all staff in the organization	◯	◯	◯	◯	◯
vii. The KM Strategy/policy/plan is widely in use in the organization	◯	◯	◯	◯	◯

Uncertainty (Prediction/predictability of consequences, information availability, confidence in decision making)

In a scale of 1-5, where 5=Extremely High and 1=Extremely Low, to what extent does your organization comply with the following statements?

Extent to which my organization complies	Extremely High (5)	High (4)	Neither low nor High (3)	Low (2)	Extremely Low (1)
1.Strategic choices or decisions on KM strategy issues are very clear	○	○	○	○	○
2.Employees are provided with sufficient information to make the correct decision or choices on KM strategy matters	○	○	○	○	○
3.My organization's decision makers are influenced by expected or potential future changes in the operating environment	○	○	○	○	○
4.My organization's decision makers usually express confidence when deciding on KM strategy matters	○	○	○	○	○
5.Changes in the business environment do influence decisions on KM strategy matters	○	○	○	○	○
6.My organization is able to predict unknown consequences in operating environment	○	○	○	○	○
7.My organization has ability to handle fear of failure	○	○	○	○	○
8.My organization fears losing relevance amongst similar organizations	○	○	○	○	○
9.My organization strives to maintain its identity amongst similar organizations	○	○	○	○	○
10. My organization expresses confidence in KM strategy goals, and objectives	○	○	○	○	○

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Perceived Success or dominance (Replication, perception, communication and complexity)

In a scale of 1-5, where 5=Extremely High and 1=Extremely Low, to what extent does your organization comply with the following statements?

Extent to which my organization complies	Extremely High (5)	High (4)	Neither low nor High (3)	Low (2)	Extremely Low (1)
1. My organization is able to replicate successful KM strategy practices of other research centers/organizations	◯	◯	◯	◯	◯
2. The decisions to accept, use and entrench KM strategy practices in my organization are meant to avoid being perceived as if we are left behind	◯	◯	◯	◯	◯
3. Communication with other research centers/organizations influences my organization's decision to accept, use and entrench KM strategy	◯	◯	◯	◯	◯
4. My organization performs actions, practices or activities performed by other research centers/organizations	◯	◯	◯	◯	◯
5.Sharing of similar goals with other research centers/organizations results in similar practices in my organization	◯	◯	◯	◯	◯
6. Sharing of similar stakeholders or service providers influences my organization's decision making management of the organization's knowledge	◯	◯	◯	◯	◯
7. My organization experiences similar challenges as other research centers/organizations in the	◯	◯	◯	◯	◯
8.Actions, activities and practices of other research centers/organizations influences the decisions made by my organization	◯	◯	◯	◯	◯
9.My organization makes decision(s) to accept, use or entrench KM strategy to acquire status or avoid embarrassment among peer organizations	◯	◯	◯	◯	◯
10. The level of understanding or use of KM strategy influences my org	◯	◯	◯	◯	◯

Prevalence of a practice (Frequency of a practice, Emergence of a practice and Growth in number of a practice)

In a scale of 1-5, where 5=Extremely High and 1=Extremely Low, to what extent does your organization comply with the following statements?

Extent to which my organization complies	Extremely High (5)	High (4)	Neither low nor High (3)	Low (2)	Extremely Low (1)
1. The extent of KM strategy practices and activities in other research centers/organizations influences the decisions of my organization	○	○	○	○	○
2. The rise of KM strategy practices and activities in other research centers/organizations influences my organization's decisions	○	○	○	○	○
3. Having many options to manage organizational knowledge influences my organization's decisions	○	○	○	○	○
4. The growth in the number of research centers/organizations influences my organization's decisions	○	○	○	○	○
5. Actions, activities and experiences of other research centers/organizations influences my organization's strategic decision making	○	○	○	○	○
6. What takes place in other research centers/organizations influences my organization's decisions	○	○	○	○	○

Professionalism (Individual Professional values, degree of exposure, Organizational Professional values)

In a scale of 1-5, where 5=Extremely High and 1=Extremely Low, to what extent does your organization comply with the following statements?

Extent to which my organization complies	Extremely High (4)	High (5)	Neither low nor High (3)	Low (2)	Extremely Low (1)
1. My organization's commitment to professional values influences its decisions	◯	◯	◯	◯	◯
2. My organization has strong belief in its professional goals and values and this influences its decisions	◯	◯	◯	◯	◯
3. My organization is exposed to new professional ideas which influences its decisions	◯	◯	◯	◯	◯
4. My organization has a commitment to identify core professional values which influences its decisions	◯	◯	◯	◯	◯
5. My organization has committed to accepting and applying practices from other organizations or its operating environment which influences its strategic decisions	◯	◯	◯	◯	◯
6. The need to create a high professional standard influences my organization's decisions	◯	◯	◯	◯	◯
7. Professional trainings or programmes influence my organization's decisions	◯	◯	◯	◯	◯
8. The number and level of professional experts in my organization influences its decisions	◯	◯	◯	◯	◯
9. Participation in professional events or forums influences my organization's decisions	◯	◯	◯	◯	◯
10. The role played by professionals inmy organization influences itsdecisions	◯	◯	◯	◯	◯

Network or association with peer organization (Relationships, integration/interoperability)

In a scale of 1-5, where 5=Extremely High and 1=Extremely Low, to what extent does your organization comply with the following statements?

Extent to which my organization complies	Extremely High (4)	High (5)	Neither low nor High (3)	Low (2)	Extremely Low (1)
1. Direct and indirect ties with other research centers or organizations influences my organization'sdecisions	○	○	○	○	○
2. My My organization's decisions areinfluenced by the desire to protectits interests from other research centers or organizations	○	○	○	○	○
3. Sharing of similar norms with other research centers/organizations influencesmy organization's decisions	○	○	○	○	○
4. The need to maintain standardssuch as the need to communicatewith other researchcenters/organizations influencesmy organization's decisions	○	○	○	○	○
5. Requirement to adhere to certainstandards within organizationalnetwork(s) influences myorganization's decisions	○	○	○	○	○
6. Exchange forums or groups orassociations with other researchcenters/organizations influencesmy organization's decisions	○	○	○	○	○
7. Integration with other researchcenters/organizations influencesmy organization's decisions	○	○	○	○	○

Expectations (values, survival and prescriptions)

In a scale of 1-5, where 5=Extremely High and 1=Extremely Low, to what extent does your organization comply with the following statements?

Extent to which my organization complies	Extremely High (4)	High (5)	Neither low nor High (3)	Low (2)	Extremely Low (1)
1. My organization's desire to maintain its preferred values influences its decisions	○	○	○	○	○
2. My organization's effort to remain relevant influences its strategic decisions	○	○	○	○	○
3. Prescriptions from stakeholders influences my organization's decisions	○	○	○	○	○
4. Changes over time in my organization influences its decisions	○	○	○	○	○
5. Changes in my organization's values influence its decisions	○	○	○	○	○
6. Demands from stakeholders influence my organization's decisions	○	○	○	○	○

Mandate (Relations, compliance, reputation, sanctions, anticipated benefits)

In a scale of 1-5, where 5=Extremely High and 1=Extremely Low, to what extent does your organization comply with the following statements?

Extent to which my organization complies	Extremely High (4)	High (5)	Neither low nor High (3)	Low (2)	Extremely Low (1)
1. Efforts to improve relationships with organizations that have an oversight role influence my organization's decisions	○	○	○	○	○
2. Compliance requirements influence organization's decisions	○	○	○	○	○
3. The desire to maintain a good reputation influences my organization's decisions	○	○	○	○	○
4. Keeping trust with mandated organizations influences my organization's decisions	○	○	○	○	○
5. Anticipated benefits from regulators influence my organization's decisions	○	○	○	○	○
6. Financial support and other benefits from regulators influence my organization's decisions	○	○	○	○	○

Resources Dependency (Recognition, compliance, Assistance)

In a scale of 1-5, where 5=Extremely High and 1=Extremely Low, to what extent does your organization comply with the following statements?

Extent to which my organization complies	Extremely High (4)	High (5)	Neither low nor High (3)	Low (2)	Extremely Low (1)
1. Resource provision influences my organization's decisions	◯	◯	◯	◯	◯
2. Obtaining additional resources from excellent performance influences my organization's decisions	◯	◯	◯	◯	◯
3. Efforts to be recognized influence my organization's decisions	◯	◯	◯	◯	◯
4. My organization's decisions are influenced by external resources or investments	◯	◯	◯	◯	◯
5. Acquisition or provision of technical assistance from superior organizations influences my organization's decisions	◯	◯	◯	◯	◯
6. Access to resources from donors or mandate-based organizations influences my organization's decisions	◯	◯	◯	◯	◯

Strategic decision making (Actions. Practices and experiences)

In a scale of 1-5, where 5=Extremely High and 1=Extremely Low, to what extent does your organization comply with the following statements?

Extent to which my organization complies	Extremely High (4)	High (5)	Neither low nor High (3)	Low (2)	Extremely Low (1)
1. Actions of managers(decision makers) influence my organization's decisions	◯	◯	◯	◯	◯
2. Practices that managers(decision makers) take up influence my organization's decisions	◯	◯	◯	◯	◯
3. Experience of managers(decision makers) influence my organization's decisions	◯	◯	◯	◯	◯
4. Decisions from internal consultants and/or advisors influence my organization's decisions	◯	◯	◯	◯	◯
5. Routine behaviors of managers(decision makers) influence my organization's decisions	◯	◯	◯	◯	◯

Organizational Leadership (competency and supervision)

In a scale of 1-5, where 5=Extremely High and 1=Extremely Low, to what extent does your organization comply with the following statements?

Extent to which my organization complies	Extremely High (4)	High (5)	Neither low nor High (3)	Low (2)	Extremely Low (1)
1. Quality of leadership influences my organization's decisions	◯	◯	◯	◯	◯
2. Knowledge of the leadership influences my organization's decisions	◯	◯	◯	◯	◯
3. Supervision from leadership influences my organization's decisions	◯	◯	◯	◯	◯
4. Performance of the organization influences my organization's decisions	◯	◯	◯	◯	◯
5. Provision of rewards influence my organization's decisions	◯	◯	◯	◯	◯

Top Management Support (Resource provision, Commitment and Quality decisions)

In a scale of 1-5, where 5=Extremely High and 1=Extremely Low, to what extent does your organization comply with the following statements?

Extent to which my organization complies	Extremely High (4)	High (5)	Neither low nor High (3)	Low (2)	Extremely Low (1)
1. Provision of adequate resources influences my organization's decisions	◯	◯	◯	◯	◯
2. Lack of adequate resources influences my organization's decisions	◯	◯	◯	◯	◯
3. Commitment from top management influences my organization's decisions	◯	◯	◯	◯	◯
4. Support from top management influences my organization's decisions	◯	◯	◯	◯	◯
5. Quality of decision from top management influences my organization's decisions	◯	◯	◯	◯	◯
6. Timely decisions from top management influences my organization's decisions	◯	◯	◯	◯	◯

You're reached the end of this survey. Thank You for your time!!

Appendix 5: Tool 2 Survey Quationnaire

Tool 2 Survey Questionnaire

Understanding the extent (level) of adoption (i.e., acceptance) of KM strategy

1. **In your organization, what is the extent of adoption (i.e., acceptance) of KM strategy? would you say it is?**

◯ Extremely High (5)

◯ High (4)

◯ Neither low nor High (3)

◯ Low (2)

◯ Extremely Low (1)

2. What was the level of acceptance when KM strategy was first introduced in the organization?

◯ Extremely High (5)

◯ High (4)

◯ Neither low nor High (3)

◯ Low (2)

◯ Extremely Low (1)

3. How much were you or other staff members involved in the development of KM strategy? Would you say it was?

◯ Extremely High (5)

◯ High (4)

◯ Neither low nor High (3)

◯ Low (2)

◯ Extremely Low (1)

4. **To what extent would your organization's KM strategy's goals and objectives increase adoption or acceptance of the strategy?**

◯ Extremely High (5)

◯ High (4)

◯ Neither low nor High (3)

◯ Low (2)

◯

Extremely Low (1)

5. What would you say is the extent of institutional support your organization has put in place to support the introduction of KM strategy in the organization?

◯ Extremely High (5)

◯ High (4)

◯ Neither low nor High (3)

◯ Low (2)

◯ Extremely Low (1)

6.What would you say is the extent of pre-conditions set for your organization to support KM strategy in the organization?

◯ Extremely High (5)

◯ High (4)

◯ Neither low nor High (3)

◯ Low (2)

◯ Extremely Low (1)

7. What is the extent of risk assessment your organization undertakes when introducing KM strategy in the organization?

◯ Extremely High (5)

◯ High (4)

◯ Neither low nor High (3)

◯ Low (2)

◯ Extremely Low (1)

8. What would you say is the priority given to KM strategy in the organization?

◯ Extremely High (5)

◯ High (4)

◯ Neither low nor High (3)

◯ Low (2)

◯ Extremely Low (1)

9.To what extent has your organization put in place the means to handle issues/challenges arising from the introduction of KM strategy in your organization?

◯ Extremely High (5)

◯ High (4)

◯ Neither low nor High (3)

◯ Low (2)

◯ Extremely Low (1)

10.What would you say is the extent to which your organization transforms decisions from knowledge into practice concerning KM strategy?

◯ Extremely High (5)

◯ High (4)

◯ Neither low nor High (3)

◯ Low (2)

◯ Extremely Low (1)

11.In your organization, what is the extent by which the organization have put in place necessary arrangements to make the organization more receptive to accept KM strategy

◯ Extremely High (5)

◯ High (4)

◯ Neither low nor High (3)

◯ Low (2)

◯ Extremely Low (1)

Understanding the extent (level) of implementation (i.e., continued use) of KM strategy

1. **In your organization, what is the extent of implementation (i.e., continued use) of KM strategy in the organization)? would you say it is?**

◯ Extremely High (5)

◯ High (4)

◯ Neither low nor High (3)

◯ Low (2)

◯ Extremely Low (1)

2.   To what extent does your organization plan and get involved in training and resource acquisition to support the organization's continued use of KM strategy?

   ◯ Extremely High (5)

   ◯ High (4)

   ◯ Neither low nor High (3)

   ◯ Low (2)

   ◯ Extremely Low (1)

3.   To what extent has your organization integrated KM strategy into other organizational strategies and KM related activities?

   ◯ Extremely High (5)

   ◯ High (4)

   ◯ Neither low nor High (3)

   ◯ Low (2)

   ◯ Extremely Low (1)

4.   To what extent would say is your organization's commitment to identifying factors that may affect continued use of KM strategy in the organization

   ◯ Extremely High (5)

   ◯ High (4)

   ◯ Neither low nor High (3)

   ◯ Low (2)

   ◯ Extremely Low (1)

5.   To what extent does your organization use practical approaches to ensure or support KM strategy's continued use, would you say it is?

   ◯ Extremely High (5)

   ◯ High (4)

   ◯ Neither low nor High (3)

   ◯ Low (2)

   ◯ Extremely Low (1)

Understanding the extent (level) of entrenchment (i.e., widespread use) of KM strategy

6.   In your organization, what is the extent of entrenchment (i.e., widespread use) of KM strategy in the organization? Would you say it is?

◯ Extremely High (5)

◯ High (4)

◯ Neither low nor High (3)

◯ Low (2)

◯ Extremely Low (1)

7.   To what extent does your organization processes support the wide-spread use and stability of KM strategy in the organization? Would you say it is?

◯ Extremely High (5)

◯ High (4)

◯ Neither low nor High (3)

◯ Low (2)

◯ Extremely Low (1)

8.   To what extent would you say your organization has achieved satisfactory results from KM strategy as a practice?

◯ Extremely High (5)

◯ High (4)

◯ Neither low nor High (3)

◯ Low (2)

◯ Extremely Low (1)

9.   To what extent would you say KM strategy practices have become a routine in your organization?

◯ Extremely High (5)

◯ High (4)

◯ Neither low nor High (3)

◯ Low (2)

◯ Extremely Low (1)

10.   To what extent would you say that actions and actors of KM strategy are widespread, clearly known, and can be easily identified in your organization?

◯

Extremely High (5)

○ High (4)

○ Neither low nor High (3)

○ Low (2)

○ Extremely Low (1)

11.   To what extent would you say your organization has gained or built up a shared history of joint utilization of KM strategy practices

○ Extremely High (5)

○ High (4)

○ Neither low nor High (3)

○ Low (2)

○ Extremely Low (1)

12.   To what extent would you say your organization has availed resources to facilitate coordination of relevant activities of KM strategy practices?

○ Extremely High (5)

○ High (4)

○ Neither low nor High (3)

○ Low (2)

○ Extremely Low (1)

13.   To what extent would you say your organization has established resources to make KM strategy practices simpler and usable in the organization?

○ Extremely High (5)

○ High (4)

○ Neither low nor High (3)

○ Low (2)

○ Extremely Low (1)

14.   To what extent would you say your organization supports long-term retention and continuity of KM strategy practices across generations in the organization?

○ Extremely High (5)

○ High (4)

○

Neither low nor High (3)

◯ Low (2)

◯ Extremely Low (1)

Uncertainty in the business environment

15.   To what extent does uncertainty in the industry/business environment influence your organization's strategic decision-making process to adopt, implement and entrench KM strategy?

Uncertainty in the business environment influence on	Extremely High (4)	High (5)	Neither low nor High (3)	Low (2)	Extremely Low (1)
Adoption	◯	◯	◯	◯	◯
Implementation	◯	◯	◯	◯	◯
Entrenchment	◯	◯	◯	◯	◯

Perceived Success of other organizations which have adopted (accepted) KM strategy

16.   To what extent does the perceived success of other organizations which have adopted, implemented and entrenched KM strategy influence your organization's strategic decision-making process to adopt, implement and entrench KM strategy in your organization

Perceived Success of other organizations which have adopted (accepted) KM strategy influence on	Extremely High (4)	High (5)	Neither low nor High (3)	Low (2)	Extremely Low (1)
Adoption	◯	◯	◯	◯	◯
Implementation	◯	◯	◯	◯	◯
Entrenchment	◯	◯	◯	◯	◯

Prevalence of KM Strategy adoption in other organizations

17.   To what extent does the prevalence of KM Strategy adoption, implementation and entrenchment in other research centers/organizations influence your organization's strategic decision-making process to adopt, implement and entrench KM strategy?

Prevalence of KM Strategy influence on	Extremely High (4)	High (5)	Neither low nor High (3)	Low (2)	Extremely Low (1)
Adoption	◯	◯	◯	◯	◯
Implementation	◯	◯	◯	◯	◯
Entrenchment	◯	◯	◯	◯	◯

Level of professionalism in the organization

18.To what extent does the need to be certified influence your organization's strategic decision-making process to adopt, implement and entrench KM strategy?

Level of professionalism influence on	Extremely High (4)	High (5)	Neither low nor High (3)	Low (2)	Extremely Low (1)
Adoption	◯	◯	◯	◯	◯
Implementation	◯	◯	◯	◯	◯
Entrenchment	◯	◯	◯	◯	◯

Requirement(s) resulting from associations or network relationship

19.To what extent does your association/relationship with other organizations influence your organization's strategic decision-making process to adopt, implement and entrench KM strategy?

Requirement(s) resulting from associations or network relationship influence on	Extremely High (4)	High (5)	Neither low nor High (3)	Low (2)	Extremely Low (1)
Adoption	◯	◯	◯	◯	◯
Implementation	◯	◯	◯	◯	◯
Entrenchment	◯	◯	◯	◯	◯

Expectations from the industry such as certifications or other compliance requirements

20. To what extent do compliance requirements influence your organization's strategic decision-making process to adopt, implement and entrench KM strategy?

Expectations from the industry influence on	Extremely High (4)	High (5)	Neither low nor High (3)	Low (2)	Extremely Low (1)
Adoption	◯	◯	◯	◯	◯
Implementation	◯	◯	◯	◯	◯
Entrenchment	◯	◯	◯	◯	◯

Regulations or requirements from regulators or mandated organizations

21.To what extent do regulators' requirements influence your organization's decision to adopt, implement and entrench KM strategy?

Regulations or requirements from regulators influence on	Extremely High (4)	High (5)	Neither low nor High (3)	Low (2)	Extremely Low (1)
Adoption	◯	◯	◯	◯	◯
Implementation	◯	◯	◯	◯	◯
Entrenchment	◯	◯	◯	◯	◯

Resource dependency or resource-based organizations

22. To what extent do donors or investors influence your organization's strategic decision to adopt, implement and entrench KM strategy?

Resource dependency influence on	Extremely High (4)	High (5)	Neither low nor High (3)	Low (2)	Extremely Low (1)
Adoption	○	○	○	○	○
Implementation	○	○	○	○	○
Entrenchment	○	○	○	○	○

Strategy practices

23.To what extent do strategy practices (i.e., routine behaviors that actors draw upon or carry out when undertaking strategy-related activities including strategy tools and methods) within the organization influence adoption, implementation and entrenchment of KM strategy in your organization

Strategy practices influence on	Extremely High (4)	High (5)	Neither low nor High (3)	Low (2)	Extremely Low (1)
Adoption	○	○	○	○	○
Implementation	○	○	○	○	○
Entrenchment	○	○	○	○	○

Concrete strategy activities taking place

24.To what extent do activities undertaken by decision-makers within the organization influence adoption, implementation and entrenchment of KM strategy in your organization?

Concrete strategy activities influence on	Extremely High (4)	High (5)	Neither low nor High (3)	Low (2)	Extremely Low (1)
Adoption	○	○	○	○	○
Implementation	○	○	○	○	○
Entrenchment	○	○	○	○	○

External practitioners or actors

25. To what extent do consultants, advisors, or investors influence adoption, implementation and entrenchment of KM strategy in your organization?

External practitioners or actors influence on	Extremely High (4)	High (5)	Neither low nor High (3)	Low (2)	Extremely Low (1)
Adoption	◯	◯	◯	◯	◯
Implementation	◯	◯	◯	◯	◯
Entrenchment	◯	◯	◯	◯	◯

Internal practitioners or actors

26. To what extent do board members, senior managers and others involved in KM strategy execution

influence adoption, implementation and entrenchment of KM strategy in your organization?

Internal practitioners or actors influence on	Extremely High (4)	High (5)	Neither low nor High (3)	Low (2)	Extremely Low (1)
Adoption	◯	◯	◯	◯	◯
Implementation	◯	◯	◯	◯	◯
Entrenchment	◯	◯	◯	◯	◯

Effective supervision from the organizational leadership

27. To what extent does effective supervision from the organizational leadership influence adoption,

implementation and entrenchment of your organization's KM strategy?

Effective supervision influence on	Extremely High (4)	High (5)	Neither low nor High (3)	Low (2)	Extremely Low (1)
Adoption	◯	◯	◯	◯	◯
Implementation	◯	◯	◯	◯	◯
Entrenchment	◯	◯	◯	◯	◯

Competency in the organizational leadership

28. To what extent does organizational leadership competency influence adoption, implementation

and entrenchment of KM strategy in your organization?

Competency in the organizational leadership influence on	Extremely High (4)	High (5)	Neither low nor High (3)	Low (2)	Extremely Low (1)
Adoption	◯	◯	◯	◯	◯
Implementation	◯	◯	◯	◯	◯
Entrenchment	◯	◯	◯	◯	◯

Provision of adequate resources

29.To what extent does the provision of adequate resources influence adoption, implementation and entrenchment of KM strategy in your organization?

Provision of adequate resources influence on	Extremely High (4)	High (5)	Neither low nor High (3)	Low (2)	Extremely Low (1)
Adoption	◯	◯	◯	◯	◯
Implementation	◯	◯	◯	◯	◯
Entrenchment	◯	◯	◯	◯	◯

Commitment to KM strategy processes

30. To what extent does commitment to KM strategy processes influence adoption, implementation and entrenchment of KM strategy in your organization?

Commitment to KM strategy processes influence on	Extremely High (4)	High (5)	Neither low nor High (3)	Low (2)	Extremely Low (1)
Adoption	◯	◯	◯	◯	◯
Implementation	◯	◯	◯	◯	◯
Entrenchment	◯	◯	◯	◯	◯

Quality of decision-making of top management

31. To what extent does top management's quality of decision-making influence adoption, implementation, and entrenchment of KM strategy in your organization?

Quality of decision-making influence on	Extremely High (4)	High (5)	Neither low nor High (3)	Low (2)	Extremely Low (1)
Adoption	◯	◯	◯	◯	◯
Implementation	◯	◯	◯	◯	◯
Entrenchment	◯	◯	◯	◯	◯

You have reached the end of this Survey, please save and submit your form. Thank You!!

Appendix 6: Key Informant Interview

Data Collection instrument

The objective of the study

1.   To find out the characteristics or features of knowledge management strategy

2.   To find out the processes of adoption, implementation and entrenchment of knowledge management strategy in the organization

3.   Kindly confirm if you would like to participate in the study.

◯   Yes

◯   No

Definitions

Knowledge Management (KM) strategy is a framework that provides the building blocks designed to facilitate the achievement and improvement of KM goals in an organization. It provides a useful guide for managing organizational knowledge. Its goal is to ensure that organizational knowledge is made available and accessible on time for intended users.

Adoption involves the formal decision-making process to accept knowledge management strategy in the organization

Implementation is the process of executing (i.e., to continue to use) knowledge management strategy in the organization

Entrenchment is the process of persistent use and continuous spread of knowledge management strategy in the organization

Section1

BACKGROUND INFORMATION

1.Please kindly your brief personal details

a. Your Full Name:

b. Your Job Title:

c. Name of your Organization:

d. Your main role in the organization

e. Number of years you served in the organization:

f. Country:

Gender and Age

g. Your Gender:

◯ Male   ◯ Female

h. Which of the following is your age bracket

○ 21-25

○ 26-30

○ 31-35

○ 36-40

○ 41-45

○ 46-50

○ 51-55

○ 56-60

○ 61-65

2. Does your organization have a Knowledge Management (KM) strategy?

○ Yes

○ No

ii. If No, has your organization had or plan to have a KM strategy

○ Has had

○ Has plan to have

Section 2: Characteristics (features) of KM Strategy/plan/policy

1. What are the key features of your organization's KM strategy/plan/policy that you can easily identify?

      I. _____

      ii. _____

      iii. _____

2. In your opinion, what key features are lacking or should have been included in your organization's KM strategy?

      i. _____

      ii. _____

      iii. _____

3. In your opinion, how has the KM strategy helped in the realization of your organization's KM goals and objectives?

      i. _____

      ii. _____

      iii. _____

4. One of the main problems often mentioned is ineffective exchange of agricultural research knowledge between researchers (those who generate/create the knowledge) and those who use the knowledge in practice (such as policy makers and other stakeholders). Do you think your organization's KM strategy has contributed in resolving this problem?

◯ Yes   ◯ No

a. If Yes, briefly explain your answer
      i. _____
      ii. _____
      iii. _____
b. If No, briefly explain your answer
      i. _____
      ii. _____
      iii. _____

Streamlining of knowledge management

5. Another problem often mentioned is that knowledge management in agricultural research organizations is not correctly streamlined. In your opinion, what factors are responsible for this problem?
      i. _____
      ii. _____
      iii. _____

Section 2: Causes

6. What would you say is the main cause(s) of the above problems (in questions 4& 5) above?
      i. _____
      ii. _____
      iii. _____

Section 3: Factors influencing adoption, implementation and entrenchment of KM Strategy

1. What determines your organization's decision to adopt or accept the KM strategy?
      i. _____
      ii. _____
      iii. _____

2. What determines your organization's decision to implement or continue to use the KM strategy?
      i. _____

ii. _____

3. What determines your organization's decision to entrench (widespread use) KM strategy in the

    organization?

      i. _____

      ii. _____

Strategic practices

    4. What strategic practices (organizational routines, procedures, techniques and/or types of discourses)

    influence KM strategy/plan/policy in your organization with regard to?

a. Adoption (acceptance)

      i. _____

      ii. _____

b. Implementation (continued use)

      i. _____

      ii. _____

c. Entrenchment (wide spread use)

      i. _____

      ii. _____

Strategic activities

5. What specific strategic activities (e.g., meetings, discussions, interactions, including processes) influence KM

strategy/plan/policy in your organization with regard to?

a. Adoption (acceptance)

      i. _____

      ii. _____

b. Implementation (continued use)

      i. _____

      ii. _____

c. Entrenchment (widespread use)

      i. _____

      ii. _____

Practitioners' actions

6. What specific aspects of practitioners' actions (people who are involved in development and execution of

strategy activities and practices e.g., managers, consultants, etc.) influence KM strategy/plan/policy in your

organization with regard to?

a. Adoption (acceptance)

      i. _____

      ii. _____

b. Implementation (continued use)

      i. _____

      ii. _____

c. Entrenchment (widespread use)

     i. _____

     ii. _____

Organizational leadership

7. How does organizational leadership influence KM strategy/plan/policy in your organization with regard to?

a. Adoption (acceptance)

     i. _____

     ii. _____

b. Implementation (continued use)

     i. _____

     ii. _____

c. Entrenchment (widespread use)

     i. _____

     ii. _____

Top Management

1.How does top management influence KM strategy/plan/policy in your organization with regard to?

a. Adoption (acceptance)

     i. _____

     ii. _____

b. Implementation (continued use)

     i. _____

     ii. _____

c. Entrenchment (widespread use)

     i. _____

     ii. _____

Section 4: Institutionalization (adoption, implementation and entrenchment) processes of KM Strategy

1. What institutional support structures has your organization put in place to ensure the KM strategy is?

a. Accepted or adopted in the organization

     i. _____

     ii. _____

     iii. _____

b. Implemented or put into continuous use in the organization

     i. _____

     ii. _____

     iii. _____

c. Entrenched or widely used in the organization

    i. _____

    ii. _____

    iii. _____

Actions

2. What are the actions taken by your organization to ensure KM strategy is?

 a. Accepted or adopted in the organization

    i. _____

    ii. _____

    iii. _____

 b. Implemented or put into continuous use in the organization

    i. _____

    ii. _____

    iii. _____

 c. Entrenched or widely used in the organization

    i. _____

    ii. _____

    iii. _____

Activities

3. What are the activities undertaken by your organization to ensure KM strategy is?

a. Accepted or adopted in the organization

    i. _____

    ii. _____

    iii. _____

 b. Implemented or put into continuous use in the organization

    i. _____

    ii. _____

    iii. _____

c. Entrenched or widely used in the organization

    i. _____

    ii. _____

    iii. _____

Tools or methods

4. What are the tools or methods (formal and informal/ICT based and Non-ICT based) used in your

organization to ensure KM strategy is?

a. Accepted or adopted in the organization

      i. _____

      ii. _____

      iii. _____

b. Implemented or put into continuous use in the organization

      i. _____

      ii. _____

      iii. _____

c. Entrenched or widely used in the organization

      i. _____

      ii. _____

      iii. _____

Steps

5. What are the steps (series of actions) that your organization has put in place to document or carry forward lessons learned or experiences to ensure KM strategy is?

a. Accepted or adopted in the organization

      i. _____

      ii. _____

      iii. _____

b. Implemented or put into continuous use in the organization

      i. _____

      ii. _____

      iii. _____

c. Entrenched or widely used in the organization

      i. _____

      ii. _____

      iii. _____

Instruments or Structures

6. What instruments or structures, or systems your organization has put in place to ensure KM strategy is?

a. Accepted or adopted in the organization

      i. _____

      ii. _____

      iii. _____

b. Implemented or put into continuous use in the organization

   i. _____

   ii. _____

   iii. _____

c. Entrenched or widely used in the organization

   i. _____

   ii. _____

   iii. _____

Users' perceptions

7. How does your organization manage users' perceptions and expectations to ensure KM strategy is accepted, implemented and entrenched?

a. Accepted or adopted in the organization

   i. _____

   ii. _____

   iii. _____

b. Implemented or put into continuous use in the organization

   i. _____

   ii. _____

   iii. _____

c. Entrenched or widely used in the organization

   i. _____

   ii. _____

   iii. _____

External or internal practitioners

8. How do external or internal practitioners affect KM strategy/plan/policy in your organization?

   i. _____

   ii. _____

   iii. _____

Section 5: KM strategy institutionalization (adoption, implementation and entrenchment) challenges or difficulties in practice

1. What are the challenges or actual difficulties your organization faces in ensuring KM strategy is?

a. Accepted or adopted in the organization

   i. _____

   ii. _____

   iii. _____

b. Implemented or put into continuous use in the organization

   i. _____

ii. _____

iii. _____

c. Entrenched or widely used in the organization

    i. _____

    ii. _____

    iii. _____

Solving challenges

2. How has your organization managed or attempted to solve these challenges or difficulties to ensure KM strategy is accepted, implemented and entrenched in the organization?

    i. _____

    ii. _____

    iii. _____

Opinion

3. In your opinion, would you say your organization KM strategy/plan/policy has been successfully:

i. Accepted or adopted?

◯ Yes   ◯ No

ii. Put into continuous or implemented?

◯ Yes   ◯ No

iii. Widely in use or entrenched in the organization?

◯ Yes   ◯ No

Explain answers

4. Briefly your answer in question 3 above

    i. _____

    ii. _____

    iii. _____

Stages/Steps

5. Briefly describe the stages or steps that KM strategy/plans/policy goes through from initiation to full implementation in your organization?

    i. _____

    ii. _____

    iii. _____

    iv. _____

    v. _____

vi. _____

What should be done differently

6. Briefly describe what your organization should do differently to ensure KM strategy/plans/policy is successful?
 a. Adoption (acceptance)
      i. _____
      ii. _____

 b. Implementation (in continuous use)
      i. _____
      ii. _____

 c. Entrenchment (in widespread use)
      i. _____
      ii. _____

Section 6: KM strategy institutionalization (adoption, implementation and entrenchment) status

1. Briefly explain the status of KM strategy in your organization with regard to:

 a. Adoption (acceptance)
      i. _____
      ii. _____

 b. Implementation (in continuous use)
      i. _____
      ii. _____

 c. Entrenchment (in widespread use)
      i. _____
      ii. _____

Opinion cont…..

2. In your opinion, do you think KM strategy/plan/policy has provided your organization with the intended value and impact? (YES/NO) Briefly explain your answer. _____
      i. _____
      ii. _____
      iii. _____

Future of KM

3. How do you see the future of KM as discourse? And how should the KM domain, specifically KM strategy development, consider these conversations or discussions in the future?
      i. _____
      ii. _____
      iii. _____

You have reached the end of this survey. Thank you for your time.

Appendix 7: Path diagram showing the results of direct and indirect relationships of all the variables