

GENERIC INHIBITORS TO CONSERVE AND TRANSFORM TRADITIONAL  
TECHNOLOGIES: THE CASE OF ETHIOPIA

by

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## **FRONTISPIECE**

*“Those who conduct research belong to a community of scholars, each of whom has journeyed into the unknown to bring back an insight of truth, a point of light”*

(Leedy and Ormrod, 2005)

## DECLARATION

I hereby declare that the study on GENERIC INHIBITORS TO CONSERVE AND TRANSFORM TRADITIONAL TECHNOLOGIES: THE CASE OF ETHIOPIA is my own work and that all the sources I have used or quoted have been indicated and acknowledged by means of complete references.



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Negassi Yosseph G-Egziabher

December 2015

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Date

## **DEDICATION**

I have dedicated this research work to practitioners and custodians of traditional technologies of the country who have scarified their life and pride, and endured the punitive measures, marginalization, and biases perpetuated at all levels of the societal echelons. It is due to their unwavering belief and commitment to conserve the inherited technologies that many of the distinct and significant traditional knowledge are spared from extinction. Without their ardor, sacrifices, and tenacity subsequent generations could not have been able to learn the past, know the acme of their ancestors, and trace roots of their identity.

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## **ABSTRACT**

Traditional technologies are revelations of knowledge, skill, and wisdom of ancestors that have been used to facilitate and enhance the performance of socio-economic activities, overcome environmental challenges, and magnify symbolic presentations of cultural and spiritual engagements. Traditional technologies are still practiced in many communities despite the strides made in the advancement of modern technologies. The socio-economic significance of traditional technologies in the context of Ethiopia is even more profound. There are hardly social, economic, and spiritual activities that are not, directly or indirectly, influenced by the application of traditional technologies. The irony is, however, they are not appreciated and conserved in spite that they have been proving a sustained significance across generations while, to the contrary, modern technologies are even staggering to outlive the stage of product introduction. Although still proving to be useful, traditional technologies have been marginalized as if they are symbols of backwardness belonging to the past as irrelevant to the modern day settings. It was, therefore, the urge to look into this dilemma that became the basis for the initiation to conduct a research on the captioned topic. The study has endeavored to address how traditional technologies, specifically that of Ethiopia, are able to sustain contrary to extant theoretical predictions of technologies, and investigate why they have been deterred from getting the conservation and transformation they deserve in spite of the socio-economic significant role they have continued to play as capitulated in the statement of the problem.

In addressing the statement of the problem, the paradigm of the world outlook within which the research was situated is found to be related to the Critical Theory paradigm. As a result, a qualitative research methodology based on a case study design was framed and a longitudinal field study on the sampled cases was conducted. The data generated from the study were

filtered, coded, organized, categorized, and ultimately analyzed and interpreted using apparent analytic models until saturated and triangulated findings were established. Accordingly, the core constructs that has been defining the fate of traditional technologies were induced and their impact in deterring or promoting the conservation and transformation of traditional technologies were synthesized. Based on the outcomes of data analysis and interpretation, appropriate methods of reshaping the societal attitude and orientation in terms of conserving and transforming traditional practices are proposed as induced recommendations ultimately requiring a timely intervention.

*KEYWORDS: traditional technologies, conservation, transformation, disruptive innovation, heritage resources, inherited technologies, modern technologies, critical theory, qualitative methodology, data triangulation, data saturation, analytic models, traditional medicine, smoke bath, kaba designs, handicrafts, technological evolution, ethnography, case study, grounded theory, socio-culture*

## ACRONYMS

AA	Addis Abeba
AGOA	African Growth and Opportunity Act
APA	American Psychological Association Style
AU	African Union
CCD	Chamber of Commerce Directory
CSA	Central Statistics Authority
DE	Discovering Ethiopia
EBC	Ethiopian Broadcasting Corporation
ebs	Ethiopian Broadcasting Service
EQ	Emotional Quotient/Intelligence
EPRDF	Ethiopian People's Revolutionary Democratic Front
ERC	Ethics Review Committee
ETC	Ethiopian Traditional Clothing
ETOC	Ethiopian Tewahido Orthodox Church
ETTE	Ethiopia Tourist Trading Enterprise
GDP	Gross Domestic Product
H	Hypotheses
HCA	Heritage Crafts Association
IQ	Mental Quotient/Intelligence
MoH	Ministry of Health
MT	Modern Technology
MSF	Medecins Sans Frontiers

P	Proposition
Rh factor	Rhesus (blood group)
SME	Small and Medium Enterprises
SQ	Spiritual Quotient/Intelligence
STD	Sexually Transmitted Diseases
SWOT	Strength, Weakness, Opportunity, & Threat
TM	Traditional Medicine
TQM	Total Quality Management
TT	Traditional Technology
TTs	Traditional Technologies
UNISA	University of South Africa
UNCTAD	United Nations Conference on Trade and Development
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNDP	United Nations Development Program
WHO	World Health Organization

## CLARIFICATION OF CONCEPTS

Sorting and defining glossary of terms that show the usage of academic concepts and terms in a study, which the researcher considers their application in terms of comprehending and reporting the results could detract the reader are taken to be necessary (Szuchman, 2011; Swales & John, 2004). Accordingly, meanings of relevant concepts and terms the researcher wanted to convey to readers in the context of the research are clarified as stated below.

<i>ARBITRAGE</i>	Buying in low and selling in high markets signifying a “two” point or “locational” advantage of riskless profits where the process may continue until the difference in price between the two markets becomes equal (O'Connell, 2015; Lee <i>et al.</i> , 2011).
<i>ARTIFACTS</i>	The physical and intellectual tools available to explain or show the practices and beliefs of a culture of a given society (Hofverberg, 2010; Saljo, 2000).
<i>BRICOLAGE</i>	Knowledge emanating from conceptions induced from available materials made or put together, which enables to understand the environment different from scientific practices (Boxenbaum, 2011).
<i>CONFIRMABILITY</i>	Refers to the evaluation of the characteristics of the data and not of the researcher where it focuses on whether the results of the research could be confirmed in another application (Maritz & Visagie, 2010).
<i>CREDIBILITY</i>	Refers to a two-fold task: to carry out the research in such a manner that the likelihood of the findings is convincingly induced or improved and secondly, having the findings rectified by the results of the studied multiple constructors (Maritz & Visagie, 2010).
<i>DEONTOLOGY</i>	Evaluating an action whether it is right or wrong by referring to established norms or the law of a given society (Leonidou <i>et al.</i> , 2012; Dion, 1012).
<i>DEPENDABILITY</i>	The attempt of the researcher to account for changing conditions to a

phenomenon created by the increasingly refined understanding of the study settings (Maritz & Visagie, 2010).

*GENERIC INHIBITORS* To denote the deterrence role played by given constructs of traditional technologies that were able to endure across generations unabated where their impact could be equated to extinction or marginalization of many skills and tools inherited from ancestors (Sheared & Kakabadse, 2009).

*IDIOGRAPHIC* Understanding the study environment at individual or set levels without attempting to generalize beyond the given premises (Lindlof, 2008; Harris, 2005; Outhwaite, 2002).

*NOMOTHETIC* An approach followed to explain the patterns of behaviors observed across many people in the study field (Lindlof, 2008; Harris, 2005; Outhwaite, 2002).

*PHRONESIS* A predictable account of constructs with the power to embrace or despise technological innovations through cultural manifestations and perceptions inculcated in the minds of members of the societies to which the study belong (Gold *et al.*, 2011; Thomas, 2010).

*SEMIOTICS* Concerned with meanings of sign and symbols in a language similar to content analysis, conversation analysis, and discourse analysis (Babbie, 2010; Smith *et al.*, 2007).

*SYMBIOTIC* The acquisition of meanings and perceptions signifying authority and credibility established among constituents (Dalpiaz et al, 2010; Holt & McNulty, 2008).

*TELEOLOGY* Making moral judgment based on the desirable or perceived consequences of an action (Leonidou *et al.*, 2012).

*TRADITIONAL TECHNOLOGY* Tools and methods applied in socio-economic activities as inherited from ancestors, perhaps in an altered form, signifying the bond and

continuity of generations ( Bunnin, & Jiyuan,2004;Nisbet, 2002).

TRADITIONAL  
MEDICINE

Health practices, approaches, knowledge and beliefs incorporating plant, animal and mineral based medicines, spiritual therapies, manual techniques, applied singularly or in combination to treat, diagnose and prevent illnesses and maintain well-being handed down from generation to generation whether orally or in writing (WHO, 2005).

*TRIANGULATION*

Convergence of multiple perspectives and realities (two or more) to provide greater confidence that what is being targeted is being accurately captured, offering greater completeness in terms of enabling to have a deeper and more comprehensive picture of the phenomenon (de Vos *et al.*, 2005; Tobin *et al.*, 2004).

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# CHAPTER ONE: ORIENTATION OF THE RESEARCH

## 1.1. INTRODUCTION

The research project on Generic Inhibitors to Conserve and Transform Traditional Technologies: The Case of Ethiopia; was a study undertaken in accordance with the requirements for the degree of Doctor in Business Leadership at the University of South Africa (UNISA). The motivation to conduct the research on the captioned topic emanated from the researcher's background influenced by living and working with a society that has been practicing variety of traditional technologies (TTs). The research topic reflects the need for conserving and transforming the surviving TTs if the socio-economic significances embedded therein have to be revitalized, or at least, preserve them as heritage resources of technological tools and methods. TTs are often "home grown" technical skills and methods usually passed from generation to generation through mentoring members of the inner circles or bestowed to subsequent inheritors (Hammersmith, 2007; Serbessa, 2006; Pierotti, 2011). The economic, spiritual, health, and cultural values served by practicing TTs can show the ontology held and perceived by respective societies where its epistemology is explored by engaging relevant participants drawn from the indigenous people of designated study fields (Fetterman, 2008; Sengupta, 2007; Hammersmith, 2007; Lundvall, 2004).

According to Sengupta (2007), traditional knowledge is an underutilized resource though many communities of the world still depend on TTs for socio-economic purposes on daily basis. One reason many people have a skewed orientation causing the underutilization or even rejection of TTs emanates from the ill-perceived connotation where the term "traditional" is "equated to extinct, redundant, or savage" (Sengupta, 2007:23). That is why scholars prefer to use the term "indigenous" alternatively, though there is a fear this alternative term may exclude valuable traditional knowledge contributed from and accumulated on non-tribal people or communities (Pierotti, 2011; Sengupta, 2007). Traditional knowledge is a cognitive process of acquiring skill and knowledge that could be adaptive (dealing with more of explicit) or innovative (dealing with more of tacit) practice of delivering products and services apparent to specific communities (Chilton *et al.*, 2010; Fetterman, 2008; Donaldson & Davis, 1991).

The core issue in traditional knowledge as a resource is that it is continuing being traded in the market across time, space, and people at a wide spectrum (Pierotti, 2011; Sengupta, 2007; Lundvall, 2004). The irony is, however, the basis of knowledge of traditional skill is often found in tacit or implicit form difficult to express and pass to others, unless one is to practice them by being a member of the inner circle, which makes it difficult to share between people of different entities (Chilton *et al.*, 2010; Lundvall, 2004). This limitation of documenting and making it explicit by those who use and control it is taken as the main factor why its conservation has been vulnerable. That is why there is an argument regarding of conducting a study on past civilizations that is based on the progress of TTs situated in a particular place and time, which is rather conceived more as humanistic or philosophical than a scientific discipline, dialectical rather than progressive, and controversial rather than conclusive (Wilkinson, 2010; Fetterman, 2008). As a result, exploring the underlying potentials, problems, and challenges (Pierotti, 2011; Boulmetis & Dutwin, 2005) of the cripplingly surviving or buried traditional technology (TT) treasures of the country that have been denied the attention and intervention they deserve has motivated the researcher to embark on such a daunting but ultimately a gratifying study engagement. Unlike the domain of modern ones that are in constant dilemma of being victims of accelerated obsolescence, the endurance of ancient technologies transcending over generations have even increased the researcher's curiosity and endeavors to answer the "how" and "why" it became possible to witness surviving technologies belonging to the remote past.

The conceptualization of Disruptive Innovative Theory, which is a prediction characterized by sweeping out old technologies by emergent innovations, one after the other (UNCTAD, 2002; Kotler, 2000; Christensen, 1997), and the product life-cycle theory stressing that all products have limited life time (Kotler, 2000; Suomala, 2008; Player, 1999), are in a stark contrast with the surviving TTs of Ethiopia. That is why, conducting a study to benefit the country and enhance the technological knowledge by uncovering the skills and methods of ancestors that have endured across centuries have been a captivating journey back in to history. The sense of responsibility to conserve and transform TTs by endeavoring to trace and restore the skills of the lost civilization and glory the country had mastered in the past has also given the researcher additional impetus to pursue with the study (Broughton *et al.*, 2005; Klein *et al.*, 2005). To witness ancient technologies still enduring the test of time and outliving the fierce competition spearheaded by modern technologies (MTs) was indeed a research worth conducting where

uncovering substantive findings in contribution to the world of the technological knowledge could become evident (Kotler, 2000; Aveyard, 2007; UNCTAD, 2004; Levitt, 1965). This research project has delved deep into the fields of the study and uncovered the secrets of endurance and the impediments to nurture the ancient technological merits that could have played a significant role in mitigating the economic and social hardships artisans and traditionalists of the country have endured (G-Teferi, 2010; Pankhurst, 2010; Counsell, 1999).

In conducting this study, an assessment on a priori research works designed and endorsed in terms of conceptual paradigms, research methods, and tactical approaches needed in interacting with participants were learnt and followed; and in some cases commented and updates suggested, as much as circumstances surrounding the environment of the study fields dictated. At the same time, the environment under which the study was carried had been full of “alarm buttons” that were in need of a heed well before the commencement of the fieldworks. There had been encounters with some people who considered TTs as nothing more than a mere heritage artifacts belonging to historical records and museums. Similarly, by contrasting with the pace of MTs, there were respondents who viewed the study as a futile engagement to rejuvenate the long-time “buried technologies.” In a nut shell, the camp of suspicious groups was by far greater than that of proponents, which required a hard work of pacification by showing the significance, relevance, and “phronesis” context of the study (Malcolm *et al.*, 2009; Fetterman, 2008). On top of contributing to the discourses of academia and impetus to cultural advocates, the research is, mainly intended to benefit those whose life is, directly or indirectly, depending on practicing and trading products and services belonging to TTs.

The focal point of the study was tuned to understand why the main constructs defining the fate of TTs were not able to play a pivotal role in enhancing the dynamism and, proactively, shape the destiny of indigenous technological resources that have been able to remain iconic across centuries. Hence, establishing findings that could uncover and potentially weed out the inhibitors, and create an enabling environment to mitigate the economic and social hardships ever confronting artisans of the country was taken as the culminating point of the study (G-Teferi, 2010; Counsell, 1999). The research work has further delved to investigate the antique products, customs, and methods that have been in application for generations tenaciously (Pankhurst, 2010a; G-Teferi, 2010). Many have survived in defiance of the harsh and rejectionist

environment, fierce competition, and cultural warfare spearheaded by illicit opponents and dominant innovations of MTs (Ekekwe, 2010; Bolden & Kirk, 2009; Ajei, 2007).

The research is carried around cases that could sufficiently reveal and explain the environment and conditions TTs have been enduring and operating by unraveling how they managed to live across centuries in the absence of proper recognition and appreciation by responsible bodies. As highlighted in the chapters and sections dealing with background information and literature review, this research has shown the potential benefits that can accrue if TTs are conserved and transformed, though currently, many are in despair or hanging on the verge of extinction. The recommendations resulted from the study have also indicated how conserving and sustaining indigenous knowledge could replicate to a broader developmental relevance, especially to the African societies who are accustomed and attached to TT practices. Since Africa has many societies valuing and relying on TTs, the findings of the study could amount to transferrable insights because indigenous skills and practices are embedded in their deep-rooted traditions (Ekekwe, 2010; Fetterman, 2008; Ajei, 20007; Kassaye, 2006). On top of the surviving and active skills and methods, the vast resources of artifacts and edifices were also assed to help in comprehending and appreciating the level of civilization the indigenous technologies have attained in their long-lived history. It is the researcher's belief that the economic and social values that could be realized as a result of recognizing and reckoning TTs of the country based on the outcomes of this research could be significant and the contribution to the world of technological knowledge substantive and original.

TTs make history alive by enabling humans to be connected with their past, present, and the future in eternity from which their identity and roots are traced and projected, as discussed and illustrated in eight chapters of this thesis document. In Chapter one of the thesis, orientation of the research, which included introduction, background of the study, objectives of the study, scope of the study, significance of the study, study environment, trustworthiness and transferability of the study, ethical considerations, plan of the study, and limitations of the study are presented. In Chapter two, theoretical foundation of the study dealing with the formulated theoretical, conceptual, philosophical, and methodological frameworks, upon which the research paradigm was based and structured, is reviewed. Chapter three of the thesis dwells mainly on reviews of literature resources belonging to seminal authors that are related to the subject matter

of the study. The literature review has dealt with assessing relevant research outcomes, historical accounts, and documented materials in a way to justify that this research work was not, indeed “reinventing the wheel” but looking for gaps in the existing body of technological knowledge (Creswell, 2009; Aveyard, 2007; Kumar, 2005; Punch, 2000). Chapter four addresses issues related to the problem statement and propositions predicted. In this chapter, the core problem that inspired and led the researcher to conduct the study is underlined and the central question with its components of sub questions is illustrated. Chapter five deals with the research methodology and design, defining the target population, the relevance of the measuring instruments used, and showing the activities embodied in the data generation process. Chapter six shows the analyzed and interpreted data generated from the field using a designate analytic models.

In Chapter seven, the outcomes of study fields are addressed in terms of presenting the blended inductions and established findings by showing how the core constructs of the research were framed out from the data analysis and interpretations relating to the answers of the research questions. In addition, explanations on whether the extant theoretical foundations and relevance of the predicted propositions, with regard to the subject studied, were accepted or rejected is discussed and illustrated. Chapter eight deals with conclusions of the research work and forwards relevant recommendations that are believed to effectively overcome the concerns framed in the research topic by answering the research questions and closing the literature gaps. In the recommendation part of the thesis, the intervention measures required if TTs are to be conserved, sustained, transformed, and enhance their dynamism for commercial and societal benefits is noted and discussed. It contains the mechanisms to be adapted so that the generic inhibitors in the context of the country’s socio-economic framework can be deterred. In addition, issues of concern that can stand by themselves, but related to this study are suggested for future research so that the subject of TTs can be compressively understood and the encounters could be competently addressed. As a final remark, the researcher’s reflection regarding the role of the core construct that has been defining the fate of TTs is discussed so that a dialogue on the subject could be initiated. In concluding the thesis, references and annexes related to measurement of instruments used in data gathering and analyses, and additional addendums are presented as integral parts of the thesis document.

## 1.2. BACKGROUND OF THE STUDY

### 1.2.1 Reflection on Ethiopian Civilization and Technological Treasures

Ethiopia is a country located in the Horn of Africa possessing magnificent and stunning geographical landscapes and climatic regimes ranging from temperate to sub-tropical and tropical zones all adding to the exotic beauty and wonders of the land (Varner, 2012; Pohl *et al.*, 2012; Pankhurst, 1997). The altitudes ranging from about 116 meters below sea level at Danakil depression, which is the lowest on earth, and rising up to 4620 meters above sea level at mount Ras Dashen of Semien escarpments, atop Africa's highest plateau called the "Roof of Africa," makes the country full of contrasts of natural beauty (G-Teferi, 2010; CCD, 2013-2014). The majestic topographic features of the country comprises ragged mountain ranges, deep gorges, plain fields, savannah lands, active and extinct chained volcanic lakes, etc., that are full of captivating vistas, and ample traces of fascinating edifices and cultural artifacts depicting the richness of history; all to mellow spectators (Varner, 2012; Milkias, 2011; Henze, 2000; DE, 1997). In fact, its mountainous chains are separated in to two by the Great Rift Valley that runs from middle east into south east Africa (Varner, 2012; Gish *et al.*, 2007).

Ethiopia is also a major "world center" of biogenetic diversity with rich floral and faunal resources where many domesticated crops and cereals, and traditional agricultural technologies such as the registered world heritage "bench terracing" system of the Konso communities are found (Varner, 2012; Fanta, 2004; Twarog & Kapoor, 2004). The mosaic of cultures is very much varied and distinct, which could give the country leverage for tourism economy and anthropological studies. On top of being a home of variety of nations and nationalities that gave rise to a mosaic of cultures, the country's geographic and biogenetic endowments could be also considered as factors that have contributed to the abundant stock of traditional technological resources (Fanta, 2004; Henze, 2000). These makes the country endowed with all the three major categories of attractions: historical, cultural, and natural (Varner, 2012; Henze, 2000; Levin, 2000). Especially, the role and effectiveness of TTs in the country could be related to the level of civilizations attained in its remote history where their application, though at diminishing rate, is continuing even in the modern settings. Nevertheless, when it comes to the reality of the country, the fact that tangible and intangible traditional knowledge could have been useful in enhancing

subsequent innovations is not found to be so. Often they are in a state of neglect and doomed to remain undervalued and in a state of rapid extinction (Twarog, 2004; Sahai, 2004; Fanta, 2004).

In the context of this research, the expanse of TTs encompasses inventions of tools and designing techniques that have been in use for the purpose of conserving energy, saving time, facilitating activities, defending external forces, surmounting hardships, adapting to changes, exploiting natural resources, etc. while interacting with the surrounding environment (Sobania, 2010; Pankhurst, 2010; Counsell, 1999). TTs are innovations built from shared values and aspirations of given communities manifested in their culture, institutions, rituals, lifestyle, etc., which in turn enabled them to get the most out of their relationships and their surroundings (Twarog, 2004; Bhatti, 2004; Fanta, 2004). TTs have been useful in playing economic and social roles performed at individual and community levels as inherited from their predecessors or ancestors with no or little modifications and alterations (Sobania, 2010; Twarog, 2004; Fanta, 2004). More often, the skills and tools are transmitted from generation to generation as accustomed by oral mentoring and apprenticeship or practical exposure often practiced in areas long inhabited by the human species (Sobania, 2010; Twarog, 2004; Fanta, 2004).

TTs are not specific to Ethiopia. Societies of the world are used to and still rely heavily on TTs (HCA, 2010; Bertram, 2011; Sengupta, 2007). However, the motivation of the researcher and the discipline of research demand to be specific where it became necessary to delineate the subject to the Case of Ethiopia (Creswell, 2009; Kumar, 2005; Mouton, 2001). In the Ethiopian context, the concept of TTs refers to heritage resources of indigenous and customary skills, tools, instruments, and techniques of applications that have been in use for economic and social interests for more than a century; of course without blurring their roots or significantly altering or adulterating the ages old practicing systems and norms (Gasiorowski, 1981; Abotomy, 1981). However, a technological heritage less than a century old can be also considered and get registered if uniqueness and ecstasy in line to social, economic, and cultural values are exhibited (Gasiorowski, 1981; Abotomy, 1981). As a result, it can be noted that Ethiopia is a country rich with history of ancient civilization traceable to its supremacy in the inventions of TTs, which could have contributed to preserve its independence from the ravaging colonization by repelling and defending all sorts of foreign aggressions (Henze, 2000; Zewde, 2002; Levin, 2000). In fact, the country is one of the countries that do not have a specific date of commemorating an

independence day (except those denoted to mark regime changes) because its sovereignty has never been encroached in its long history of nationhood. According to Henze (2000: xiii), “Ethiopia is one of the oldest political entities in the world and where history is always alive.” Though there is a recorded history indicating that the formation of the country dates 4000 years old, archaeological and paleontological findings takes its history back into millions of years (Henze, 2000). Ultimately, the deduction of historical accounts and archaeological proofs has led to the claim that the country is indeed the oldest formally structured country of the world (Klein *et al.*, 2005; Counsell, 1999).

On top of this, anthropological and paleontological discoveries have revealed that the oldest human skeleton named Lucy, hominid human remains, who had lived 3.2 million years ago was found in 1974 in Hadar-Afar region of Ethiopia (Hancock *et al.*, 2009; Donald, 2005; Henze, 2000; Pankhurst, 1997). This fossil is yet the nearly complete oldest human skeleton remains known in history, which deductively makes the country the origin of humankind (EBC, 2015; Hancock *et al.*, 2009; Donald, 2005; Klein, 2005; Henze, 2000). In relation to such revelations, the rudimentary stone tool of 2.5 million years old found in the same place can be claimed to be the oldest technology used by humankind as the starting point of advancing innovations in parallel with human evolution (Milkias, 2011; Tamene, 2010; Bousman, 2005; Pankhurst, 2001). The discovery of such primitive tools in the great Rift Valley of Ethiopia belonging to the Paleolithic era or Old Stone Age supports the argument that the use of stone tool was indeed the beginning of technology the oldest mankind ever innovated and applied (Milkias, 2011; Henze, 2000). By deduction, the country being the oldest domicile of humankind, the discovery of oldest technological heritages in the land could be hypothesized as to have a direct correlation demonstrating that wherever there were humans, there were parallel and apparent technologies.

Stone tools are suitable to understand the activities of ancient humans because they are not easily “decomposed.” Rudimentary stone technology that started before two million years as a crude tool in the land of present Ethiopia has evolved and developed to blades, hand axes, and spears (William, 2008; Shott *et al.*, 2007; Alemayehu, 2000). The use of stone tools has indeed continued well into the present generation (Bertram, 2011; William, 2008; James, 1997). Ancient stone tools are live primitive TTs still used in cutting, digging, and scraping in many areas of Ethiopia, especially around *Gamo* region (William, 2008; Shott *et al.*, 2007; James, 1997).

Ultimately, these rudimentary tools were able to evolve and transcend into a more advanced technological manifestations across centuries until becoming applicable in the shapes and context of modern ages. The extent of technological inventions of the country could be further attested by observing the varied and fascinating artifacts that are still conserved or preserved in museums, churches, castles, private collectors, etc. (Varner, 2012; Fanta, 2004; Sobania, 2010; Pankhurst, 1997; Abotomey, 1981). This reality leads to establish an argument that the land is indeed the first where humans originated, technology innovated, and civilization flourished (Pankhurst, 2001; Hancock *et al.*, 2009; Belay, 2007; Levin, 2007).

The earliest TTs of Ethiopia had the opportunity to become even more advanced and cross-fertilized due to the impetus created by being homage and promoter of world major religions. The historical accounts reflected by Levin (2007) have shown the introduction of Hebric before 6<sup>th</sup> century B.C., Christianity in the 4<sup>th</sup> century A.D. century, and Islam before it was officially embraced in the land of its origin in the 6<sup>th</sup> century (Varner, 2012; Chiani, 2009), have made the country one of the world's oldest sanctuary and surviving institutions of religions. This situation is believed to have helped in creating a blend of ancient technologies and respect and tolerance among religions the country has been adoring across generations by fellow citizens: a land where diversity has never been a curse as experienced in many areas of the world. Such coherence among different religious sects could be hypothesized as the basis for the development of iconic TTs the country managed to own (Briggs, 2009; Levine, 2000; Henze, 2000). The long-lived interactions and acquaintances among the religions are also believed to have contributed to the advancement of rich culture and social serenity not vulnerable to the breeding of identity-based conflicts and extremism as could be feared elsewhere. Before Orthodox Christianity and Islam were introduced to the hinterland, the country's main dogma of religion was rooted in the teachings of the Old Testament that served as a bridge to the New Testament (Varner, 2012; Belay, 2007; Pankhurst, 1997), a unique continuum of Christianity in its old and new versions worshiped in the country. The dogma of the Old Testament has indeed continued till now by the believers of the so called "*Felasha*." These people consider themselves as descendants of the Israelites who are also known for their skills in inventing traditional handicrafts (Varner, 2012; Belay, 2007; Pankhurst, 1997).

To the contrary, the current intrinsic views of the Orthodox Church could not enable to tap and promote own religious artifact including the acclaimed historic *Arch of the Covenant* of the commandments and the *Piece of the Cross* where Jesus was believed to have been crucified. As claimed by the church and some authors, these artifacts are believed to remain “locked” in areas called *Axum* and *Gishen* respectively for centuries without revealing the preached miracles (Pohl *et al.*, 2012; Varner, 2012; Hancock *et al.*, 2009; Chiari, 2009; Henze, 2000). Same weakness in nurturing spirituality and tourism attraction centers is also noted in Islamic entities, especially in promoting the site of the oldest Mosque and the first *Hegira* outside the region where Islam originated, the *Al-Nejashi* (Pankhurst, 2001; Henze, 2000; Levin, 2000). Even the *Jewish* belief has remained practiced and engraved throughout the history of the country, which might be the oldest religious establishment outside its origin (Varner, 2012; Chiani, 2009; Henze, 2000; Levine, 2000). These accounts show that the country has indeed been the fortress of the major religions of the world though a point to note is that the adaption of religions was not confined to internalizing spiritual doctrines only. Cultures, taboos, and rituals of the religion originating societies were also imported and embraced. TTs associated with the religions also migrated and cross-fertilized with the indigenous skills as noted in the hand crafting practices of the *Jewish-Felasha* tribes (Pankhurst, 2001; Henze, 2000; Levin, 2000). The Arab culture, language, rituals, and naming of persons observed with regard to the followers of Islam is a case in point. In Orthodox Church, to some extent the naming of persons and the practicing of some rituals are also adapted from the Jewish domains ambushing indigenous cultures and identities in a pretext of religious practices. This situation indicates that the culture of the country is also adulterated by alien cultures while adapting and contextualizing the influences of migrated religions.

The tangible and intangible cultural and technology heritages registered as UNESCO world heritages could also attest the technological richness of the country. Some of the vivid technologies that were able to produce splendid products and artifacts are indeed amazing for the age they were invented and applied. The ample inscriptions the country had mastered in its old history can be inferred from referring into the dozen ancient parchments of manuscripts registered as UNESCO world heritages. The ancient books of parchments of the country were indeed able to tell, firstly, that the world is a spherical in shape as early as 14<sup>th</sup> century before scientists of west came to prove it late in the 16<sup>th</sup> century (Ethio5p, 2015; Belay, 2007). The Ethiopian Calendar is also believed have evolved starting around 2000 BC (Varner, 2012;

Pankhurst, 2001; Adhana, 2003). This calendar is claimed to be the oldest and original invention (except for some adulterations including the hour of the day that starts to count at midnight), which can be also inferred to suggest that even the knowledge of the oldest astronomy could be rooted in this land (Ethio5p, 2015; Bayu, 2014; ETV, 2014b; Haile, 2008; Belay, 2007). This hypothesis can be appreciated by relating to the horoscope practices that are still evident, at least confined around traditional circles of ancient church teachings (Ethio5p, 2015; Bayu, 2014; ETV, 2014b; Haile, 2008; Belay, 2007). Old coins were also found at *Axum*, which could indicate that the country was indeed a pioneer of trade economy (Milkias, 2011; Pankhurst, 2010; Chiani, 2009). These technological and historical accounts could lead to deduce that Ethiopia is indeed a land “where it all began.”

However, the momentum of TTs’ dynamism has been forced to confront many external and internal challenges and impediments including wars of destruction of which the most prominent were those waged by the internal worriers in the name of Yodit in the 10<sup>th</sup> century and Ahmed Gragn in the 16<sup>th</sup> century (Chiari, 2009; Gish *et al.*, 2007; Henze, 2000). Empress Yodit from the *Zagwe* dynasty and Ahmed Gragn, who was chief of the Muslim invaders from the eastern region of the country, with aim of expanding the teachings of Islam over the Christians of the highlanders, are responsible for the destruction of many inventions, architectural fascinations, cultural heritages, and ancient manuscripts (Hancock *et al.*, 2009; Gish *et al.*, 2007; Henze, 2000; Pankhurst, 1997). The armed robbery of countless inventions and artifacts by the British expedition to conquer Emperor Theodros at a place called *Mekdella* can be also cited among foreign interventions that resulted in a huge destruction of the country’s technological heritages (Pankhurst, 2001; Zewde, 2002; Henze, 2000). Though Ethiopia has escaped from direct colonial domination, its economic and social development has been miserable and crippled even by the standard of those who fall victim to colonization due to the impacts of neo-colonialism and the aforementioned external adversaries and internal political rivalries. In fact, the country’s independence from colonialism has represented the hopes of many African and beyond as icon of black independence; yet it had become a case of “frustration” due to its economic crises and deadly politically induced civil wars (Sarbo, 2009; Zewde, 2002; Henze, 2000). To the contrary, the following expression on the country’s past supremacy in civilization and technological innovations can summarize what has been said so far. The researcher picked this quotation not because it is a statement of an authority on the country’s history, but for the simple reason that it

depicts the image of the country the researcher has already observed and drawn as aesthetic impression; and further, justify why to conduct a research on the topic becomes relevant.

*Ethiopia is truly a land of discovery-brilliant and beautiful, secretive, mysterious, and extraordinary. Above all things, it is a country of great antiquities with cultural and traditions dating back more than 3000 years. The traveler in Ethiopia makes a journey through time, transported by beautiful monuments and ruins of edifices built long centuries ago (Ancient Empire , 2004, n.p.).*

Despite the long history and contribution to the economic and cultural role TTs used to play, they have been, rather, rejected or overlooked (Sarbo, 2009; Yeneabat, 2007). Traditional handicrafts practitioners have been marginalized, even not allowed, to own land and socialize but treated in segregation and counted as outcasts (Sarbo, 2009; Yeneabat, 2007; Yadeta 2002). According to Sarbo (2009), almost all leaders in the modern era known in the history of the country have been ruling coercively, which have been stifling innovation and conservation of technologies, development of socio-economic wellbeing, and entrepreneurial drives (Sarbo, 2009; Yeneabat, 2007; Yadeta 2002). Sarbo's (2009: 5) assertion is that, in the history of the country, political leadership has been changing by violence and coercion not by the will of the populace as a lasting feature of the "historical legacy of crises of state legitimacy." With respect to TTs, the acts of the leaders have been more of destruction than construction and conservation. Most of them were cited as destroying what past generations have innovated and constructed instead of conserving, enriching, and adding on top of a priori accomplishments (Pankhurst, 2010; Sarbo, 2009; Yeneabat, 2007).

The innovative technological advancement past generations of the country were able to register that could be appraised by analyzing the stocks and edifices of old civilizations are also taken as markers and tracers of the roots and versatility of the societies' inherited identity and culture (Pankhurst, 2010a; Pankhurst, 2010b; Chiari, 2009;Asnik, 2006; Henze, 2000; Levin, 2000). Nevertheless, rejecting and ignoring merits and skills of previous generations, as if they are dead and buried with the past, just to start afresh, or as Ajei (2007) has explained, to assimilate to the detached, and "non-fertilizing" alien technologies and cultures, leaves a vacuum that cannot be filled with the so called "modernity." Due to this reality, the difficulty to blend the traditional with the modern, or to abandon either and uphold the other, can be assumed as one

cause blurring the directions of holistic and rooted development programs that is not free from the “negative ripples” of contradicting cultures. That is why there is an urge for valuing “African knowledge” rooted in traditional practices by showing how it can be captured and conveyed to the extent it could resonate in the “lived experiences” of contemporary societies (Bolden & Kirk, 2009; Khoza, 2009; Senge, 1990). Traditional knowledge has intrinsic meanings that go beyond economic values like cultural, spiritual, aesthetic, artistic, ecological, etc., where its application is more efficient, appropriate, accessible, and internalized to local communities (Varner, 2012; Tolossa, 2006; Twarog, 2004). However, the marginalization of the culturally oriented trades by skewed orientation, and in some cases, counter-productive government policies (Alemu, 2013; Tolossa, 2006; Kassaye *et al.*, 2006), have obscured the initiation to conserve and regenerate the values embedded in ancient technologies.

In the context of this study, it can be stressed that national planning of the country that has not recognized the role TTs are playing in socio-economic terms has indeed missed a significant value-factor, which could not be a competent and complete plan. That is why handicraft practitioners have been forced to suffer subjugation and marginalization that goes up to death, and even to suspect them as main “vectors” of illnesses related to evil spirits: a major problem that had hindered the development of indigenous technologies and the “well-being” of practitioners (Yeneabat, 2007; Yadeta 2002). In fact, Emperor Yeshaque (1413-1430) had gone to the extent of proclaiming that *Felasha* (artisan tribes) be uprooted from any land possession because they have been perceived as “polluters,” which caused the avoidance of their integration into the society for fear of “evil eye;” a view that has persisted up to present days though at a diminishing level (Yeneabat, 2007). According to Yeneabat (2007), from the past rulers Menelik II, who reigned a century ago, is referred as a notable king to issue a decree to protect artisans. He even encouraged them to settle in Addis Abeba near the palace (embroidery workers by the side of the palace; gold smiths in a place called *Serategna Sefer*; potters, blacksmiths, and weavers in a place called *Kechene*) (Yeneabat, 2007). The author believes that traditional handicraft, a skill which is inherited from family members or mentors, has been the basis of social, cultural, and identity manifestations and economic significance for many generations, though they have been forced to endure marginalization and stigma. This raises the curiosity to know the myth that has been underpinning in sustaining the skills across generations despite the segregation and prosecution artisan were doomed to endure. Renaissance of the once glaring Ethiopian

civilization is badly in need of intervention. Rediscovering the roots of the lost civilization and valorizing the rebirth of the ancient glories of the country, before the remaining technological traces vanish becomes topical (Varner, 2012; Sobania, 2010; Singh, 2009; Ruggiero, 2002).

### 1.2.2 Highlights on the Enduring Ethiopian Technologies

To appreciate the endurance and uniqueness of the country's TTs, a glimpse in to the history, socio-economic manifestation, artistic portrayals, and handmade artifacts can suffice. Among the active TTs that can be enumerated to justify the richness of TTs practiced in the country include Medicine, Textile/Weaving, Agriculture, Pottery, Architecture, Cosmetics/Makeup, Cuisine, Art, Culture, Music, etc. These technologies are still in application at different levels of significance, whether in the shadow or explicitly, depending on the level of rejection or appreciation they endure (Ethiopian Culture, n.d.). The amusement one can experience from exploring TTs of the country can extend into the art of making jewelry, hairstyles, embroidery, iron works, soil conservation, alphabet, calendar, etc. all reflecting deeply rooted societal philosophy and beliefs. Actually, the attempt to know the extent of the country's stock of the technological resources by Abatomy (1981) was not successful. His evaluation in general, however, has indicated the vastness of the resources left unnoticed, unvalued, and untapped. That is why looking into the tacit contribution of TTs to the economy (GDP) of the country and the resultant employment opportunities could not justify the unabated neglect of TT practices, which has reached to a level of a haunting concern (Kassaye *et al.*, 2006; Kifleyesus, 2004). Ignoring to account and even salvage the values of the already vanished technologies that are no more active as tools or techniques is also a concern from the view of conserving the country's heritages (Tamene, 2010; Abatomy, 1981; Gasiorowski, 1981).

On the other hand, the technology of obelisks or stelae construction, like the magnificent erection at the site of *Axum*, which are the "largest block of stone fashioned by humanity anywhere in the world" (Pankhurst, 2010a: 28) are already extinct technologies: a rare and splendid traditional skills that are lost forever (Figure 1). The elaborated stelae construction of Axumites is "the tallest examples of monolithic stone cutting known from the ancient world. We have no clues to the technology required to quarry and transport them, raise them to the vertical, and stabilize them in place, which is believed to have been built starting the 3<sup>rd</sup> century B.C. "

(Henze, 2000: 34): a mysterious technology of quarrying, transporting, and erection a mass of stone not thinkable even with present day technological sophistication. The building heritages of the rock hewn churches of Lalibela (Figure 2) and castles of Gondar are still exhibiting a magnificent architectural technology of their times. The blame of neglecting and marginalizing TTs is not, however, to rest on past generations only. Citing the construction boom the country is expressing currently, it is saddening that no one is embracing and reflecting such traditional skills and unique traces of technology, except some attempts seen with the Hilton Hotel in Addis Abeba having architectural features of Lalibela buildings (Dubois, 2010). The main building of the Commercial Bank also has some traces of local cottage construction topology, and the Axum Hotel in Mekelele city resembles to incorporate the architectural features of the Axum obelisk. It is regrettable the construction sector has failed to incorporate the traces of the marvelous ancient architectural technologies, evident in the crafts of the long-lived churches, palaces, age-old houses, and obelisks.

**Figure 1: A Stelae Made of a Huge Mass of Stone at Axum Town (from post card)**

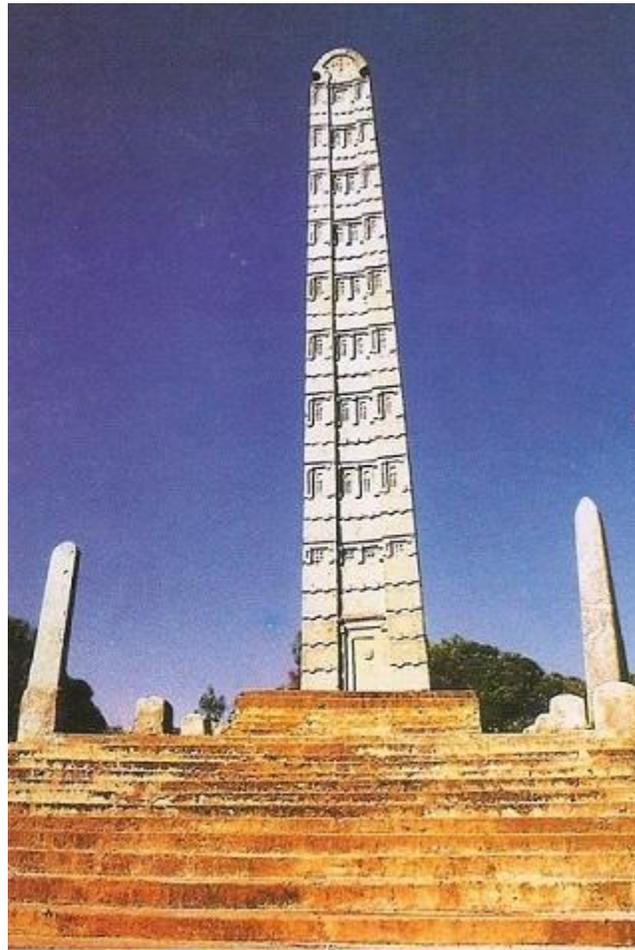
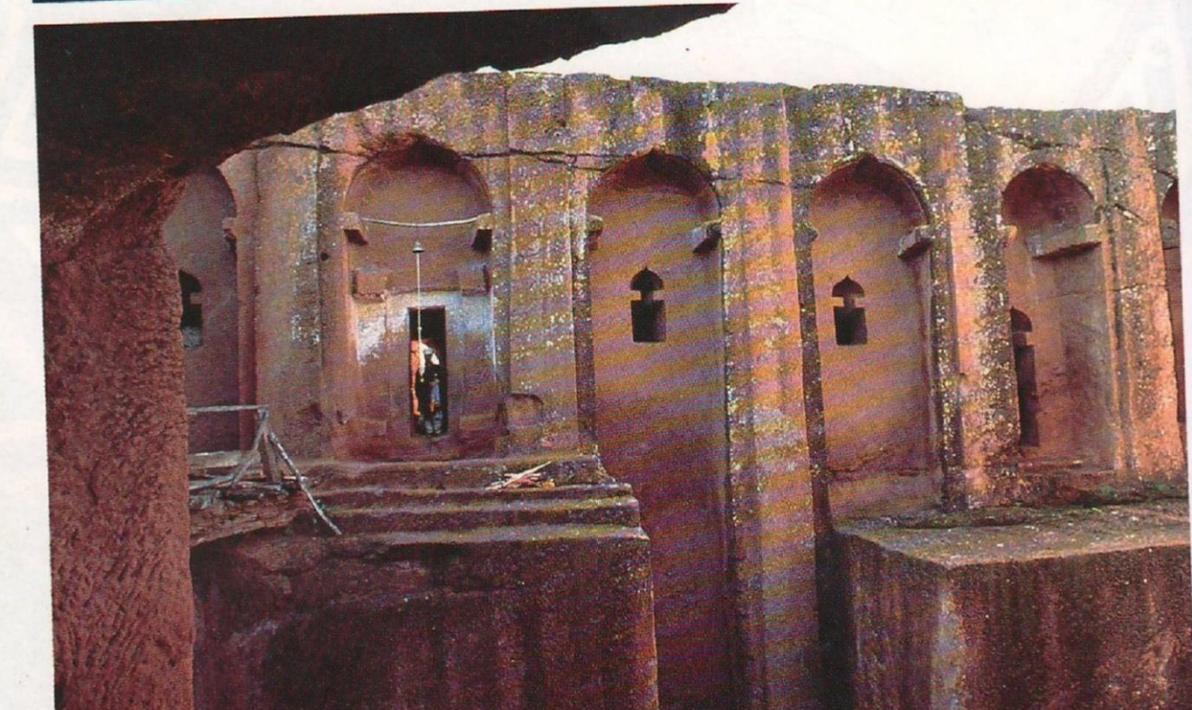
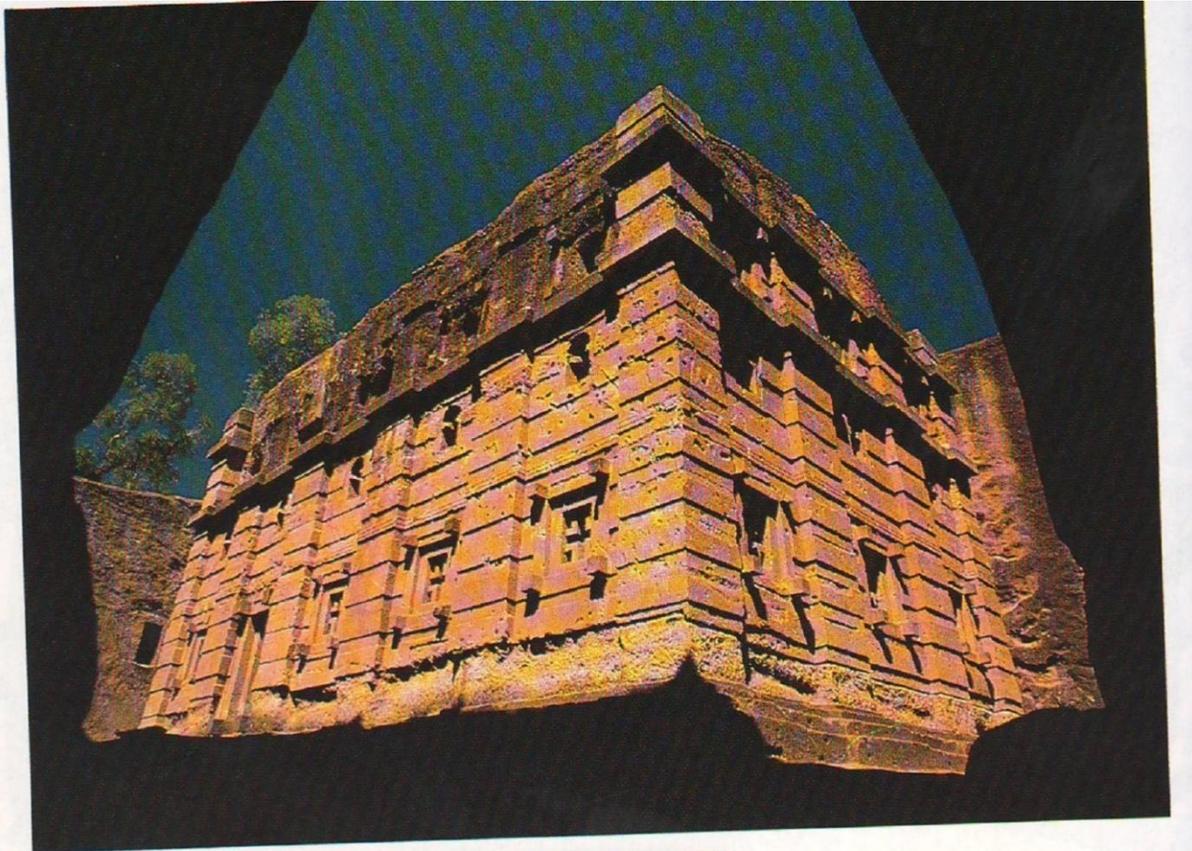


Figure 2: Rock Hewn Church at Lalibela Town (ETTE, 1997)



Similarly, traditional food preparation technology and specialty dishes are continuing to be the prime and nationally preferred menus where most of the kitchen utensils in many homes are also made of pottery crafts (Yeneabat, 2007; Kifleyesus, 2004). National Cuisine is almost a stock of every household (Yeneabat, 2007; Kifleyesus, 2004) not yet easily giving way to the promotionally and psychologically pounding influences of foreign dishes. The traditional cuisine also consists of variety of beverages ranging from mild to high concentration of alcoholic contents. Pottery crafting of Ethiopia also goes back to pre-Axumite civilization where mostly women who turn out to become pottery makers were suffering the consequences of social stigma, domestic violence, and even branded as “evils” or associates of “witchcrafts” (Pankhurst, 2010b; Azania, 2009; Yeneabat, 2007; ETTE, 1997). Traditionally, “pottery in Ethiopia linked to crafts in general was among the less honorable occupations. Those who knew the skill were feared and kept at distance” (Pankhurst, 2010a: 2): a damaging perception that have been ridiculing and defeating attempts to enhance TTs including the once highly praised skill or craft of the ornamental basketry and weaving culture of the *Harrari* women, which is getting lost before the knowledge is conserved (Asante, 2005). The skill of obtaining the traditional colors made from organic distaff is by now a virtually lost technology, which was evident up to the 1970s. Currently it is the “concentrated chemicals” in use without having any hint of the original and organic dying staff and processes practiced indigenously (Asante, 2005).

Among the unique features of Ethiopian cultures is their fanciful painting, especially found in churches depicting strong colors and clear lines, portraying religious events and stories. Parchment paintings often found in churches murals or church decorated expressions painted on walls, ceilings, and objects are manifestations of the artistic technology advancements the country has been mastering in its long history (Henze, 2000; Levine, 2000; DE, 1997). In fact, they are not a mere paintings only but storytellers where the entire story of the Holy Bible is depicted virtually in order to enable the illiterate believers of the time to grasp the teachings of the religion. According to Hatke (2012: 3), the country “possesses a written history stretching back two and a half millennia.” From this, one can learn how early the country had embarked in enhancing literacy works even before the adaption of Christianity in the 4<sup>th</sup> century by inventing one of wonderful human creations—the alphabet called Ge’ez (Ethiopic): that evolved into a full script around 1000 BC (Varner, 2012; Alemu, 2013; Hatke, 2012; Adhana, 2003; Pankhurst, 2001; Henze, 2000). This alphabet and language of the country is taken to be one of the

invention engines of TTs. In fact there are arguments that claim these language and alphabet to be the oldest ever invented by humanity (citing for being the medium of the book of *Enoch*—the oldest UNESCO registered manuscript): a parallel that can be contemplated with the land being the home of the oldest human beings (Varner, 2012; Donmoyer, 2013; Zaleski, 2011; Anderson, 2010; Belay, 2007).

The ancient Ethiopic language and alphabet referred as Ge'ez, has been serving as the liturgical language of the Ethiopian *Tewehado* Orthodox Church (ETOC) and the bases of the inscriptions of the country. However, any distinct society or group in the country does not currently speak the language, except the church using it as a medium of prayer, sermons, citations, and chorus starting the time the religion was adapted by the country. The extent Ge'ez was so ancient and developed can be inferred from observing and learning that the expansion of Christianity, including the Old Testament, was introduced to the country using this language and its script not via the language of its origin, though same pattern was not replicated when it comes to the introduction of Islam. The Ge'ez language has already become a history where ancient knowledge and secrets contained in numerous manuscripts are abandoned to rust and perish across churches and monasteries they used to be stored (Radio Fana, 2014). This shows that when a language gets lost, the entire socio-economic fabrics with its technological, psychological, philosophical, accumulation of knowledge, and cultural heritages including the identity of the people embedded in it are also bound to vanish. When it comes to the alphabet of the language, the observation of the researcher who is acquainted with three alphabets of the world, including Arabic, has witnessed that Ge'ez is the only alphabet that can accommodate varied sounds and accents competently, economically, and efficiently. The Ethiopic or Ge'ez alphabet uses appendages of signs as vowels for expressing consonant sounds and accents (Alemu, 2013; Varner, 2012; Pankhurst, 2001; Henze, 2000).

The sounds of Ge'ez letters that are based on the dimensional movements of the mouth are designed to be shaped in conjunction with the interactions or maneuvers and turn taking of the tongue and throat that can go up to forming seven sounds for each utterance. The appendages for every letter are, in fact, the factors that define the type of the sounds apparent to the specific letter that could be taken as expression of consonants on which the anatomy of crafting the Ge'ez alphabet is based (Belay, 2007; Adhana, 2003). As a result, there are no sounds and accents that

are not captured by Ge'ez letters, which makes it unique and comprehensive. That is why in the Ethiopic language, there is no as such "bad language" emanating from differences in pronunciation because the Ge'ez letters represent specific voices and accents in a rigid manner. The most interesting feature of the Ge'ez alphabet is that there is no need to memorize or refer dictionary to spell out words or understand pronunciations because there is a perfect match between the voices and the accents with corresponding letters of the alphabet. In relation to the application of Ge'ez alphabet, some may argue as if the signs of appendages to the consonants are to be considered as stand-alone letters while, in actual terms, they are part and parcel of the principal or the consonant letters. Denying this reality, shroud proponents of western alphabet have been promoting their illicit motives by basing their arguments as if the number of letters of Ge'ze are big compared to that of *Latin* by counting the appendages as consonants denying the fact that they are serving as vowels. They try to base their argument by camouflaging the multiplier vowel letters evident in many alphabets of the world. In fact, if the consonants are to be multiplied by the vowel letters where it could extend up to double applications, the *Latin* could even outnumber the Ge'ez letters in the way they have based their argument.

On the other hand, ignoring the intention of the country's ancestors in inventing the Ge'ez alphabet, some have committed a crime by denouncing some letters to be ejected out of the list as if they were anonymous or redundant, or as if they represent the same sound and accent while the fact is to the contrary. Among the letters they presume to represent the same voice and accent in a specific language are, indeed, derailed from capturing the true intentions of the inventors that they were meant to express different but related sounds and accents. As much as the letters are taken as redundant, the language in concern remains to be stunted or lost the embedded versatility due to missing the meanings in terms of incorporating the intended voices and accents. Some letters, however, may still need further investigation to uncover their original purpose or meaning by studying their anatomy in relation to those generically related languages, i.e., Ge'ez, Amharic, and Tigrigna, not from the perspective of a given one only. Without knowing which letters are fit with which language's voices and accents could result in a short sighted conclusion. Nevertheless, to own alphabet was indeed one of the manifestations of technologically advanced societies because technology of writing has been the most important innovation of humanity following the creation of language (Stake, 2013; Donmoyer, 2013; Zaleski, 2011; Anderson, 2010; Alemu, 2013; Rihll, 2009). The Ge'ez alphabet and language are surviving not because

there are designate communities or societies who speak the language but because it was fortunate enough for being a scripture and liturgical language of the church and ecclesiastical scholars, mainly the priests and *debteras*.

On the other hand, many traditional musical technologies are still surviving and active, which include the unique single-stringed *mesenko*, lyre-like plucked *kirar*, simple reed flute *washint*, etc. (Larson, 2010; Tessema, 2009; Adejumobi, 2007; ETTE, 1997). Ethiopia has distinct music and dance performances of varied styles and forms (DE, 1997). In fact, the first musical notation/scale is rooted in Ethiopia—pioneered by Saint Yared as early as the 6<sup>th</sup> century A.D. in the Ge'ez language, centuries before the west came to learn the writing of notation (Pankhurst, 2001; Levin, 2000). When it comes to costumes, Adejumobi (2007: 25) has explained the scenario as, “the love for ornamentation ruled by a natural affinity for beauty leads Ethiopians to adorn themselves in often memorably dramatic fashion.” In addition, the traditional armament technology past generations were able to produce has enabled them to competently defend their territories and defeat enemies. Especially, the traditional spear and shield, though rudimentary, have been used as a symbolic weapons signifying sentimental attachment as inherited heritages adapted almost by all nations and nationalities of the country. Such conviction and symbolic ownership across the compatriots of the nations, though remained unnoticed, could have served as an iconic and historical altar of the national emblem or official logo.

Predominately, it was by using such rudimentary but “venerated” weapons that the patriots of the country were able to defeat colonizers at the battle of *Adwa* in 1896 and a priori attempts. The fact that Ethiopia was victorious against the colonial drive of Europeans was seen as an exemplary phenomenon to inspire and mobilize the oppressed people. The event has demonstrated to Africans that colonization can indeed be defeated, and hence consolidated their resolve in waging a continental struggle for independence. On the other side, colonizers were forced to reckon on the danger Africans can pose, which they never thought of encountering a humiliating reprisal at this magnitude by the “uncivilized” people so much they undermined (Milkias, 2013; Commey, 2015; Abdel-Aziz, 2011; Vestal, 2005). Actually, the victory of *Adwa* was achieved not because of supremacy in armament over the invader but excelling in indigenous methodological warfare technology. In fact, it was due to this victory that the colors featured in the flag of the country were taken as inspirational and endorsed (at least tacitly) to

reflect the basis of the emblem or flag of the United Africa by the late prominent freedom fighters and pan African activists (Al-Qawi, 2015; Bedjaouri, 2012; Olaosebikan, 2011).

Pan African activists had already defined and laid the bases of the “Pan-African colors” of symbols upon which the color combination (green, yellow, and red) were supposed to be taken as enshrines of the flags of the continent, though many nations, except some in west Africa, have failed to understand the engraved historical perspectives and meanings. The unifying vision as stated in Pan-Africanism (n.d.) has indicated that: “Several newly established countries in Africa adapted these three colors in homage to Ethiopia’s resistance against foreign occupation.” Indeed, the historical ignorance to acknowledge the aspirations and vision of Africa’s great leaders to bring the continent under “common government” and similar flag of the “United States of Africa” with the already designated colors had deterred the initiation to feature and enshrine their vision even in the helm of the bonding organization, the African Union’s (AU)s emblem: a cause of unity seemingly on being realized, at least sluggishly, from the seeds sown by the struggle of the continent’s forefathers (Al-Qawi, 2015; Bedjaouri, 2012; Olaosebikan, 2011). In fact the major weakness lies in Ethiopia where the country has failed to promote the historical symbolism, mainly of *Adwa* victory, which served as the embryo for the emergence of Pan-Africanism concept that could have been emulated to the level of Global Black Heritage icon. In deed, this event has emulated the motivation for the anti-colonialism struggle waged in many parts of the continent without which the independence of many countries could have been more protracted and prolonged.

Traditional knowledge of the country is not confined to technical skills only. It can be also learnt from the deeply entrenched practices of social, economic, and political inheritances. Traditional cooperatives have been in use as systems or methods to mobilize and forge financial and human resource pools way back before the concepts of modern financial institutions came to the scene. Associations like *Edir* (literally insurance), *Ekub* (literally bank), and *Debo* (literally collective work or cooperatives) signify the level of awareness in collective resources mobilization traditions that have been practiced to maintain the economic and social well being of indigenous societies (Veerakumaran, 2007). Societal and communal conceptions and activities at national or local levels of the country were heavily influenced by the cultural and traditional oriented tacit rules and dictations, which has continued to date, in many cases, framing people’s

behaviors, actions, relations, and “world outlooks.” Justice delivery is noted even to have been better rooted in traditional norms than in contemporary establishments. “Elders processions” were respected for their power of wisdom that enabled wrong doers to repent transgressions committed against accepted legal, social, and moral norms. Unlike the conventional systems, which depends on popular voices and rigid stature, their verdict was observed to have been based on wisdom, constructive, conciliatory, and not a win-lose game but restoring and nurturing victims of both sides.

When it comes to discharging administrative or political issues, many communities had the practice to administer their affairs using culturally coined norms. An inclusive government that reflects the concepts of democracy was in fact conceived in the country for a long time where no one could imagine it in any corner of the world. Especially the political culture practiced for generations way before the concept of democracy was incepted in the west, the Oromo people of the country have been practicing exemplary, matured, and inclusive political traditions termed as “*Gada*” system (Varner, 2012; Briggs, 2009; Heinz, 2000). The system was notable for its suitability in embodying, not only the contents of the so called conventional democracy but the reflection of wisdoms in its splendid form inferred from the experiences of elders (Varner, 2012; Briggs, 2009; Heinz, 2000). Even the popular government model of Federalism had been long pioneered and practiced in Ethiopia before the term itself was conceptualized anywhere else. Emperor Yohannes, who ruled the country around the 1870s, was the king of kings, which implied a government structure whereby the regions were ruled by their own kings under the king of the kings signifying the devolvement of political power from the central government.

Likewise, traditional education of the country has a long history, which was in most cases designed and led by the church. The system was mostly undertaken by the motivation of unordained clerks but highly learned clergies called *debteras*. *Debteras* are not involved in administering sacraments or celibacy as in the case of monks or priests. They informally serve the church as choristers, scribes, poets, dancers or teachers. According to Tolossa (2006), Yineger *et al.* (2008), and Serbessa (2006), western led and oriented educational system spearheaded by 19<sup>th</sup> century emperors of Ethiopia was the prime cause to discourage traditional schools and “uproot” the indigenous intellectual fabrics, which had its unique historical and cultural background. The rulers failed to recognize that proper definition of civilization is a

higher achievement in culture, morale, ethical values, architecture, arts, and societal fabrics, which was already achieved by the pioneers of ancient Ethiopian traditions. They should have traced and nurtured the roots rather than uproot and replace it by western ideologies and thereby expedite the demise of the heritages the country accumulated and owned for generations (Tolossa, 2006; Yineger *et al.*, 2008; Serbessa, 2006). In the hierarchy of Ethiopian traditional church education, to reach the highest level of schooling takes a minimum of 30 years, especially to become an ecclesiastic scholar, the *Debtera* (Tolossa, 2006; Yineger *et al.*, 2008; Serbessa, 2006). Traditional education of the country was not wound up in school life only. Especially, the process of learning church doctrines continues with believers in the form of a life-long mentoring. Even today, devotee Christian community members have a confessor (father of the soul) who plays the role of coaching and mentoring moral and ethical values throughout the life of a person (Alemu, 2013; Tolossa, 2006; Yineger *et al.*, 2008).

The endeavors of Emperor Menelik II and Emperor H/Sellasse to introduce western education system to the country by pushing hard to the point of punishing parents who resisted to send their children to “modern” schools (because the society feared their children could go out of their customs and beliefs), though naïve, had the intention to benefit the country from the advancement of science and technology of the west. But this was done without seeing what the country owns and that their actions were going to alienate the society from its deep rooted history, technology, culture, language, philosophy, mindset, art, and the entrenched social affairs (Yineger *et al.*, 2008; Tolossa, 2006). That is why the contribution of Ethiopians educated in the western culture and style had been almost “iota” to the betterment of the toiling mass who badly needed a homegrown educated compatriots (Yineger *et al.*, 2008; Tolossa, 2006). When children were put in the so-called “modern schools,” they started the journey of being alienated from their traditions and became closer to be aliens to their roots (Tolossa, 2006). In addition to the importation of different ideologies, they even went to impose communism by abolishing property ownership and discouraging religious practices for which the society gives a great regard (Alemu, 2013; Yineger *et al.*, 2008; Tolossa, 2006). As these authors have argued, the effect of westernized education ended up in producing intellectuals that are more useful to the west than to their country. That is why many of the intellectuals ended up in the west, including the “revos” or communist minded intellectuals who used to abhor and raise slogans against the “Yanki” imperialism (Alemu, 2013; Yineger *et al.*, 2008; Tolossa, 2006).

The educational system and the derivative cultural hegemony were not able to neither get fully internalized nor give impetus to the indigenous dynamism, without which “development” was proved to be a farfetched errand (Ekekwe, 2010; Khoza, 2009; Maathai, 2009; Ajei, 20007). Yineger *et al.* (2008) strongly abhorred the motive of western model education proponents who had the connotation of replacing the Ethiopian alphabet, which is one of the oldest world alphabets (which should have been endorsed to the extent of becoming owned by entire Africa). The whole intention of their campaign in this regard can be taken as an illustration of sinister and dishonest motives with the intention of uprooting the society from the foundation of its traditions for the mere of securing transient political gains (Alemu, 2013; Yineger *et al.*, 2008; Tolossa, 2006). That is why when the internalization of the western education began getting deeper and deeper, successive generations became more and more allured and inclined to embrace western features, terminologies, names, etc., by getting more and more detached from the “originality” in which their identity is rooted (Yineger *et al.*, 2008; Tolossa, 2006). The confusion and threat in terms of language and culture has become more vivid, especially, in quarters of the enlightened citizens who often practice a hybrid language. Even if it is for new concepts, they could have invented generic word from the origin or borrow from other indigenous languages. Consequently, after paying heavy cost of backwardness resulted from cultural confusion and resistance to get assimilated to western orientations, the country is gradually tracking on development path at least by becoming more and more western; not on the bases of own indigenous knowledge and cultural versatility that have produced the once glaring innovations and civilizations (Tolossa, 2006; Yineger *et al.*, 2008). In conclusion, the information stipulated in the background accounts of the research has shown that the country is indeed a land where, not only humans but also the parallel technologies originated.

### **1.3 OBJECTIVES OF THE STUDY**

The attitude and management of TTs of the country in terms of accounting the socio-economic role they have been playing, and even salvaging insights from those already vanished that are no more active as tools or methods, has been a grave concern from exploiting the embedded benefits and heritages conservation point of view (Abotomy, 1981; Gasiorowski, 1981). Unlike the domain of modern technologies, which are in constant dilemma of being victims of obsolescence, the survival secret of ancient technologies kept in mystification across

centuries has even increased the researcher's resolve to vehemently pursue with the study. As far as there are mysterious or secretive and shadowy practices, the connotation is that there is a knowledge buried deep in societal sanctuaries that could be investigated and unraveled. The sense of responsibility to conserve and transform TTs, on top of endeavoring to trace and restore the skills of the lost civilization and glory the country had mastered in the past, were also additional sources of inspiration to pursue with the study (Broughton *et al.*, 2005; Klein *et al.*, 2005). To witness ancient technologies that are still enduring the intense competition spearheaded by modern technologies is indeed a lesson to learn that could have the potential of being replicated into the domain of the often "short lived" life span of modern technologies (Aveyard, 2007; Kotler, 2000; UNCTAD, 2004, 2002). It is ironical to know that the country had owned variety of centuries old technological resources without being viable in terms of creating competitive and comparative advantages (Hiebert & Klatt, 2001; Porter, 1997) where some of them could have even resonated beyond its boundaries.

Hence, the purpose of conducting this research was to help in reclaiming the ancient skills/methods of crafting or technological innovations currently in despair or hanging on the verge of extinction by designing a conservation and transformation methods as induced from the findings of the study. Besides enriching the technological knowledge by replications and challenging the viability of the relevant theories, the recommendations resulted from the study are also believed to have a broader developmental relevance that could be replicated in to the wider African Societies where indigenous technological practices are deep rooted (Ekekwe, 2010; Michaelides & Theologou, 2010; Khoza, 2009; Johnson-Sirleaf, 2006; Maathai, 2009; Trochim, 2005b). As indicated in the purpose statement, conducting an investigation in search of an answer how TTs managed to survive across generations, in defiance to the internal pressures and dynamism of modern technologies, was the main reason that initiated the need to conduct the captioned study. On the other hand, investigating the inhibitors that have been deterring the conservation and transformation of the technologies where the livelihood of many compatriots has continued to rely on (Yeneabat, 2007; Yadeta, 2002; Hiebert & Klatt, 2001) was another side that coined the objective of conducting the research. As a result, uncovering the embedded technological secrets and design methods to conserve and transform them for social, economic, and cultural benefits was the core objectives of the study, which was phrased to read as:

*To know how Ethiopian traditional technologies managed to sustain across generations, contrary to extant technological theories, and reveal the deterrents of the conservation and transformation they deserve*

Based on these objectives, conducting the research on conserving and transforming TTs of Ethiopia has helped to explore the problems (Leedy & Ormord, 2010; Henning, 2004; Punch, 2000) that have deterred the country in general, and artisans and practitioners, in particular, in getting the benefits of the technological resources originated in the past. The pre-designed objectives were instrumental in setting the focus of the study throughout the research process. Meeting these objectives is believed that the technological resources and leverages accruing from appreciating and nurturing the traditional sector could count in making a difference in terms of socio-economic contributions. Accordingly, the specific objectives of the research on the surviving traditional technologies of the country that were defined beforehand are:

Sub-Objective 1

*To understand how TTs of the country managed to sustain across generations contrary to the predictions of extant technological theories*

Sub-Objective 2

*To assess the economic and social significance of TTs of the country*

Sub-Objective 3

*To identify the generic inhibitors that have been operating against the conservation and transformation of the country's TTs*

Sub-Objective 4

*To unravel the replicable or transferable inductions that can enrich the body of technological knowledge*

#### **1.4 SCOPE OF THE STUDY**

The scope of the study that was defined before the commencement of the actual research has helped to properly address the boundaries and extent of the investigation, which was crucial in enhancing the efficiency and effectiveness of the research design by directing the magnitude of maneuvering and minimizing unnecessary efforts and wastages of resources (Lordsleem Jr & Melhado, 2014). As a result, the research methodology was defined and explained in terms of its

relevance to the topic of the study. The extent of the data collected was carried until “thick” information was retrieved from primary and secondary sources of multiple-sources by using multiple-measuring instruments. The scope of the study in terms of theoretical frameworks has also dealt to reflect multiple conceptual bases relevant to the constructs constituted in the study (Laitinen *et al.*, 2009; Stake, 2005; Yin, 2003).

The type and locations of the fieldwork engagement was conducted in the manner the sampling method and size was designed (Vaivio, 2008; Neergaard, 2007; Yin, 2003). The study fields were selected on the basis of theoretical sampling that were decided after scrutinizing the expanse and complexity of the target population (Laitinen *et al.*, 2009; Stake, 2005; Yin, 2003). The has investigation has dealt with three field sites drawn from the target population of TTs that were believed to be appropriate sampling for the topic studied. After the issues related to sampling method and size were put in order, the data generation process that was conducted, primarily on the study fields, has followed a longitudinal time horizon to retrieve “thick” data, which continued until “saturation” levels were attained (Leedy & Ormord, 2010; Creswell, 2009; Dawson, 2002). Based on the defined scope of the study, all spectrums surrounding the samples were investigated in-depth so that the result of the study could address the research questions and understand the core problems that have been haunting the survival and transformation of TTs. The study that took place in the sampled field sites has followed an inductive approach within and across the given settings with a due attention to the behaviors and meaning of respondents’ activities conducted, setups framed, and the environment in which they were situated.

The main constructs that were thoroughly investigated within the scope of the study were scrutinized in relation to the impact they have had in defining the fate and dynamism of TTs. To further understand the processes and interactions that took place within the fields studied, data generation was conducted until the relevant places, respondents, documents, and artifacts that could help to reveal focal and peripheral empirical and historical data were accessed (Leedy & Ormord, 2010; Creswell, 2009; Dawson, 2002). Subsequently, the data organization, categorization, and analysis were conducted by using pre-defined analytic models. The analysis was conducted in an in-depth approach so that all aspects of the “lived experiences” of the activities involved in operating, applying, and using TTs could be properly addressed (Leedy & Ormord, 2010; Creswell, 2009). From the cross-sectional and cross-case analysis approaches,

institutional and functional dimensions that could shade light in tracing weaknesses and strengths affecting TTs were identified and the underlying meanings and patterns were interpreted. Issues surrounding the technological aspects of the cases studied were assessed and analyzed as much as they could reveal the embedded meanings they embody and induced the knowledge of the “lived experiences” of participants of the research.

## **1.5 SIGNIFICANCE OF THE STUDY**

Establishing the significance and rationality of conducting a given research beforehand has the potential of enhancing informed decision making and setting strategies that takes into account the “natural interactions” so as to have a predictable, calculable, and controlled activities while justifying the relationship between decisions and practices involved in the processes (Anderson *et al.*, 2009; Olson, 2015; Paylon, 2014). Hence, conducting a study to benefit the country from the unconsciously and ignorantly abandoned heritage resources by uncovering and reviving the skills and techniques of ancestors that have endured across centuries was taken as a significant factor supporting the resolve to conduct this research. The researcher believes that the quest for development is not achieved by looking forward only but also by looking backward from where “lived experiences” and acquired skills can be captured and learnt—a rationale underlying the study of the technologies belonging to the past. Despite the lead in owning the oldest technologies and the resultant civilizations and advancements the country had been mastering, the reason subsequent generations have been enduring the burdens of backwardness is dwelt by this research and lessons to deter recurrence is learnt. If the findings and recommendations resulting from the study are indeed adhered, the socio-economic returns to accrue to the country could be significant (Pankhurst, 2010b; Houston, 1997), which will show the overdue concern in terms of conserving and transforming TTs of the country.

The significance of the study could be further demonstrated if there is a resolve to conserve and transform the valuable technological heritages by overcoming the generic impediments (Yemer, 2009). Especially, the result could be taken as a breakthrough when the initiation to develop small-scale industries reliant on indigenous technological resources that could enjoy competitive advantages is seen taking place. Looking into the remains of ancient civilizations, the images depicted in many edifices, and the livelihood of many citizens still depending on the staggeringly surviving TTs but not getting the attention and intervention they deserve (Kassaye

*et al.*, 2006; Kifleyesus, 2004), was also a clear rationale to convince that the subject was indeed worth researching. The continued application of TTs both overtly and covertly (Kassaye *et al.*, 2006) shows that the trade is, indeed, valuable and could have a future in developmental programs of the nation if proper measures of recognition and intervention are taken. The irony is, however, unless a timely and systematic intervention based on research is not taken, the fate of the surviving ones may not have the chance to see the dawn of the coming generations. That is why showing the way for saving these technologies from extinction in the chapter that deals with recommendation could be taken as a grand significance of the study. The technologies need to be preserved by transforming and incorporating them into economic and social activities like the small-scale industries, cultural festivals, tourist attraction schemes, and heritage promoting firms.

Recognizing and embracing the technologies that have demonstrated viability across centuries could inject an impetus to the development of the nation's economy by introducing indigenous competitive leverages (Zaleski, 2011; Bock *et al.*, 2005). If the study succeeds in reversing the skewed orientation prevailing against TTs and bring aboard all concerned role players, the economic and social returns the country could gain from reclaimed and rejuvenated TTs could be immense. In fact, the blame for underdevelopment the country has so far suffered could be ascribed to be the result of the recklessly discarding of indigenous skills and knowledge in pursuit of intimidating and assimilating alien technologies that were so stiff to get cross-fertilized into the sanctum of indigenous views and cultures. As stressed by Ekekwe (2010) and Ajei (2007), alien technologies, instead of helping development of African nations, have delayed and complicated the process and the journey to development. As highlighted in the background information, many social and economic activities of the country are dependent or influenced by TTs, though the surviving are taken to be by far less than those believed to have gone extinct without a trace and acknowledgement (Bhaumik & Banik, 2010; Dubois, 2010).

The second category of significance of the study is the potential of acquiring a transferable substantive knowledge (Leedy & Ormord, 2010; Creswell, 2009; Yemer, 2009) that could further enrich the current technological literature by the inductions from traditional skills, methods, and knowledge that have been alienated from the main socio-economic stream despite the endurance they have demonstrated. The contrast between modern technologies suffering a short span of life compared to the survival stamina of ancient technologies could have the

potential of attracting the curiosity of researchers that could inspire the urge to explore and investigate secretive skills behind the living but shadowed traditional technologies. This could mean a considerable contribution to the body of technological, social, economic, cultural, and leadership enlightenments. As a result, a lesson to learn on how TTs managed to sustain for centuries contrary to the short span of life observed in modern technologies, can be taken as valuable and transferable/replicable knowledge, which could mend the “broken succession” process of regenerating TTs in pursuit of “modernization” (Ekeckwe, 2010; Ajei, 2007). The secret of perseverance of the surviving TTs of Ethiopia that managed to sustain without being adulterated or bent to the alien technological lures, psychological influences, colonial impositions, and marketing offenses, contrary to the concerns of Ekeckwe (2010), Bolden and Kirk (2009), and Ajei (2007) are found to be a significant insight of the study. In addition, the findings of the research could have academic benefits relevant to those studying history, archeology, anthropology, economics, marketing, and leadership field of disciplines in learning lessons unique to TTs transferable to the domains of “modernity.”

In general, the reason for marginalization and stigmatization of TTs that have been affecting the economic and social wellbeing of the society, and the artisans in particular have been a generic problem the study has delved in search for an answer. In actual terms, conducting a study on TTs based on empirical, contemporary, and historical data relevant to the topic could be instrumental to connect the technological strides of the past and create the link to enhance the present that can extend into the future. In fact, because of conducting the research, a specific technological niche of strategic importance for the country’s economic and social development could be achieved. According to Central Statistics Authority (CSA) (2008/09), the population of artisans engaged in TTs and the contribution to the GDP is believed to be so significant. Traditional tools and products of artisans are by far dominantly applied technologies, especially in rural areas of the country. That is why this study became relevant to explore, if at all, both the existing and the traces of extinct TTs can see the light of renaissance by making them, once again, reactivated and transformed to a level they can become significant tools, methods, and artifacts of socio-economic and academic significance.

## 1.6 STUDY ENVIRONMENT

The conceptual view of environment in terms of the study can be regarded as to encompass everything outside the area of TTs influencing or impacting the performance of related activities, which included the legal, social, political, physical, and economic situations that could be classified as external enablers or disablers in conducting this research (Adomako & Danso, 2014; Ho, 2014). Actually, an in-depth scrutiny segregates all surrounding environmental issue into two where one could be classified as the “task environment,” dealing with issues relevant to the setting, performance, objectives, and achievement of the subject in concern. The second reference to “general environment,” concerning with the less or not directly affecting the operational and relational issues of the studied subject (Adomako & Danso, 2014; Ho, 2014). The research has taken place in areas where the practices of TTs are long instituted but operating in an environment confronted with neglect and stigma denied appropriate appreciation and recognition (Kassaye et al., 2006). In addition, the absence of data and referencing materials from a priori research works on the subject that can tell the past and predict the present status of TTs was even more daunting. The discouragement of traditional practices by biased quarters of the public at large and the neglect that extended up to harassment by skewed government policies have made the effort of connecting and interviewing respondents very challenging and difficult that ultimately had to be surmounted.

Many of the traditional practices are conducted in covert that made the intended interactions often not easy and full of suspicion. Most principal practitioners have turned to be so secretive in order to protect their skill and themselves while end users prefer to take the applications in shadow so as to avoid stigma and marginalization by the despising wider public. Under such circumstances, it was so challenging to convince some respondents that the researcher’s mission to study the trade they are engaged in was purely for academic ends. The traditions of keeping the trades in secret (in fear of societal ostracizing and stigma) by practitioners had posed a considerable challenge in the process of retrieving data, which indeed required more of revisits and triangulation works (Creswell, 2009; Kumar, 2005). On top of the problem of secrecy, the fact that vendors or suppliers of raw materials/inputs and end users of the practices were scattered and inaccessible has also posed a great challenge to get their version of the story in a scheduled time. The fact that the data and information retrieved from individuals and operators

who were not mostly educated but mastering inherited skills from their ancestors also caused hurdles in getting comprehended information, which demanded more effort and time for cross-fertilization. There were also respondents who were unwilling to share information although they were presumed to be informed individuals or operators but ended up unyielding. This showed the magnitude of the challenge the environment posed in getting willing, and at the same time, well informed or acquainted respondents who can boldly give an in-depth account on the history, challenges, and opportunities surrounding the TTs they hold dear in earning their living.

## **1.7 TRUSTWORTHINESS AND TRANSFERABILITY OF THE STUDY**

As the concepts of validity, reliability, and generalizability are synonymous with quantitative research, so are “Trustworthiness” and “Transferability” with qualitative research methodology (Maritz & Visagie, 2010; Cousin, 2010; Caldwell & Hayes, 2007). That is to say “trustworthiness” stands to replace the concepts of validity and reliability of quantitative methodology (Maritz & Visagie, 2010; Cousin, 2010; Caldwell & Hayes, 2007). In qualitative study the term “trustworthiness” becomes more relevant to justify that the method designed and employed for the research was acceptable and credible in terms of dependability and conformability (Cousin, 2010; Niekerk *et al.*, 2010; Caldwell & Hayes, 2007). Hence, the trustworthiness of this study was enhanced by the attention given to institute apparent measures of designing and implementing the activities of the research by ascertaining their integrity and credibility (Mayayise & Osunmakinde, 2014; Gray, 2012; Caldwell & Hayes, 2007). As Foster & Urquhart (2012) and Lincoln *et al.* (1985) have indicated, the “transferability” or “fittingness” of the findings refers to the generalizable of the study to similar situations surrounding the cases studied. This cross-checking using the apparent measuring instruments has given the confidence of the integrity, credibility, and applicability of the findings to be transferable to similar situations across TTs (Foster & Urquhart, 2012; Gray, 2012).

Transferability has shown how the findings could be applied consistently in similar situations by showing the level of conformability to the established logical reasoning that link the constructs studied and the measuring instruments used (Lee *et al.*, 2010). Comparing the deductions of the cases studied from the respective literature reviews with the end results of the data analysis and interpretations are, indeed, found to be transferable insights and predictions in a way their applicability and transferability to the target population could be confirmed (Yin,

2009; Steckler & McLeray, 2005; Dawson, 2002). To be objective and unbiased, the research process has followed a predesigned framework of philosophical outlook, defined procedures, and methods accepted for their credibility as conceived and deduced from the cited literature sources (Creswell, 2009; Blaxter *et al.*, 2008; Kumar, 2005; Punch, 2000). To enhance the trustworthiness and transferability of the study process and designing of measuring instruments:

- a) Multiple sources and evidences were captured and used;
- b) Causal relationship among the cases was established;
- c) Matching patterns to be transferable to the target population were induced;
- d) More than one instrument yielding similar results from similar targets were applied (Creswell, 2009; Yin, 2009; Blaxter *et al.*, 2006).

The trustworthiness of the findings of the data analysis of this research was not testified in the same way used in dealing with quantitative methodology, which often follows a linear approach. Rather it took the established facts as prevailing “Out There” in the fields of study as genuine and acceptable only when viewed from the perspectives of the “lived experiences” of the research participants (Mayayise & Osunmakinde, 2014; Niekerk *et al.*, 2010; Caldwell & Hayes, 2007). To ascertain the trustworthiness of the instruments of measurement used in the data gathering process, the researcher had designed relevant, effective, and sufficient data generation instruments by incorporating the reflexivity of the researcher as one instrument (Foster & Urquhart, 2012; Maritz & Visagie, 2010; Cooper & Schindler, 2006). The findings of the study were taken as revelations depicting a “holistic portrayal” of the environment TTs have been operating for generations. Hence, considering the relevance of inferring from the specific sectors to the wider population of TT (Sakaran & Bougie, 2009; Schensul *et al.*, 1999), the findings of the cases studied were concluded as springboard predictions that are believed to be transferable or generalizable to the reality of TTs in the Ethiopia context. The trustworthiness and transferability of the research conducted were consolidated by using methods of triangulation, checking levels of saturation, and ensuring trust on the authenticity of the processes, concepts, interactions, evaluations, and representations as discussed hereunder.

### 1.7.1 Data Triangulation

The trustworthiness of this research work is reflected in the steps and precautions taken by the researcher while designing the instruments of measurement, selecting sources of data generation, and modeling multi-data analysis approaches (Mayayise & Osunmakinde, 2014; de Vos *et al.*, 2005; Tobin *et al.*, 2004). To maximize the credibility of the study, the research methodology adapted has incorporated triangulation methods (Mayayise & Osunmakinde, 2014; Foster & Urquhart, 2012; Leedy & Ormourd, 2010). The triangulation approach has employed different theories, data sources, and models to capture the unity and synergy of data generation and analysis from the perspective of multifaceted socio-economic realities (Lee *et al.*, 2010; Bilandzic, 2008). Similarly, to ensure that the data generation process has reached levels of saturation, a strategy of longitudinal engagement, giving more and repeated visits to the field sites, and consulting respondents on the conclusions reached on each and the overall visits and interactions was also followed (Leedy & Ormord, 2010). To generate “thick data” from the “lived experiences” of the research participants in the field, an in-depth study under the natural settings was conducted (Stillman, 2011; Yin, 2003; Tellis, 1997) and triangulated in line with the concepts framed by Tellis (1997) as indicated below:

- a) Data source triangulation—when the researcher looked for similar data in different contexts;
- b) Investigator triangulation—when several investigators, i.e. the researcher and his assistant examined the same phenomenon independently (practiced in one activity);
- c) Theory triangulation—when investigators, i.e. the researcher reflected his own viewpoints in understanding the trustworthiness and transferability of the data generated and the situation addressed.

To ensure the effectiveness and productivity of the measuring instruments, however, the researcher has reckoned on the notion of Steckler and McClarey (2008) that the right respondents are identified, instruments are properly designed and consistently applied, detracting pitfalls not parts to the settings are identified and excluded, and sufficient resources to conduct the study are provided as much as the job to be done demanded. In designing a realistic and reflective instruments and procedures of data generation, the categories or groups of respondents were ramified according to the relevance and impact they had on the data to be gathered. The

effectiveness of the measuring instruments was also seen from the overall results that were able to converge and point to the same conclusion (Leedy & Ormord, 2005). Embarking on “real-life” settings has also served to triangulate the data generation process, which gave confidence in understanding the research participants and in addressing the research questions (Yin, 2012; Stillman, 2011; Shaw, 1999). To further triangulate the sources of data, secondary, archival, and artifact resources were also used. Since the roots of the sector under study do belong to the domain of the past, extended data and information was sought from historical records (Creswell, 2009; Lattuca & Stake, 1994). This has made the design of the research to be more of “retrospective-prospective,” though as Lattuca and Stake (1994: 410) have noted, “History is a discipline in which there is no standard content, no prescribed sequence of courses.” Yet, to make the best use of historical data and to validate the results, areas of focus, sources of relevant documents, reputed authorities on Ethiopian studies, relevant policy documents, informed respondent, and renowned artisans in the field where data and information could be owned, were identified and accessed. The method of reading and observing the artifacts has allowed to understand the symbolic content of communications, which was contextualized in relation to the ascribed “symbiotic” meaning of TTs (Alcaniz *et al.*, 2010; Yin, 2003; Lattuca & Stake, 1994).

### 1.7.2 Data Saturation

To enhance the trustworthiness of the study, “thick data” was generated from the field and from secondary sources until levels of “saturation” were attained. Designing effective measuring instruments, widening the scope of respondents, and incorporating reflections of the researcher from observations and interviews undertaken have helped to capture a saturated data that enhanced the trustworthiness of the study (Caldwell & Hayes, 2007; Dawson, 2002). To further enhance the saturation of the data generation, a strategy of giving more time for the fieldwork through repeated visits and engaging participants for a longer period and intensive interaction was practiced (Leedy & Ormord, 2010). In order to overcome data gaps that were missed or wrongly responded, the process has followed an overlapping ramification approach (Yin, 2006). By doing so, the chance of correcting, enriching, or verifying the data from preceding instruments, respondents, or different sources was consolidated. The entire data generation process has enabled to establish that the investigation has uncovered the problems that concerns respondents, and addressed the research questions by incorporating the views of all accessed

participants (Yin, 2012; Stillman, 2011; Shaw, 1999). This approach has enabled to build the confidence of the researcher that the saturation of the data generated was indeed attained.

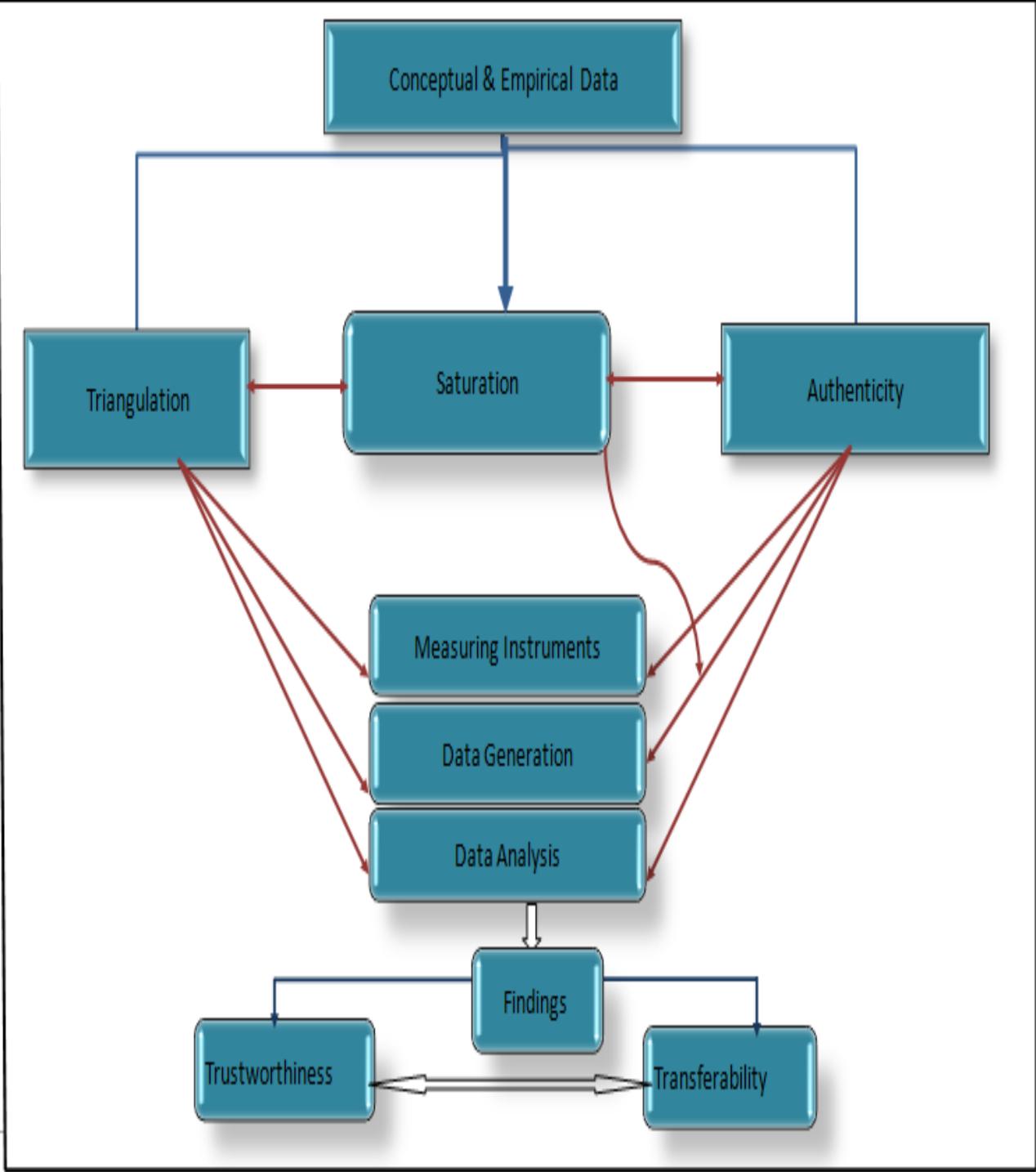
### 1.7.3 Data Authentication

The process of authenticating the research process in a qualitative method is reflected in the “trustworthiness” and “transferability” of the study, which is attained by the credibility of the applied measuring instruments, sources of data generation, and data analysis methods adhered throughout the conduct of the research (Mayayise & Osunmakinde, 2014; Foster & Urquhart, 2012; Caldwell & Hayes, 2007). Authenticity enhances the ethicality of the research by the researcher who becomes true for himself in a desirable and objective resoluteness (Carman, 2006). In line with views of Gilpin & Palazzolo (2010) and Leedy & Ormrod (2003), establishing authenticity of documents was also essential to underline the credibility of external evidences, while with regard to the internal evidences, the data was cautiously interpolated, categorized, extracted, and interpreted without overlooking the need to integrate and ensure the coherence with the main themes of the topic. As indicted in the preceding paragraphs, the researcher had built confidence that the instruments of measurement applied, the cases sampled for the study, the nominated participants of the study, the type and level of data generated, and the analytic models applied were indeed manifested in a way to enhance the authenticity of the research method employed (Beddoes-Jones & Swailes, 2015; Chhabra, 2005; Delozier, 2013).

To minimize the researcher’s bias and risk of distortions in the process of data generation, the recording and inscription aspects were conducted in the field right at the spot where the events and insights were unraveled (Whitelock *et al.*, 2012; Abeysekera, 2010). To validate the process and the outcome of the research, that is to make it free from preconceptions and prejudices that could have comprised the trustworthiness, transferability, and authenticity, checking and rechecking of data for bias, neglects, gaps, distortions, contradictions, limitations, misrepresentations, etc. was undertaken during and after the data generation processes (Lancaster, 2005; Henning, 2004). To accredit participants’ interpretation of situations, decisions, activities, and outcomes, the study has endeavored to collect additional data from other sources or analyzed relevant documents to confirm, consolidate, reject, or elaborate the participants “sense making accounts” (Delozier, 2013; Battinson & Woodside, 2009). To authenticate the data analysis process, the researcher has employed multi-modal analytic

methods that have enabled to reach at similar inductions of patterns and meanings showing the association with logical methods common to all the studied cases (Delozier, 2013; Creswell, 2009; Trochim, 2005a). The credibility of the study was further authenticated by applying strategies like member checking, peer debriefing, thick description, audit trial of measuring instruments, extended research participants, relevant data generation methods, and appropriateness of analytic methods (Cousin, 2010; Van Niekerk & Savin-Baden, 2010; Caldwell & Hayes, 2007), where the conceptual approach framed in this regard could be charted as indicated in Figure 3.

**Figure 3: Trustworthiness and Transferability/Validity and Reliability**



Source: Based on schematic presentation of the discussion

## 1.8 ETHICAL CONSIDERATIONS

Among the dominant ethical issues more relevant to qualitative study are the confidentiality and informed consent (Macfarlane, 2010) to which the researcher has given a heed in a priori (Annex VII). Society demands almost all professional exercises and deliberations to be ethical and legal (Emerald, 2015; Zakaria *et al.*, 2010). In the early phases of the research or before the commencement of data generation, the researcher had sought and acquired ethical clearance approval on the conduct of the research from Ethics Review Committee (ERC) of UNISA (Annex VI). The second ethical approach pursued was the engagement in carrying the actual practice or fieldwork, which referred to the making of sound decisions when the researcher was confronted with conflicting interests and options (Johnson, 2014). In addition, the “invisible power” relationship between the researcher (dominant, active, an insider) and the researched (passive, outsider, vulnerable) or the “named” and the “anonymous” subsumed in categories, themes, typologies, data sets, etc. that are serious ethical issues prone to abuse were vehemently heeded by the researcher (Johnson, 2014; Zakaria *et al.*, 2010). In line with the ethical principles that were confirmed by the evaluation and subsequent declaration of ethical clearance to pursue with the research work by the Ethics Review Committee (ERC), the issues required to be adhered in ensuring the acceptable conduct were followed strictly.

From the start, the researcher had vowed to conduct and manage the process of the study in a sober and free from any deceit of presentation, manipulation, or plagiarism. Common ethical issues such as confidentiality, anonymity, legality, professionalism, participation, etc. have been adhered (Blaxter *et al.*, 2008). Ethical principle were taken as an inner morale guider in presenting the values, principles, and beliefs a researcher needs to respect while designing the methods of the study, generating and “interrogating” the data, and establishing what the whole process of the research outcome would mean to participants and end users (Green & McCann, 2011; Macfarlane, 2010) (Annex VII). As Green and McCann (2011), Babbie (2010), Kanuka (2010), and Mason (2002) have stressed, effort was made to ensure that the study is clean in construction, true in confession, appropriate in referencing, legal in ownership, authoritative in declaration, and substantive in contribution (Green & McCann, 2011; Macfarlane, 2010; Babbie, 2010; Kanuka, 2010). Adhering to ethics is not only a matter of respecting the expected moral value; it was also taken as an important factor to create sustainable social and economic

development by regulating abuses and reconciling conflict of interests, which are detrimental in all endeavors in the march to progress (Kanuka, 2010; Sihag, 2005; Mason, 2002).

Materials referred for secondary data and for literature review are recognized and duly credited. Ethical issues including protecting respondents and study sites from material and psychological harm, and securing their informed consent and permission to access the site and the information captured from them, guaranteeing confidentiality and anonymity or receive recognition when they want it, was strictly followed and respected. Besides, the researcher had made an effort to initiate and instigate respondents to cooperate in revealing the information of their “lived experiences” the study was looking to capture though there is a perception that ordinary people are open, natural, and authentic in their discourse (Delozier, 2013; Chhabra, 2005). Even when they cooperate, a question that was necessary to raise was to know if there could be any hidden interest that contradicts the moral and ethical foundations of the research (Creswell, 2009; Kumar, 2005). To establish the motive of participant, whether they were cooperating freely or in anticipation of a return in any form, the researcher had made an effort to scrutinize and understand the underlying situations of all respondents. On top of this, if potential risks were identified by the researcher or indicated by respondents themselves, the mitigating mechanisms the researcher was bound to undertake were explained and an assurance, when needed, was ascertained (Leedy & Ormord, 2010; Kumar, 2005). Especially, when there was an expressed expectation to benefit from the study by respondents, or claims of rights affected or transgressed as a result of the field study, the researcher has tried to appreciate and address their concerns by taking mitigating measures already set in advance (Sihag, 2005; Mason, 2002). Among the mitigating measures, paying financial incentives in situations where an income was perceived to have forgone because of the time lost due to the engagement with the researcher was also considered

Procedurally, a complete briefing on the intention and content of the study was administered for all respondents before they were asked to confirm their consent. The risks and benefits that can accrue from the study were explained so that they can clearly see the purpose of the study and the meaning it could entail from the perspective of their interests. To pacify respondents, who turned out to be suspicious and hesitant as to what the motives of the study could be, sufficient explanation and assurance was given by showing them that there will not be any harm

and that the study was purely intended for academic ends (Babbie, 2010; Kumar, 2005; Trochim, 2005b). However, there were some who were not convinced or not willing to participate in the study, which forced the researcher to exclude them from the initial list and add others who were willing to do so. In practical terms, informed consent was secured, confidentiality and anonymity respected, description on issues that matters to them was provided, and debriefing following the interviews and interactions was also conducted (Babbie, 2010; Kanuka, 2010).

To get access to the field of the sampled cases and secure consent of respondents who could raise issues on conflict of interests was an issue that was not overlooked (Leedy & Ormord, 2010; Trochim, 2005b). In securing their informed consent on the intended study, the time and information needed from them, their right to terminate or change opinion any time they wish, giving assurance against incorrect reporting or misuse of information, and access to the finding of the study if they look for it was the commitment the researcher bowed (Leedy & Ormord, 2010; Kumar, 2005; Mason, 2002). The area of TTs is in fact more sensitive and vulnerable to ethical issues. Most artisans and practitioners operate in secret and in “shadow” or in a disguised situations (Tadesse & Mesfin, 2010; Kassaye et al., 2006; Workineh, 2008), which could raise issues of legality and social taboos where protecting the identity, activity, and profile of respondents was so crucial. That was why in order to ensure the security and anonymity of respondents and rest assure them regarding the protection of their covert and secretive practices, electronic recording gadgets were not used except to use inscription by the researcher himself only. In a nutshell:

- a) Support provided in securing materials to refer and, data to retrieve was given a due recognition;
- b) Sites to access and respondents to interview was based on consent and permission secured in advance;
- c) Care was taken not to misunderstand the feeling of respondents in respect of the culture and the norm in which they live and operate;
- d) Caution was taken not to expose sites and respondents when the trade was found operating in shadow;
- e) Data was recorded in inscription on which willing and literate respondents were urged to put their initial of endorsement on the information they provided;

- f) To ensure the confidentiality and clear suspicion of respondents, no recording using tapes or electronic gadgets was used;
- g) Anonymity of respondents in the process of the study was truly respected (Green & McCann, 2011; Creswell, 2009).

Ultimately, respondents were reassured that confidentiality of the information they furnished and anonymity of their identity shall remain secured (Macfarlane, 2010; Leedy & Ormord, 2010; Kumar, 2005; Mason, 2002). Such an approach was relevant in the situation of the sector studied, which is more of ostracized and stigmatized by the wider public; though in some cases there were respondents who did not mind about the disclosure of their information. As stressed by different authors in conducting social inquires, the treatment of participants was scrutinized to see if the approach of their participation falls within the bounds of their social norms in terms of political and cultural contexts central to people's identity (Beddoes-Jones & Swailes, 2015; Duncan & Watson, 2010). The study was concluded with the researcher's inner conviction that no ethical doubt was left uncovered or compromised so that the study could become scholarly sound and the findings remain "trustworthy" and culturally accepted as the quote goes: .

*When you have disciplined people, you do not need hierarchy, when you have disciplined thoughts, you do not need bureaucracy, when you have disciplined action, you do not need excessive control, when you combine a culture of discipline with an ethics of entrepreneurship, you get the magical alchemy of great performance (Collins, 2001:13).*

## **1.9 PLAN OF THE STUDY**

The planning aspect of the research project began after determining the research design, defining the methodology to follow, indicating measures of validity and reliability, addressing ethical issues, and after looking the details to be incorporated in the data collection processes (Leedy & Ormord, 2010; Mason, 2002). The research conducted has commenced after drawing a thorough planning and executing strategies that were deemed to be competent in carrying and processing the data gathering, organizing, analyzing the evidences, developing conclusions, setting recommendations, drawing an implementation plan, and showing outcomes and implications (Creswell, 2009; Blaxter *et al.*, 2008; Tellis, 1997). Ultimately, the plan and research processes were designed to enable the meeting of the prescribed goals in a manner Leedy and Ormord (2010: xvi) articulated:

*Research has one end; the discovery of truth. Its purpose is to learn what has never been known before; to ask a significant question for which no conclusive answer has previously been found; by collecting and interpreting relevant data, to find answer to that question.*

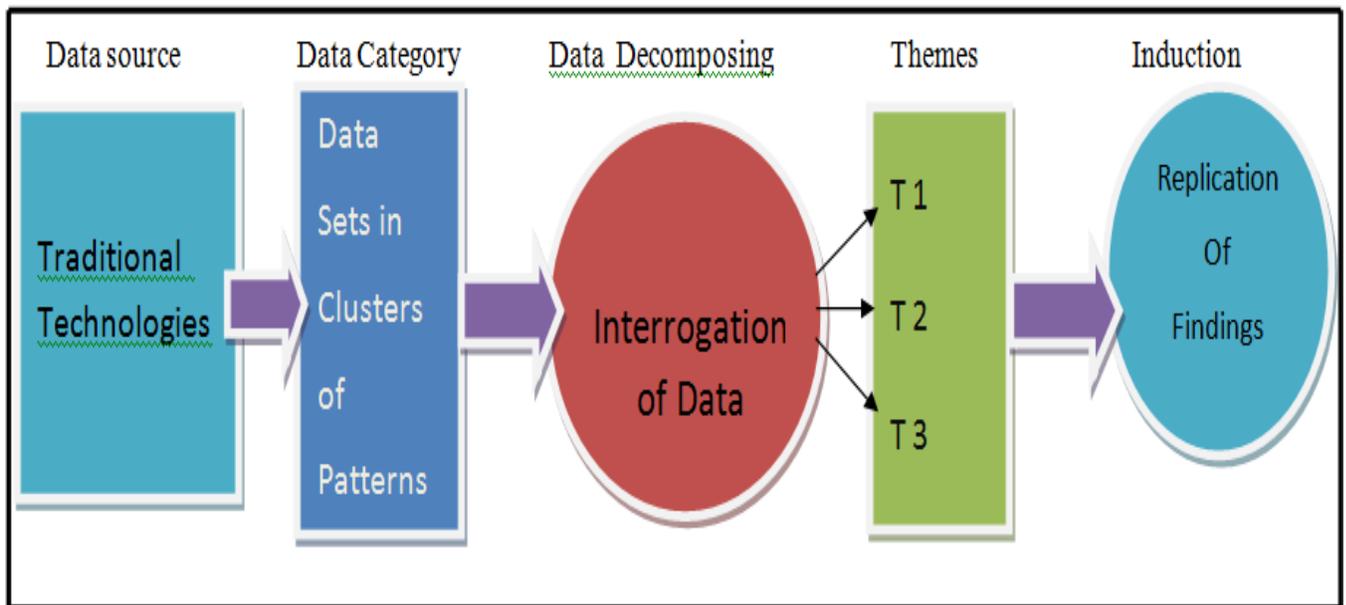
Planning the research program has encompassed formulating the research problem, conceptualizing a research design, constructing instruments for data collection, selecting the sampled cases from where the data was generated, organizing and extrapolating the data, applying analytic models, inducing the findings, and analyzing or interpreting the findings (Kumar, 2005; Mouton, 2001). The resort to have a preplanned plan of action was motivated by the need to streamline accountability, meet expectations, and overcome financial constraints. This was done by having clear statements of vision, exploration, resurgence, and refinement that have enabled the researcher to speculate the challenges ahead of time and foresee the opportunities that needed to be grasped, especially in the field works of the cases studied (Smith *et al.*, 2015; Cooper, 2006: 22). The research design was expressed in a manner that can ensure the viability of the process of the study in revealing meaningful concepts and come out with applicable recommendations (Mason, 2002) based on the characteristics of the research topic by referring the “blue-print” or guiding principles, which clarified in advance that:

- a) The topic was well researchable and applicable;
- b) Purpose was clearly articulated and research process detailed;
- c) The theories or constructs could align with the specified philosophical worldview;
- d) The theoretical orientation from the literature was going deductively;
- e) Appropriate methods and instruments of data gathering were organized;
- f) The area selected for the study was more convenient and productive;
- g) High ethical standards were applied and researcher’s experience reflected.
- h) Appropriate analytical and interpretive approach for the data was considered;
- i) Provisions for reconfiguration of the data gathering and analysis were considered;
- j) Issues regarding credibility, reliability, and ethics were well dealt with;
- k) Guidelines and procedures envisaged to conduct the study were prepared;
- l) The places and the nature of the people to be involved were well comprehended;

- m) To minimize defaulting respondents, inaccessible or complex cases, or “weak novelty” of findings were considered;
- n) Dimensions for effective discussion and contextualization of findings were set unambiguously;
- o) Resources, timetable, and logistical issues were well scheduled (Creswell, 2009; Trochim, 2005b; Henning, 2004; Mouton, 2001).

In dealing with how the study was going to be planned, structured, and put into a practice, the entire procedural works of the investigation were crafted by looking into the historical, cultural, social, economical, and technological dimensions (Kumar, 2005) of the environment TTs have been operating. The entire processes and management of data generation and analysis planned a priori was designed to follow a process of activities as indicated in figure 4.

**Figure 4: Data Management and Analysis Process**



Source: Based on schematic presentation of data processes

## 1.10 LIMITATIONS OF THE STUDY

The approach in dealing with limitations of the study refers only to issues and activities confronted within the given scope of the study. With this understanding, the investigation to uncover the challenges confronting TTs in terms of conservation and transformation has demanded the need to dwell on a study environment, in most cases, operating in shadow and in a state of neglect. Conducting an investigation to uncover the “lived experiences” of a sector that have been doomed to operate under intense pressure was a compelling engagement the researcher had to surmount. Some respondents, especially practitioners, were not willing to reveal secrets of the type and the way of preparing the products and services they provide to their end users. The harsh environment TTs has been doomed to endure has forced relevant documents and archives to be stunted. The data captured from the cases studied could not get sufficient reference materials and recorded data or compiled documents and literature sources.

Another limitation the researcher felt to have some impact was the low level of literacy of respondents, which is believed to be the dominant characteristics of the people operating in the domain of the marginalized TTs (Summers, 2010; Killian *et al.*, 2011). They are used to live and work with TTs as a result of inheritance from their forefathers not because of advancement in knowledge from education and training that could have eventually materialized into skills based on oral mentoring. The confined, detached, and stigmatized living and working situations revealed from respondents could not enable them to become knowledgeable regarding the history and challenges facing the trade, which was a critical personal limitation that hindered them to give a full account of TTs the researcher needed so badly. Such situation have limited the versatility of the data in revealing a full view of the way TTs have been evolving and operating with indicative clues on the current and future threats. Difficulty to access and capture sufficient information regarding the people involved as either operators, suppliers, produces, or end users was a challenge that needed to be confronted. Most of the people involved in the trade were scattered and the relation among themselves is kept confidential, which made interviewing and observing their activities costly and limiting the number of participants, time taking, and challenging (Kumar, 2005; Cooper & Schindler, 2005).

The fact that the accessed secondary data source materials were scarce, old prints, and not authenticated by relevant authorities and problems related to the practicality of accessing them

were limitations that have influenced the magnitude of secondary data (Yemer, 2009; Hammersmith, 2007). Similarly, reliance only on few accessible scholarly manuscripts or scanty reference materials on TTs could be taken as another limitation, which has narrowed the scope of the literature review in this regard (Hammersmith, 2007). A priori research works and documents that could indicate gaps of concerns or shade light on the development and upheavals endured and hurdles confronted by TTs of the country are scanty, shallow, and, if available, less “authoritative.” The selected sample cases and sites compared to the vastness and variety of TTs, though a qualitative case study may not lend to go for a representative size, could be taken as another limitation (Yemer, 2009). In addition, culture of secrecy, punitive government attitudes, and problems related to infrastructures in accessing participants were vivid barriers the researcher had to face, though surmounted with some compromises on the “thickness” of few items (Abbad & Abbad, 2011).

## **CHAPTER TWO: THEORETICAL FOUNDATION OF THE RESEARCH**

### **2.1 INTRODUCTION**

Theory is a prediction about what will be observed in the real world that can be deduced from particular to general (Henning, 2004; Jonesskip, 2003; Eisenhardt, 1989). Theories are inferred lessons learnt from practices, precedents, failures, or successes of activities or actions as depicted from similar history in the past that can draw a parallel on how the present and the likely future could unfold (Henning, 2004; Mintzberg & Wistley, 2001; Donham, 1992) from the view point of a given theoretical paradigm. According to Henning (2004: 117), “Theories are not lists of findings but coherent arguments that explicate and explain social processes and phenomena.” They are, rather, “sense making” statements explaining how a phenomenon is connected to another because “theoretical perspectives are interrelated sets of assumptions, concepts, and propositions that constitute a view of the world” (Henning, 2004: 2). However, knowledge that is conveyed from a theory is not always derived from empirical assessments. It can be also “Bricolage” knowledge derived from indigenous mystic conceptions of intimate understanding of the environment in a different way from scientific approaches (Boxenbaum, 2011; Lipscomb, 2012; Peirce, 1903).

If a research is to be based on the assertions of “generic behaviors” of broad ranges into a specific instances in a manner of “scholarly conversation,” and “illuminate” the way into a new or the “unknown” territory, its foundation has to be constructed on the premises of extant theoretical paradigms (Boxenbaum & Rouleau, 2011; Henning, 2004; Fowler, 2004). As a result, the identified theories apparent to this research have served as a basis for understanding the relationship between variables or constructs, guiding the direction of the study, and helping in predicting the possible answers (as inferred from the literature review) relevant to the central question of the research. Theories also provide a mechanism of relating the construct or variables to each other, which remained valid as far as it continued to describe the target population based on the nature of the sampled cases (Creswell, 2009; Ford, 2007; Prendergast, 2007). Exploring the relevant theories has enabled the study to shed light in predicting the apparent constructs and, at the same time, show how the statement of the problem has evolved from these constructs. In a qualitative research methodology, the researcher uses extant theory, not to test assumptions but to guide the process of the study, though there is a potential of generating a new theory or

knowledge from conducting the study (O’Toole, 2010; Yin, 2003; Mason, 2002) as a result of which “reality is understood by reflective processes” (Niekerk *et al.*, 2010: 28).

The theoretical dimension applicable to a qualitative research is preferred to be a “theoretical proposition” rather than a “hypothesis,” because it entails “formulating questions to be explored and developed in the research process rather than hypothesis to be tested by or against empirical research” (Mason, 2002:19). In Lorenzo’s (2010) view, philosophical and theoretical stances are essential components of a study. This is due to the fact that a “qualitative research is concerned with building descriptions, explanations, and theories that are rich, nuanced, and comprehensive” (Lorenzo, 2010: 121). It is from these theoretical bases that the study has assessed and evaluated the context of the studied topic. As far as the research undertaken was a qualitative study, the issue of replicating a theory was not an issue of concern. Rather the main goal was to build a theory from a new insight revealed in the course of the study (Yin, 2003; Mason, 2002; Eisenhardt, 1989). The survival of TTs indicates that they still have sustained demand because of their inherited qualities appealing to the modern day settings (Varner, 2012; Cunningham & Young, 2009; Yadeta, 2002). That is why among the once vast technological products of Ethiopia, many have managed to survive by overcoming the challenges and tests of time across centuries; though most of them are forced to operate in shadow and in peripheral markets. Had it been for extant technological theories (Kotler, 2000; Jobber, 1997; Christenson, 1997), there would not have been surviving technologies belonging to the remote past. This show, unlike the conceptual bases of extant technological theories, sustaining TTs and practices can also serve as prelude to advance new inventions and opportunities appealing to modern times (Michealides & Theologou, 2010; Tamilia, 2009; Laitinen, 2006). Hence, technological, leadership, entrepreneurial, and socio-culture related theories and concepts were used as relevant “viewing lenses” to understand the survival secrets of TTs as discussed below.

## **2.2 THEORIES EXPLICATING RELEVANT CONSTRUCTS**

### **2.2.1 Technological Theories**

Technologies are the application of tools and methods in manufacturing and delivering processes of products and services (Schiaivone, 2011; Adner, 2004; Kotler, 2000; Christenson, 1997). New technologies are predicted to reflect features the old lacks. This in turn wipes out

predecessor technologies entirely from the scene in ways the market operating comfortably could not anticipate (Schiavone, 2011; Adner, 2004; Christenson, 1997). Such phenomenon takes place, usually, by lowering prices or embodying designs and features appealing or alluring for a different set of consumers (Knopper, 2009). In this regard, relevant theories so far governing the concept of technologies, especially those of Disruptive Innovation Theory (Christenson, 1997) and Product-Life-Cycle Theory (Kotler, 2000; Jobber, 1997), do not seem to become generalizing concepts when it comes into the domain of TTs of Ethiopia. In Kotler's (2000) generalization or prediction, any product has a life shelf of growth and death, and in Christenson's (1997) theory, emerging technologies are forces that could disrupt any a priori established technology to give way to new brands that have improved performance and suitability in cost and convenience compared to the existing ones (Schiavone, 2011; Zang *et al.* 2011; Jobber, 1997).

According to the extant technological theories, all priori innovations shall be defeated by subsequent innovations. With this analogy, there could not have been any technology proving viable, and yet belonging to the remote past; though there are no empirical studies that can show what qualities have enabled them to survive to the contrary. The incomparability of the pace contemporary technologies are fading out compared with the perseverance observed in surviving TTs indicate that there is indeed a qualitative relevance that can be replicated or "transferred" even to the benefit of modern technologies. That means accepting the generalization of extant technological theories in defining the situation surrounding TTs of the country is indeed arguable. This has led to conclude that if extant theories are not fully embracing TTs, the rationale for conducting a research to induce a substantive findings that can close the gap in this regard is found to be justifiable and inspiring. The idea promoted to enable companies become innovative based on disruptive capabilities as the only guarantor to survive (Schiavone, 2011; Assnik, 2006; Barber & Manager, 1997) has not shown a pattern replicable to the surviving TTs.

As Knopper (2009) and Christenson (1997) have indicated, TTs can be renovated and transformed for better results as evident in many instances, such as the automobile industry that does not look only after technological disruptions but also to sustain by updating existing practices too. Disruptive innovation promotes a characteristic that is not in favor of sustaining traditional practices, which could be in contrary to the interest of customers who want to

embrace traditionalism (Schiavone, 2011; Dombrowski & Gholz, 2009). Further, Schiavone (2011) has indicated how TTs can be nurtured by following a “racing strategy” that stresses on enhancing the performance of TTs to make up for losses resulting from innovations’ and adhering to “retreat strategies,” which deals with “repositioning” existing technologies to enable them to compete with the new ones. Therefore, under the assumptions of extant technological theories, it could not have been possible to witness centuries old technologies when the very recent are staggering even to outlive the “product introduction” stage in terms of the product-life-cycle conceptualization (Assnik, 2006).

### 2.2.2 Leadership Theories

#### a) *Conventional Leadership Theories*

Leadership is a concept used to explain the relationship between the leaders and the led that develops on continuous basis to attain excellence at cognitive, skill, and action levels for effective attainment of perceived goals (Wang, 2011; Sihag, 2009; Bennis, 2003). As Thomas (2011) and Yergler & Obolensky (2011) have emphasized, leadership is a process that has to keep abreast with the dynamics of society by becoming a “change agent” and, at the same time, by becoming able to lead the dynamics taking place in societal interactions. Leadership is also perceived as a mindset and a pattern of behaviors that can help to practice and prevail the best and effective actions and norms needed or demanded at societal and organizational levels through the influence of inspirational and motivational methods rather than by exerting power (Vigoda-Gadot, 2007; Bennis, 2003; Hiebert & Klatt, 2001). This could be done by constructing methods of sharing meanings that enables people to make sense of their social systems (Bolden & Kirk, 2009). To stay abreast of the constantly emerging challenges, creating versatile culture that can facilitate the initiation to change and adapt (Lee, 2011; Bennis, 2003) in tune with traditional practices becomes crucial.

The theoretical foundation of leadership described by Horney (1997) shows two paradigms. One side describes leadership as an outcome of a process, and the other as of a trait. Theories explaining leaders as results of attributes has stated that they are born and not made while the focus of the second view is on what successful leaders do (Sheared & Kakabadse, 2009; Brant *et al*, 2008; Horney, 1997). In the context of organizations, increase in effectiveness will remain a

function of identifying what behaviors differentiate leaders from followers by looking into “people-oriented” and “task-oriented” activities (Rodriguez & Griffin, 2009Mc; Crimmon, 2005; Horney, 1997). Leadership theories that have been shaping and molding the fate of human views and actions, including those in the realm of TTs, have a range that starts from the great man and traits theory up to behavioral, situational, and contingency theories, which extends to include the contemporary theories. These contemporary theories include charismatic leadership, influence theory, relational leadership, transactional leadership, and transformational leadership (Sheared & Kakabadse, 2009; Brant *et al.*, 2008; Dannhauser, 2007; Bass & Riggio, 2006).

Leadership theories and concepts have been evolving starting from the era where the concept of personality theory has emerged from “deontology” and “teleology” interactions and influences (Leonidou *et al.*, 2012; Mostovicz *et al.*, 2009; Van Seters *et al.*, n.d.). Though leadership is the most common human practice, it is also the least understood critical organizational factor in the interactions of societies (Jogulu, 2010). The evolution in leadership, however, does not necessarily imply that the latter is a “disruptive” or a radical from the former. Mostly, the conceptions depend on the views propagated by opposing ideas. That is why even in modern times, leadership theories of historical dimensions like that of traits and great man theories emanating from personality attributes, are still claimed by referring to some grains of truth valid for today’s gaps in leadership effectiveness (Killian *et al.*, 2011; Bolden & Kirk, 2009). That is why Essentialist Theorists stand on leadership is based on constituents of effective leadership emphasizing on personal qualities of the leader, behaviors they enact, or functions they perform, which are still used to inform leaders selection, appraisal, and developmental endeavors (Killian *et al.*, 2011; Bolden & Kirk, 2009).

On the other hand, Relational Theorists state that leadership is not regarded as an attribute of individuals but as a function and quality of a group by emphasizing that leadership resides in the relationship with others (Killian *et al.*, 2011; Bolden & Kirk, 2009). Similarly, Constructivist Theorists’ view on leadership is taken as a construct of shared meanings that enable people to make sense of their predicaments looking into how social systems operate in the sense making interactions (Killian *et al.*, 2011; Bolden & Kirk, 2009). From the angle of Critical Theory paradigm, the conception on leadership is that it is an ‘alienating social myth’ in the underlying dynamics of power and politics within organizations, often used to “maintain the relationship

between the statuses and legitimize the unequal distribution of power and resources” (Bolden & Kirk, 2009: 3). Some theorists, however, have tried to specifically address the African aspect of leadership as in the works of Bolden and Kirk (2009) and Senge (1990). They have reflected on the need to promote an Afro-Centric view, which focuses on ‘African Renaissance’ that urges the liberalization of Africans themselves from colonial and post-colonial thinking to come into terms with indigenous value pillars applicable to business and leadership realms. From the perspective of leadership, the Afro-Centric aspiration is an approach on how the “symbiotic” African knowledge can be discovered, captured, conveyed, and the extent to which it will resonate with the lived experiences of modern Africa (Killian et al., 2011; Dalpiaz *et al.*, 2010; Bolden & Kirk, 2009; Senge, 1990).

Referring into the scope and range of the theoretical definitions and predictability of leadership as indicated above shows the extent the concept remains in astray and “conceptually vague.” Nevertheless, the contemporary perception of leadership emphasizes on the view of understanding it as a process of giving purpose, meaning, and guidance to the attainment of collective objectives and meeting goals by addressing shared vision that can appeal to the ideological orientation and “self-perception” of the led (Green, 2011; Killian *et al.*, 2011; Vigoda-Gadot, 2007; Dannhauser, 2007). As Clutterbuck (2001), Zachary (2000) and Murray (2001) have emphasized, developing followers through mentoring could be considered as one convenient form of upgrading the skills and personalities of subordinates or “mentees.” The points propagated by seminal scholars like Bass (1990), Greenleaf (1977), and Spears (1998), if leaders have to be understood by their followers, first they have to have the resolve to serve by learning on how to “lead by example.” Servant leadership (Greenleaf, 1977) focuses on moral priority and benevolence, which could be less effective in scenarios of non-volunteer organizations. Leaders are there to enable operators to succeed in achieving group goals, solve problems, and tackle barriers by exercising influences and by differentiating roles (Cripee, 2002; Bass, 1990). Engaging and energizing followers in the absence of committed leadership who can show where the goal is, how to lead to reach there, envisage what values to cherish, and symbiotically, what all these means personally becomes the biggest challenge of organizations (Lee, 2011; Dalpiaz *et al.*, 2010; Holt & McNulty, 2008; Chaleff, 2003; De Gues, 1997).

As Adir (2007), Thomas (2004), and Cogliser & Bringham (2004) have explained the acquired leadership knowledge and skill has to produce qualities of enthusiasm, integrity, toughness, fairness, warmth, humility, and confidence in creating an environment where followers can get a sense of vision, direction, inspiration, and spirit of a team as the examples set by the leader himself. That is why Lee (2011) further advised the need for leaders to behave as “catalysts” by creating an environment where entrepreneurship and change have to converge if innovations and sustainability by the led are to be achieved, which could have a defining role on the fate of TTs. According to Schneider (2011) and Vigoda-Gadot (2007), transformational leadership is the most preferred and workable theory because its focus is on “intellectual stimulation” by inspiring followers and seeking their collective accomplishment instead of focusing on the self. Schneider (2011) and Tichy & Ulrich (2008) also have indicated the rationale for the performance of transformational leadership than the competing theories of transactional (contractual) and servant (moralized) leadership theories because it is based on building new insight and changes from the old and conventional styles. In fact, Schneider (2011) has emphasized that transactional leadership theory is less effective because the kernel of its concept deals with control and contractual obligations. Transformational leadership theory, on the other hand, searches for building strong relation with others and encourages individuals to develop and motivate them for a “higher-order” needs by initiating and coping with changes that can create new “looks of the old” through the alignment of strategy, culture, and societal networks related to the context (Lee, 2011; Schneider, 2011; Horney, 1997).

Though the broader classification of leadership can be under democrats and autocrats, the specific theories that have been developing throughout human history have been shaping and reshaping the context and effectiveness of leadership. Even if leadership can be seen as falling into democratic or autocratic camps (Gonin *et al.*, 2011; Dannhauser, 2007; Horney, 1997), none of their sub groups ramified into many leadership styles as indicated in the foregoing statements have tried to embrace the social and economic life evident in the realm of TTs. If the diverse views on leadership are related to TTs, none of them has appealed to solicit an advocate the dire situation the sector has been doomed to endure. The literatures scanned on the subject have not indicated if paradigms from traits all the way to transactional or transformational leadership theories (Horney, 1997) have ever comprehended the economic and social benefits embodied in

TTs. In fact, when it comes to the reality of Ethiopia, the concept seems to have worked the opposite in a counterproductive manner (Yineger *et al.*, 2008; Yeneabat, 2007; Tolossa, 2006).

*b) Emergent Leadership Theories*

Another dimension of leadership is its advancement to incorporate new insights, which can be referred as Emerging Leadership Theories among which Transcendental and Quantum theories are holding ground. Leadership “gurus” are often in search of a better meaning and understanding of complex and contemporary issues by using wider spectrum of disciplines (Liu, 2007b; Piotrowski, 2006; Albert, 2006; De Geus, 1997). As a result, the interaction between the old and the new leadership theories are now giving way to the emerging concept of transcendental (Liu, 2007b; Zohar & Marshal, 2000) and quantum leadership theories (Piotrowski, 2006; Cunningham, 2006; Stumpf, 1995) as advanced conceptual and behavioral tools to enhance effectiveness or fill unresolved leadership gaps still widening at societal and organizational levels. Extant leadership theories, including transformational and transactional, that are based on creating organizational stability and certainty, cannot provide the mindset and approach required to face the turbulent changes and organizational chaos of the contemporary world unless new horizons of leadership theories are conceptualized and embodied (Liu, 2007b; Albert, 2006; Zohar & Marshal, 2000).

Traditionally, cognitive or mental intelligence (IQ) that was taken as sufficient to understand logical issues is more and more proving inadequate to comprehend the dynamism of present day challenges, which has demanded the inclusion of emotional intelligence (EQ) and spiritual intelligence (SQ) into the leadership equation (Albert, 2006; Goleman, 20002; Zohar & Marshal, 2000). According to these authors, to have an effective business leadership, it is imperative that the approach should enable to acquire skills of self-awareness, self-management, and relationship management. It is when leadership is able to comprehend and blend IQ, EQ, and SQ that the leading skills and practices could become fit to the dynamic of changes by enabling the building of core competences, designing suitable systems, affirming shared ownership, setting direction, anticipating change, and creating meaning in chaos (Albert, 2006; Goleman, 20002; Zohar & Marshal, 2000). Such refinement and advancement in leadership theories could be taken as a promising approach to overcome the challenges in conserving and transforming TTs.

Spiritual Intelligence or Transcendental approach in leadership is getting momentum as a powerful catalyst for inducing a change by acquiring a new and evolving intelligence that is value-based in the process of “decision-making” and “sense-making” (Liu, 2007b; Albert, 2006; Cardona, 2000). Spiritual Intelligence gives humans the ability to discriminate and raise moral sense and the ability to temper rigid rules with understanding and compassion (Liu, 2007a; Albert, 2006; Goleman, 2002). The dimension of spirituality leadership is a new thinking model of creating awareness on the social spectrum of relationships and ethical alertness to enable the transformation of the power of humans to find meaning, values, and purpose in life (Albert, 2006; Cardona, 2000; Dale, 1991). This theory integrates and extends transformational and transactional leadership theories into a step higher by incorporating morale and charismatic aspects of human nature, which are believed to be essential in enhancing social interactions and nurturing human values (Liu, 2007b). For Liu (2007b), transcendental dimension is a style that can fill a gap in leadership so far known in the field. That is the reason why the field of leadership shall remain vocal until its role to win “brilliant” strategies, develop organizational capabilities, and core competences are achieved on continuous basis (Yergler & Obolensky, 2011; Thomas, 2011; Wang, 2011; Gandz, 2005).

The focus of spirituality and leadership is to create meaning, sustainability, and value as asserted by Albert’s (2006: 20) description: “we are active in constructing our worlds that we can benefit from greater awareness of the processes through which this occurs; and that we can become simultaneously more reflective and more proactive in shaping the way social reality unfolds.” In fact, it is the sentimental value embedded therein that have been the source of impetus of TTs to endure. However, to make transcendental leadership more effective it has to be “located in a nested hierarchy” with transactional and transformational leadership styles (Liu, 2007b; Albert, 2006; Goleman, 20002; Cardona, 2000). Transcendental leadership could be counted as a way forward to realize values so far overlooked in this regard. Since spirituality is dominant in cultural and traditional societies, transcendental leadership theory could be more appealing in realizing the renaissance of TTs. That is why, leadership should mobilize followers behind the march to change mainly by instigating “intrinsic” and “extrinsic” reward motivators that includes dimension of spirituality (Espinosa, 2011; Vansteenkiste, 2010).

On the other hand, the concept of Quantum is evolving into the realm of leadership development where authors in the field believe that it could be an effective conceptual tool to narrow the prevalent leadership gaps. The worldview of Quantum is that things operate within multiple dimensions where parts are not independent but dependent on the whole—all participants are connected to fill the space between them (Piotrowski, 2006; Ercetin & Kamaci, 2008). The theory stresses that there are no prefixed, definitely describable things except that they are existing only in relationship to the larger context, which shows that they are beyond complete description (Piotrowski, 2006; Ercetin & Kamaci, 2008; Stumpf, 1995). This means a reduction system cannot be applied to the “complex adaptive system” (Pellissier, 2010). Quantum Theory (generally non-linear) is becoming a divide from the conventional or Newtonian thinking (generally linear) where the “paradigm does not predict a single definite result for an observation. Instead, it predicts a number of different possible outcomes and tells exactly how likely each of these is” (Pellissier, 2010: 59). In stark contrast to the Newtonian Outlook, the principle of Quantum Theory stresses on the need of organizational flexibility to attain self-transformation congruent to the changes observed in the external environment (Piotrowski, 2006; Ercetin & Kamaci, 2008; Pellissier, 2010). In view of these authors, such a mindset embedded in the “Quantum Thinking” enables organizations to easily shift into “system thinking” and move to the dynamics of “Living System” by grasping the link between the brain’s creativity, organizational transformation, and leadership skills. To further consolidate and define the roles of leadership, Cunningham (2006) and Gonin (2011) have proposed the application of Quantum Theory of leadership by giving emphasis on knowledge building endeavors starting from own experiences in order to be able to build unique and original competitive leverages.

In the Quantum concept, the dynamic energy is always the pattern of interacting and overlapping of “crisscrosses” and interferences in unbroken wholeness that can be pinned down, measured, and located in space and time that is internally bounded up with possibilities and identities of others (Ercetin & Kamaci, 2008; Albert, 2006; Goleman, 2002; Zohar & Marshal, 2000). Quantum Leadership Theory views nature as complex, chaotic, and uncertain that requires a full comprehension to “live with and get the fullest potential out of complexity” (Zohar & Marshal, 2000: 72). That is why Quantum Theory is quite relevant because leadership cannot be approached in a deterministic manner but by focusing on the dynamics of relationship

and systems modeled to provide direction in working within complexities and changes of societies (Piotrowski, 2006; Stumpf, 1995): a leadership mindset lacking in the realm of TTs.

Stumpf (1995) has stressed that leadership is a “heuristic” framework where discovering is the underlying dynamic process, not the discovery per se. For Piotrowski (2006) and Stumpf (1995) leadership in quantum is not to influence others to accomplish specific goal but a process to explore and move to accomplish it: creating and sustaining field of energy in which relationships with followers grow, develop, and become increasingly purposeful, dynamic, and effective through empowerment. To make empowerment purposeful and productive, barriers like culture, distrust, fear, lack of focus, mental models, and “rankism” need to be tackled (Piotrowski, 2006). In Piotrowski’s article, “leaders of quantum organizations work to empower employees and ensure that they have the freedom to make suggestions, grow and mature, and become sensitized to themselves and others” (Piotrowski, 2006: 70). In quantum paradigm, leadership does not provide rules but action alternatives that enable to adapt to changes (Ercetin & Kamaci, 2008; Piotrowski, 2006): a limitation of extant leadership views that hindered the motivation to appreciate and exploit TTs.

There are also scholars who advocate the rebirth of an Agrarian model of Leadership. An Agrarian Model of Leadership is characterized by its independence that is family focused, ethical, organic, natural, conservationist, community oriented, etc. (Green & McCann, 2011), where its tenets resemble to share the values embodied in traditional technological practices. Advocators of Green Economy are opted to adhere to the Model of Agrarian Leadership for the fact it is driven from value factors as indicated above (Green & McCann, 2011). For Green and McCann (2011) looking back to the primitive model of leadership is essential because the attributes were organic, natural, and environment friendly, which is urged to be followed to address leadership gaps in order to address the existing environmental challenges. The argument is, however, full of questions. There could be pivotal lessons to learn from traditional practices, which is the strong belief of the researcher. However, simply ignoring the merits and advancement of modern leadership concepts by blindly favoring the models of the primitive practices in pursuit of preserving the narrowly interpreted eco-system values could be taken as a problematic view in the context of the dynamism of modern era. Rather, cultural similarities that could enhance understanding and create ease of communications among the leaders and the led

on the basis of “similarity breeds attraction” could be appreciated (Jane & Jiang, 2010; Quinn, 1996). This concept can be also replicated to the domain of traditional sector that could appreciate the embedded cultural complexity in a tailored manner if the self and others are to be inspired to undertake common causes by exploring latent talents and energies at societal or organizational levels relevant to conserve and transform TTs (Cashman, 1998; Quinn, 1996; Hiebert & Klatt, 2001).

### 2.2.3 Entrepreneurship Theories

Entrepreneurship can be defined as an endeavor of spotting and exploiting economic functions proactively where opportunities for “arbitrage,” innovation, and risk taking activities can grow and widen to exploit existing or latent markets at small or medium size enterprise levels (SME) (Casson, 2010; Schendel, 1990; Lucas, 1981). It can be further defined from a wider perspectives of economics, sociology, psychology, history, and management in the pursuit of creating opportunities for profit and alertness to spot the untapped or not preciously perceived situations where market disequilibrium exist (Bula, 2012; Praag & Hans, 1983; Schumpeter, 1983; Shane & Venkataraman, 2000; Becker, 1993). According to Thompson *et al.*, (2011: 213), “Entrepreneurship is about the discovery and exploitation of profitable business opportunities for the creation of personal wealth and, as a consequence, for the creation of social value.” In the process of discovering and exploring economic potentials and opportunities, new and “small ideas” can germinate and get invigorated into a creative innovations and ventures (O’Connell, 2015; Green & McCann, 2011; Lee *et al.*, 2011). The exploitations of social and economic values embodied in small and new ideas are often subjected to judgment in making decisions on innovations and profit arbitrages by focusing on the effects of Spillover Theory (Rubtsova *et al.*, 2004) that conceptualizes on capitalizing latent and marginalized resources (Green & McCann, 2011; Lee *et al.*, 2011; Rubtsova *et al.*, 2004).

The classic Creative Destruction Theory of Schumpeter (1934) has also stressed the importance of developing entrepreneurship if new innovative economic activities are to be created and enhanced. Schumpeter’s theory has focused on the link between innovation and the individual entrepreneur, and maintains that richness was created when things were changed, whether by the introduction of a new asset or new product through a new production method, by opening a new market, or creating a new organization. Entrepreneurship is getting recognition as

a core factor that could play an important role in innovative economic growth and in building competitive leverages (Fairoz *et al.*, 2010; Stevenson & Gumpert, 1985; Shane & Venkataraman, 2000) by using human capital of individual endowments where an actor can establish business ventures to equilibrate demand and supply of the economy (Shane & Venkataraman, 2000; Becker, 1993). Indeed, entrepreneurship demands the presence of opportunities and presence of enterprising individuals stressing the criticality of human capital in this regard (Bula, 2012; Praag & Hans, 1983; Schumpeter, 1983; Shane & Venkataraman, 2000). Entrepreneurship is considered as one component of human capital where in practical terms they are “the human faces of market economy” (Giusta, 2010: 35) by creating a network among members of communities. Human Capital refers to the knowledge and skill a person has accumulated over time while social capital of entrepreneurs is the sum of actual or virtual resources accruing to individuals or groups from networks of more or less institutionalized relationships of mutual acquaintances and recognition (Jiao, 2011, Gordon, 2012; Gundry *et al.*, 2011; Korgaard, 2011).

The existence of social relationship creates an opportunity for entrepreneurs who can take an initiative to introduce small scale businesses and take advantage of the market opportunities created by the social membership relationships in which they are situated (Gordon, 2012; Green & McCann, 2011; Jiao, 2011; Ferri, 2009). In fact, entrepreneurial ventures are social entities involving choices by associating with groups of similarity or related in terms of various forms of capital, which helps in getting access to opportunities and distributing responsibilities of decision making among members in a social context (Schumpeter, 1983; Shane & Venkataraman, 2000; Becker, 1993). Organizational renewal, innovativeness, and performance that can be marked ahead of its competitors, in the manner Lee *et al.* (2011) see, largely depends on the availed bundles of resources and capabilities where social capital is a very critical resource to be tapped by industrious entrepreneurs. Usually, conventional economic theories focus on factors of endowment, development, and growth without giving a due notice to the economic values embedded in social cohesion based on trustworthiness referred as social capital: an important factor that was overlooked but now capturing the attention of entrepreneurs and leaders alike (Giusta, 2010; Staub, 2002; Oxoby, 2009; Bourdieu, 1986). By deduction, such a growing focus on socio-cultural capital is could bring a paradigm shift relevant to capitalize the latent resources embodied in TTs.

Entrepreneurship creates an “arbitrage” capacity to recognize the existence of market opportunities that can have a bearing on the economy and social development of communities expressed in the form of flow of values from sellers to buyers (Cravens *et al.*, 2009; Muscat & Whitty, 2009; Decarolis & Litzky, 2006). It is a powerful orientation of business making within a given societal context where shortage of funds can be substituted by social contacts or social capital as alternative, though often an ignored resource (Redding & Rowley, 2012; Ferri *et al.*, 2009). Especially social-entrepreneurship has the potential to mobilize and exploit local resources and tackle problems communities are forced to endure in embracing TTs (Redding & Rowley, 2012; Ferri *et al.*, 2009; Gunn *et al.*, 2008). Market or morale “suasion” (the use of private economic activities by governments outside the legal definitions to facilitate changes in social order so as to address inequalities in society with the sense of persuasion) can bring the latent social capital into market interplay through enlightened entrepreneurs (Kucher, 2011; Redding & Rowley, 2012; Ferri *et al.*, 2009).

Social entrepreneurship can take the lead to develop innovative approaches for economically constrained societies using the principle of “bricolage” (using what is at hand such as TTs to do good things), which can be more effective especially if an innovative ecology (institutional and structural support for social entrepreneurship) are prevalent (Boxenbaum, 2011; Gundry *et al.*, 2011; Thompson *et al.*, 2011). In fact, social networks are important factors in all endeavors of entrepreneurship (Casson, 2010; Ferri *et al.*, 2009; Lucas, 1981). Social entrepreneurship is often a non-profit venture aiming to alleviate pressing social problems, especially in view of resource scarcity, and help others based on common goods and values specific to given communities using social networks and relationships as social infrastructures (Pruthi, 2012; Sundin, 2011; Giusta, 2010). The benefits of developing entrepreneurship could emerge and accrue from the bridging of social capital (connecting with larger social aggregates), which counts on social trust and obligation (Wicks, 2009; Kramer, 2006; Johanson, 2001; Coleman, 1988) that has been the source of imputes in the survival of TTs. In Prasad’s (2005) assertion, Bourdieu’s formulation of social capital and cultural capital theories are explained in terms of their relevance to entrepreneurial values that can be explained as: “Individuals and groups drawn upon variety of economic, social, and cultural resources in order to improve, maintain, or strengthen their positions in the social order” (Prasad, 2005: 199). In fact, the predictions of entrepreneurial

theories could be more realistic if they are seen in conjunction with social and cultural capital theory (Kramer, 2006; Rubtsova *et al.*, 2004; Ferri *et al.*, 2009; Bourdieu, 1996).

#### 2.2.4 Socio-Cultural Capital Theories

Social capital and cultural capital theories are used to explain intangible goods shared among members of communities (Casson, 2010 ; Bourdieu, 2000, 1996). Social capital signifies the social cohesion bonded by networks and relationships while cultural capital theory magnifies the values adhering to the beliefs and norms that are internalized and used as guiding principles in the interactions and relations of communities (Casson, 2010; Prasad, 2005; Bourdieu, 2000, 1996). In this thesis, social capital is taken as the aggregation of potential and actual technological and relational resources useful for the well being of members that can be created in formal or informal settings reflected in networks of relationships within the accepted societal norms (Lorenzo, 2010; Ferri *et al.*, 2009; Oxoby, 2009). Socio-cultural theory is based on negotiation of meanings where the mental process first originates from the “external plane” and then transferred to the “internal plane” through the use of language as a tool which forms the context of socio-cultural capital (Field, 2005; Ducate, 2003; Salomon & Perkins, 1998; Putnam, 1993; Wertsch, 1991). As a result, socio-cultural capital is conceived as a resource grounded in relations, trust, skills, or experiences blended in the fields of economics, sociology, history, psychology, and political science of social interactions (Huvilia, 2010; Wallis *et al.*, 2004; Woolcock & Narayan, 2000). Networks in socio-cultural capital are used to serve as a glue to bond and bridge the relationship of individual and groups, which can improve the integration and efficiency of societies (Ducate, 2003; Salomon & Perkins, 1998; Putnam, 1993). The situation creates access to information and resources for individuals and groups and excludes others while reinforcing the dominance or privilege of members (Field, 2005; Ducate, 2003; Putnam, 1993; Wertsch, 1991). Socio-cultural capital is one of the salient forms of capital conceptualized in social relations of networks and dispositions of norms enabling people to get understood, accepted, and supported for better accomplishment to the extent of the sharing or constraining values and meanings accruing or denying to members (Lin, 2001; Bosch, 1991; Bourdieu, 1986).

Socio-cultural capital features social organizations that can improve the efficiency of society by facilitating coordinated actions of actual and potential resources resulting from the “aggregation” of mutual acquaintances and recognitions (Putnam & Nanetti, 1993; Ferri *et al.*,

2009; Bourdieu, 1986). Social capital also refers the accesses individuals can use by being members or enjoying affiliations of institutions and groups sharing similar cultures. According to Earle (2005) and Loland (2005) culture is the legacy of physical artifacts and intangible attributes of societies inherited from preceding generations, manifested in the present and, at the same time, bestowed to successive generations through technologies invented and practiced by successive communities. Culture is an intangible asset having a property of “public good” with shared “values and beliefs often memorized by individuals, and are transmitted to the next generation through parenting and education” (Casson, 2010: 207). As argued by Rubtsova and Dowd (2004), Harris and Moran (2000), and Bourdieu (1986), cultural capital of societies refers to the disposition of dominant classes as natural and acceptable to facilitate and justify their continued succession, which in fact leads to the reproduction and legitimization of inequality.

Hence, as one of the main constructs of TTs, socio-culture is considered as a critical “phronesis” vehicle that has been playing a role in transmitting the coping skills and knowledge to subsequent generations (Bhalachandran, 20011; Gold *et al.*, 2011; Thomas, 2010; Rubtsova & Dowd, 2004). In Bourdieu’s (1986) view, socio-cultural capital theory embodies values in the form of economic, cultural, institutional, and symbolic expressions. Economic capital denotes tangible materials, cultural capital refers to artistic and “rare collections,” while social capital refers to relationship and accesses of individuals that can be used by being a member or having affiliations to institutions and groups. Similarly, cultural capital can exist as embodied (in mind and body), objectified (like instruments or art), and institutionalized (like in education), which can be expressed in terms of material or symbolic (Field, 2005; Ducate, 2003; Lin, 2001; Bosch, 1991; Bourdieu, 1986). Symbolic capital relates to none economic value expressions, which could be traced to social, cultural, or institutional forms (Gold *et al.*, 2011; Thomas, 2010; Rubtsova & Dowd, 2004; Bourdieu, 2000, 1996).

Propagators of social evolution theory have stated that the journey of change societies have been going through was gradual and unidirectional where the traces of the older technologies are germinated in the generations of the new (Gold *et al.*, 2011; Thomas, 2010; Michaelides & Theologou, 2010; Asnik, 2006). This concept infers to modern technologies (MT) as offspring of TTs showing that in the course of natural development, there is a string of alignment and unity between the technologies of the old and the new. In the continuum of the socio-cultural realm,

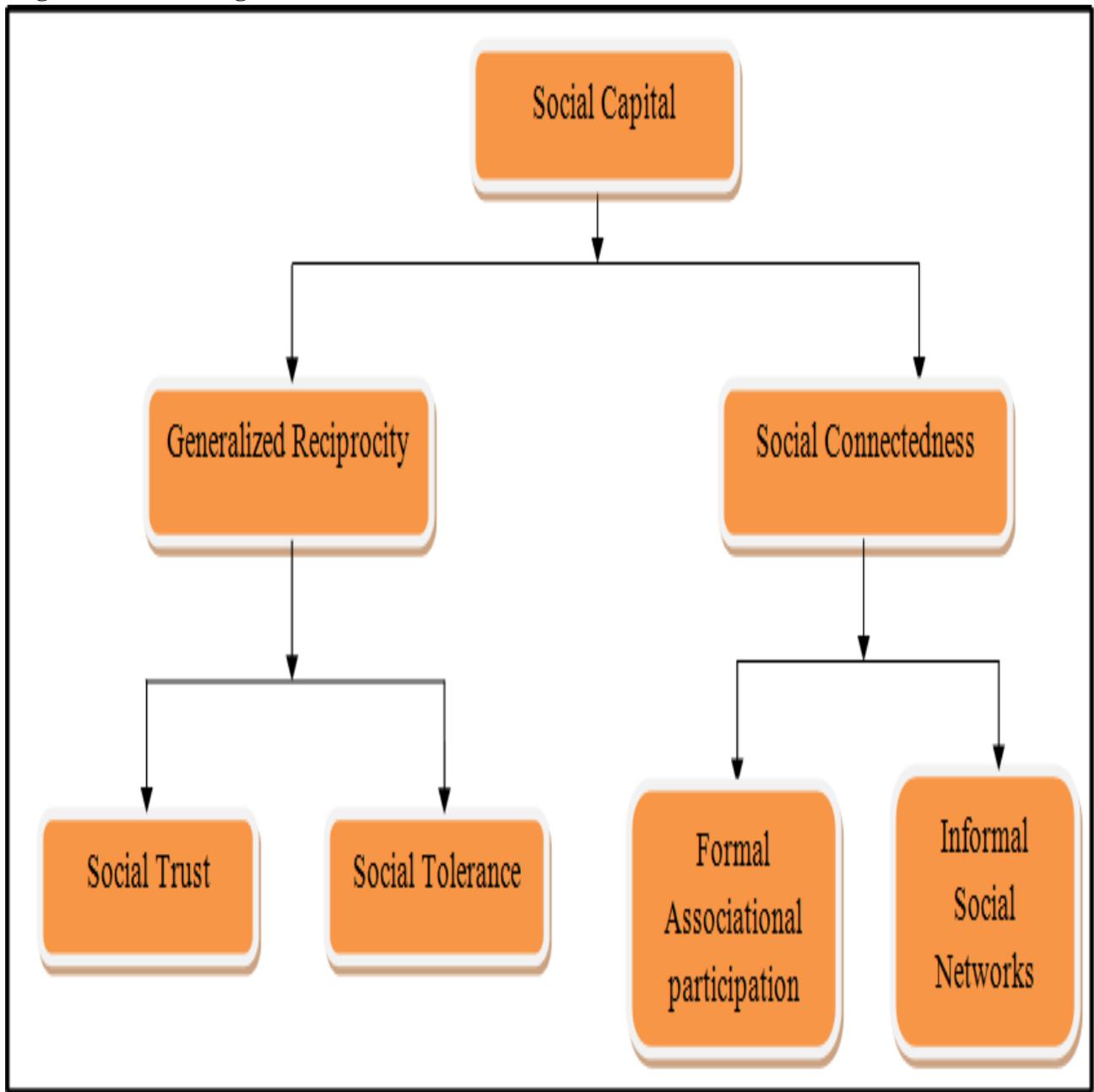
capital is the aggregate of the actual or potential resources (tangible or virtual) resulting from the institutionalized networks of mutual recognition whereby member “agents” strategically locate themselves and act to gain power and dominance in the field to promote their interests (Rubtsova & Dowd, 2012; Johanson, 2001; Bourdieu, 1991). Social-capital (relationship identities of different subgroup) is a complex construct that gives rise to social bonding with a convertible potential into a “private or public good” (Wicks, 2009; Kramer, 2006; Johanson, 2001; Coleman, 1988). Adversely, when networks of ties gain performance, and entrepreneurial strides give way to a “negative group thinking, that is they become more clone-like, think more alike, and novelty becomes elusive” (Han & Mckelvey, 2008: 40).

Social capital based on skewed relationships may also inhibit the attainment of anticipated goals, thus resulting in “social liability” (Thomas, 2010; Earley & Mosakowski, 2002; Johanson, 2001; Coleman, 1990, 1988). Social capital is as pervasive as “institutional instruments that shape the society’s proclivity to cooperate and release the energy that lies otherwise latent in the human dispositions” (Redding & Rowley, 2012: 275). The problem with the management of culture is that its death is invisible, which does not give clue and time to retain the important, among others, the technological values and skills of TTs that should have been conserved for present and future generations. Especially, the trend shows that the capital of having cultural diversity is likely to diminish over time (Casson, 2010; Bourdieu, 2000, 1991; Lucas, 1981). In the process of evolution, culture is vulnerable to become extinct to changes and adulterations, or due to actors getting smaller and smaller until they lose their “vocal” place, which also means the loss of TTs owned by same communities. Huvila et al. (2010) explain that social capital creates the venue and opportunity of networking and accessing to resources for connected individual entrepreneurs usually available in abundance in society.

The resources of socio-cultural capital as in TTs are believed to be vast and among other, include information, knowledge sharing, and support of members, networking, and availing facilities (Ferri *et al.*, 2009) framed in institutionalized settings of societies. The lack of awareness to develop and maintain the tenets of social capital in order to enable them to adapt and survive the turbulence of changes (Pun & Nathai, 2011; De Gues, 1997 Quinn, 1996) is rather found to be a chronic limitation, which affects the conservation of TTs. In reality, as to Jordan and Prichard (1999), though change is an ever certain phenomenon, the people in

traditional practices of socio-culture settings do not comprehend what change is all about. TT practitioners embraced in socio-culture sanctuaries are not taught how to evolve and adapt to changes that are necessary for endurance. Rather, they are left in bewilderment and in the course of extinction due to the lack of embracing new and radical approaches and directions, unless their role as competitive edges in social and cultural capital leverages is appreciated and safeguarded (Lee, 2011). In understanding the challenges in facing a change, Lee (2011) has indicated that the sources of impetus have to be from internal (autogenic) and external (allogenic) “stimulants” adapted by designing strategies that consider cultural and social network realities. It is in this “drifting” instead of appreciating the “inter-connectedness” among members of similar or different actors (Ciulla, 2004; Rothwell, 2004) that the values of indigenous knowledge contained in TTs are getting eroded. From this perspective, the values of a successful socio-cultural capital can be taken as the ability to build competency of cohesion and symbolic representation applicable to members by maneuvering the embedded structural settings and norms (Wang *et al.*, 2011; Killian *et al.*, 2011; Prasad, 2005; Bourdieu, 1986), which could be portrayed as indicted in Figure 5.

**Figure 5: Measuring Social Attitudes**



Source: Adapted from Jowel et al. (2012)

## 2.3 THEORETICAL WORLD OUTLOOKS

### 2.3.1 Extant Theoretical Paradigms

To give direction to the research undertaken, identifying the appropriate theoretical framework from among the research paradigms such as positivism, realism, critical theory, or constructivism was vital (Andriopoulos & Slater, 2013; Costantino, 2008; Henning, 2004; Yin, 2003; Healy & Perry, 2000; Guba & Lincoln, 1994; Eisenhardt, 1989). To start with, a research work cannot be carried where there is no theoretical base or knowledge that can serve as a frame of inquiry, and show how the ontological realities (the facts the researcher investigates) are interconnected or shaped as learnt epistemologically (relationship between the researcher and the reality) (Andriopoulos & Slater, 2013; Henning, 2004; Guba & Lincoln, 1994). This approach is based on the deductions of a priori studies or observations by using an appropriate research methodology (techniques of investigating the realities) (Andriopoulos & Slater, 2013; Henning, 2004; Guba & Lincoln, 1994). To understand the theoretical basis as relevant predictive or descriptive tool that can relate to this topic, reconstructing “abstractions” of correlations, outcomes, or interests from the “messy” phenomenon surrounding the subject of study was necessary (Carlile & Christenson, 2005; Bower & Gilbert, 2005). In practical terms, a theory has to reveal how far the interrelated cases are internally valid (clarity in drawing from its premises), externally valid (trustworthy while applying to a different context), and reliable (observe same result when applied in different settings), whether it is used in its deductive or inductive “genre” (Carlile & Christenson, 2005; Bower & Gilbert, 2005). In fact, the concept of “trustworthiness” implies to the construction of truth from qualitative study stances in the world of interpretative thinking (Niekerk *et al.*, 2010).

The theoretical backgrounds already reflected has enabled the researcher to interpret his findings in terms of the meanings of the causes and effects giving rise to the problems or events the study has embarked. The theoretical basis was not used only to explain the meaning of the causes and effects of the research problem and variables or constructs the researcher has dealt with. It was also a basis to understand what the implications and consequences of the solution or intervention measures proposed could turn out to be in terms of the meanings radiated to the targeted population of the study (Singh, 2006; Yin, 1994; Eisenhardt, 1989). Since the review of the literature has revealed no a priori in-depth study on TTs of Ethiopia in a holistic context, the

approach of this research was predominantly geared to be an exploratory in its nature, which revealed new inductions and abductions of theory building, theory testing, theory extension, or theory refinement (Voss *et al.*, 2002; Yin, 2003, 1994). The conceptual basis of the research was, therefore, to explore, describe, and explain the kernel that kept TTs alive across centuries, despite the predictions of the central theory in this regard—the Disruptive Innovation, and at the same time, track the main problem that has deterred the conservation and transformation of same in relation to social, cultural, entrepreneurial, and leadership theories as stressed in the aforementioned conceptual frames. Among the theoretical frameworks stipulated in the foregoing passages, the Critical Theory Paradigm (among the ranges falling into this category as shown in Table 1) has given the position and direction or lens of viewing the world of this study (Creswell, 2009; Sanders *et al.*, 2005; Hopkins, & Geroy, 2005; LeCompte, 2003).

Table 1: Categories of Theoretical Paradigms

Element	Positivism	Critical theory	Constructivism	Realism
Ontology	Reality is real and apprehensible	“Virtual” reality shaped by social, economic, ethnic, political, cultural, and gender values, crystallized over time	Multiple local and specific “constructed” realities	Reality is “real” but only imperfectly and probabilistically apprehensible
Epistemology	Objectivist: findings true	Subjectivist: value mediated findings	Subjectivist: created Findings	Modified objectivist: findings probably true
Common Methodologies	Experiments or surveys: verification of hypotheses, chiefly quantitative methods	Dialogic or dialectical: researcher is a transformative intellectual” who changes the social world within which participants live	Hermeneutical or dialectical: researcher is a “passionate participant” within the world being investigated	Case studies/convergent interviewing: triangulation, interpretation of research issues by qualitative and by some quantitative methods such as structural equation modeling

source: Adapted from Perry (2001)

### 2.3.2 Relevance of Critical Theory

To base the research on “scholarly conversation” and “illuminate” the way into a new or the “unknown territory,” the reflections of the entire premises of TTs was viewed from the perspectives of the given world outlook that is the Critical Theory paradigm (Fowler, 2004; Henning, 2004; Guba & Lincoln, 1994). The philosophical paradigm with regard to critical theory was found to be relevant for qualitative research stances because of its significance in marketing “rubrics” and business related undertakings by explaining the “lived experiences” of participants related to TTs (Creswell, 2009; Henning, 2004; Santora & James, 1995; Burton, 2001). The concern of critical theory is understanding history and structures in terms of critiquing and transforming social, political, cultural, economic, ethics, and gender meanings and values (Andriopoulos & Slater, 2013; Healy & Perry, 2000; Guba & Lincoln, 1994). Based on Guba and Lincoln’s (1994) view, critical theory helps to expand the insight and stimulate actions to eradicate ignorance, marginalization, and misapprehensions rampant around the practices of TTs through the mastery of “informed consent.” Such theoretical frame is used as an outlook to build an insight in containing exploitations and conflict situations of humankind from the viewpoint of a transformational mindset.

Critical theory assumes that social reality is historically constituted and that it is produced and reproduced by people who can act consciously to change their circumstance, though their ability to do so is constrained by various forms of socio-cultural, economic, leadership, entrepreneurial, and political dominations and orientations (Davis, 2008; Sobh & Perry, 2006; Myres, 1997). That is why the view of Lorenzo (2010: 131) becomes relevant: “The research process needs to address, and be cognizant of, the experiences of segregation, inequality, poverty, discrimination and oppression experienced by the participants; the daily uncertainties within a context characterized by poverty and marginalization.” This is, therefore, the reason critical theory was found to be the relevant world viewing lens in conducting the explorative, descriptive, and explanative qualitative research undertaken on the studied TT. As to Davis (2008) and Myres (1997), critical research focuses on the oppositions, conflicts, and contradictions in contemporary society, and seeks to be emancipator by struggling against the causes of alienation and domination. Based on this approach, the research has given emphasis to understand the underlying dynamics of power and politics influencing the organizations of TTs by taking

leadership as an ‘alienating social myth’ that legitimizes relationships of “unequal distribution of power and resources” (Bolden & Kirk, 2009: 3). That was the relevance of the critical theory as guiding lens in conducting the research undertaken on TTs (Sobh & Perry, 2006; Grix, 2002). It was from this perspective of theoretical paradigm that the stance of the ontology, which is looking after the reality “out there” and the epistemological lens of understanding the reality was conceptualized and framed accordingly (Costantino, 2008; Sobh & Perry, 2006; Grix, 2002).

The critical paradigm has given a shared view of ontological and epistemological assumptions in guiding the conduct of the research (Costantino, 2008; Prasad, 2005; Guba & Lincoln, 1994) on the targeted entities or communities of TTs. In other words, this theoretical foundation was used as the starting point to scrutinize the constructs that defined the realm of TTs; meaning leadership, socio-cultural, and entrepreneurial concepts as identified and deduced from the literature review. Critical Theory “looks at, exposes and questions hegemony—traditional power assumptions held about relationships, groups, communities, societies, and organizations—to promote social change” (Davis, 2008: 140). This implies that the relationship between the researcher and participants of the study is constantly negotiated to deconstruct power, achieve and maintain trust, promote equality, and ensure reciprocity from which a grounded knowledge is unraveled (Duncan & Watson, 2010; Ropers-Huilman & Winters, 2010; Blaxter *et al.*, 2006). As stated by Blaxter *et al.* (2006), a critical paradigm is relevant in dealing with issues where there is a characteristic of conflict and oppressions, and where there is a need to promote and seek for change and emancipation. Such a worldview makes the philosophical outlook more relevant to the dire situation Ethiopia’s TTs have been situated. Considering the methodology of the study adapted, it can be also stated that “qualitative research would do well to engage in critical reflection—with participants and focused in systems—on various configurations of identities that are salient” (Ropers-Huilman & Winters, 2010: 40).

The basis of the study, which is a qualitative study, could be argued as belonging to the interpretive paradigm. But the goal of the study was not going to stop only by explaining the “lived experience” of the subjects of study from the view point of the interpretive paradigm (Prasad, 2005). Rather, the endeavor has stretched until the scientific approach of “deconstructing” of dominant structures and constructs of the studied TTs were articulated from the angle of critical theory paradigm (Weick, 2010; Henning, 2004). If a theory has to gain a

valuable and valid applicability within the real world, the proposition or prediction from interpretations has to provide an explanation that is in fact generalizable or transferable at a level of “universal application” (Gold *et al.*, 2011; Stewart *et al.*, 2011). The value of theory application was not restricted to understand and explain a phenomenon as induced from empirical data only but also on the idea of the philosophical realm of the constructs, which reinforces the making of predictions about “transferable” outcomes too (Mohr, 2008; Prasad, 2005). In addition, to enrich the empirical data, “hermeneutical” interpretation of texts and artifacts related to TTs were also added throughout the course of the study (Prasad, 2005).

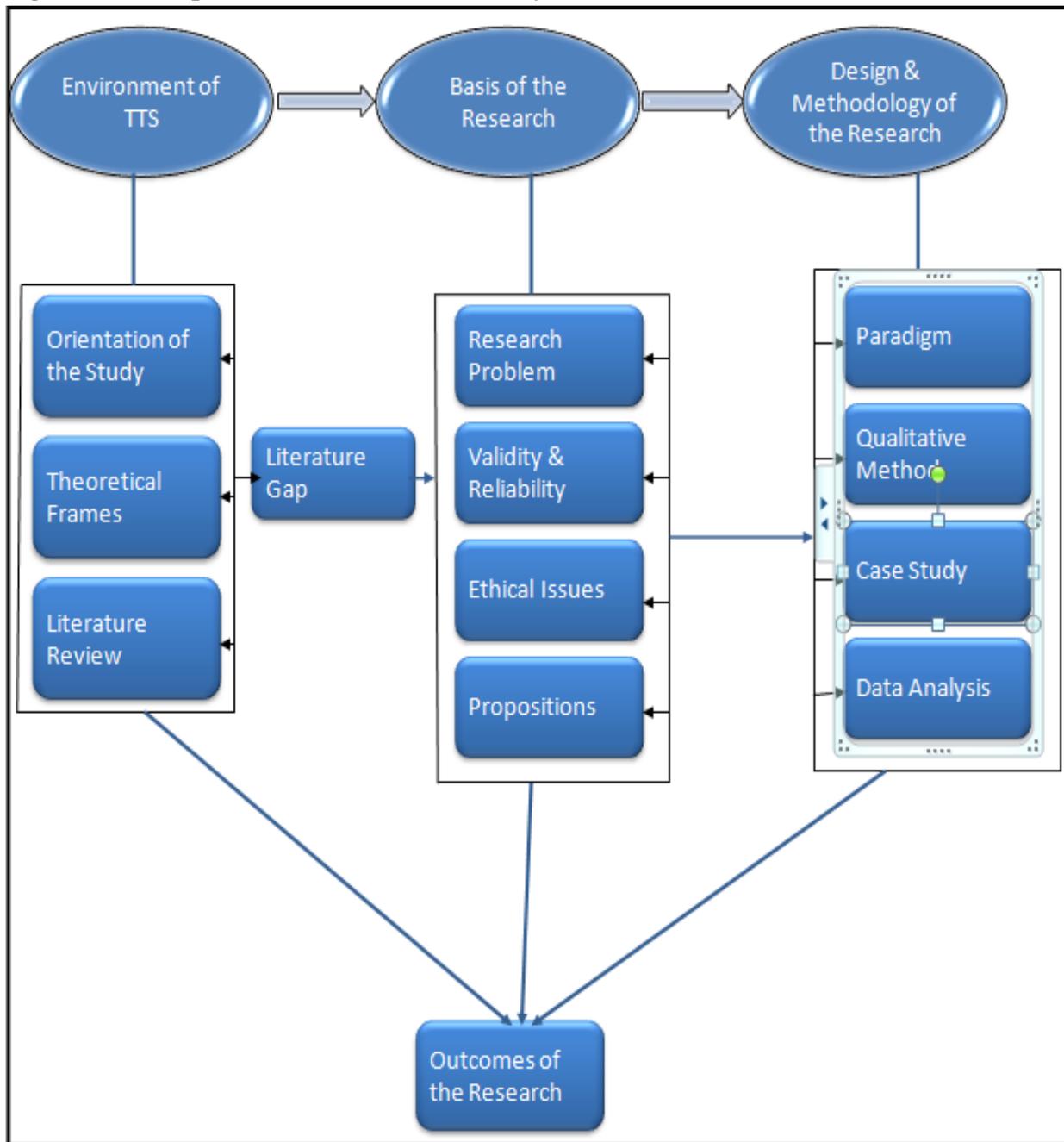
The discourses on disadvantages of critical theory (where critics consider it as a fault finding) compared to other theories with respect to the issues related to business practices are believed to be insignificant (Mohr, 2008; Prasad, 2005; Burton, 2001). The inherent behavior of critical theory focuses on critique of prevalent assumptions and social practices intends to change rather than to modify established systems. The theory is sounder in dealing with phenomena that required an in-depth understanding regarding the behavior of humans within a given framework from which new insights and values are derived (Baba, 2005; Prasad, 2005; Burton, 2001), such as the situations surrounding TTs of Ethiopia. It serves to view and to reveal the contradictions beyond the face value prevalent in the sector of TTs with the ultimate goal of creating a knowledge intended to emancipate the sector that have been doomed to endure “oppression” (Prasad, 2005). In effect, Critical Theory requires combining phenomenological stances, which implies the need to consider:

- 1) Interpretive approach to understand the lived experiences stressing the importance of dialogue between researcher and subjects in their natural settings;
- 2) Understanding the relevant socio-cultural structures and processes that may mediate and contain people’s subjective understanding;
- 3) “Juxtaposing” interpretation of social actors with existing socio-cultural structures by the researcher to delve into ideology critique to induce or infer inconsistencies, distortions, contradictions, and asymmetries;
- 4) Awareness or participative stage when the researcher shared scholarly interpretations with different actors in an effort to provide them with a narrative that was potentially empowering in developing alternative practices and social arrangements;

- 5) “Praxis” when the researcher helped actors develop a critically grounded program of action designed to change many of their own immediate conditions with a view of ensuring social justice (Prasad, 2005: 150).

In conclusion, critical theory is the foundation that was used as a “world viewing lens” in conducting the research undertaken on TTs of Ethiopia. Considering the dire situations TTs have been forced to endure, the relevant world outlook to the research could not have been other than the critical theory paradigm (Creswell, 2009; Sanders *et al.*, 2005; Henning, 2004; Burton, 2001; Guba & Lincoln, 1994). In addition, this philosophical paradigm, which is conceptualized by the researcher in the manner shown in Figure 6, was preferred because the way it views the reality “out there” emanates from analyzing, understanding, and capturing the meaning and experience of the real life situations of participants in concern within the context of the study environment (Creswell, 2009; Henning, 2004; Santora & James, 1995), which is a result of close scrutiny of the data generated from the study fields.

**Figure 6: Conceptual Framework of the Study**



Source: Based on conceptual frameworks excerpts

## 2.4 SUMMARY

To understand the expanse of extant theoretical frameworks in addressing the general predictions regarding the technological dynamism, in general, and TTs, in particular, becomes topical and a basic spring board in conducting the captioned research work. As Henning (2004) and Eisenhardt (1989) have stressed, placing the research in appropriate theoretical paradigm is essential on which the direction of a qualitative study is bounded. Defining the philosophical and theoretical background relevant to the study was necessary if the descriptions, explanations, and assumptions of the qualitative methodology were to be sensible and justified (Lorenzo, 2010; Henning, 2004). The endurance of TTs contrary to the indicated technological predictions was indeed a gap that required an investigative study. The resolve to understand the secrets that enabled these technologies to sustain across generations transgressing the philosophical foundations of the general technological laws has enabled to reveal a substantive knowledge that could further enrich and develop the extant body of knowledge on the addressed constructs. That is to say, the conventional technological theories have proved to fall short in addressing and embracing the rules governing TTs. As result, the Product-Life-Cycle theory propagated by Kotler (2000) and Disruptive Innovation theory by Christenson (1997) that have been assumed as relevant technological theories are found to be full of ambiguities when it comes to define and predict the patterns and dynamisms shaping TTs.

According to the prediction of these theoretical frames, any technology in existence shall be overtaken to give way to emerging technologies, which are going to be more efficient in application or cheaper in cost, and convenient in usages (Schiaivone, 2011; Zang *et al.*, 2011). Because of the qualities and features embodied in new technologies the old are predicted to be wiped out entirely from the market (Schiaivone, 2011, Kotler, 2000; Christenson, 1997), a theoretical generalization which has not proven so when it comes to the domain of TTs of Ethiopia. It has become clear that modern technologies are in constant “disruption” as predicted by these technological theories while many TTs of the country are otherwise. Other than the technologies that have gone extinct, there are still many observable technological practices that are still playing a constructive role in the socio-economic life of the country able to sustain across generations. It is from this perspective that the research has endeavored to understand the essences of TTs and addressed the coined research questions. In the quest for answers of the

research question, however, identifying the core constructs defining the fate of TTs upon which the investigation has focused was vital.

Among the core constructs, the theories defining leadership has been ever evolving to keep pace with social and technological developments (Sheared & Kakabadse, 2009; Brant *et al.*, 2008; Bass &iggio, 2006) in order to attain excellence at cognitive, skill, and action levels (Wang, 2011; Sihag, 2009). Leadership is perceived as a relationship between leaders and followers designed to provide effective direction and motivations in the process of resource mobilization by inducing methods of sharing meanings and values acceptable to the interacting societies (Bolden & Kirk, 2009; Vigoda-Gadot, 2007; Hiebert & Klatt, 2001). It is in the effectiveness of leadership that the aspirations of the led will be met, which in turn depends on the theoretical soundness, other than the ideological orientations and perception of both parties, on which the methods and actions of practicing leadership are presumed to rely on (Green, 2011; Killian *et al.*, 2011; Vigoda-Gadot, 2007; Dannhauser, 2007). However, such understanding regarding the concept and role of leadership leads to question the extent it has been a “catalyst” in leading and aspiring the resources and actors related to the survival of TTs of Ethiopia. The way leadership has been able to conserve and nurture the skills and aspirations of traditional practitioners by designing strategies, setting goals, and inspiring motivations and commitments, addressing shared values and beliefs, in order to attain collective accomplishment, had to be questioned (Lee, 2011; Schneider & George, 2011; Vigoda-Gadot, 2007). The role and practice of leadership in the realm of TTs of the country has been, in fact, practiced in counterproductive manner (Yineger *et al.*, 2008; Yeneabat, 2007; Yadeta, 2002).

Similarly, the constructs for which theoretical generalizations have been reviewed in order to see their role in n conserving and transforming TTs were entrepreneurship and socio-culture capital. Entrepreneurship enables to initiate motivations for taking risks in seeking innovations around small and medium size enterprises (Casson, 2010; Schendel, 1990; Lucas, 1981), based on linking technological and economic potentials embedded in new ideas and resources often found in latent or marginalized situations as indicated in the Spillover Theory predictions (Thomas, 2011; Lee, 2011; Rubtsova *et al.*, 2004; Bourdieu, 1996, 1991). To enhance the effectiveness of entrepreneurship theory, expanding the domain of innovations to include areas of social and cultural capital could be more gratifying (Thomas, 2011; Lee, 2011; Rubtsova *et*

*al.*, 2004; Bourdieu, 1996, 1991). On the other hand, the role of socio-cultural capital in defining the fate of TTs has been overlooked. As Bourdieu (1986) has asserted, social capital and cultural capital can be turned into economic values by developing entrepreneurial orientations based on being members or affiliations to institutions and groups. Social and cultural capital can create the opportunities of networking and accessing relational, informational, and facilitates the utilization of resources abundant in society (Huvila *et al.*, 2010; Ferri *et al.*, 200; Bourdieu, 2000; Bourdieu, 1986; Schumpeter, 1947, 1934).

Ultimately, the core constructs constituting TTs had to be mirrored through a theoretical paradigm that defines the world outlook on which the conduct of the study was carried. Setting the basis of the theoretical paradigm of the study has helped to understand the meaning and consequences of the outcome of the research when the proposed intervention measures are initiated (Singh, 2006; Voss *et al.*, 2002; Yin, 1994). Accordingly, critical theory world outlook has been used as the paradigm appropriate for this qualitative method of research (Creswell, 2009; Henning, 2004; Guba & Lincoln, 1994) on TTs because it is found to be relevant in the effort of emancipating the sector under study from the yoke of rejection and marginalization that have persisted across generations. The paradigm is preferred for its stance in analyzing and understanding the meanings and experiences of the real life of participants of the research (Creswell, 2009; Henning, 2004; Santora & James, 1995). Such a philosophical approach was also found to be relevant in addressing oppositions, conflicts, and contradictions in the society (Davis, 2008; Myres, 1997) in terms of accepting or rejecting the role of TTs based on their historical and cultural background (Stake, 2013; Redding & Rowley, 2012; Ferri *et al.*, 2009; Leedy & Ormord, 2005; Yin, 2003).

## CHAPTER THREE: LITRETURE REVIEW

### 3.1 INTRODUCTION

Scanning across documented resources of knowledge to understand a priori findings is a “launching pad” for researchers undertaking an original research from which an insight on the required level of rigor of the phenomenon to be studied is captured (Creswell, 2009; Aveyard, 2007; Kumar, 2005; Punch, 2000). The exploration in search of “truth” that can “shade light” to understand knowledge gaps and surmount societal challenges commences by accessing and reviewing available literature sources (Creswell, 2009; Leedy & Armrod, 2005). Literature review makes it easier for subsequent researchers to refer and scrutinize the stock of scholarly works so far done in order to avoid redundancy and reworks in the process of establishing a substantive knowledge (Creswell, 2009; Boot & Beile, 2005). The notion described by Punch (2000: 42); “All social researches have a relevant literature, and no research takes place in a vacuum” indicates that researching is not a repeat of what has so far been done but to close gaps and advance already established findings (Creswell, 2009; Boot *et al.*, 2005). To conduct a valid and credible review of a literature in retrospect where TTs are rooted has demanded a meticulous work of identifying and locating relevant sources, setting criteria for screening literature materials, and sorting and filtering to ensure their applicability to the intended purpose (Leedy & Ormord, 2010; Boot *et al.*, 2005). In conducting the literature review the core points that were taken into consideration include:

- a) The relevance of the issues reflected in the materials referred;
- b) Appropriateness of the methodologies used to produce the materials;
- c) Soundness of the theoretical and conceptual frameworks reflected;
- d) Degree of focus needed to reveal and address the inherent gaps (Leedy & Ormord, 2010; Creswell, 2009; Boot *et al.*, 2005).

In fact, a literature review is not an “open ended swing” that moves freely in search of the works of preceding researchers. It greatly deals focusing around the subject of interest (Creswell, 2009; Kumar, 2005). To this end, the researcher has followed Kumar (2005) and Boot *et al.*’s (2005) views that shows how the process of the research need to be guided using a focused set of “sound assumptions” namely, looking to those literature materials falling into similar category and arguing only on unaddressed knowledge gap in a manner to:

- a) Show how the previous works can clarify or justify the research to be done;
- b) Compare predicted or proposed research outcomes with previous findings;
- c) Help to resolve the problem by answering the research questions the study has dealt;
- d) Indicate how the planned research work was going to enrich the preceded studies;
- e) Justify how the researcher formulates a “good theory” upon which the “broad research” area ponders.

The excursions across documented materials have looked after segregating relevant items by including or excluding literatures from the view point of methodological approaches, practical and theoretical significances, grasping insights for structuring the study program, and deductions of substances to be composed in the context of the review (Boot *et al.*, 2005; Kumar, 2005). However, to reckon on the assumption that documented resources in any field of a study are widely available was found to be an overemphasized statement when it comes to the reality of the marginalized TTs of Ethiopia. The sector has been merely abandoned and left to haunt in wilderness, being a victim of punitive measures that went to the extent of harassing and denying the existence and relevance of traditional practitioners. As stated above, the literature sources related to TTs of Ethiopia are very scanty. Nevertheless, as much as the review got momentum, accessing ancient archives and accessing custodians of artifacts and intimating scholars and practitioners working in and around traditional practices were found reasonable and sufficient to address the gaps where the proper and accredited literature materials failed to fill. In the absence of an in-depth studies conducted on TTs of the country, referring to un-authoritative literature materials, as far as they can convey some degree of data and information or shade light regarding the subject matter, were taken as supplementary and complementary sources. To validate such literature sources and the information they contained, the “peripheral” materials were subjected to scrutiny by comparing and contrasting with similar issues addressed using secondary and primary data. Ultimately, the endeavors made by the searcher to understand why TTs have been denied the attention and intervention they deserved and the mystery how they sustained across centuries without bending to the emergent technologies that have the power of wiping out a priori innovations was finally achieved.

## 3.2 HISTORICAL ROOTS OF TECHNOLOGY

### 3.2.1 Emergence of Primitive Technologies

Technology is the innovation of tools and techniques by the mental capacity of human species that is used in helping to adapt to the constantly changing environment, to facilitate the accomplishment of demanding activities, and deter the ever-confronting threats (Rihll, 2009; Adams, 2004; Zaleski, 2011; Anderson, 2010). In actual terms, technology refers to the knowledge of designs, methods, systems, techniques, tools, and crafts innovated to exploit natural resources or to overcome problems of practical encounters facing humanity (Zaleski, 2011; Moskowitz, 2009; Rollings & Earnest, 2006; Rollings, 2006). The word technology is derived from the combined Greek words of *techne* (art, craft) with *logos* (words, speech). By the early 20<sup>th</sup> century, the term came to embrace ranges of processes and simple tools belonging to the prehistoric times that ultimately evolved overtime into advanced machines (Rihll, 2009; Adams, 2004). If the very essence of technology is assessed from the view of its natural merits, it can be stated that all creatures do have embodied instinct techniques metered to their need and posture that could help them to perform if they have to survive.

In fact, animals have a physical power exerted through their limbs, teeth, horns, etc., to use and defend, while humans have an ever developing mental capacity, with less physical power, operating both voluntarily and instinctively where its creativity and applicability extends beyond filling the void of cropping demands (Kuhn, 2005; Plummer, 2004; Khan, n.d. Buchanan, n.d.). Non-human species are endowed with instinctive but static reactions and actions to suit to their environment, as observed, among others, in bees building elaborate hives to deposit their honey and birds to make nests (Buchanan, n.d.; Kuhn, 2005; Plummer, 2004; Khan, n.d.). In the proper sense of technology, it is only humans that use mental power to design and innovate external tools and methods aimed at aiding, reinforcing, transmitting, fabricating, multiplying or magnifying the activities to be performed. In the center of technological innovation made by humans, however, the creation of language as a tool of communication has remained to be pivotal (Stake, 2013; Donmoyer, 2013; Zaleski, 2011; Anderson, 2010), which was and shall remain iconic and “center stage” of all ancient, current, and future human wonders of innovation. Language is the pillar of communication, on top of showing the identity of interacting parties,

which could be taken as the earliest *soft ware* technology, as it was for crafting of stones that can be considered as the earliest *hardware* technology (Varner, 2012; Kuhn, 2005; Plummer, 2004).

From the records cited below, the initial or earliest crude technological tools and techniques were related to the application of stone tools estimated to have been practiced since 2.5 million years ago found in Ethiopia (Tamene, 2010; Klein, 2005; Pankhurst, 2001). The introduction and evolutionary improvement of the rudimentary tools and techniques had enhanced the performance of hunting, food preparation, and fruit and root gathering. That is to say, all the way of the technological evolution, the old has been giving birth to the new until a breakthrough emergence of sophisticated innovations has reached the zenith of the current information technology era (Rollings, 2006; Plumer, 2004; Gere, 2003). Historically, the invention of stone tools was followed by multifaceted inventions where all served as preludes to the emergence of subsequent civilizations. According to seminal works on the overall social evolution (Rollings, 2006; Plumer, 2004; Gere, 2003; Springborg, 2002; Nass *et al.*, 1995), the emergence of civilization is characterized mainly by:

- a) The conception of man as a citizen or member to a community;
- b) The creation of an economic surplus and development of monetary economy;
- c) The development of writing and learning science;
- d) Skill development in construction, metalwork, pottery, textile, sculpture, paintings;
- e) Instituting forms of political representation or social stratification;
- f) Impersonal or bureaucratic administration;
- g) Establishing institutions for organizing and disseminating skill and knowledge.

The history of technology is the history of inventions, in many ways similar to the history of humankind (Rollings, 2006; Springborg, 2002; Nass *et al.*, 1995). Reviewed literatures have indicated that the concept and duration of technology can be perceived nearly as old as human history. Wherever there is a trace of lived ancestors, there is a parallel technology apparent to same era. That is why in East Africa, specifically in Ethiopia, where remains of the oldest human fossils were discovered, the oldest rudimentary stone tool was also found (Tamene, 2010; Klein, 2005). The context of TTs knowledge is not purely mechanical. Rather it embodies social, economical, political, spiritual, emotional, and cultural meanings and reflections mostly evident through ethnical and ritual manifestations and behaviors of practicing communities (Pierotti,

2011; Sengupta, 2007; Kuhn, 2005). The pioneering roots of TTs belonging to the remote past have been evolving from generation to generation usually practiced by artisans (Sengupta, 2007; Kuhn, 2005; Cohn-Sherbok, 1992). Artisans, as indicated in biblical era were those engaged in construction of temples, ironworks, smiths, potters, masons, and stone-cuttings. In the middle ages, the range of the products also grew to include wool and silk weavers, dyeing, and glass manufacturing, and in the dawning of modern era, technological activities like tailoring, diamond cutting, shoe making, etc. have been developing (Pierotti, 2011; Sengupta, 2007, Cohn-Sherbok, 1992). However, the number of traditional artisans dwindled following the period of industrial revolution, which eroded cultures embodying them because they were not able to meet the growing demand for mass production (Pierotti, 2011; Sengupta, 2007, Farry, 2006).

The knowledge of TTs has been evolutionarily enriched and upgraded across generations until almost all a priori inventions faded into “oblivion” when technological development became more and more dynamic (Pierotti, 2011; HCA, 2010; Sengupta, 2007; Khan, n.d.). In fact Sengupta (2007: 21) believed that “modern technology has only enriched the earlier technology and knowledge just as in past”: an emphasis that society should not afford traditional knowledge to go into extinction, which is the basis of present and future technological grounds by overcoming the prejudices vitiated as traditional not worthy to the modern world (Sengupta, 2007). By many, the concept “traditional” is taken as a connotation to describe the past that could represent unchangeable, irrelevant to contemporary world, a declining phenomenon, belonging to distant past, difficult to conduct verification, not referring as such to knowledge but just as something reflecting a way of old life, etc. (Pierotti, 2011; HCA, 2010; Sengupta, 2007; Khan, n.d.). That is why even the surviving TTs that demonstrated effectiveness to survive by adapting to changes across generations are not getting sufficient appreciation, and the role they play has often been downplayed (Pierotti, 2011; HCA, 2010; Bertram, 2011; Sengupta, 2007). Sociological and anthropological investigations of social and cultural developments have established that technological progress was the factor for having the major stages of social evolution referred as Savagery, Barbarism, and Civilization as the basis for subsequently advancing technologies (Spencer, 2011; Earle, 2005; Nass *et al.*, 1995; Morgan, L., 1877). In addition, Nass *et al.* (1995) have indicated that the effects of social identification of traditional practices (inclusive TTs) are pervasive and powerful realities leading to group identity where:

- a) They perceive themselves to be more similar to each other;
- b) They are more likely to act cooperatively;
- c) They feel less stranger to agree with group opinion;
- d) They perceive group messages to be of higher quality;
- e) They confirm more similarity in both behavior and attitude.

For Ingham and John (2007), societal relations were the fabrics for developing a culture of stability and coherence in which the basis for societal advancement and sowing the seeds to open the technological realm of the future incubates. The improvement of primitive technologies had taken place within the agrarian society, which in turn brought the end of the agrarian era (Green & McCann, 2011). Broughton et al. (2005) have explained how farming technology came to emerge in prehistoric era from the need to ease the hardship of hunting and gathering and save energy and time (Green and McCann, 2011; Broughton *et al.*, 2005). According to Green & McCann (2011) and Sihag (2009) the development of agrarian economy was also the inception of capitalism where surplus or in excess of what was needed for survival caused the emergence of “bartering” goods as an embryo of subsequent commercialization and urbanization. Green and McCann (2011) have also studied how the parallels in the improvement of technologies heralded the dawning of the robust industrial revolution in place of an agrarian era, which lasted from the 17<sup>th</sup> to the beginning of the 19<sup>th</sup> century.

The development of the western world is rooted on the foundations of their indigenous technologies, which evolved into industrial revolution (Shibata & Kodama, 2008; Davis & Davis, 1998; Gray, 1984; McClelland, 1961). It was due to this reason that they were able to conserve and nurture the primitive and cultural technologies into an advanced levels that they were able to transform the entire socio-economic fabrics (Shibata & Kodama, 2008; Davies, 1998; Gray, 1984; McClelland, 1961). The continuous and vehement process of conserving, reinventing, and advancing indigenous technologies have enabled them to achieve a quality and quantity oriented production that by far exceeded their demand, which ultimately flooded the designate markets (Shibata & Kodama, 2008; Davies, 1998; Gray, 1984; McClelland, 1961). This fact shows a conceivable pattern where the economic achievement of the developed world is indeed anchored and correlated to the way they were able to conserve and transform the culturally framed indigenous technologies (Shibata & Kodama, 2008; Davies, 1998; Gray, 1984; McClelland, 1961). From this deduction, it is rational to conclude that throughout the history of

humanity technology has been the driving force in every sphere of civilization and transformation (Shibata & Kodama, 2008; Davies, 1998; Gray, 1984; McClelland, 1961). That is why wherever there are traces of old civilizations like that of Ethiopia, there were dynamic TTs doing the job that should have earned the credit.

### 3.2.2 Evolution and Revolutions of Technologies

Technology has been evolving and accumulating from primitive to civilization, from incremental to radical, and from levels of rudimentary to sophistication apparent nowadays (Zaleski, 2011; Moskowitz, 2007; Rollings & Earnest, 2006). The emergence of technologies as tools and methods to assist humans in their struggle to adapt to changes and defeat or defend the challenges posed by nature is as old as the history of its creator—the humankind (Rihll, 2009; Rollings, 2006; Wasbeck, 2004; Gere, 2005). The evolution of ancient technologies was reflected in a prolonged period of time without requiring a planned “foresight” (Murman, 2010; Rihll, 2009; Rollings, 2006) until a complete transformation or “disruption” of one after another took place. In the course of human history, technological progress has gone through three evolutionary stages: tool, machine, and automation (Rollings, 2006; Plumer, 2004; Zeneski, 1996). Referring to literatures on technologies of socio-economic works of Hodson and Sullivan (2012), Giusta (2010), Hadson and Sullivan (2012), Rollings (2006), Broughton et al. (2005), Kuhn (2005), Paine and Ammerman (2005), Plumer (2004), Gere (2005), Morgan and Guevara (2009), Morgan, L. (1877), Buchanan (n.d.), and across pertaining encyclopedias, on-line library of UNISA, and websites like Google Scholar and Wikipedia, the researcher was able to retrieve the following generally accepted evolutionary and revolutionary periods of technological development stages recorded chronologically:

1. Before 2.5 million yeas (currently updated to 3.1 million years) the oldest form of stone tools was in use in Ethiopia, which was improving from time to time;
2. Fire was introduced before 1 million years ago;
3. Before 380, 000 BC the production of clothes and shelter was taking place;
4. Rudimentary textile technology have started around 27000;
5. Farming was practiced before 12,000 years following primitive hunting and gathering;
6. Writing system was evolving starting 3500 BC;

7. Practicing Iron works and application started around 1500 BC;
8. Domestication of animals started before 10,000 years as extension of farming;
9. Stone boiling was in use as the oldest cooking methods in the Stone Age era;
10. Primitive form of skin care using organic cosmetics was practiced since the 4<sup>th</sup> millennium BC;
11. Industrial revolution took place starting 1750<sup>th</sup> AD;
12. Telecommunication revolution came into being beginning the 1900s.

The combined impact of the renaissance that took place in medieval Rome, and the Industrial Revolution that occurred in England, have marked the transformation of the category of primitive technologies (ranging from manual to semi-mechanical) into the category of advanced stage (ranging from mechanical to electronics) through evolutionary and revolutionary processes (Bertram, 2011; Marens, 2007; Baba, 2005; Khan, n.d.). This was the mark where anthropology and business of crafts that had roots before the industrial revolution had converged and converted into a market economy (HCA, 2010; Marens, 2007; Baba, 2005; Khan, n.d.). Industrial revolution, which took place in England became highly specialized in manufacturing textile, iron, engineering, building materials, transport, farming, trade, town planning (e.g., roads and drainage), etc. (Ross, 2008; Housel, 2008). The industrial Revolution, which resulted in subsequent “explosion” and advancement of a variety of technologies, had broken the dominance of the static TTs (Sarkar, 2010; Ross, 2008; Khan, n.d.). That is, inventing machines to do the hard work changed the existed world of artisans radically because of “creative destruction” processes that has opened new markets and closed down old markets (HCA, 2010; Lundvall, 2004; Kotler, 2000; Christenson, 1997). Industrial revolution expedited the technological “change in the way things were made and sold, and how people lived and worked” (Ross, 2008: 9) and brought an end to the way ancient people used to live. The industrial revolution was characterized by the emergences of entrepreneurs who had the “critical ability” to recognize “disequilibrium” from which their business opportunities were maturing (Han & Mckelvey, 2008; Baumol, 2005). To the contrary, the swift technological revolution had a negative impact, which often resulted in the demise of indigenous technologies, especially in societies who used to value or “worship” cultural practices as their icons of identity and means of livelihood; such as the many indigenous practices still evident in Africa (Bertram, 2011; HCA, 2010; Ekekwe, 2010; Ajei, 2007; Khan, n.d.).

The marginalization of traditional practices and swift advances in technologies have increased the risk of destroying the vast “repositories” of accumulated knowledge and cutting the links of humanity with its origins in the remote past. In disregard to the international human rights declaration enshrined to protect the rights and practices of indigenous societies, the attempts of modern era to discard ancient technologies, tribal communities, and cultural practices by itself has been threatening the conservation of human traces and their technological heritages (Bertram, 2011; HCA, 2010; Lauderdale & Natividad, 2010; Rihll, 2009). According to these authors, the stance of Neo-Liberalism contingent on the uncontrolled egoism of individualism and the centralized prosperity of multinational corporations has aggravated the destruction of indigenous norms and practices. This raises a fear that if people with initiation and motivation to conserve the values embedded in TTs are not able to take the lead, the surviving skills and resources constituting the basis of ancient knowledge could not have a future. The rush of the world into “hegemony” of cultures devoid of ancestral norms and practices need to be “paused” and reflect on the beauty of diversity laid by preceding generations (Javalgi, *et al.*, 2011; Maiga, *et al.*, 2011; Lauderdale & Natividad, 2010). In addition, the long overdue agenda to recognize the significant role played by shadow economy mostly operating using TTs (Tadajewski, 2009; Friedrich, 2006; Williams, 2006) also implies the need to account and rejuvenate traditional resources before what remains becomes extinct.

In fact, it is emphasized that the basis of the incumbent era as an age of “knowledge-driven” economy could be bolstered by embracing and looking back into traditional skills that can bring an added leverage of organic and green technologies to the prevalent socio-economic development (Javalgi *et al.*, 2011, Maiga *et al.*, 2011; Schiavone, 2011). TTs are indeed valuable to present and the coming generation in many forms of values including personalized, educational, economic, and environmental. But, they are faced with many challenges and detrimental problems of cohesion and vision; lack of institutional support, education and training; derailed public perception and weakened mindset of artisans; all calling for an effective and timely rescuing intervention (Javalgi *et al.*, 2011; Maiga *et al.*, 2011; Bertram, 2011; Ajei, 2007; Khan, n.d.). These authors warn that the life of heritages will not be long enough before to read them from history books only, unless a timely corrective measure were considered. However, the reason why TTs are not entirely defeated as predicted by the extant technological theories or why they are not nurtured and transformed as factors of social and economic values,

is not unequivocally established fact. That is why this study was expected to induce an emergent theory, which could be more “abstract” and profound to address the concerns surrounding the wider technological spectrum (Punch, 2000) encompassing the realm of TTs, in general, and that of Ethiopia, in particular.

### 3.2.3 Economic Models Related to Traditional Technologies

The endurance and survival of TTs indicates that they, in fact, have a sustained demand for the embedded quality appealing even to the modern day settings (Javalgi *et al.*, 2011; Maiga *et al.*, 2011; Cunningham & Young, 2009). This shows that, contrary to the conceptual bases on technology, TTs can serve as prelude to advance new inventions and market opportunities by becoming the bases for creating comparative and competitive advantages (Michealides & Theologou, 2010; Tamilia, 2009; Laitinen, 2006). The impact of “perfect markets” of neo-classical models, which is, of course, based on the fabrics of societal development (Thampapillai, 2010; Avella & Vazquez, 2010) had indeed a regression impact in diminishing the role of institutionalized markets. It works against protecting and nurturing ancient socio-economic values, which is contrary to ensuring the continuum and transformation of indigenous technologies (Galera & Borzaga, 2009). The concept of leaving markets to operate freely has forced many vulnerable and rare ancient technologies to vanish or operate in shadow and get pushed to the periphery (Thampapillai, 2010; Avella & Vazquez, 2010; Waskey, 2009).

The conceptual base of “perfect competition” has not helped indigenous, historical, and cultural resources to bolster or to fertilize with foreign or “advanced” technologies, ideas, and values in a meaningful way that could help “backward nations” to benefit such as those belonging to Africa (HCA, 2010; Ajei, 2007; Bossche, 2005; Buchanan, n.d.). Instead, these technologies should have enjoyed a “preferential treatment” in tandem with the wider societal and historical values and beliefs they embody. A strategy that promotes the “survival of the fittest,” favoring modern technologies at the expense of TTs, has not produced a viable economy and social justice in the situation of “underdeveloped nations” who used to rely extensively on home grown indigenous practices (Bertram, 2011; Ekekwe, 2010; Ajei, 2007; Bossche, 2005). In fact, western technologies have widened the gap of disparity and cultural “confusion” in spite of attaining the promised developmental programs due to the difficulty to assimilate into the norms of traditional societies that are shaped by the practices of owned TTs

(Ekekwe, 2010; Bolden & Kirk, 2009; Simons, 2001). Though many new inventions are often unrecognized reinventions of the old, so far the chance to formally spare the survival of TTs by some benevolent actors has been through either to find new or niche markets, switch to adapt some components into new technologies, or revitalize old core capability postures (Bertram, 2011; Tajeddini, 2011; Rihll, 2009; Schiavone, 2011; Khan, n.d.).

To enhance the sustenance and transformation of TTs as a basis of competitive advantage, the drive for innovativeness has to emanate from the inspiration and cultural affinity of the actors (Tajeddini, 2011; Schiavone, 2011; Rihll, 2009) supported by the creation of conducive environment. That is why, even in areas like Ethiopia that could have had comparative and competitive advantage, external and internal pressures have deterred in making a stride by the actors of TT constituencies (Bertram, 2011; HCA, 2010; Bondy, 2004; Porter, 1997). The external influence and hegemony, together with generations of citizens more and more getting detached from their cultural and historical roots, has complicated the social tenets of indigenous ontology and wasted or dwarfed many of the antique skills (Bhalachandran, 2011; Giusta, 2010; Morgan & Guevara, 2008; Schein, 1990). These technologies have been often ignored and left to perish in wilderness for the sake of advocating and promoting the alien, but often the “imposed,” strategies of modernization (Ekekwe, 2010; Ajei, 2007; Leavy, 2003). Ajei (2007) has also stressed that traditional tools and values were not at all obstacles to modernization rather a constructive synergy could have been created. As to Ajei (2007: 153), the authenticity of indigenous knowledge to cultural affinity “demands that we have to stop being what we have not been, what we will never be, and what we do not have to be.” This presupposes that economic development models or theories need to be grounded, valued, and nurtured on the tenets of indigenous technological knowledge (Bertram, 2011; Tajeddini, 2011; Rihll, 2009; Khan, n.d.) central to the ontology and epistemology of practicing societies (Ekekwe, 2010; Ajei, 2007; Leavy, 2003).

### **3.3 REVIEWS OF THE CASES STUDIED**

#### **3.3.1 Traditional Medicine Technology**

Traditional Medicine (TM) practices of Ethiopia are products and services incubated in the societal relations and cultural traditions that have evolved over many centuries to be used in

diverse health practices, though nurturing them has been frequently ignored in the national health plans and systems (Derese et al., 2012; Kassaye et al., 2006; WHO, 2002). TM deals with physical, spiritual, social, and mental wellbeing of the society by using preventive and curative healing practices prepared from plants, animals, minerals, and applying spiritual therapies, manual techniques, and exercises taken singularly, in combination or in assortments (Mehari et al., 2013; Derese et al., 2012; Kassaye et al., 2006; WHO, 2005). WHO (2005) estimates 80% of the Ethiopia's population uses TM, which is the result of cultural affinity, physical accessibility, efficacy against certain diseases, and economic affordability (Tadesse & Mesfin, 2010; Messele, 2004; Kassaye et al., 2006), especially in rural areas where they are widely accepted (Gall & Zerihun, 2009; Kassaye et al., 2006). Even Ethiopian migrants in developed countries in Europe and the US still continue using TM (Derese et al., 2012; Kassaye et al., 2006; Lay & A.M., 2002), which shows the extent the practice is entrenched in the culture of the society. The depth of the society's belief in TM can be seen from the metaphoric expressions reflected on the subject, which includes the saying: "*Ets Yehiyu, Ets Yiketle,*" literally meaning a plant cures, a plant kills. This denotes that, unless it is for the lack of knowledge, there is a plant or herb to cure every ailment.

This metaphoric expression on the belief of the power of TM can be understood in terms of expressing extreme properties. The potency of medicinal plants as curing agents or the damage they can cause unless the practitioner has a "*Feriha Egziabher*" morale and responsibility; which implies the need to "fear God's reprisal" if prudent and menace free healing practices are not followed (Tadesse & Mesfin, 2010; Kassaye et al., 2006; Workineh, 2008). In fact, many indigenous beliefs and practices on TMs coupled with cultural affinities are contained in ancient manuscripts that have served as the main sources and custodians of traditional knowledge (ETV, 2014b; Mehari et al., 2013; Kassaye et al., 2006). However, many TMs of Ethiopia that had the chance of being recorded in Ge'e language, where the country's ancient scripts of ecclesiastical texts and manuscripts are found, are believed to have been robbed and ransacked mostly to be traced in foreign collection stores and museums, notably in USA and Europe (Bekele, 2007; Kassaye et al., 2006; Fassil, 2003).

The Ge'ez language and alphabet has been serving as the basis of the scripts that harbor medicinal knowledge acquired by the church-based indigenous ecclesiastical learned healer clergies called *Debteras* who use botanical and spiritual healing methods (Mehari et al., 2013;

Workineh, 2008; Bulakh *et al.*, 2007; Yineger *et al.*, 2008; Tolossa, 2006). TM is not formally featured in church education. Rather it is seen as an “elective” field of study undertaken by the unordained clergies, the *Debteras*, who are the scholars of the church education system (Workineh, 2008; Bulakh *et al.*, 2007; Yineger *et al.*, 2008; Tolossa, 2006). The medicinal knowledge of *Debteras* involves “a rich complex of practices based on the use of esoteric medical texts and the manipulation of letters and numbers, as well as an invocation of spirits and the use of herbal remedies” (Mehari *et al.*, 2013: 16). Such a non-herbal mode of healing is believed to be based on nurturing spirits, though it is unscientific and seems an act of magical presumptions or illusions (Kum-Neger, 2015; Bulakh *et al.*, 2007; Fassil, 2003).

The prescription of TM by *Debteras* could be in the form of herbal, *amulet* (a magic written scroll to wear around the neck or hanged in the house), cast horoscopes, and basing on astrological predictions (Yineger *et al.*, 2008; Bulakh *et al.*, 2007). In line with Bulakh *et al.* (2007) and Fassil (2003), traditional healers other than experienced practitioners and *Debteras* include *Buda*, *Tenquay* or *Zars* (possession cults) who are often recognized as spiritualists, supernatural, or magicians. The “possession spirits” are believed to reside in the body of the actors who are spiritually motivated to embrace healing practitioners used as a medium with the spirit causing the sickness (Derese *et al.*, 2012; Yineger *et al.*, 2008; Bulakh *et al.*, 2007; Kassaye *et al.*, 2006). According to these authors, *Zars* are nurtured through ceremonies to enable them prescribe herbals or specify certain conducts for their patients in order to get cured. Another area where TM is practiced is the “*Weggasha*,” which means a healer who “gives relief” or “effects cure” and whose role is to serve as a “surgeon-empiricist” (Mehari *et al.*, 2013; Tadesse & Mesfin, 2010; Kassaue *et al.*, 2006). However, the practices of *Zars* and *Debteras* are condemned by the church on pretext of having an association with “witchcraft” or “evil spirit” (Bulakh *et al.*, 2007).

On the other hand, Christian monks and saints are also cited as healers of miraculous cure through prayers, which include “the administration of sacraments, recitation of hagiography, liturgies for the sick, application of holy relics (eg. Bone of Saints), ingestion or immersion in holly ash, water, mud, etc. all taken from the compound of the church considered efficacious against diseases because of their sanctity” (Bulakh *et al.*, 2007: 3). “*Tsebel*” (holy water) is the most recommended protective, curative, and purifying agent proffered by the church, generally recommended or prescribed for almost any illness or malaise (Kum-Neger, 2015; Fassil, 2003).

Nevertheless, ethno medicinal plants have remained the most widely used in TM applications of the country since ancient times (Yineger *et al.*, 2008). The worry is, however, the potential risk of propensity (Corter & Chen, 2006) in practicing medicines not confirmed in scientific terms. In the absence of proper intervention from concerned bodies, the possibility of sustaining damage in terms of “physical” and “moral hazard” could be eminent and severe (Yineger *et al.*, 200; Corter & Chen, 2006). The other side of the worry refers to the fact that most TM practitioners pass away without sharing their knowledge to mentees or inheritors (Fassil, 2003; Abebe, 1993; Pankhrust, 1990; Young, 1982), to some extent, because of their belief that if shared the potency and efficacy diminishes. Even the limited knowledge passed from generation to generation secretively through word of mouth, usually to descendants, gets lost due to distortions, migration, change of life style, and loss of habitats (ETV, 2014a; Mehari *et al.*, 2013; Teklehaymanot & Giday, 2007). The obscured practice of healers causing to the raising of suspicious questions of credibility and transparency in the way they prepare medicines, conduct examination of patients, prescribe dosages, etc. are also causes for extinction of TMs (ETV, 2014a; Workineh, 2008; Kassaye *et al.*, 2006; Moges, 1984).

Considering the wide use, acceptance, and affordable price of TM, the government of Ethiopia has a policy issued with the intention to promote and regulate its application (Workineh, 2008; Derese *et al.*, 2012; Kassaye *et al.*, 2006). However, the Ministry of Health, which is well aware of the extent citizens are relying on TM, has not gone further than promulgating a policy meant to support healers and protect users (Mehari *et al.*, 2013; Derese *et al.*, 2012; Tadesse & Mesfin, 2010; WHO, 2002). In practical terms, the ministry has failed to ascertain, promote, and integrate TM into the public health system of the country. Its actions have been more of rhetoric rather than a real commitment to change the reality on the ground. Government policy and strategy towards TM is narrowly focused and skewed, which has compromised, on top of allowing the extinction of the traditional skills, end users’ safety and wellbeing (Bekele, 2007; Kassaye *et al.*, 2006; Fassil, 2003). In fact, the “derogatory” measures were more severe in the *Derg* Regime where healers, especially those believed to claim their potency to be based on spirituality, were punitively imprisoned, forced and harassed to march in markets with their clients and tools to use them as warning examples (Workineh, 2008; Bekele, 2007; Bahiru, 2006; Fassil, 2003). The *Derg* regime was following a policy of “rooting out” TM practitioners on the pretext of alleging them for exploiting citizens on false claims of curing illnesses (though the

acceptance in terms of handicrafts was better) (Bayu, 2014; Bekele, 2007; Kassaye *et al.*, 2006; Bahiru, 2006; Fassil, 2003).

### 3.3.2 Traditional Cosmetics Technology

The existence of many nationalities in the country has given rise to the prevalence of varied practices of costumes and invention of traditional cosmetics technologies. It is natural for every distinct community to have unique or shared costumes and stuffs used to enhance beauty and appearance, especially that of female. Accordingly, to decorate the costumes tattooing of the facial body and elaborate coiffure, gold, base metal, cowries' shells, signs of cross, lions mane, profusion of jewelry, national emblems, crafted gold and silversmiths, metal works, colorful beads, and ornamented wearing and clothes are beauty practices of many communities crafted by traditional smiths and artisans (Bayu, 2014; Adejumobi, 2007; ETTE, 1997). From the wider costume and stuff used to emulate beauty, the practice of *Tush* (smoke bath) is unknown in the wider public, except in enclaves of some region where the custom is that every woman has to be a frequenter of *Tush* if she is to look elegant and get acceptance in her community. *Tush* is taken as an ancient body or skin care and mind relaxing technology indigenous to the country.

As to the legendary story of *Tush* told by the practitioner, the historical account is not different from the reviews narrated on TM. The practice has been enduring across generations for the wellbeing and relaxation of the body though there are no recoded references. The practice of *Tush* is believed to have been frequented by members of the royal family who where kin in keeping and nurturing the posture and beauty of their body. In fact, as the legend tells, the edifices of *Tush* pits marked in ruins of ancient palaces and castles notably that of Gondar and Axum cities are exhibitors of the country's history in practicing the *Tush* technology (Varner, 2012; Henze, 2000; ETTE, 1997).

### 3.3.3 Traditional Textile Technology

In the context of this research, Textile is defined as fibers made into yarn and subsequently netted, looped, knitted, or woven to make fabrics (Bernard & Louis, 2007) where the decorating materials are locally called *Mukash* or *Worke Zobo*. Conceptually, clothing is used for variety of purposes, including to keep comfort by counter balancing the climate, protect from hazards, magnify cultural rituals, indicate gender differences, and mark social status, religious sermons,

occupational uniforms, ethnic or political affiliations, sexual orientation, marital status, etc. (Bernard & Louis, 2007; Peter, 2003). The proper textile technology is documented as to have appeared during the late Stone Age in the Middle East, evolving until a marked transformation was registered during the industrial revolution of 1760—1840 (Bernard & Louis, 2007; Peter, 2003). The initial textile developed from the use of animal skins and plant fibers is believed to have grown to the level of spinning and weaving apparent in nowadays (Bayu, 2014; Bernard & Louis, 2007; Peter, 2003).

Traditional textile of Ethiopia has a long history reputed for being made from the cradle of cotton growing land (Kassaw, 2013; Ayele *et al.*, 2009; Abdella & Ayele, 2008). The tradition of textile production in cottage industries is inherited from generation to generation—using handlooms and hand weaving to produce white outfits, usually featuring a distinctive decorative bordering called *Tibeb* (Kassaw, 2013; Alemayehu, 2006; Yadeta 2002; UNCTAD, 2002). Ethiopian clothing includes *Bernos* or *Kaba* (a wool cloak used by highlanders), *Gabi* and *Kuta* (handmade clothe worn over the shoulder and upper body usually worn by men), and *Netela* (similar to *Gabi* and *Kuta* but usually worn by women). Similarly, *Habesha Kemis* (traditional attire of women), *Jelebiya* (a kind of dress usually worn by *Tigray* women), *Kidan Habesha* or *Ije Tebab* (white handmade clothing of white shirt and pants mostly worn by men in weddings), *Medebeli* or *Tilfi* and *Dino* (handmade fabric with intricate designs, usually worn during weddings), and *Shiraro* (leather material wrapped around the waist used by men) are also products of traditional textile technology. Actually, yarn made from cotton fiber is a homespun item produced using “age old” spinning drop wheel (Bayu, 2014; Ayele *et al.*, 2009; Yeneabat, 2007; Yadeta, 2002).

The society is heavily reliant on wearing traditional clothes produced using traditional weaving tools, which is made of organic fabrics mostly suited in practicing cultural activities and rituals (Varner, 2012; Yadeta 2002; ETC, n.d.). Traditional handloom is a homegrown handicraft technology used to produce different kinds of clothes that are used for cultural, casual, and formal wears. The traditional textile technology includes tools and methods of spinning, weaving, knitting, sewing, dyeing, coloring, embroidery, printing, etc intended for gracing holidays and social ceremonies (Kassaw, 2013; Abdella & Ayele, 2008; Scott, 2004; Maiwada, 2012; Cheng, 2010). Ethiopian traditional textile has many and diversified artistic features,

wearing styles, and meanings of symbols reflecting customs of different ethnic groups, which have the potential of developing into a tailored cloth making that could enter into the fashion industry. However, the initiation to promote and feature the unique textile products of the country into the international fashion and apparels markets, in spite the opportunities AGOA provides to US markets, is found to be insignificant (Kassaw, 2013; Maiwada, 2012; Abdella & Ayele, 2008; Alemayehu, 2006; Scott, 2004; UNCTAD, 2002).

Textile products of the country are integral parts of everyday life, which gives impetus for a continuous growth and dynamism (Scott, 2004; Maiwada, 2012; Majority, 1980). Though the history of Ethiopian textile is so long, it has not been able to keep competitiveness by “catching up, keeping up, and getting ahead” based on the competitive advantages it has had (Abdella & Ayele, 2010; UNCTAD, 2002, Alemayehu, 2006). In fact the handloom weaving sector is declared as the most important non-agricultural source of income of the country (CSA, 2009), even though the societal inclination is not often vibrant in accommodating traditional knowledge (Hofverberg, 2010; UNESCO, 2009; Pankhurst, 2003). Otherwise, the uniqueness of the traditional textile could have given the country a market competitiveness that emanates from the advantages of designs of unique patterns and organic inputs (Kassaw, 2013; Rugman, 2011; Tefera, 2010; Ayele *et al.*, 2010; Porter, 1990). Among the textile products, the Ethiopian Kaba (literally meaning cloak or overcoat) is a loose garment often sleeveless outfit or uniform usually fastened at the neck or over the shoulder with a varying length that is worn from hip all the way down to the ankle, mid-calf being the normal length (Bernard & Louis, 2007; Parry *et al.*, 2001).

The production of cloak-wears is an old technology in the human history documented starting the “biblical era,” which was worn including the prophet Moses and by John the Baptist (Bernard & Louis, 2007; Parry *et al.*, 2001). They are also used as staple garments in the “fantasy genre,” frequented by dignitaries of the higher class, although in some cases, they are also taken as customs associated with witches, wizards, and vampires (Bernard & Louis, 2007; Parry *et al.*, 2001). Metaphorically, cloak may be anything that disguises something as in the fiction “Cloak and Dagger” portrayed to conceal weapons or make an object invisible (Bernard & Louis, 2007; Parry *et al.*, 2001). However, the design and knitting of Ethiopian Kaba is full of artistic patterns and decorations, which is unique in many features. Kaba has been in production since the ancient Axumite Kingdom especially starting the reign of Emperor Kaleb (Bayu, 2011; Kassaw, 2013:

Pankhurst, 1990). The product is used in gracing members of the royal circles and, the processions of the churches and cultural festivals and rituals including covering icons like the replica of the famous Arch of the Covenant believed to be housed in the town of Axum, where Christianity was first introduced to the country (Hancock, 1992; Henze, 2000; Levin, 2000). Often, the royal circles that were self contained in luxurious products and services were making craftsmen and designers to live and work confined in the sanctuary of palaces, which is the reason some of the rare TTs like the crafting of Kaba managed to survive (Yeneabat, 2007; Yadeta, 2002).

### **3.4 CONSTRUCTS DEFINING THE FATE OF TTs**

#### **3.4.1 Attributes and Dispositions of Leadership**

The dynamics of TT, as deduced from the literature resources, was not affected by the evolutionary, renaissance, and industrial revolution developments only. The explicit and implicit role of the main construct, the leadership, has been a critical factor in the “metabolism” of TTs (Khoza, 2009; Johnson-Sirlealf, 2006; Maathai, 2009; Awadzi & Awadzi, 2007; Bass & Riggio, 2006). Leadership is taken to have the power and the responsibility of rooting out impediments and contain endowments by nurturing the socio-cultural values and practices of the led (Khoza, 2009; Johnson-Sirlealf, 2006; Maathai, 2009). According to Yemer (2009) and Cashman (1998), leadership can be also described as actions of individuals or groups assuming leading positions with the power to sustain, mobilize, influence, and change established norms or practices proactively by using the resources and instruments under their command. Though leadership in Jogulu’s (2010: 1) statement is “one of the most observed and least understood on earth,” still it can be further defined as the role leaders play to influence and shape the behavior of people and institutions in a manner that can:

- a) Enable them to adapt to varying situations and changes;
- b) Direct their activities to attain common goals;
- c) Create a room to accommodate discretionary efforts;
- d) Inspire followers to assume responsibility;
- e) Add value by enhancing awareness and commitment;

- f) Motivate followers to learn or work with a renewed energy (Jogulu, 2010; Conte & Novello, 2008; Lee, 2008).

Considering the dynamics of the day upon which competitive adaptations and capabilities to change have to be built (Jogulu, 2010; Lee, 2008; Hay & Hodgkinson, 2006), TTs could have served as a vital resource in nurturing the development of the country. However, this ideal has never received the appreciation of successive leaders who were responsible to instill motivation in followers to enable them to practice self leadership: a crucial factor to inspire, influence, and generate positive attitudes and actions in pursuing traditional practices (Houghton & Diliello, 2006; Hollander & Winston, 2005). In Sihag's (2009) argument, the tenets of shared values and practices engraved in ancient social practices could not uphold due to a belief that they are reflectors of backward views lacking technical and ethical premises in creating the stability of social order required for the coexistence in the modern world. By deduction, leadership whether in its traditional or modern forms, sets the direction on how to cope and synchronize the way out if established or envisioned goals and objectives have to sustain and succeed (Khoza, 2009; Maathai, 2009; Johnson-Sirleaf, 2006; Bennis, 2003). According to Yergler & Obolensky (2011) and Bhalachandran (20011), when organizations or societies are in "disruptive" circumstances, the magnitude of the rescue mission shall be counted upon the level of leadership effectiveness.

The toll of responsibility people and organizations can shoulder by becoming competent performers depends, largely, on the role leadership plays (Liu, 2007a; Bass, 2006; Benator, 2003). In Bhalachandran's (20011) conclusion, had it not been for the skewed role of leadership, traditional skills reflected in TTs and social mediation wisdoms could have been appreciated as valuable inherited resources that could help in tackling societal challenges. Bhalachandran (20011) and Sihag (2009) have a great concern that there is no loud appreciation and recognition of traditional or indigenous practices that could have played a significant role in paving the way for locally initiated developmental strategies as often observed in Far East economies. It is due to leadership's failure that the knowledge and skill embedded in TTs have not been able to become beneficial to practicing and owning societies despite the inherent competitive leverages in the form of human, physical, and social capital endowments (Green, 2011; Suh & Boggs, 2011; Denning, 2005; Oswalt, 2005). Any organized economic or social activity is continuously in

need of growth, maintenance, and development if at all they have to adapt and survive the turbulence of change (Liu, 2007a; Bennis, 2004; Christenson, 1997; De Gues, 1997; Quinn, 1996). However, to formulate an effective organizational leadership behavior, as Bolman and Deal (2003: XVI) have stressed, the expertise of leading and managing have to be balanced as:

*Leading and managing are different but both are important. If an organization is over managed, but under led, it usually losses any sense of spirit or purpose. A poorly managed organization with a strong charismatic leader may soar briefly only to crash shortly thereafter*

If there is an effective leadership in place that promotes the dynamism of change (Khoza, 2009; Johnson-Sirlealf, 2006; Maathai, 2009; Lee, 2011; Giusta, 2010), the chance to appreciate the values of TTs could be enhanced. The traditional skills and values of the practices have been often tempered, distorted, interrupted, marginalized, or discarded by hegemonic alien cultures because of the absence of evocative or reminiscent leadership role in place (Lee, 2011; Khoza, 2009; Johnson-Sirlealf, 2006; Maathai, 2009). When effective leadership and cooperation in a society is absent, it could result in a “failed state,” which is a culmination of endemic mistrust, tribalism, corruption, or anarchy (Redding & Rowley, 2012; Lee, 2010; Giusta, 2010; Dannhauser, 2007). This calls for a greater role of leadership because strategies regarding traditional skills and practices pursued by societies are not often products of conscious intentions but results of societal interactions shaped by habits, beliefs, and “folklore legacies” that need to be tamed and directed by a consciously acting leadership (Jogulu, 2010; Prasad, 2005; Koestenbaum, 2002; Quinn, 1996).

Leadership has to operate by recognizing the power culture plays in influencing the measures to be taken where Jogulu (2010) refers it as the “software of the mind.” Inability of leadership to become a “culture contingent” based on ethnographic realities could be a major factor for the demise of countless indigenous skills (Jogulu, 2010; Khoza, 2009; Johnson-Sirlealf, 2006; Maathai, 2009; Koestenbaum, 2002). Leaders have to move to intervene and intermingle with their constituents if they have to become responsive to the complexities that surface so as the societal drives for innovation and change could become achievable (Yergler & Obolensky, 2011; Spinosa, 2011). It is through such interconnectedness (Bjerregarrd, 2011; Lee, 2011; Woolcock & Narayan, 2000) that leadership intervention in social structures and “micro processes” can

help TTs to bear fruit by reconciling cultural tension of “inventions and conventions,” which is a basic inter-organizational metabolism that gives the urge for getting “dubbed” in streams of change (Lee, 2011; Ingham, 2007; Bennis, 2003; Quinn, 1996). As stated by Prasad (2005), leadership is the catalyst that has to play a role in conservation and reproduction of social cultures through the “agency” of social actors. This shows that no leadership can be effective unless the socio-cultural dimensions of societies or the led are taken into consideration.

Effective leadership has to understand that people are “authors of their actions” and strive to harness emotions, meanings, experiences, and values that can remain intrinsic to them (Sheard *et al.*, 2011; Windsor, 2007; Munroe, 2006). The role of leadership has to model the future, foster interdependence, balance idealism and realism, assume accountability and responsibility, and institute effective mobilization of resources, and create a sense of purpose and direction (Khoza, 2009; Johnson-Sirlealf, 2006; Maathai, 2009; Hiebert & Klatt, 2001). The role of Ethiopian leaders in conserving and nurturing the indigenous technological heritages has not lived up to the responsibility and expectation of the led (Pankhurst, 2010; Yeneabat, 2007; Quinn, 1996). To fully understand the reason TTs of the country were not heeded, contrary to values they embody and the benefits they render, understanding the impact of the core constructs in terms the perceived roles and functions is imperative. Accordingly, leadership was indicated as the core construct though lacked the conviction and action to sustain and transform the traditional sector of Ethiopia (Galera & Borzaga, 2009; Hunt & Derozier, 2004; Quinn, 1996). Instead, leadership was immersed in defeating TTs and clearing obstacles for the sake of promoting alien technologies, which had no mercy either to fertilize or to support indigenous resources (Khoza, 2009; Johnson-Sirlealf, 2006; Maathai, 2009; Trochim, 2005b).

In fact, there were leaders in the history of Ethiopia who were cited as main stumbling blocks acting to the contrary, and in many instances enemies of artisans (Pankhurst, 2010; Yeneabat, 2007; Yadeta, 2002). These leaders have been dehumanizing, neglecting, and despising traditional practitioners as outcasts, which killed their aspirations and precluded the promotion of inherited skills (Pankhurst, 2010b; Ayele *et al.*, 2009; Yeneabat, 2007). No leadership intervention to correct the negative cultural orientations and sinister motives developed in the Ethiopian society against TTs has been visible (Pankhurst, 2010; Yeneabat, 2007; Pankhurst, 2010, 2001; Simonsen, 1997). Why leadership hindered the country’s TTs from becoming

vibrant innovations, while they are still playing a significant role in economic and social spheres, even though operating in “shadow” settings, was a critical question that this research longed to answer. The role of leadership has not been confined in influencing the fate of TTs directly and indirectly only. Other constructs that had a bearing on TTs were also succumbed. That is the reason why the role of the constructs of entrepreneurship drives and socio-cultural capital in nurturing and promoting TTs has been also compromised.

#### 3.4.2 The Mediation and Driving Role of Entrepreneurship

Entrepreneurship is the practice of industrious business minded persons who take a bold stride to innovate and come up with insight of small-scale businesses often by forging overlooked ideas not addressed by the main stream of economic and commercial momentums prevalent in the society (Giusta, 2010; Staub, 2002; Quinn, 1996). Small-scale businesses and industries driven by entrepreneurs are effective in filling gaps not covered by big “conglomerate” enterprises that have the potential of accelerating the development of societies by creating competitive and customized socio-economic activities, something that is difficult to attain through the conventional methods of “mega business” establishments (Giusta, 2010; Munroe, 2006; Staub, 2002; Quinn, 1996). Entrepreneurship enables to discover and exploit latent or small potentials and opportunities innovatively that can materialize into growth and development for personal and social wellbeing (Green & McCann, 2011; Lee *et al.*, 2011). If entrepreneurial skills and orientation were nurtured, the possibility of conserving and transforming TTs could have been a reality (Bhalachandran, 2001; Lee, 2011; Ferri *et al.*, 2009; Cravens *et al.*, 2009; Gunn *et al.*, 2008; Decarolis & Litzky, 2006). As Javalgi *et al.* (2011) and Ferri *et al.* (2009) have enumerated, SMEs are becoming the “backbones” of economic drivers and innovations, creators of national wealth, and “engines” of growth and success. In fact, the economic potentials created in the societal fabrics can be comprehended, commercialized, and accessed easily by entrepreneurs than by conglomerate businesses as reflected by Staub (2002: 148):

*I think the next level out into the future is going to be more and more empowerment of the individual worker. Give him the proper tools, give him the proper training, make sure he has your full support, and he can make the decision on the spot. Nobody actually knows the situation better than the person who is doing the job, and if we are to delight*

*our customers, then we must give the employees the ability to make decisions and make more of them. That will be the next level of evolution we have to achieve.*

Small businesses of entrepreneurs that follow a strategy to offer small but effective products and services with competitive prices often look first to the niches available in their communities (Layton, 2011; Cravens *et al.*, 2009; Lingthelm, 2010). This approach can be helpful for developing marketing skills and products of artisans and traditional practitioners if entrepreneurial oriented leadership could guide and support them. That is also the reason entrepreneurship is found to be an important construct of TTs through which the embedded values can be exploited and the long-lived heritages can be conserved and transformed. To endure throughout the marketing challenges of the day, it is crucial that businesses innovate and create values that were “non-existent” before (Webster *et al.*, 2010; Cravens *et al.*, 2009), which also need to embrace the tenets of indigenous knowledge as a springboard in creating competitive leverages.

In Webster *et al.* (2010) and Vigoda-Gadot (2007) view, the knowledge for conducting innovative marketing has to come from studying experiences, behaviors, and aspirations of consumers who are believed to be well understood by entrepreneurs living and working in the same communities. Such reality could motivate artisans owning and practicing rich indigenous resources reflected in their traditional skills and social relations. That is why entrepreneurship has a direct impact in renovating, sustaining, or weakening the sustenance and application of TTs. When entrepreneurial orientation gets enhanced, the possibility of nurturing and conserving TTs can get more and more momentum (Bhalachandran, 2001; Zaleski, 2011; Lee, 2011; Ferri *et al.*, 2009). TTs can become opportunities for entrepreneurship depending on the social capital resulting from networks built around them (Han & Mckelvey, 2008; Bock *et al.*, 2005; Baumol, 2005). As much as entrepreneurs are able to know how ideas are converted into new and small firms, products, or processes, they can help in achieving market “equilibrium by rectifying discrepancies in supply and demand” (MacMullen & Sheperd, 2003: 139).

The main problem small businesses face is the competition from big firms, which they can overcome by following a strategy of using social capital as an important leverage (Javalgi *et al.*, 2011; Bamford *et al.*, 2009; Ferri *et al.*, 2009) mainly by focusing in niche markets that match with available resources such those in TTs. To develop competent entrepreneurs, engaging in

leadership and management development programs like mentoring, coaching, and training activities that could help to delve into the domain of TTs is also crucial (Bhalachandran, 2011; Wang *et al.*, 2011). Leadership and management development programs designed for entrepreneurial ends could enable to achieve intellectual capital (cognitive) capabilities, psychological capital (cross-cultural) encounters, and social capital (relational) achievements by creating an enabling environment, among other things, where trademarks, and patent and copy rights are respected (Zaleski, 2011; Frednick, 2009). If leadership is able to take affirmative action, entrepreneurship could have the potential to play a pivotal role in the economy by bringing the unnoticed new “insights” and “unique” skills (Bratton *et al.*, 2011; Villar *et al.*, 2010) often abundant but ignored in the realm of TTs.

### 3.4.3 Socio-Cultural Bondages

Society is the organizational and structural setup that encompasses related people while culture is the norm and meaning generated within and for the social environment (Bhalachandran, 2011; Ferri *et al.*, 2009; Schein, 1990). Societal setup is the “helm” where norms are incubated and realized throughout the conduct of activities, relations, and reflections at group or individual levels that can become a source of development as much as appropriate measures of intervention prevail (Bhalachandran, 2011; Ferri *et al.*, 2009; Prasad, 2005). Development is contingent on socio-cultural realities because it sets the standard for creating vibrant leaders, followers, entrepreneurs, and institutions (Lee, 2011; Jogulu, 2010; De Gues, 1997). Technical changes and innovations are not functions to be promoted by enterprising only but by developing receptive socio-cultural features at a wider level of the technological environment (Lee, 2011; Jogulu, 2010; Hodgson, 1998; Quinn, 1996). As witnessed in the reality of TTs, innovations that are not aligned with cultural practices and beliefs or failing to respect the culture that is supposed to embrace and nurture could end up in “disruption” (Lee, 2011; Jogulu, 2010; De Gues, 1997; Lattuca & Stake, 1994). Socio-cultural relations are considered as a fertile area where bold entrepreneurs can use the unique advantages of captive resources like the power of innovativeness and competitiveness embodied in social relations and in the meanings of cultural interactions (Gonin, 2011; Ferri *et al.*, 2009; Prasad, 2005).

As Rausch *et al.* (2010) and Ingham (2007) have stated, the world is constructed the way people model themselves individually and collectively within the context of their socio-cultural

environment. Socio-cultural norms and practices have always to emerge renewed by staying flexible and innovative in search of advancement and adaptability to changes that are continuously being posed as a result of turbulent changes (Lee, 2011; Jogulu, 2010; De Gues, 1997). Socio-culture has the ability to either embrace or ostracize any practice or attitude that takes hold in given communities (Bhalachandran, 2001; Rubtsova & Dowd, 2004; Harris & Moran, 2000), which means if an inherited technology could not comply with prevalent socio-cultural norms, there could not be any ground where it can function and survive.

Socio-cultural construct has the ability to embrace or despise technological innovations through its societal relations, cultural manifestations, and ideological perceptions (Bradford, 2012; Bhalachandran, 2011; Prasad, 2005; Putnam & Nanetti, 1993). That is the reason socio-cultural manifestations, including the learning of myths and rituals, become factors that could define the magnitude of conserving and transforming TTs. However, this is not to belittle the reciprocating power of technology in shaping and reshaping the social and cultural norms where the changes and relationships are often communicated to members and subsequent generations through folklores that are understood as spiritual (soul) and instinctive (biological) (Bradford, 2012; Bhalachandran, 2011; Prasad, 2005; Putnam & Nanetti, 1993). This includes using “art” as a means for telling a story nonverbally (Woodside et al, 2013), which could show the “aggregation” of shared social norms and relations termed as socio-cultural capital (Putnam & Nanetti, 1993; Bourdieu, 1996). Socio-cultural capital resulting from societal relationships, associations, and interactional norms have the power to embrace, cement, and promote traditionally practiced technological tools and skills, as far as they continue to remain aligned to the perceived beliefs and values held dear by respective societies (Huvilia, 2010; Wallis et al., 2004; Woolcock & Narayan, 2000).

The social capital expressed in terms of prevailing inter-community ties of bonding or bridging across the social divides can mobilize communal tangible and intangible resources for the benefit of common ends (Huvilia, 2010; Wallis *et al.*, 2004; Woolcock & Narayan, 2000). However, if a mentality of exclusion or outcast prevails in society (Oxoby, 2009; Yeneabat, 2007; Pankhurst, 2003), the consequence could result in the denial of members from getting access to collective institutions and resources, and marginalization or utter rejection of their technological practices as witnessed in the situation of TTs of the country. The danger of

exclusion in social capital is the fact that, instead of annihilating the excluded, it may even result in urging victims to form alternative associations that could erode or affect the viability of the principal associations or social formations (Huvila *et al.*, 2010; Oxoby, 2009; Woolcock & Narayan, 2000). The actors in social capital could be individuals, groups, or organizations all influencing or being influenced in reciprocity via “dyadic” or horizontal levels, “triad” or facilitator levels, and “netting” or linking levels (Bowey & Easton, 2007; Bourdieu, 1996).

On the other hand, culture is the reflection of societal norms, attitudes, behaviors, and activities that are incubated and realized at societal or individual member levels usually expressed in symbolic reflections (Lee, 2011; Bhalachandran, 2011; Schein, 1990; De Gues, 1997), which bears a defining power with regard to the fate of TTs. The symbolic expression could be in the form of art, music, rituals, practices, methods, etc. (Prasad, 2005; Schein, 1990; De Gues, 1997). Culture reveals an incremental change with a possibility to suffer a “traumatic set-back” in events of defeat where in high tension society significant commitment is expected, and in high trust society significant emotional penalties are attached for breaching the established norms (Slater & Robson, 2012; Giusta, 2010; Morgan & Guevara, 2008). The tenets of culture are taken to be strong catalysts of TTs because they define their versatility in terms of social, economic, and technological viability. In other words, culture is:

- a) The invisible “mystic” usually manifested in shared values, assumptions, and artifacts that serve as glue bonding members of a society in actions and outlooks (Lee, 2011; Bhalachandran, 2011; Schein, 1990; De Gues, 1997);
- b) The basis from where the perception and interpretation of meanings, behaviors, and interaction of members of a given group or society blends to reflect the entire social, physiological, and psychological makeup from which vast anthropological wisdom can be drawn (O’Kane, 2010; Ingham, 2007; Schein, 1990);
- c) The “imperfectly shared” experience revealed in a “patterned way of thinking, feeling, and reacting to various situations and actions” (Earley & Mosakowski, 2002: 200).
- d) The social grouping expressed in shared values (moral aspect), beliefs (technical aspect), and form of expressions (symbolic aspect): all memorized by members and transmitted to succeeding generations through parenting and education recorded in books, art, artifacts, rituals, and routines (Rubtsova & Dowd, 2012; Giusta, 2010; Schein, 1990);

- e) The embedded skills and thoughts that are shared and expressed through speeches, behaviors, and technologies learnt and transmitted to the future, which usually gets lost or drifts when the number of its carriers get too small to force its spread on the population (Kevin *et al.*, 2005);
- f) The perception as a “medium” through which members interact by looking into the assumption, values, symbols, artifacts, tools, methods, and norms reflected in activities and behaviors (O’Kane, 2010; Alavi *et al.*, 2005; Schein, 1990).

As Schein (1990) has reflected, culture as a career evolves in to a “self-concept and self-insight” of individuals and organizations in the process of personal and institutional development. It is obvious that societal members in a given culture have a common understanding in a way that can promote their interest and helps them to stand in unison in the face of challenges or in meeting common objectives (Bennis, 2004; Bolman & Deal, 2003). Anthropologically, it is established that culture is the way groups feel and understand external pressures and consolidate internal integrations, valid for all and used to inculcate new members to perceive, feel, think, apply the methods, and relate to the society in order to be accepted into the sanctum (Prasad, 2005; Bennis, 2004; Schein, 1990). The same applies in embracing or excluding TTs by referring those belonging to the community or not by giving people the understanding and the ability to respond including indoctrination and the initiation to have the resolve towards technological innovations (Lee, 2011; Bolman & Deal 2003; Simonson, 1997). Socio-culture is also a mystic bond between members of groups or organizations defining how to adapt and transmit the coping skills and knowledge of science and technology like that of TTs to subsequent generations (Bolman & Deal 2003; Harris & Moran, 2000; Schein, 2004). Bolman and Deal (2003: 242-243) has also stated five assumptions as to how cultural behavior is framed, which can be also inferred as crucial in defining the fate of TTs:

- a) What is most important is not what happens but what it means;
- b) Activity and meanings are loosely coupled: events have multiple meanings because people interpret experience differently;
- c) In the face of wide spread uncertainty and ambiguity, people create symbols to resolve confusion, increase predictability and find direction, and anchor hope and faith;

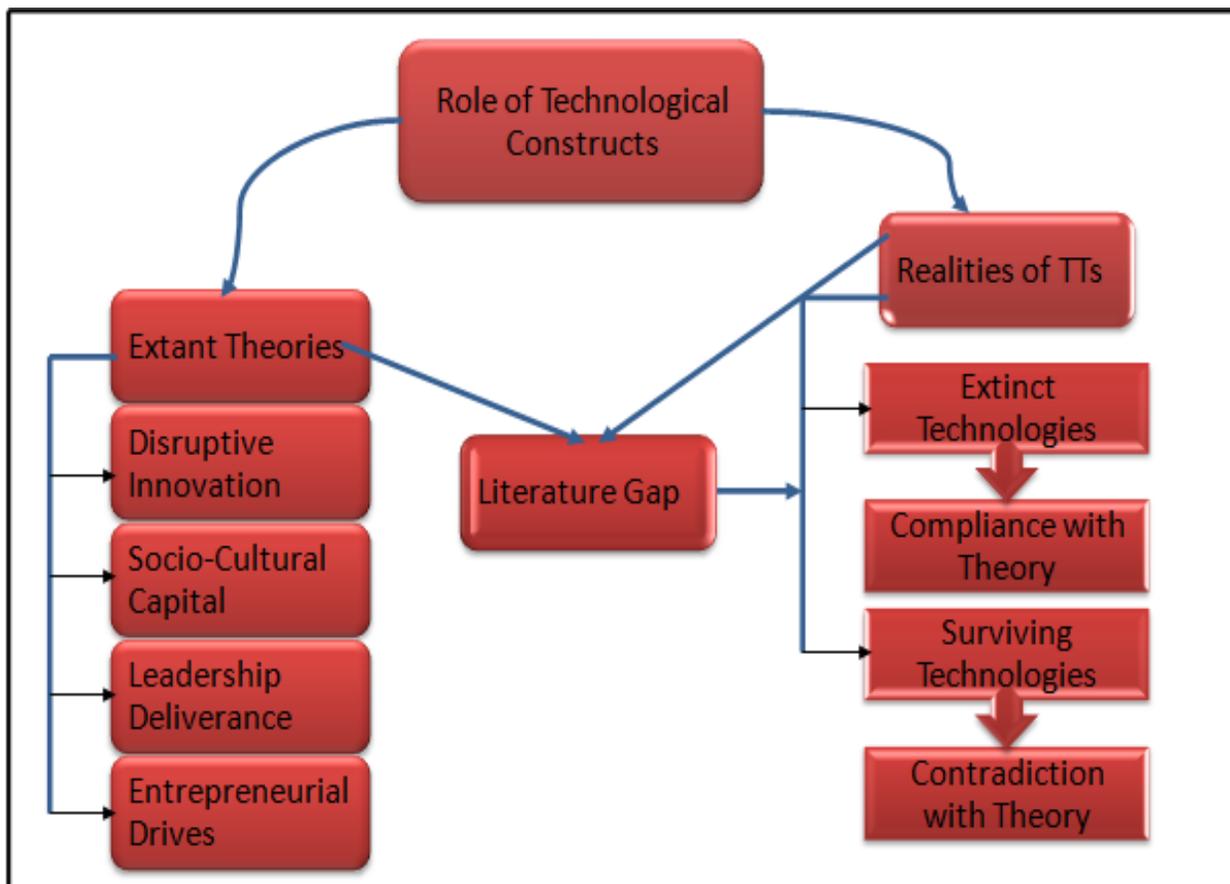
- d) Many events and processes are more important for what is expressed than what is produced. They form a cultural tapestry of secular myths, heroes and heroines, rituals, ceremonies, and stories that help people find purpose and passion in their personal and work lives;
- e) Culture is the glue that holds organizations together and unit people around shared values and beliefs.

The socio-cultural background of societies, which is a technology inclusive, is a decisive factor in creating an enabling environment and mindset of given communities, though everyone has a tendency to reflect a “negative ripple” (Rothwel, 2004; Lulofs & Cahn, 2000). In such a situation, it takes more time and dialogue to reach a consensus and to appreciate innovations as in the case of TTs. Disagreements reflected in groups are not to blame personal relationship problems, but they usually stem from different socio-cultural practices and orientations (Rothwel, 2004; Lulofs & Cahn, 2000). In effect, culture is concerned with the production and distribution of the values and beliefs related to fundamental social and technological issues (Giusta, 2010; Morgan & Guevara, 2008). The effect of socio-cultural influence on economic performance is significant, which makes it an economic asset: a cultural capital (Giusta, 2010; Morgan & Guevara, 2008). That is why a strategy that can blend the “idealistic” and “realistic” views societies hold dear, as a result of their attitudinal and socio-cultural background, can serve as a catalyst in socio-economic and technology developmental fronts (Lee, 2011; Prasad, 2005; Simonson, 1997). It is after giving a due regard and recognizing indigenous cultures (Lee, 2011; Ferri et al., 2009) that the embedded technological wisdom and lessons relevant to modern ages can be retrieved and applied. As far as the talk is about technology, it cannot be by deferring culture: the other side of the coin, at the same time, which is also the other side of social capital. That is to say, technological evolution or revolution is a socio-culture inclusive, and the vice versa (Lee, 2011; Giusta, 2010; Ferri *et al.*, 2009; Prasad, 2005).

Societal values and technological skills embedded in native cultures are often tempered, distorted, interrupted, marginalized, or discarded by hegemonic alien cultures (O’Kane, 2010; Ekekwe, 2010; Ajei, 2007; Prasad, 2005). Societies that are victims of “cultural invasion” are caught in confusion between holding their inherited identity, on one hand, and internalizing or assimilating alien traditions, on the other. In fact, such scenario is against their perceived beliefs and norms upon which their ability to adapt and live in harmony with the social fabrics and

natural environment have been crafted (O’Kane, 2010; Ekekwe, 2010; Ajei, 2007; Prasad, 2005). Another aspect of culture is its impact either to promote or kill the values of social capital that emanates from the formation of social networks (Lee, 2011; Giusta, 2010; Ferri *et al.*, 2009; Prasad, 2005). Social capital could also reflect a negative perception that can harm perceived values, like the sacrificing of individual merits or capabilities, indoctrinating misguided views, etc., which can be also expressed in technological terms by branding practitioners as casts. This is a harsh reality in the Ethiopian context of TTs (Pankhurst, 2010; Yeneabat, 2007; Rothwel, 2004; Yadeta, 2002), where the overall perception can be summarized figuratively in the manner drawn in Figure 7.

**Figure 7: Portrayal of TTs Environment**



Source: Based on technological environment discussions

### 3.5 LITERATURE GAP

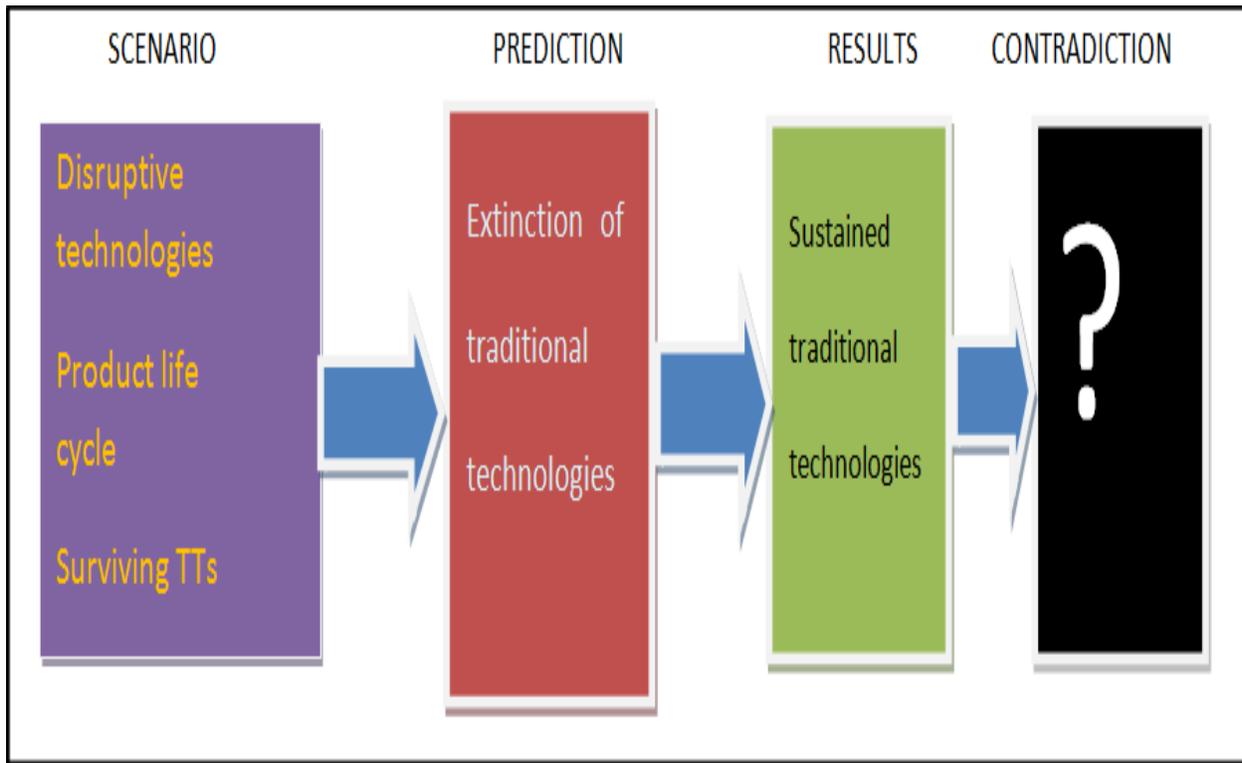
Among the predictive theories spinning around technologies, disruptive innovation theory of Christenson (1997) and product-life-cycle theory of Kotler's (2000), profess that old technologies lagging in performance and quality attributes naturally will wither away in the face of the advent of new technologies. As it would have been predicted from the perspective of extant technological theories, there could not have been any trace of TTs that are spared from extinction (Mohan & Krishnaswamy, 2006; Kotler, 2000; Christensen, 1997): a real gap of knowledge on theoretical premises regarding the predictions on the advancement of technologies. In the course of reviewing the literature on the subject, one of the constructs that was presumed to constitute the core fabrics of TTs, the leadership, was found to play a role to the contrary, which could be taken as another knowledge gap. The gap in leadership roles became so vivid, especially when the socio-economic benefits from TTs could have been significantly enhanced, to the wellbeing of today and the coming generations. It has been against such an oppressive environment that TTs of the country managed to endure and persevere across generations, registering a contribution to every socio-economic walks of the country.

The other scenario reviewed regarding the sector was the effort waged to understand the role of entrepreneurship in exploiting the potentials embodied in TTs. The entrepreneurial functions could not capitalize the vast but unheeded TTs, forcing the marginalization of the strong social capital and cultural capital resources of the country (Zaleski, 2011; Bourdieu, 1996, 1991). The existence of strong social bondages, ample heritage resources, and aesthetic cultural aspects that could have turned into economic values are in most cases left idle and wasted indicating the level of the gaps not yet addressed by the review of the literature (Prasad, 2005; Bourdieu, 1991). Had it been according to the entrepreneurial roles prediction, the existence of variety of TTs could have been exploited by taking a deliberate commercial oriented measures (Zaleski, 2011; Frednick, 2009; Bourdieu, 1996). Same gap goes to socio-cultural capital, which harbors the standardized norms of incubation, dissemination, and utilization of TTs. The reason of perseverance of TTs amidst the neglect and stigma that extended up to despising their existence was not articulated in the constructs of relevant theories across the reviewed literature sources. The existence of socio-cultural capital that has been embracing TTs for generations, without the

benefits rendered to the society being realized, was a mind haunting dilemma that was taken as an obvious literature gap.

Another literature gap deduced was why modern technologies, after stunting indigenous technologies did not become a panacea to developmental problems of Africa at the level they have demonstrated in the countries to which they belong (Khoza, 2009; Ajei, 2007; Johnson-Sirleaf, 2006; Maathai, 2009; Bolden & Kirk, 2009; Ekekwe; 2010). Recipients of modern technologies in backward countries are made to believe that their culture and indigenous technologies are backward, savage, poor in quality, unscientific, risky in application, designated for poor or marginalized classes of the society, etc., which implied that adapting modern technologies is must in place of indigenous technologies. To the contrary, why modern technologies could not assimilated easily into the settings of backward nations, especially to that of Africa, is another gap in the reviewed literature (Pankhurst 2010; Ekekwe, 2010; Ajei, 2007; Yeneabat, 2007; Pankhurst, 2003). However, the size of the African population still depending on TTs is not yet something that can be ignored (O’Kane, 2010; Ekekwe; 2010; Ajei, 2007; Khoza, 2009; Maathai, 2009; Johnson-Sirleaf, 2006). In general, the inability of modern technologies neither in wiping out the old technologies nor in giving impetus to the lacking dynamism in TTs was a gap not addressed in the literature reviewed. That is why, whether it is in explicit or in shadow, many TT practices are alive, valuable, and functioning in many communities, which is an obvious gap that can be drawn as framed in Figure 8.

**Figure 8: Predictions of Traditional Technologies**



Source: Based on the deduced literature gaps

### 3.6 SUMMARY

The deductions from the reviewed literature on TTs of Ethiopia has shown unequivocally that the country is home of the oldest technology of stone tools dating to 2.5 million years old, and recently updated to 3.2 million years (Tamene, 2010; Klein, 2005). It has also become clear that man and technology are inseparable. Wherever there are remains of humans, there were technologies in parallel reflecting different levels of social development. The introduction and evolutionary improvement of the rudimentary tools and techniques was instrumental in boosting the performance of early humans in hunting, food preparation, and gathering, which was getting continuously improved where the old technology has been giving birth to the new (Rollings, 2006; Plumer, 2004; Gere, 2003). The technological advancement has been growing from levels of rudimentary to sophistication and from incremental to radical innovations that have culminated to the present day achievements (Zaleski, 2011; Moskowitz, 2007; Rollings & Earnest, 2006; Rollings, 2006; Plumer, 2004). On the other hand, the survival of traditional technologies shows that they, in fact, have a sustained demand for the inherited quality, which is appealing even to the modern day markets (Cunningham & Young, 2009). However, to the dismay of the traditional sector, leaders in the history of Ethiopia, instead of playing a pivotal role in sustaining and conserving the indigenous skills, were the main stumbling blocks, and in many instances, enemies of artisans and traditional practitioners (Pankhurst, 2010b, 2001; Ayele et al., 2010; Yeneabat, 2007; Yadeta, 2002). On top of the gap in technological predictions, the reason why leadership roles have been ill-conceived and practiced in a counterproductive manner regarding the indigenous technologies is a clear literature gap this research has endeavored to fill.

The role of entrepreneurship was also indicated as a poor performer with regard to the role it should have played in conserving and commercializing TTs. Entrepreneurs should have strived to harness emotions, meanings, experiences, and values that remained as intrinsic values to the communities they belong (Sheard *et al.*, 2011; Windsor, 2007; Munroe, 2006). It is when entrepreneurs are motivated and inspired that small scale businesses and industries fill economic and employment gaps not covered by big business conglomerates (Sheard *et al.*, 2011; Giusta, 2010; Windsor, 2007; Munroe, 2006). Similarly, socio-culture could have become a source of dynamism (Bhalachandran, 2011; Rubtsova *et al.*, 2004). To harness socio-cultural capital, leadership and entrepreneurship should have played a pivotal role to nurture and promote the

technological advancements embraced by the society and deter the perceptions stigmatizing artisans and end users (Ferri, 2009;; Shibata, 2008; Yeneabat, 2007; Rubtsova *et al.*, 2004). In general, the reason of the perseverance of TTs amidst the neglect and stigma that extended up to despising their existence for centuries, and against the theoretical prediction are deduced as clear gaps and contradictions not generalized by the theories of the apparent constructs.

## **CHAPTER FOUR: PROBLEM STATEMENT AND PROPOSITION**

### **4.1 INTRODUCTION**

To know how TTs managed to endure against the pressures spearheaded by implicit opponents and competition from advanced technological innovations was a key point the study has endeavored to uncover. Lack of appreciation and promotion of Ethiopia's traditional practices, on top of the multi-faceted pressures, has marginalized the sector until it seems a designate to the economically disadvantaged classes of societies only (Pankhurst, 2010b; Yeneabat, 2007). The sector should have got advocators willing to document and tell the story of traditional practices for the benefit of subsequent generations. It was from this perspective that the study has tried to articulate the core problem responsible for the staggeringly surviving and for the miserable extinction of the onetime glaring technologies where the ruins and artifacts are vivid testimonies traceable in almost all historical sites and cultural practices of the society.

In this Chapter, the context of the research problem that needed to be addressed is conceptualized from the deductions contained in the information of the research background. The research problem is formulated in way to create the needed understanding of how TTs managed to survive across centuries without getting the proper appreciation and taming they deserve. The research questions that needed an answer if the core problem was to be addressed are phrased in a manner suitable to investigate and retrieve data and information from the participants of the research. Subsequently, the propositions predicted a priori to the commissioning of the study that served as guiding concepts of the entire research processes are also stipulate and discussed in this Chapter.

### **4.2 PROBLEM STATEMENT**

The dire situation endured by ancient technologies of Ethiopia, as reflected in the background information and literature review, was deduced and explained as a core issue this research needed to address. As the description in the consulted literature indicated, the core constructs apparent to TTs have been operating in disarray in a way that was killing the urge and motivation for conserving and transforming TTs. The marginalization of these technologies has extended up to denying practitioners' social acceptance including getting marriage partners and access to resources such as ownership of land (Pankhurst, 2010b; Yeneabat, 2007). Unlike the fate of

modern technologies, the survival secret of TTs across centuries is marvelous and astonishing. To have ancient technologies still surviving, when there was no conducive and nurturing environment, is indeed a lesson to learn that could be replicated to the domains of modern technologies (Aveyard, 2007; Adner, 2004; Kotler, 2000; Christenson, 1997; Jobber, 1997). On the other hand, what hindered their transformation to become vibrant in the developmental endeavors of the country, while they are still playing a significant role in the socio-economic life, even though to a large extent they are forced to operate in a “shadow” setting, was a concern that initiated the researcher to undertake this study (Hiebert & Klatt, 2001; Porter, 1997). Hence, the research problem framed in dichotomy was coined into a statement to reads as:

*To uncover the mystique that enabled traditional technologies of Ethiopia to survive across generations in defiance to what the theories of disruptive innovations profess, and investigate the inhibitors that have been deterring the conservation and transformation of same while they still play a significant socio-economic role.*

In articulating the research problem from which the research questions were derived, the researcher has considered the measurability of derivative concepts, level of expertise required to conduct the investigation, relevance of the predicted answers to the research topic, and accessibility to the study fields to generate “thick data,” which is sufficient and competent to carry the analytic works (Leedy & Ormord, 2010; Malcolm *et al.*, 2009; Kumar, 2005). In formulating the research questions from the problem statement, the practicality in terms of conducting the investigation was made to be “clear and bounded to determine the knowledge to be accumulated through the synthesis” (O’Toole, 2010: 109). By deducing the concerns stated in the statement of the problem, therefore, the central question reckoned for the study (Creswell, 2009; Damgaard *et al*, 2001), which was contextualized in a dichotomy of the “why” and “how” peculiarities of a qualitative methodology (Damgaard *et al.*, 2001) was reframed to read as:

*“How” did traditional technologies of Ethiopia continue to sustain across generations contrary to predictions of extant technological theories, and “Why” have they been deterred from getting the conservation and transformation they deserve?*

Accordingly, the sub-questions reflected as unit components of the central question that explicitly addressed the possible dimensions of the field study while limiting the boundaries of

focus of the research (Leedy & Ormord, 2010; Creswell, 2009; Kumar, 2005) to the Ethiopian perspective of TTs, therefore, were:

Research Sub-Question 1

*How did TTs of Ethiopia sustained across generations contrary to the predictions of extant technological theories?*

Research Sub-Question 2

*How significant have been the economic and social role played by TTs of the country?*

Research Sub-Question 3

*What are the generic inhibitors that have been operating against the conservation and transformation of the country's TTs?*

Research Sub-Question 4

*What are the replicable/transferrable inductions that can enrich the body of technological knowledge?*

### **4.3 PREDICTED PROPOSITIONS**

Taking into account on the need of a “tentative guess” deduced from the conceptualized propositions,” and working on the required process of investigation in solving the research problem was found to be a necessary procedure that was followed. This approach has helped to reveal the underlying facts and seek alternative solutions by indicating the generic inhibitors that have been crippling the survival of ancient technologies of the country (Creswell, 2009; Kumar, 2005; Yin, 2003). The core point concluded from the literature review was, therefore, extant technological theories have not proved the predictions of wiping out all old innovations of Ethiopia. In line with this argument, the point raised by Kumar (2005) that a hypothesis (in this case a proposition) has to emerge from the existing body of knowledge was used to frame the relevant propositions to guide this research and also used to:

- a) Further articulate the research problem;
- b) Measure the relevance of derivative concepts;
- c) Understand the level of expertise required to investigate the research in the study field;

- d) Ascertain the relevance of the topic to the intended research purpose and research problem;
- e) Acquire a clue regarding the availability and accessibility of “thick” data (Leedy & Ormord, 2010; Malcolm *et al.*, 2009; Kumar, 2005).

Since the nature of the research design was a qualitative case study, the data generated from the field was not used to test a hypothesis. Rather, the data was used to induce and explain new concepts and insights from the observed phenomena (facts) in relation to the formulated propositions designed to reflect the core constructs (Michaelides & Theologou, 2010; Yin, 2003; Cooper & Schindler, 2001). As Yin (2003: 12) has stated: “Each proposition directs attention to something that should be examined within the scope of the study.” As Yin has also warned, without a proposition the study program could go “untamed” in disarray, and could create a temptation to cover everything apparent to the cases studied. As a result, explanatory concepts and insights were induced from the observed phenomena from which the propositions of the main constructs were formulated (Thomas, 2011; Dul & Hak, 2008; Cooper & Schindler, 2001). In fact, a proposition benefits from a priori developed theories in the process of guiding the data collection and analysis (Yin, 2003). In relation to the study, the underlying theory or conceptual framework is proposed before the commencement of data collection. The conceptual model is then translated into a specific logical model where the data collection in terms of cause-and – effect relationships were presumed to lead to the emergent themes (Michaelides & Theologou, 2010; Lee *et al.*, 2010; Yin, 2003).

The causes of the inapplicability of modern technologies neither in wiping out TTs nor in giving impetus to the dynamism they lack was a point the reviewed literature review was not able to address in unequivocal terms from which the core issue that gave rise to the central question and to the framing of the proposed propositions were coined. The possible deductions to address the central research question were, therefore, consolidated in three propositions relevant to the constructs underpinning the realm of TTs. The first proposition has dealt with a concept that can help in answering the “How” TTs managed to survive across generations in defiance of the theories and pressures emanated from the dynamism of modern technologies (Schiafone, 2011; Kotle, 2000; Christenson, 1997; Jobber, 1995). The second proposition has investigated “Why” leadership did not create an enabling environment to conserve and transform

TTs (Wang, 2011; Sihag, 2009; Yeneabat, 2007; Alemayehu, 2000). The third proposition has shown to “What” extent TTs were used as leverages of social and cultural capital that could be exploited by entrepreneurial drives (Redding & Rowley, 2012; Lorenzo, 2010; Ferri *et al.*, 2009) as stated hereunder:

*P1. The endurance of TTs across generations, in defiance of what relevant technological theories profess, is a result of the embedded socio-cultural capital attributes that has served as a shield against disruptive innovations.*

*P2. A skewed attitude of leadership, not the prediction of relevant technological theories, has been responsible for the extinction and a deterrence to conserve and transform TTs.*

*P3. Entrepreneurial orientation deficiency has been an inhibitor to harness and commercialize TTs.*

#### **4.4 SUMMARY**

If the role of TTs in the economic and social spheres of the country is considered, the neglect and marginalization to conserve and transform the sector for maximum application and exploitation becomes unjustified. To the contrary, the survival of many technologies benefiting practitioners in particular and the society in general amidst the harsh and antagonistic environment has become a cause to raise the research problem as explained by the central question that needed to be answered by conducting such an investigative study. By addressing the research problem through answering the central question through the stipulated sub-questions based on the findings of the study, the measures that need to be taken are revealed and mitigating intervention measures that need to be taken by responsible stakeholders are initiated. This has shown that the objectives of the study stipulated in Chapter 1 were indeed successfully attained.

Based on the central question and objective of the research, a proposition that was presumed to define the underlying reasons of the fate and future of TTs was organized in a set of three conceptualized statements by showing how the extant technological theories were not sufficient to be sound predictors (Leedy & Ormord, 2010; Malcolm *et al.*, 2009; Kumar, 2005). Setting and defining a proposition from the outset was necessary in order to tame and direct the approach of the entire research process before unnecessary temptations and disarray of directions could haunt

the course of the study (Thomas, 2011; Dul & Hak, 2008; Yin, 2003). As intended, the crafted propositions were found to be relevant and competent enough in guiding the actions of the researcher and in showing the “metabolism” of the constructs deduced from the background information and literature review of the study.

## CHAPTER FIVE: RESEARCH METHODOLOGY AND DESIGN

### 5.1 INTRODUCTION

The ultimate purpose of conducting this research was to help in tracing and reclaiming the lost and surviving ancient skills and methods alike. This was done by making the research to focus on rescuing those TTs that are currently hanging on the verge of extinction using abstracted concepts generated from observations by relating the induced patterns with the coherent body of knowledge termed as THEORY (Jonesskip, 2003; Yin, 2003; Cooper & Schindler, 2001). The deductions reached from the literature review have revealed gaps in relation to relevant constructs that have been impeding the intervention needed to conserve and transform TTs of the country. As highlighted by Eisenhardt (1989) and Leedy & Ormord (2010), the constructs used to define and measure the impact they had in accelerating the demise or in conserving the endurance of TTs were taken as tentative templates that were endorsed or refuted in due course as much as the research outcomes dictated. As stipulated in Chapter 2, this research has pondered from relevant theoretical foundations that were able to reflect the predictions of the main constructs apparent to the study. The deductions established from the literature review has shown how the ontological and epistemological reflexives of the core constructs defining the fate of TTs, but not captured by predictions of contemporary theories, were taken as literature gaps that needed to be addressed by answering the stipulated research questions. The focus of the investigation was to understand the activities, thoughts, social interactions, attitudes, behaviors, beliefs, perceptions, and living meanings of the research participants deep at individual and collective settings, which necessitated the application of an appropriate “genre” of a research methodology (Leedy & Ormord, 2010; Das *et al.*, 2008; Colton & Covert, 2007; Flick, 2006). The research methodology and design apparent to this chapter has started by explaining the necessity of indicating the theoretical world outlook in terms of undertaking the captioned study, which was found to be appropriate to conduct an investigation on a target population that is not in a linear ramification (Yin, 2003, 1994; Eisenhardt, 1989). The approach used in selecting the issues to be studied is shown under the sampling method and size by indicating how the units of analysis were treated within the bounds of the target population. To ensure the reliability and credibility of the process, the instruments of measurement were also designed and formatted in a manner each instrument was able to complement and/or supplement, on top of further rechecking

and triangulating the generated data. The way the field study was planned and the process of data generation conducted, including the system used to organize and filter the thick data, is described in the data generation sub-topic of this thesis.

## 5.2 RESEARCH PARADIGM

The world outlook conceptualized in framing the conduct of this research has pondered from theoretical background of the main constructs as discussed and illustrated in chapter 2 and 3. Constructs in a paradigm of a qualitative context are often latent variables or attributes that cannot be measured directly but observed or measured, and then framed into texts of language (Das *et al.*, 2008; Cotton & Covert, 2007; Verbeke *et al.*, 1996). The three elements of a paradigm, i.e., ontology (the reality researchers investigate or the nature of reality), epistemology (the relationship between the reality and the researcher or how the reality is understood), and methodology (the technique used to investigate the reality or how the reality could be accessed), were tuned to be applicable to a study program dealing with a qualitative paradigm (Andriopoulo & Slater, 2013; Costantino, 2008; Gayling, 2002; Guba & Lincoln, 1994). The ontological and epistemological reflexives apparent to the conceptualized theoretical outlook of the core constructs were used as viewing “lenses” in understanding and defining the role and destiny of TTs. The ontology to look in the study and the epistemology through which to understand the reality are based on conceptual frames and semantic relationships (Andriopoulo & Slater, 2013; Costantino, 2008; Gayling, 2002). By relating these reflexives to the sphere of TTs, the role of the relevant constructs that were not in tally with the predictions of apparent contemporary theories as deduced from the literature review were, therefore, deduced to be *Socio-Cultural Capital, Leadership Attitude, and Entrepreneurial Orientation*.

As highlighted by Yin (1994) and Eisenhardt (1989), the deduced constructs were taken as “core templates” and the extent of their impact in accelerating the demise or in promoting the conservation of TTs is measured accordingly. The conduct of the research has pondered from relevant theoretical background as deduced from the narrations of the literature review and theoretical foundation apparent to technology. Among the relevant and domineer theoretical frameworks that have been used to define the overall technological, leadership, entrepreneurial, and social understanding in terms of the concepts of TTs, which had required an in-depth investigation, not a linear approach of research, were therefore:

- 1) Disruptive Innovation Theory: dealing with predictions of technological dynamism (Christenson, 1997);
- 2) Product-Life-Cycle Theory: dealing with predictions and outcomes of the life of products (Kotler, 2000);
- 3) Social and Cultural Capital Theory: dealing with predictions of socio-cultural bondages and relationships (Bourdieu, 1991);
- 4) Full Range Leadership Theory: dealing with predictions of composite leadership concepts (Mumfor, et al., 2009; Stumpf, 1995);
- 5) Evolutionary Theory: dealing with predictions on the evolution of leadership concepts (Peterson & Kim, 2012; Miles, 2007);
- 6) Entrepreneurship Theory: dealing with drivers of entrepreneurial orientation in creating commercial environment to exploit latent and marginalized technological potentials (Casson, 2010);

Disruptive Innovation (Christenson, 1997) and Product-Life-Cycle (Kotler, 2000) theories were used to show how products or technologies are constantly being defeated or becoming obsolete by subsequent Innovations. Despite the fierce competition spearheaded by advanced technologies, TTs have managed to strive across centuries while the modern ones, in accordance to the technological law, have perished in unprecedented short life span. Similarly, among relevant leadership theories, if Mumford *et al.*'s (2009) view is considered, the assertion that leadership is the ability to have persons in the right place if achievements are to be maximized was not found to be compatible with the reality of TTs. The deductions from the literature review on the Full Range Leadership Theory, which is an extension of Transformational-Transactional theory divide, used to stress the values in the societal relations as a base to build competitive advantage, is not either found able to lead the dynamism of TTs (Peterson & Kim, 2012; Pankhrust, 2010; Yeneabat, 2007).

On the other hand, the socio-cultural Capital Theory (Bourdieu, 1991), which states that social capital and cultural capital could be tradable potential economic resources was not realized. Despite the existence of strong social bondages and rich aesthetic heritages in the country (Sarika, 2012; Korsgaard, 2011; Prasad, 2005; Bourdieu, 1991), the general perception of the wider public has been obsessed with stigma and marginalization against artisans and

traditional practitioners (Kum-Neger, 2015; Yadeta, 2002; Yeneabat, 2007). The latent and wasted socio-cultural capital could have materialized into a vibrant economic and technological resources had the tenets of TTs got the chance to be appreciated and nurtured (Redding & Rowley, 2012; Sarika, 2012; Korsgaard, 2011; Ferri *et al.*, 2009; Bourdieu, 1991). Especially, had there been a dynamic entrepreneurial orientation rooted in the social fabrics, the values of traditional practices could have been saved and exploited instead of suffering marginalization and extinction (Palmas, 2012; Ferri *et al.*, 2009; Rubtsova *et al.*, 2004).

Hence, to carry a research aiming at reversing a subject in such a dire and daunting situation has appealed to a research design of an interpretive and co-constructive nature because its purpose is not to generalize but understand the issues deep in the society (Earl, 2010; Rodseth, 2010; Scholl, 2008). As viewed from the literature through the “lenses” of the core constructs, such a methodological approach has demanded the engagement of “knowledgeable inter-actors” that can realize the crucially needed “emancipation” of the traditional practices often doomed to operate under shadow, intense, and harassing environment (Gold, 2011; Kassaye *et al.*, 2006; Henning, 2004). As a result, the theoretical issue relevant to the subject studied has called for a paradigm world outlook aligned to Critical Theory (McMullen & Shepered, 2003; Lincoln & Guba, 2000; Myres, 1997). Critical Theory approach was preferred for the study conducted because of its significance in advocating a concern to empower human beings to “transcend” over their hurdles. This could be accomplished by addressing the depleting challenges like strains in social relations, lacking leadership support, and challenges confronting on marketing “rubrics” that emanated from the interplay of “power” structures (McMullen & Shepered, 2003; Burton, 2001; Lincoln & Guba, 2000) evident in the realm of TTs of Ethiopia.

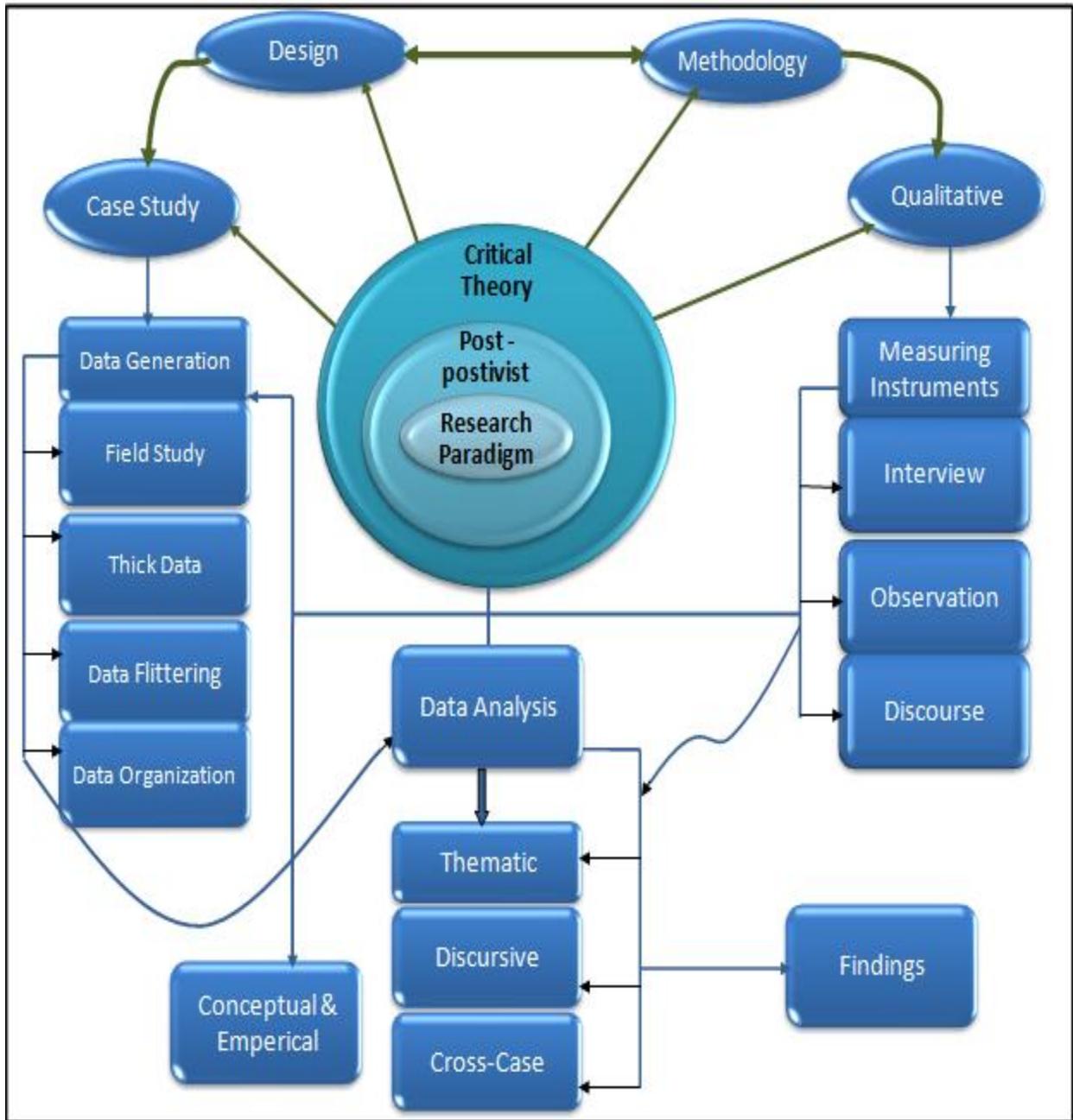
Critical Theory paradigm became relevant to the study for the fact that practitioners in the fields of TTs, who are denied freedom and recognition to pursue their skills and aspirations, cannot be explained and addressed otherwise until the epistemology required to understand the lived experiences were derived interpretively; both empirically and reflexively (Ropers-Huilman & Winters, 2010; Given, 2008; Lincoln & Guba, 2000). The relevance of Critical Theory to this research work can be magnified by citing Given’s (2008: 150) quote:

*By engaging people in monologic and dialogic data collection, sharing the results of critical analysis, and supporting participant action on these findings, critical*

*ethnographic processes and results can assist individuals, groups, and communities in addressing their own situations or lobbying to change oppressive social structures*

According to Blaxter et al. (2006) and Lincoln & Guba (2000), critical theory helps to expand insight on “conflicts” where there is a need to promote and seek for change, emancipation, and stimulate actions that can eradicate ignorance, marginalization, conflict, oppressions, and misapprehension through the mastery of “informed consent.” This shows that whenever technological vibrancies of societies were hampered, so were the strides in the social progress (Earl, 2010; Rodseth, 2010; Blaxter *et al.*, 2006; Prasad, 2005). In fact, the influence of technology has been dictating societies to think and live in a “one-dimensional” culture (Earl, 2010; Rodseth, 2010; Blaxter *et al.*, 2006; Prasad, 2005). In the process of applying the Critical Theory paradigm of world outlook “the dynamic relationship between researchers and participants is constantly negotiated to deconstruct power, achieve and maintain trust, promote equality, and ensure reciprocity” (Duncan & Watson, 2010: 53). This was seen as a guiding concept that was adhered throughout the investigation process where the researcher has knitted the interconnectedness within the constructs of the study that were gravitated to the central point of the paradigm as formulated in Figure 9 where employing such paradigm has enabled to unravel a grounded knowledge embedded deep in TTs.

**Figure 9: Research Design & Methodological Approach**



Source: Based on methodological approach excerpts

### 5.3 RESEARCH METHODOLOGY

As far as the purpose of the investigation in the research field was to understand the meanings of the “lived experiences” of participants deep at individual and collective settings, the appropriate methodology could not have been other than a Qualitative Methodology (Leedy & Ormord, 2010; Das *et al.*, 2008; Cotton & Covert, 2007; Flick, 2006). In a qualitative study the constructs, theories, and even propositions are tentative—because the main intention of a qualitative method is generation or refutation of presumed theories (Yin, 2003, 1994; Eisenhardt, 1989). In this methodology, the data generated is analyzed by assuming that “social world” can be understood interpretively (Mason, 2012; McMullen & Sheperd, 2003; Mason, 2002). The data analysis in qualitative method commences starting from the data generation stage where “transferability logic” could be reached not through statistical but through analytic generalization (Babbie, 2010; Yin, 1994; Eisenhardt, 1989). Qualitative research enables to have a deeper understanding of the social world in concern by reconstructing the cognitions, emotions, communications, and actions of research participants through the interactions with the researcher (Earl, 2010; Rodseth, 2010; Scholl, 2008; Prasad, 2005). Under such circumstance, the epistemology becomes a “negotiated” stance of the interactions, not a given one, revealing the underlying ideological and power relations (Earl, 2010; Rodseth, 2010; Scholl, 2008; Prasad, 2005). That is to say, the data generated from the field was not used to test hypotheses, rather to learn new concepts and insights from the observed phenomena (Earl, 2010; Rodseth, 2010; Cooper & Schindler, 2001). That is to say, the qualitative data used was not analyzed using statistical models, rather the generated “thick data” were presented and extrapolated in a way “they speak for themselves” (Leedy & Ormord, 2010: 295) using a “thick description.” Naturally, studying a qualitative phenomenon lends itself to a research design that embraces a “non-numerical” method, potentially rich in details that could advance knowledge induction from “lived experiences” of respondents (Model & Humphrey, 2008; Cassel & Symon, 2006).

However, Vaivio’s (2008: 2) advice that a qualitative research could be a “bold-jump in to the unknown where the intriguing empirical site can produce poor result” was well noted. A qualitative research can also rectify, refine, or reject existing theory. It does not necessarily have to ponder from a theoretical background (Bhat, 2012; Vaivio, 2008). Nevertheless, the research design appropriate for the study, as discussed in Chapter 2, has pondered from relevant theories

that were used to guide the entire conduct of the research process (Bhat, 2012; Yin, 2012, 2003; Vaivio, 2008; Eisenhardt, 1989). A qualitative data analysis is the most difficult and crucial method that deals with technical and analytical exercise of data in order to gain a deeper understanding from the perspective of the research questions (Gold *et al.*, 2011; Babbie, 2010; Basit, 2003). Contrary to positivist paradigm, a qualitative method is a study approach from the inside out, not from the outside (Given, 2008; Shaw, 1999). This has made the epistemological stance of the subject to appeal more to interpretivism where the data generated was analyzed by assuming that “social world” can be understood interpretively (Lavrakas, 2008; Given, 2008; McMullen & Shepered, 2003; Mason, 2002). This approach has made the methodology, not to look for the given, but to reveal the underlying ideological and power relations through the researcher’s interactions with the people to whom the issues to be addressed were so “persona” (Earl, 2010; Rodseth, 2010; Scholl, 2008; Flick, 2006; Prasad, 2005).

The focus of the study was to get a deep insight on the subject studied so as to understand the research problem comprehensively (Yin, 2012; Sandelowski & Barroso, 2007; Shaw, 1999) with the purpose of gaining concepts, categories or themes that have recurred across the datasets (O’Toole, 2010; Babbie, 2010). Despite the criticism on qualitative methodology from the angle of proponents, on grounds of researcher’s subjectivity and bias, rather Vaivio (2008) and Patel (2007) have shown how the method is useful to comprehend subjective and varied realities that do not lend themselves to quantitative or “linear” measurements. In fact, a qualitative research methodology is continuously gaining a “wave of popularity” (Sandelowski & Barroso, 2007) as a study “genre” that uncovers the meanings of the real world. This approach is even challenging when it comes to the “nomothetic” or “law-like” generalization, which is a source of dilemma when validating the stances of paradigms in individually contextualized concepts of “lived experiences”(Lincoln *et al.*, 2013; Stake, 2013; Gomm *et al.*, 2013). The argument goes up to concluding that the classic concept of generalization based on controlled time and context is questionable unless there is a genuine linkage to the members of the population beyond “imaginative” applicability (Lincoln *et al.*, 2013; Stake, 2013; Hammersley *et al.*, 2013). That is why the view to belittle qualitative method over surveys and experiments by some critics is taken as resulting from not being able to see the extent such method can provide in terms of conceiving a phenomenon in its natural settings than in other methods (Lincoln *et al.*, 2013; Stake, 2013; Rundle-Thiele, 2009; Yin, 2003).

A qualitative method is as rigorous or scientific as any statistical analysis in quantitative data (Lincoln *et al.*, 2013; Stake, 2013; Hammersley *et al.*, 2013; Samkin & Schneider, 2008). Unlike quantitative method that deals with relationships among variables across many cases, qualitative method focuses on an in-depth examination of small number of specific cases (Greckhamer & Mossholder, 2011; Flick, 2006; Yin, 2003). In this research, it was inferred that the appropriate methodology to investigate the cases studied could not be other than using a Qualitative Method if the activities, thoughts, social interactions, attitudes, behaviors, beliefs, perceptions, and living meanings deep rooted at individual and collective settings (Leedy & Ormord, 2010; Flick, 2006; Yin, 2003) of the TT practices are to be understood. That means the data generated from the field was not used to test hypotheses, rather to learn new concepts and insights (Michaelides & Theologou, 2010; Malcolm *et al.*, 2009; Cooper & Schindler, 2001) by the instrumentality of the researcher's interactions with TT players. As Flick (2006) has stated, the qualitative research approach is useful in directing the interactions with the people in the identified fields where real activities and inner expressions were captured using multiple methods of inquiry without applying a deliberate controlling or manipulative tools.

Following the adaption of qualitative methodology, the concern of the study was predominantly to capture "rich and thick" description rather than to look for representative population of the sector (Leedy & Ormord, 2010, 2005; Yemer, 2009; Yin, 2003) using a statistical modeling. In conducting the qualitative research, as Leedy & Ormord (2005) have stated, the appropriate approach was to "dig deep" in the process of data collection, which had to be examined from angles and construct real meanings. That is why in conducting the research emphasis was given to points raised by Henning (2004: 128):

- a) Qualitative analysis takes place throughout the data collection process;
- b) An analysis commences with reading all the data then dividing the data into smaller and meaningful units;
- c) Data segments or units are organized into a system, which implies an induction analysis;
- d) The researcher uses comparisons to build and refine categories, to define conceptual similarities, and to disclose patterns;
- e) Categories are flexible and may be modified during analysis;
- f) The analysis should truly reflect the respondents' perception;

- g) The results of analysis are a kind of higher order, patterns or themes, or emerging or substantive theory.

To produce “rich meaning,” and capture “holistic” and emergent experiences, as Prasad (2005) has indicated, the study has assumed an involvement of the researcher at a higher degree of personal resolve in order to understand the concerned people’s activities, challenges, beliefs, and problems deep from the roots occurring in a natural settings (Leedy & Ormord, 2010; Blaxter, 2006). That is to say, the applied qualitative methodology has enabled to present the study in the form of induced meanings constructed from the language of the data that reflected the “lived experience” of research participants. In qualitative methodology, though the social interaction is understood by exploring and reconstructing inductive meanings relative to the given context with an epistemological view that adheres to a dynamic environment and characteristic (Gold et al, 2011; Scholl, 2008), there are claims that the result of the investigation need to be viewed in an abductive epistemology (Lipscomb, 2012; Peirce, 1903). According to Peirce (1903), who introduced the concept, abduction is taken as an integrated view that is supported by deductive and inductive evidences within the qualitative paradigm: not a merger of deduction and induction. The abductive approach also differs from deduction and induction in its research genre. Customarily, deductive research scans theory (e.g., in a literature review), derives logical conclusions from this theory and presents them in the form of hypotheses (H) and propositions (P); tests these inductively based on the corroboration or falsification in an empirical setting and then presents its general conclusions (Lipscomb, 2012; Kovács & Spens, 2005; Peirce, 1903). In this research, abduction was used in making ‘fair guesses’ about the meaning of data conceptualized during analysis, in developing themes, codes, and categories, and in structuring the data “insightfully.”

If the method has to be adequate, Peirce’s view has to be extended to incorporate the reality in social sciences by explaining how people reconstruct their reasons in terms of taking into account the “Phronesis” or propositions of guesses (Gold *et al.*, 2011; Thomas, 2010; Scholl, 2008). An abduction approach in social sciences reinforces the understanding of inductive reasoning, which reflects that the inclusion of emergent views in such scenario could also fall into the premises of grounded theory (Timmermans, 2012; Thomas, 2010; Jensen, 2008). In fact, when it comes to the inductions arrived from investigations, actually the bases of the premises is not founded on “pure” generalized theory but also by incorporating guesses of information

supported by “phronesis” too (Li, 2012; Babbie, 2010; Alavin *et al.*, 2005). To consolidate the claimed inductions arrived from narrowly sampled cases, the relevance of abduction that could address the unforeseen or pragmatic side of the study was considered so that the research methodology could be reinforced to become competent and stand by itself (Gold *et al.*, 2011; Thomas, 2010; Scholl, 2008). That is how this methodology was able to answer the “Why” and “How” TTs managed to survive across generations in defiance of relevant theories.

#### **5.4 RESEARCH DESIGN**

Research design in a qualitative methodology is a plan of action that deals with a phenomenon to be studied from “inside” to induce a comprehensive insight, usually, that gets developed and refined incrementally throughout the course of the study (Macfarlane, 2010; Patel, 2007; Mason, 2002; Shaw, 1999). The design could be characteristically exploratory, fluid and flexible, data-driven, and context-sensitive, where knowledge and evidence are conceptual and interactional with the potential of delivering emergent themes (Macfarlane, 2010; Patel, 2007; Mason, 2002). However, the first challenge to study TTs of the country was confronting a sector, which has been marginalized and dispersed, mostly kept in secret and operating in shadow. A study in such environment has required a toll of meticulous planning of activities and selecting the appropriate design from case study, ethnography, phenomenology, grounded theory, and content analysis apparent to qualitative methodology (Ryan, 2012; Yin, 2009; White *et al.*, 2009; Myres, 1997). Accordingly, as discussed in preceding sub-topics, which considered the nature of the target population commissioned for the research, which was not a unified, not linear, and requiring an in-depth study, the appropriate research design was found to be a Case Study.

#### **5.5 CASE STUDY**

Considering the background of the subject studied, the design appropriate for the subject was found to be a Case Study Design: a notion that appeals well to justify the method of inquiry selected by the researcher to a field study situation which is poorly understood. A case study design was preferred because it was more feasible for TTs of the country that are used to operate under intense environment. At the same time, it is an ideal method that enabled to have a triangulated, holistic, and multi-perspective interactions among actors with salient voices and attain full conceptualization from the angle of “natural settings” (Silverman, 2010; Creswell, 2009; Blaxter *et al.*, 2006; Santora & Sarros, 1995). As one model of a qualitative research design, a case study is based on intensive empirical investigation in a constituent of a given

target population's bounded events, situations, activities, phenomena, etc. of participants by maintaining the unity in the "observable totality" (Stake, 2013; Whitelock *et al.*, 2012; Ryan, 2012; Ridder *et al.*, 2009). As Yin's (2012: 4) has stipulated, a case study is "an empirical inquiry about a contemporary phenomenon, set within its real-world context—especially when the boundaries between phenomenon and context are not clearly evident." This is due to the fact that designated cases are most understood when they are treated as wholes or bounds in a real life context (Hammersley *et al.*, 2013; Ryan, 2012; Ridder *et al.*, 2009; Yin, 2003). A case study can be employed for theory building, theory-refutation, or theory testing; though it tends more for theory building (Bhat, 2012; Ridder *et al.*, 2009; Yin, 2009).

In fact, case studies are reflections of intuition and empiricism based on "direct "and "vicarious" experiences that lead to a "naturalistic" generalization (Stake, 2013). Epistemologically, case study is considered as "down-to-earth" and "attention-holding" research design (Stake, 2013) conducted in harmony with the researcher's experiences. Case study gives emphasis to few entities that are complex or in poorly understood situations in the knowledge building process by providing an in-depth description, exploration, or explanation of the phenomenon with the aim of generating, modifying, or testing a theory in a given social context (Lee *et al.*, 2010; Flyvbjerg, 2006; Cepeda *et al.*, 2005. Arguably, Flyvbjerg (2006) emphasis that the "closeness" of a case study to a real situation and its "wealth of details" was an additional enforcement why a case study design was preferred. To conceptualize the basics of a case study, and why this method of research appealed to the curiosity of the researcher, quoting Marriam's view in Henning (2004: 41) can suffice:

*A case study design is employed to gain an in-depth understanding of the situation and meaning for those involved. The interest is in process rather than outcomes, in context rather than a specific variable, in discovery rather than confirmation.*

Considering the premises of a case study design, a single case was sufficient to comprehend the "lived experiences" surrounding TTs, though a multiple case study approach drawn from the target population was employed (Ridder *et al.*, 2009; Dul & Hak, 2008; Yin, 2003). In fact, a case study design is a "a powerful" method with the ability to combine individual (sometimes a group of individuals) interview with records, and observation to serve as a platform of empirical generalization (Lincoln *et al.*, 2013; Stake, 2013; Gomm *et al.*, 2013; Cooper, 2006). Although

there is a growing acceptance of a case study design, it has also given rise to some misunderstood conceptions as enumerated by Flyvbjerg (2006) and Yin (2003), which include:

- a) Theoretical knowledge is more valuable than a practical knowledge;
- b) One cannot generalize from a single case;
- c) A case study is useful for hypothesis generation than for testing or theory building;
- d) Case study contains a bias;
- e) Generalization from a case study is difficult; etc.,

Regardless the critics who doubt if a case study design can appeal to a higher level research “genre,” Fiegen (2010) and Ridder et al (2009) have strongly argued that case study designs are young revelations introduced as a valid method to reveal the real world of participants. The belief that a bias is of less threat because case study is more biased towards falsification or preconceived notions than towards verification has convinced the researcher to consider this design as appropriate (Stake, 2013; Yin, 2003; Stake, 1994). Flyvbjerg’s (2006: 224) assertion that “the interest of a case study is not for the sake of proving anything but for the hope of learning something” shows the soundness for choosing the design to the subject of the study. According to Levi-Faur (2006: 54):

*The logic of a case study is fundamentally configurational. Different parts of the whole are understood in relation to one another and in terms of the total picture or package that they form. The central goal is usually to show how different parts of a case interconnect. What matters most is that the investigator makes sense of multiple aspects of the case in an encompassing manner using his or her theory as guide.*

The concerns of Blaxter (2006) and Yin (2003) is that the disadvantage of a case study in terms of the analyses is to know when a context begins and ends in complex situations; though the strength of a case study is the ability to contextualize such situation, not through statistical generalization but through analytic generalization (Stake, 2013; Yin, 2012; Eisenhardt, 1989). At the same time, the researcher was well aware of the possible limitations, including getting swarmed by voluminous and “messy” data that could be mistaken for representing everything in the units of analysis, which entails a risk of failing to become a “transferable” insight (Yemer, 2009; Eisenhardt, 1989). This type of research design has helped the researcher to show the link

between the research topic (conceptual framework), the data (observation), data analysis (interpretation), and the theory and knowledge accumulated throughout the research process (Ryan, 2012; Capeda, 2005; Yin, 2003). In a case study design, the constructs, theories, and even propositions are tentative—because the intention is mainly generation or refutation of presumed theories not as such confirmation of theories (Stake, 2013; Yin, 2003, 1994; Eisenhardt, 1989). This was the reason in dealing with TTs that have been ever doomed to perish, in most cases, in poorly understood circumstances, applying case study design became the justifiable mode of investigation to consider (Stake, 2013; Savin-Baden & Major, 2010; Yin, 2003).

If the study on the topic was to bear fruit, no methodological design looked so feasible, except to consider a case study that delved deep to understand the systems, actions, perceptions, hopes, despairs, and feelings of artisans and practitioners whose life, starting back from their ancestors, have been immersed in the culture of crafting and operating indigenous technologies requiring a naturalistic, interpretive, and critical examination (Stake, 2013; Savin-Baden & Major, 2010; Yin, 2003). In line with this argument, White *et al.* (2009: 210) have indicated three specific attributes of a case study that were relevant views adhered in conducting the study on TTs:

- 1) It allows to gather rich, detailed data in an authenticated setting;
- 2) It is holistic and thus supports the idea that much of what we can know about human behavior is best understood as lived experience in the social context;
- 3) Unlike experimental research, it can be done without predetermined goals.

Case study methods are increasingly becoming sources of theoretical innovations. They take “descriptive –interpretive” approach seriously by delving into deep investigation on “fewer instances” (Blatter, 2008; Mills, 2008; John, 2007). Such approach gives the the ability to produce substantive knowledge from the links of inputs, outputs, and effects (Hammersley et al., 2013; White *et al.*, 2009; Yin, 1994) by giving emphasis to the complex and poorly understood situational settings (White *et al.*, 2009; Cepeda & Martin, 2005). Though a single case examination was still valid and reliable to reveal a power to disprove a general statement or reveal a fresh insight (Ryan, 2012; Jans & Dittrich, 2008; Payne & Judy, 2004), more cases are studied (as indicated in the sample size) with the belief of inducing a strong generalization competent for the target population. For some of the sampled cases getting literature resources was almost impossible. To address the gap, taking the view of Alavin *et al.* (2005) that stresses

the need of offsetting by delving deep to the historical roots that, could be explained by the lived events and practices, was necessary.

All types of case studies, i.e., exploratory or clarifying uncertain issues of the case (usually at the initial stage in the entry to the field), descriptive (revealing the particulars of the context), and explanatory (establishing the cause-effect relationships of constructs), were used to retrieve and analyze data as much as the relevance and reality in the study field dictated (Yin, 2012; Ridder *et al.*, 2009; Dul & Hak, 2008; Stake, 2005; Eisenhardt, 1989). The study has focused on activities and individuals within the bounds of each case by entering, besides observation, into discourse with individuals who have the experience or knowledge to share (Mason, 2002) on the subject in line with Blaxter's (2006: 74) remarks:

- a) Case study data is drawn from people's experience and practices and so it is seen to be strong in reality;
- b) Case study allow for generalization from a specific instance to a more general issues;
- c) Case studies allow the researcher to show the complexity of social reality. Good case studies build on this to explore alternative meanings and interpretations;
- d) Case studies can provide a data source from which further analysis can be made;
- e) Because case studies build on actual practices and experiences, they can be linked to action and their insights contribute to changing practices;
- f) Because the data contained in case studies are close to people's experiences, they can be more persuasive and more accessible.

On the other hand, the investigation on traditional technology was influenced by "Grounded Theory" design (Li, 2012; Glaser, 2012, 1968) due to the fact that literature resources on the subject of Ethiopian TTs are very scanty and hence do not allow to competently conduct a deductive literature reviews. A case study starts with an open-ended or even without any prior conceptions and finishes with closed-end procedures making the reflections more of "abductive logic" (LI, 2012; Babbie, 2010; White *et al.*, 2009). In addition, a case study ponders from existing theory while grounded theory enters the field with no a priori capitulation and no literature review so as to behave "unlearned." This gave rise to unintentional inclusion of grounded theory practices and reflections in the study process, where applying both designs was

found appropriate for theory building than theory testing endeavors (Li, 2012; Glaser, 2012; Oturus, 2011; Babbie, 2010; White *et al.*, 2009).

In this research pronouncing the convergence of “Grounded Case Study” design approach was implicitly promoted, not by design but by default. In the applications of the case study design, the distinction between case study and grounded theory was that, more or less, they diluted in the process (Bhat, 2012; Li, 2012; Leedy & Ormord, 2005; Damgaard *et al.*, 2001). In fact, the actual study conducted on the sampled cases has extended beyond the context of “grounded case study” design. Since the duration of the study was over five years, out of which three years were expended in the study fields (almost close as to have lived with participants), a full emersion and delving deep into the sanctum (sacred or private sanctuary) of the secretive environment and life of the participants has led to conclude that the research design was also reflecting an “Ethnographic Methodological” design (Bajc, 2012; Lehoux *et al.*, 2010; Martin, 2009). This kind of open-ended and expansive approach of investigation has, in fact, helped the researcher to comprehend how the technological seeds of the past have been “germinating” into the present and possibly extending to the future. Accordingly, the process of the study carried in the field has tried to know and identify role players, inherent values and qualities, understand the basis of the skill or crafts employed, and explore how successors are mentored, principles and ethics are applied in producing and using the products, and designing the processes in terms of applications (Alavin *et al.*, 2005; Kumar, 2005; Punch, 2000; Santora & James, 1995).

## **5.6 TARGET POPULATION**

Target population as explained by O’Leary (2004) and Schensul *et al.* (1999) is the aggregation or summation of members of a class of people, objects, or events of a defined situation. It can be also explained as the entire set of units for which the findings of the data analysis generated from specific units can be inferred or transferred (Lavrakas, 2008; John, 2007; Neergaard, 2007; Eisenhardt, 1989). The assumption that a population is the target of a study implies there could not be any information from where a study sample is not drawn (Sakaran & Bougie, 2009; Bethlehem, 2009). This shows how the effectiveness of the information from the target population is dependent on the effectiveness of the sample becoming a representative of the entire population. Accordingly, defining the target population from which the study units

were identified and deciding on the sampling method and sample size of the research conducted was necessary (Silverman, 2011; Silverman, 2010; Bethlehem, 2009; G. Cox, 2008).

As indicated in the background information of the study, the type and spectrum the research topic encompasses is so vast, hence difficult to make them fall in to one target population. But, as far as the focus of a case study is not on size but on conducting an in-depth investigation, to deal with few sampled cases where the outcome could appeal to a replicable logic by revealing a pattern of “trustworthiness” and “transferability” was to be acceptable (Li, 2012; Babbie, 2010; Blaxter, 2006; Kumar, 2005). Though there could be expectations that the trustworthiness of findings could increase with a growing sample size, the researcher has preferred to follow a cautious stand to limit the researchable area of the target population into convenient sectors that were capable to be inferred into the target population, at least tacitly even to cases that seem remotely situated (Sakaran & Bougie, 2009; Bethlehem, 2009; Neergaard, 2007).

## **5.7 UNIT OF ANALYSIS**

Unit of analysis is the actual object or entity studied where the projected objectives and propositions are intended to address. In this context, the performance or reflection of the overall units of the case could be in terms of a single or multiple study design falling into holistic or embedded settings (Stake, 2013; Yin, 2003; Eisenhardt, 1989). Considering Yin’s (2009) and Tellis’s (1997) views, the design of a case in terms of unit of analysis could be a holistic (single or multiple unit of analysis in a case) or embedded (more units of analysis in a case). In other word, unit of analysis is defined as the point from where the researcher obtains data from investigations, which could be individual, entity, event, or a process, where if it is holistic the design tends to examine the unit of analysis globally while an embedded design pays attention to sub-units of a case (Singh, 2014; Lee *et al.*, 2010; Hepp, 2008; Stake, 1995). In defining the unit of analysis, a single or multiple units, as a holistic versus embedded were differentiated and designated for the study. Often in a single unit of analysis, the unit of sampling becomes the unit of analysis (Lee *et al.*, 2010; Hepp, 2008; Stake, 1995).

To address pertinent questions of “what” and “whom,” regarding individuals, groups, or organizations deciding the units that constitute the focus of the study was a core issue of the research design (Hodson & Sullivan, 2012; Hageman, 2008; Eisenhardt, 1989). In this study, the

unit of analysis was preferred to be the entire or holistic with multiple units (Hodson & Sullivan, 2012; Neergaard, 2007; Mathison, 2005) where patterns of convergence or divergence were drawn, in as much as possible by reflecting the formulated propositions in terms of each unit involved in the investigation. The units of analysis of the study has fallen into the category of multiple organizations, which enables to study each case by itself in a holistic body, and then, conduct a cross-case analysis in a multiple-embedded approach (Neergaard, 2007; Yin, 2003). This approach has implied that the study had to integrate the entire data from the field, including semiotic meanings and artifacts that supported the rationale of taking every case in its entirety as a holistic unit of analysis (Ryan, 2012; Hageman, 2008; Smith & Anderson, 2007) before considering them as parts of the central units of analysis in the cross-case analysis within the multiple-embedded settings as shown in Table 2.

**Table 2: A Matrix of Unit Analysis**

Type of Unit Analysis	Holistic	Embedded
Single	One case, one unit of analysis	Several cases, one unit of analysis
Multiple	One case, several units of analysis	Several cases, several units of analysis

Adapted from Yin (2009)

The units of analysis were studied in terms of reflections of participants’ activities emanated from the fact that a unit of analysis in qualitative method “embraces the belief that real-world activities cannot be isolated into variables” (Yamagata-Lynch, 2010: 6). Rather, the captured data was considered as a “trustworthy” of the unit of analysis enumerating the “living enclaves” of activities and relationships (Babbie, 2010; Yamagata-Lynch, 2010). The sectors selected for the study were in a holistic-multiple units of analysis, which enabled to conduct a “cross-section” and “cross-case” synthesis (Blaxter, 2006; Kumar, 2005) in the context of TTs.

## 5.8 SAMPLING METHOD AND SIZE

### a) The Method

Qualitative research method does not allow carrying multiple-case study because in the real world facts and opinions are rarely rational, though the potency of drawing on similar patterns across more cases could increase (Donmoyer, 2013; Ridder et al., 2009; Vaivio, 2008). As it is

apparent to the satisfaction of qualitative research method, the sampling approach has considered the necessity of addressing the research questions that had to be answered from a mere representation of a population, which is a purposeful sampling (selected constructs) or theoretical (logical constructs) (Li, 2012; Ridder *et al.*, 2009; Stake, 2005; Yin, 2003; Averbach *et al.*, 2003; Eisenhardt, 1989). It is worth noting, however, that the small size sampling approach has followed a systematic selection of cases in a way to cover the extremes of relevant but heterogeneous cases (Stake, 2013; Gomm *et al.*, 2013). In line with Patton's (1990) assertion, who is an authority on purposeful sampling method, the selection of the cases was based on satisfying the interests and objectives of the research from within the cases studied. In other words, the approach designed was a purposive sampling from which snowball sampling (chained cases) and opportunistic sampling (taking advantage of what may unfold), including linking sampling (relating traces or generations of interest), were the practical norms the researcher adapted (Ridder *et al.*, 2009; Neergaard, 2007), especially in the selection of participants.

Theory driven sampling method of the study at meso-level has followed an extreme or deviant and chain sampling strategy in order to draw transferable lessons by targeting relatively "problematic or successful" cases (Swanborn, 2010; Will, 2008; Neergaard, 2007) as is done in identifying end-user respondents. In addition, to show the theoretical logic used in selecting the samples, as Mason (2002) has illustrated, the choice was supported by clearly stating and explaining how the universality or transferability of the envisaged findings could extend beyond the specific studied cases. That is why the researcher has taken a "purposive" or "theoretical" sampling approach based on relevance rather than a linear representativeness of sampling (Li, 2012; Ridder *et al.*, 2009; Van Den Hoonaard, 2008; Neergaard, 2007; Yin, 2006, 1994). Hence, sites and respondents were selected by ascertaining that they are appropriate to address the research questions and clarify the curiosity of the researcher as felt to satisfy the research topic (Silverman, 2011; Silverman, 2010; Cooper, 2006). The logic followed in qualitative sampling, which is not interested in the proper sense of sampling of census, but to focus on specific phenomena in-depth, was also influenced by practical and resources considerations that bounded the researcher (Silverman, 2011; Silverman, 2010; Parry, 2003; Mason, 2002; Patton & Appelbaum, 2003). In selecting and studying the sampled cases, the researcher has used "transferability" logic to show how the findings of the study can produce literal, similar, or

contrary results of predictions and theoretical replications or refutations across the realm of TTs (Ryan, 2012; Vaivio, 2008; Parry, 2003; Voss *et al.*, 2002).

By taking Mason's (2002) argument, a purposive or "organic" sampling is adapted without forgetting the need of reshaping the frame of sampling in the process to suit the circumstances surrounding the sites and respondents encountered during investigation. To achieve the maximum representation of the cases studied, the relevance of purposeful sampling strategy to the subject of the study has been weighed against extreme, heterogeneous, homogenous, typical, critical, opportunist, emergent, mixed or triangulated cases, etc., sampling methods (Suri, 2011; Patton & Appelbaum, 2003). As Li (2012: 130) has shown, in a case study method "the most challenging step is to find good paired cases to compare, especially those ones that truly represent the two sides of the debate," which was achieved in the situation of this sampling method. Accordingly, in order to draw "transferable" lessons by targeting relatively "problematic or successful" case scenarios, more of an extreme or deviant sampling strategy was devised and implemented (Will, 2008; Neergaard, 2007).

Similarly, in selecting respondents from the identified sites of the sampled cases, the approach was to deal with a convenience or theoretical sampling (looking for people who can provide substantive knowledge) and "snow ball" sampling where the data collected led to other respondents to be included in the process of the study (Henning, 2004). In fact, the main point to consider was the setting (content analysis) and the people who were knowledgeable to shed light on the issues investigated (Henning, 2004). In situations where the potential number of respondents in the units of the analysis was expected to exceed more than 5, a selection by a representative approach was followed (Creswell, 2009; Babbie, 2010). As Mason (2002) has stressed, the researcher had the confidence that the cases selected were sufficient to reach a "theoretical saturation" by portraying the realities within the continuum of the sectors studied (Li, 2012; Babbie, 2010; Swanborn, 2010). The points set in the selection criteria had considered the following issues:

- 1) If the technology or handicraft is indigenous or traditional;
- 2) If it has survived for more than a century;
- 3) If it is authenticated for a traditional proper (indigenous or practiced by ancestors);
- 4) If it is still fulfilling socio-economic values (Yin, 2012; Gasiorowski, 1981).

The focus of the study was on extreme or deviant cases of TTs showing practices and activities that are, on one hand, on the verge of extinction or staggering to survive while the other reflects those technologies enjoying, to some extent, favorable conditions that enables them to endure into the future. This goes with Yin's (2012: 126) advocating that the "selection of contrasting cases in pairs, with one as the best to represent one side of the debate and the other as the best to represent the extreme side" as appropriate sampling method for the accomplished study. Contingently, shifting to another site or sample was not mandatory since the technology operating in the selected sites were not deviant from the set of assumptions. They were not victims of some sort of adulteration that could have forced the researcher to "drop and switch" to another sample sites or cases (Li, 2012; Will, 2008; Neergaard, 2007).

#### b) Sample Size

In deciding how many sites and respondents to select in a purposive or theoretical sampling, as Li (2012), Ridder *et al.*, 2009, and Mason (2002) have indicated, the number was not important but to ensure that the range and category were indeed sufficient to generate the data and information required in reaching a substantive conclusion. Unlike statistical sampling, case study employs small size of samples, which chooses cases that have the potential to replicate or extend the emergent theory or induction into the target population (Lee *et al.*, 2010; Flyvbjerg, 2006). It is obvious that TTs of the country are many in form and context, which is impossible to address all in a linear way except to pick specific cases where their analytic outcome could reveal explicable patterns across the sector. Without confusing a case study with a single respondent as in proper sampling (Yin, 2003; Stake, 1995; Tellis, 1997), the selection of the cases for the study were based on the researcher's judgment in terms of their applicability to the topic of the study. Since more than one case was involved in the study, a tentative model designed based on the results of the first studied case was subsequently adjusted to fit to the next case (Yin, 2012; Swanborn, 2010; Kumar, 2005). In fact, the unique or exceptional character of single case is its ability to explain, understand, and inform situations relevant in building a "trustworthy" theory or reaching generalizations, at least for similar cases in the target population (Stake, 2013; Blaxter, 2006; Yin, 2003; Perry, 2001).

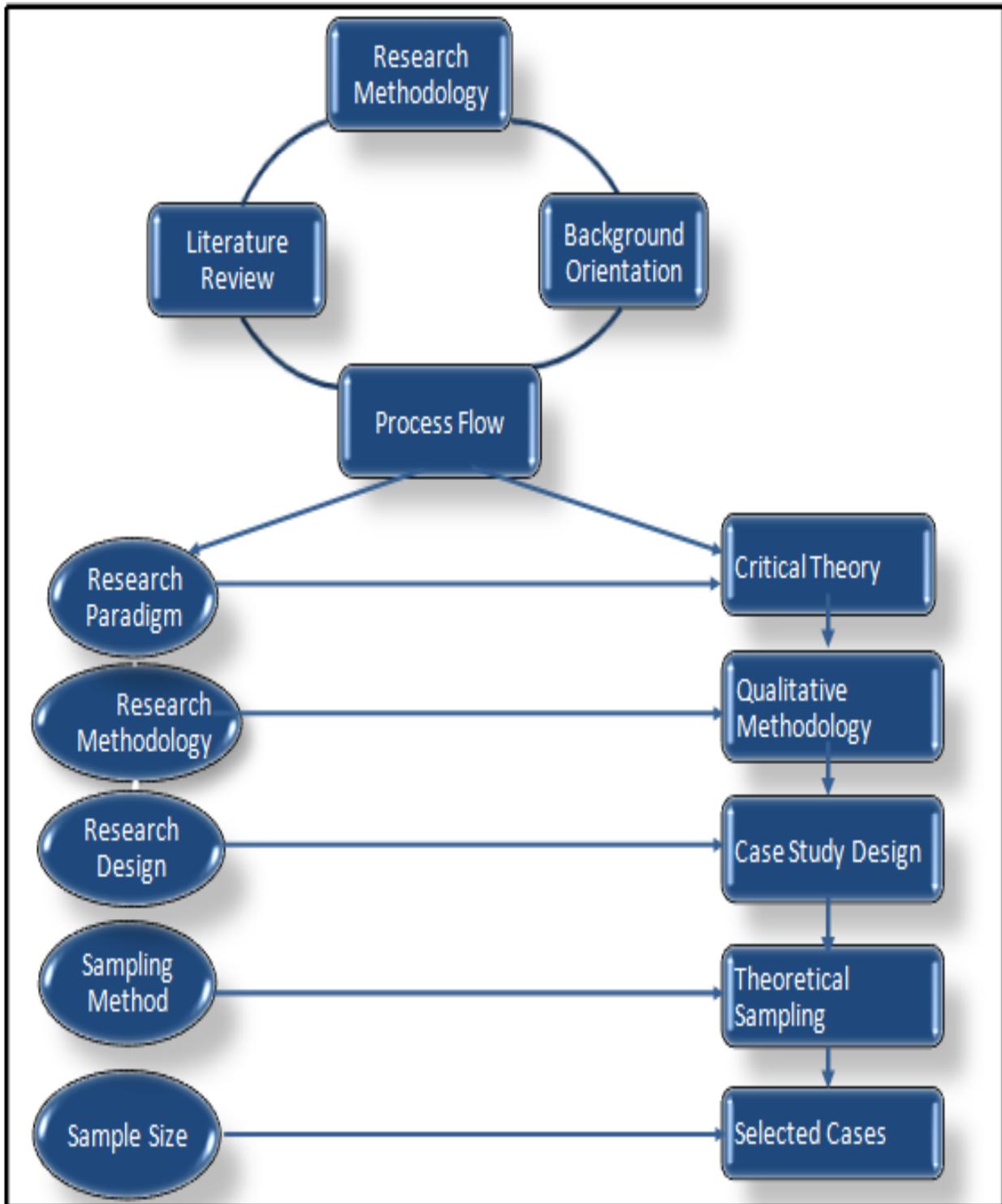
Theoretically, the ideal number of cases to investigate at a cross-case analysis level could go up to 4 cases while the number of respondents from the selected cases could extend up to 35

individuals or units (Li, 2012; Babbie, 2010; Perry, 2001), though the actual study conducted was confined to 3 cases and 27 participants. In fact, among the sampled cases the textile sub-sector (including small scale or cottage) of the country (as stipulated in the growth and transformation plan of the country) enjoys a relatively encouraging acceptance at societal levels and at policy-making levels (CSA, 2015; EPRDF, 2010). That is why it was taken as a sub-sector convenient to conduct the study with the belief that the relative acceptance could serve as a point of contrast (Yin, 2012; Will, 2008; Neergaard, 2007) in relation to the other marginalized TT sub-sectors. On the contrary, traditional medicine is frequented by around 80% of the population (Derese et al., 2012; Kassaye *et al.*, 2006; WHO, 2005) but left in bewilderment. Similarly, the sub-sector of traditional cosmetics was selected because it is a sector on the verge of extinction without getting recognition and appreciation it deserves. These sampled cases were purposely selected by making them to have five to eleven participants representing the extremes from those technologies still able to sustain but situated on extreme sides: a promised survival, on one hand, and doomed to extinction, on the other, as stipulated below:

1. Technology on TRADITIONAL MEDICINE (TM) sub-sector, which is denied the attention it deserves despite still playing a significant socio-economic role;
2. Technology on TRADITIONAL COSMOTICS sub-sector specifically on TUSH (smoke bath), where the original skill is observed to be on the verge of extinction;
3. Technology on TRADITIONAL TEXTILE sub-sector, specifically KABA (cloak handicraft), which is presumed to enjoy support and acceptance at government level.

The entire processes involved in research methodology and design, starting from articulating the views of paradigms from the perspective of the research undertaken up to the cases treated at the sampling method and size is portrayed in Figure 10.

**Figure 10: Flow Chart of the Research Methodology**



Source: Based on research methodology excerpts

## 5.9 MEASURING INSTRUMENTS

Instruments of measurement are the methods designed to collect data by understanding and gauging the main variables or constructs reflected in the units of analysis (Dul & Hak, 2008; Yin, 2003; Eisenhardt, 1989). In order to extract maximum data from respective respondents and the surroundings of the study fields, the responsible personnel to conduct the data gathering activity was the researcher himself. Personal emersion in the study has enabled the researcher to read hidden expressions, understand the unexplained psychological, emotional, and behavioral feelings, and was able to note body motions and unuttered language tones of respondents (Creswell, 2009; Kumar, 2005; Henning, 2004). That is why, the researcher was also taken as a measurement instrument by himself in as much as the designated instruments were applied (Leedy & Ormord, 2005; Patton & Appelbaum, 2003). This is also the reason why Cousin (2010) has to stress; “The self is not some kind of virus which contaminates the research. On the contrary, the self is the research tool, and thus intimately connected to the methods we deploy.” The main instruments used to retrieve primary data from respondents, sites, activities, processes, and artifacts of the cases studied were interview, observation, and discourse (Yin, 2012; Li, 2012; Damgaard *et al.*, 2001). Interview and observation have been the measuring instruments used extensively to ‘mine’ data because these are the tools believed to be appropriate in “digging deep” into the “lived experiences” of participants (Leedy & Ormord, 2010; Yin, 2009).

Secondary data was retrieved from relevant documents and archival records of various institutions, the on-line library of UNISA, and other credible websites (Creswell, 2009; Cooper & Schindler, 2006; Mouton, 2001). The process of measurement started by identifying tangible and intangible variables or constructs in continuous and discrete forms by reading the embedded meanings in terms of their empirical and conceptual construction (Ryan, 2012; Cooper, 2006; Kumar, 2005). The instruments were also designed to include “semiotics” data by capturing insights from artifacts, practices, signs, and symbols where art has been used for telling story nonverbally, which is one of the oldest forms of communication methods (Woodside *et al.*, 2013; Sellarberg *et al.*, 2012; Ann-Mari & Hillman, 2011; Lorenzo, 2010). In designing the instruments of measurement the researcher has ensured the capability in capturing and filtering relevant data, and, at the same time, ascertained that they are free of subjective influence (Leedy & Ormord, 2010; Creswell, 2009; Cooper & Schindler, 2006). In the process of retrieving primary data, the

stipulated instruments were used in repeated site visits and contacts, which enabled the researcher to establish intimate relationship with respondents until levels of data saturation and triangulation were attained (Swanborn, 2010; White, et al., 2009; Dawson, 2002). Re-tailoring and re-framing measurements of instruments apparent to interview, observation, and discourse in a manner to suit to the situation of participants and circumstances of the units of analysis was also followed when the need arose (Swanborn; 2010; White *et al.*, 2009; Damgaard *et al.*, 2001).

#### a. Interview

Interview is a communication tool through which, among others, the researcher tried to understand respondents' socialization practices, myths, rituals, activities, and articulation of culture using their language (Lincoln *et al.*, 2013; Stake, 2013; Woodside *et al.*, 2013). Language as a “marvelous invention” of humans is a tool used to convey thoughts and experiences through styles of interview or other means (Stake, 2013; Donmoyer, 2013; Ayres, 2008a). From the view of social constructionist, language is not only a technical means of articulating meanings and findings, but a conveyer of “value laden” feelings and experiences of participants (Cousin, 2010). The creation of meaning using language mediated through communication styles, ranging from gesture to symbolic interactions, is in fact the hall-mark of human identity (Bradford, 2012; Cousin, 2010; Waxler & Hall, 2011) where the conviction is that “social relations are fundamentally communication relations” (Bradford, 2012: 99). Further to this, Henning (2004: 50) has stated that:

*Research interviews are but one of many types of interviews—all of which assume that the individual's perspective is an important part of the fabric of society and of our joint knowledge of social processes and of the human condition.”*

Depending on the situation surrounding the units of analysis, the attempt to scale up the number of interviewees to include “mini-group” (2-6 members) or “focus groups” if the number of individuals warrants doing so (up to 15 members) (Babbie, 2010; Cooper, 2006; Wilkinson, 2003), all under the moderation of the researcher, was not feasible due to the fact that every respondent had a unique experience in relation to the specific nature of TT. The grouping aspect, the size of the population, and the nature of “friendship” or relationship among respondents, as charted in Table 3, (Kanuka, 2010; Cooper, 2006; Wilkinson, 2003) was heterogeneous, which

made the interview approaches of “mini-group” or “focus groups” unsustainable and unwarranted.

**Table 3: Category of Interviewees**

Study Cases	Type of Practitioners	End—Users	Others
TM	Traditional healer	Patients	Plants gatherer & aides
Tush	Smoke bath service provider	Gynecology patients and spa frequenters	Aides
Kaba	Traditional designers	Garment shops, elites, and the church	-----

Source: List of clusters of participants

The interview process has followed a “matrix” questioning approach (Fiegen, 2010) focusing, not on hypothetical or abstract concepts, but on the “lived experiences” of respondents (Abeysekera, 2010; Ayres, 2008a; Mason, 2002). This approach has enabled to become flexible in redirecting and influencing the data generation process by incorporating meanings not initially targeted or planned (Abeysekera, 2010; Yin, 2006; Dawson, 2002). In the interview process, respondents were encouraged to feel free in explaining their experience and convey the meaning they want to tell using their own language (Cousin, 2010; Perry, Wimpenny, 2010; Patel, 2007) while interacting with the researcher. The interaction has included the possibilities of creating an opportunity for a wider data “extraction” or “mining” through cross-fertilization with other instruments used in the process (Abeysekera, 2010; Leedy & Ormord, 2005; Mason, 2002). The interview questions that were derived from the central question of the research problem were divided into four categories each having sub-questions (Lewis-Beck, 2004a) (Annex IV), including those developed in the process of the interview generically and organically. The interview questions were arranged taking into account the alignment of their content and wording with the research problem and expected responses (Cooper, 2006, Kumar, 2005). In framing the wording of the interview questions, care was taken to make them convenient, biased free, understandable in vocabulary, and based on realistic assumptions (Cooper, 2006).

The questions were arranged and conveyed in simple words so that they were easily understood by respondents when asked one at a time, with provisions to add more instigations if

respondents seem elevated to do so (Fiegen, 2010; Leedy & Ormord, 2010; Trochim, 2005a). In interactions where respondents reflected body signs of irritation or discomfort, the researcher was watching alertly so as to switch or rephrase the questions to calm emotions (Fiegen, 2010; Leedy & Ormord, 2010; Trochim, 2005a). The questions raised to respondents were also sequenced from “icebreaker” to more depth where there was a probe after 4-5 questions followed by explanation of their ideas in a discourse manner (Henning, 2004). To standardize the research questions across the cases, the interview was formatted using interviewer’s guide or protocol (Annex I), which consisted elements ranging from open-ended (responses are not directed) to semi-structured (to check respondent wandering out of topic), and in some cases to closed-ended structures (possible answers set out), mostly in a face-to-face settings (Ryan, 2012; Yin, 2006; Punch, 2000). In conducting the interview Stark’s (2003) worry that normally, people enjoy speaking way-out of the topic, though their information could be interesting, was managed by the questioning approach, which has helped interviewees to stay focused on the topic at hand. This is an indication of the extent derailing opinions could have intermingled in the process of interviewing where the researcher has taken a maximum care in ensuring that facts or events revealed have indeed happened and the people and places for certain do exist or have existed from the context of the study (Ryan, 2012; Yin, 2006; Mason, 2002).

In the face-to-face interview, instruments of “interrogation” were applied in a unidimensional and multidimensional interactive approaches, at maximum for duration of two hours and at minimum for half an hour in each session, and in few cases, up to twenty minutes when telephone conversation was employed (Abeysekera, 2010; Cooper, 2006). The duration of every visit to the sites by the researcher, however, ranged from half to full day, determined by the number of respondents to interact with and the extent of observation required as per the schedule. The setting to conduct the interview was arranged in the premise of each sampled case, except for few interactions conducted at alternative places convenient for corresponding respondents. To pacify respondents, who turned out to be suspicious and hesitant without understanding as to what the motives of the study could be, sufficient explanation was given that there will not be any harm and the conduct shall remain ethical (Kumar, 2005; Trochim, 2005a). Official letters from UNISA to the addressee was also issued as a pacifier and confidence builder that the study was indeed intended purely for academic purposes. In addition to creating suitable environment

for respondents to release their information, designing a system that could help to control loss of data during interview was equally crucial, which was managed by:

- a) Using predesigned controlling format;
- b) Directing respondents to specific topic;
- c) Clarifying when events or meanings were not clear;
- d) Asking questions that can help respondents to air their views freely;
- e) Taking data at the interviewing process and interactions in order not to forget and not to get biased while engaged in analyzing the data (Abeysekera, 2010).

The respondents in the category of end users belonging to each case, who were introduced to the researcher by respective practitioners, have furnished the data and information of their experience and knowledge regarding the traditional products or services they have been using or adoring inherently. Considering the background of respondents in the cases studied (Cooper, 2006; Lewis-Beck, 2004a), which are often victims of stigma and social phobia, the researcher has taken care to monitor “reactivity responses” (altering behavior) that could have had the potential to detract the alignment of the retrieved data from the reality of the “lived experiences.” Generally, the respondents’ intentions and perceptions were not taken as incontestable knowledge or as free of deceit of the phenomena they reflect and represent in terms of the language and expressions they used, which made the researcher to be cautious in:

- a) The form and content of interaction apparent to individuals and groups;
- b) Arranging the sequence, turn taking, relevance, and boundary of the extent of conversations with participants;
- c) Characterizing the usage of language in terms of their performance rather than in terms of their description or intended meaning;
- d) Looking for “indicators and markers” of meanings and intentions in the conversation (Ryan, 2012; Cousin, 2010; Yin, 2006; Henning, 2004).

However, the duration of the interview was continuously checked to see if “saturation” was not “running high.” The process continued until no new categories were emerging. Every time data was coded or categorized, there was a rechecking for missing, misrepresented, and distorted facts that needed correction in subsequent interactions. Inherent encounters in conducting

interview such as getting different responses from different respondents (thereby making comparison and contrast difficult), weaknesses that could be revealed in collecting, inscribing, transcribing, and analyzing data, and potential interviewer influence on respondents did not surface as issues of concern. The data generation process was completed after the data required to address the research questions were sufficiently generated, verified for completeness, and their factuality ascertained. As Babbie (2010) and Trochim (2005b) have indicated, the researcher has taken prudent measures not to get trapped or biased due to deductions of “ecological fallacy” on accounts of deviant individual or erroneously retrieved data. The researcher has tried to understand and refine the data, which was recorded in a field note format based on Dawson and Catherine (2002) advise as designed in advance (Table 4), in case it emanated from ignorance, self-deception, delusion, fantasies, lies, etc. by following a “convergent approach” and readdressing them in successive interviews (Fiegen, 2010; Macfarlane, 2010; Dawson & Catherine, 2002).

**Table 4: Interview Field Note Format**

Case of Study: _____	
Site: _____	Interviewee: _____
Date of Interview: _____	
Time of Interview: _____	
Duration of Interview: _____	Subject of Interview: _____
<u>Questions and Responses:</u>	

Source: Deduced from Literature reviews

Actually, the interview process has considered that:

- a) If interviewing is partly conversation, then the interviewer must be a skilled conversationalist;

- b) If interviewing is partly the digging tool of social science, then the interviewer must be an effective nonthreatening interrogator;
- c) If interviewing is partly a learning situation, then the interviewee must be a willing student (Hart & Robert, 2007: 3).

To counter the critics on interview method regarding respondents who may incline to report a reality in an incorrect way for reasons of their belief or to behave in a socially acceptable way than revealing the truth (Rundle-Thiele, 2009; Dawson & Catherine, 2002), appropriate measures of triangulation using the results of other respondents and instruments were followed. Among the instruments of measurement relevant to interview, tape recorder was not used. The data was captured from live encounters by reading feelings and emotions of respondents as felt in the processes of interactions by the researcher: an insight, which could not be realized from data recorded in tapes or documents. This decision was taken after considering the need to pacify respondents exposed to stigma and, mainly for practitioners who fear of squandering trade and skill secrets in a sector often operating in “shadow.” To record their identity and engagement in situations where there is no deserving official recognition or acceptance by the wider public was not in their interest. Besides the face-to-face settings, to some extent, interview was conducted using telephone, which has the least operating cost and highest accessibility (Leedy & Ormord, 2010). Though telephone interview was intended to clarify ambiguities in the data and information captured in a priori interactions (Leedy & Ormord, 2010), actual interviews were conducted with two respondents, one regarding the Kaba practitioner for clarification on data from prior interactions and the second for full data retrieving. In the data retrieving telephonic interview, the interaction was with a cured Rh factor patient residing far around 800 kms away from the place of the researcher.

#### b. Observation

The observational method was employed as one of the main data retrieving instruments for the simple reason that in using qualitative method the measurement enables to capture information of a wider scope by using all senses of the researcher that could not be delivered otherwise (Gummesson. 2007; Hancock & Algozzine, 2006; Mason, 2002). Indeed, knowledge acquired by description of “intermediaries” typically from interview is a “second-hand” result while observational method offers firsthand experience by capturing data the interview or other

instruments could not deliver (Gummesson, 2007). Hence, the researcher has found observation to be suitable to view the units of analysis and respondents in a broader context at different times of interactions from multiple viewing perspectives (Bollingtoft, 2007; Hancock & Algozzine, 2006; Wilkinson & Birmingham, 2003). In fact, the ontological perspective in using observation involves reflections of human actions and the social arguments, which require depth or roundness of understanding (Bollingtoft, 2007; Hancock & Algozzine, 2006; Wilkinson & Birmingham, 2003). The observation method was conducted, mostly, at the exploratory stage or when access to direct data has not yet matured or was not easy, starting from unstructured form and then progressively moved into a structured procedure (Bollingtoft, 2007; Kumar, 2005; Lewis-Beck *et al.*, 2004b; Slack & Rowley, 2000). This instrument was useful because it enabled to easily comprehend the context of the phenomena, in addition to supplementing the other research instruments, by widening the flexibility of the retrieved data and information, and also it has helped in triangulating the quality of the data (Rundle-Thiele, 2009; Hancock & Algozzine, 2006; Dawson & Catherine, 2002).

When the researcher felt doubt of bias or intrusion in the process of interviewing respondents, triangulating by using observation was found to be appropriate to crosscheck the captured data in relation to the observed processes (Creswell, 2009; Ryan, 2012; Hageman, 2008). In order to take advantage of unforeseen data sources as they unfold, the observation in the study fields was conducted in a non-participant and free-flowing or flexible manner (Kawulich, 2005; Lewis-Beck *et al.*, 2004b; Henning, 2004). This was done by blending into the community of respondents without attracting the attention of participants and detracting the natural way of acting and behaving (Kawulich, 2005; Lewis-Beck *et al.*, 2004b; Henning, 2004). The observational instrument was conducted by the researcher himself both at covert and overt levels, sometimes simultaneously when the program of interviewing and discourse was administered (Evans, 2012; Kumar, 2005; Lewis-Beck *et al.*, 2004b). The covert approach did not technically mean being participant observer but was a way of enabling members to act naturally while the researcher still gets immersed into the source of the data to understand what was going on (Kawulich, 2005; Henning, 2004; Slack & Rowley, 2000). In conducting the process of observation, a due care was taken not to be obtrusive or “threatening,” but honest, and an assuring to learn not to impress (Kawulich, 2005; Wilkinson, 2003). This instrument gave the researcher a wider option to “mine data” extensively; it was especially helpful to capture data as

they surfaced naturally (Leedy & Ormord, 2010; Kumar, 2005; Lewis-Beck *et al.*, 2004b) in different stages of activities and interactions of the field study. The observational instrument has generated data without attempting to elicit directly from others but by following Cooper's (2006) methods of studying respondents and activities or processes at a non-verbal (body movement), linguistic (unarticulated expression), extra linguistic (interpretation of hidden meanings), and spatial relationship (distanced relations) approaches in unstructured and non-participant manner.

The use of observational method at the site of the units of each case studied, and, in some cases at respondents' convenient place, has included looking into who interacts with whom, contents of participants' communication with each other, and checking how much time was spent on various activities (Kawulich, 2005; Wilkinson, 2003; Peterson, 2000). As part of primary and secondary data gathering, the researcher has also tried to observe and understand the "semiotics" data of "artifacts" related to TTs in each unit of analysis (Kawulich, 2005; Lancaster, 2005; Wilkinson, 2003). The observational process was manifested at the descriptive stage (initial observation of everything), focused stage (observations supported by interviews), and selective stage (observing at delineated activities) (Creswell, 2009; Kumar, 2005; Henning, 2004; Punch, 2000). As noted below, the researcher has also taken in to account the worry of Douglas *et al.* (2012), Leedy Ormord (2010), and Cooper (2006) while dealing with observational method flaws that were closely monitored:

- a) Wastage of time and loose records of observations;
- b) Being available at the site while events were taking place;
- c) Adapt cost and time waste monitoring procedures and guidelines;
- d) Give sufficient time to understand covert activities;
- e) Check for subjective views and assessments;
- f) Overlooking the central issue and focusing on details;
- g) Become biased or confusing the actual observation with interpretation.

In addition, to capturing a rich meaning of the entire phenomena, observational method was also used to fill data gaps that were overlooked or missed by other data collection methods designated for the study (Gummesson, 2007; Mason, 2002). Through observation, the synergy among actors, nature of setups, difficulty and suitability of activities, evident challenges and opportunities, advantages and disadvantages of the practices, nature of relationship among

actors, unfolding of events, etc. were observed (Leedy & Ormord, 2010; Kawulich, 2005; Peterson, 2000) and recorded by the researcher in a predesigned field note book as drawn in Table 5. Among the limitations of observational method, as stressed by Kawulich (2005) and Peterson (2000), which include a bias that could emanate from the background of the observer like gender, ethnicity, class, theoretical approach, etc., were also well heeded.

**Table 5: Observation Field Note Format**

Case of Study: _____
Site of Observation: _____ Date of observation: _____
Study Case: _____ Time of Observation: _____
Unit of Analysis Observed _____ Duration of Observation: _____
<u>Data from Observation:</u>

Source: Deduced from Literature reviews

c. Discourse

Case study requires multiple methods of data gathering where discourse (recording naturally occurring conversations and interactions) as a measuring instrument of interactional tools of “talk” and “text” is used as additional data generating method (Babbie, 2010; Hageman, 2006; Prasad, 2005; Henning, 2004). Discourse as a composite of instrument and analysis models is a “none-linear” process used to describe and analyze data captured and abstracted as produced from people when discussing their information and experiences in intense and captivating conversations or pieces of writings (Oturu, 2011; Nahl, 2010; Leech & Onwuegbuzie, 2008). Discourse was employed in the process of conducting the investigation focusing to search for the meaning of language of the specific audience in oral and text format within the given purpose and setting (Babbie, 2010; Hageman, 2006; He, 2002). Procedurally, the instrument was applied

in the field during formal and informal discussions with respondents of the study, mostly intermingled with the interview and observation processes, including in interactions off-the-record before and after sessions. As Henning (2004: 119) has expressed, “participants use metaphors and, usually, these metaphors are pertinent indicators of meaning,” which prompted to consider the discourse instrument as a tool to “mine” data and triangulate the overall measuring instruments. This instrument has helped in bringing new insights to the study embedded deep in the language of respondents by looking and sensing at the symbolic and sentimental use of the language of participants (Babbie, 2010; Hageman, 2006; He, 2002).

In fact, the discourse instrument was useful in describing and constructing participants’ lived experiences linguistically such as issues of identity, community, emotion, knowledge, belief, etc., (Hageman, 2006; He, 2002). The metaphors from the discourses were used to convey meanings in communication by noting whether they were recurrent patterns or isolated instances (Babbie, 2010; Hageman, 2006; He, 2002). Using the recursive abstraction model, patterns of data comprising respondents’ philosophies, ideas, and beliefs drawn from the utterances of their language in a natural talk were “coalesced” together with apparent coherence without adhering to formal data coding and categorization procedures (Sousa & Magalha, 2013; Madichie, 2011; Oturu, 2011; Koskinen, 2009; Leech & Onwuegbuzie, 2008). The discourse data was further manipulated discursively, which implied a reduction of logic by incorporating extra but triangulating tools in order to mark or spot and abstract the repeating patterns in the process of interactive speeches between respondents and the researcher (Madichie, 2011; Floridi, 2010). That is why Lee (2002) claims there could not be a language standing by itself but in discourse featured in a given context and settings of specified audiences. But when it comes to discourse as an instrument, a reliable observable does not necessarily emanate from quantitative measurement; it could also result from the embedded deep meanings and feelings contained in the actions and expressions of respondents (Madichie, 2011; Floridi, 2010; Lee, 2002).

To triangulate the data generated from discourse itself, current or latest data were compared constantly with previous recorded or spotted indicators, categories, and patterns (Yemer, 2009; Elizondo-Schemelkes, 2011; Stillman, 2011). In a non-standardized or discursive interview (Prasad, 2005), the speech or communication “genre” conducted in the “meaning making” process has yielded information of the “lived experience” of respondents. Discourse “markers”

that were grasped and integrated into the identified and framed categories drawn from the patterns of the language used by respondents (Cousin, 2010; Henning, 2004) have complemented and enriched the information already retrieved through the measuring instruments of interview and observation. The process of discourse interaction, mainly, has focused on language games, interactions, sequences, turn of verbal moves, use of metaphor, and “allegory” (Myres, 1997; Bryman & Burgess, 1994), which enhanced the way to understand and spot the symbolic meanings contained in the use of language as they were uttered (Gummesson, 2007; Prasad, 2005; Henning, 2004). Ultimately, as Henning (2004) has indicated, data from conversation was generated by looking into the boundaries of timing and turn taking of participants, and by focusing on how:

- a) Conversation begins and terminates;
- b) Embedded meanings of the actions and metaphor of the language were reflected;
- c) Identities and roles of participants implicated in the process were scrutinized;
- d) The characteristics and sequences of the actions in the performance and usage of the language were revealed.

Focus to understand how participants make sense of their reality and how it was produced and maintained within the given social context was also stressed (Prasad, 2005). That was to know how the embedded meanings and actions or tone in the uttered language were found to be “packaged” with emotions, symbols, accusations, incidents, judgments, frustrations, future and past accounts, hopes, etc. (Gummesson, 2007; Prasad, 2005; Henning, 2004). Further to the technicality of the language, the researcher has also endeavored to understand the impact and implication of roles, positions, and relationships that could affect the behavior, knowledge, and reaction of respondents (Gummesson, 2007; Prasad, 2005; Henning, 2004). In applying the discourse method, recognizing the role of culture, has been scrutinized, which is usually an unaccounted feature of human condition (Henning, 2004) where the researcher had been well cognizant. The meanings of the language of some responses were laden with a “powerful” cultural meaning expressible in a single utterance, and occasionally, there were responses that resulted in “outburst” of emotions and feelings requiring a skilled handling or comforting the actors and managing a “discourse-rich” data (Henning, 2004).

On the other hand, there were responses not well articulated but the facial and body expression was full of meaning and, in some cases, there were encounters that tried to hide or escape the truth or facts due to influences of stigma, cultural, and background experiences (Prasad, 2005; Henning, 2004). The fine line between giving the interviewee more space and rigidly controlled or standardized interview was drawn in a line that yielded about “two-way” communication. The researcher has tried to create a mood of discourse in order to create a sense of “sharing not supplying” data and information (Henning, 2004). In the discourse interactions (Prasad, 2005; Henning, 2004), multifaceted data were captured from the actions and understanding of participants in their “symbolic” use of language that had the power of conceptualizing the recurrent patterns in the course of the meaning making process. The application of the discourse instrument did not take a turn by turn approach by participants as is often done in “ethno-methodology” but in its naturally occurring interactional process (Prasad, 2005; Henning, 2004). As Prasad (2005) has indicated, “storytelling” accounts had the power of immersing respondents in to moods often without finite forms where the researcher had to closely follow and redirect in order to delineate messy boundaries of data meanings captured from the interactions. In fact, in some discursive interactions of interviews, as indicated by Prasad (2005) and Henning (2004), the instrument was able to reveal more important meanings than the formalized questioning process where the following format of field notebook referred as Table 6 was used to capture and inscribe the discourse data:

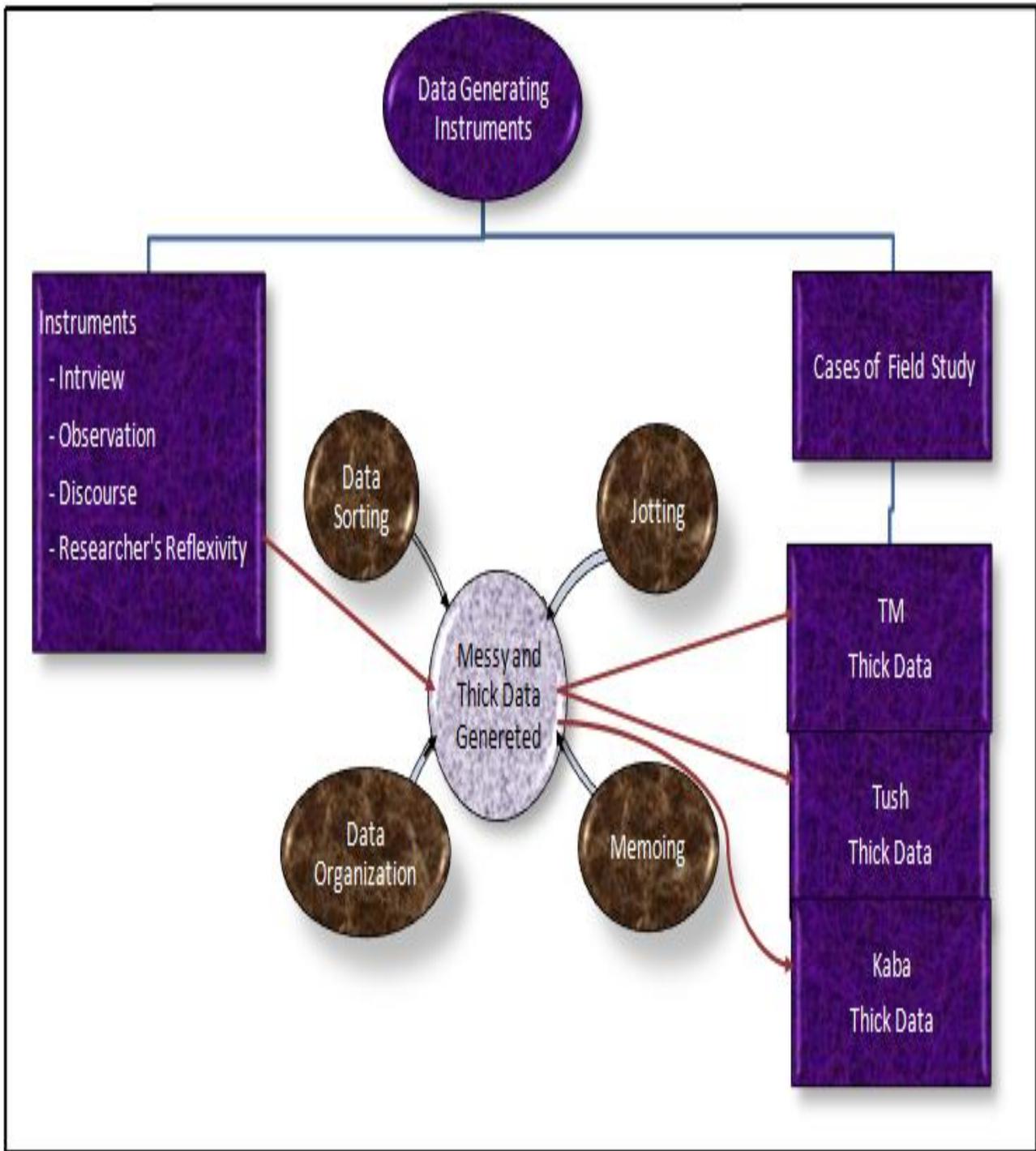
**Table 6: Discourses Field Note Format**

Case of Study: _____
Site of Discourse: _____ Date of Discourse: _____
Observed Case: _____ Time of Discourse: _____
Duration of Discourse: _____
<u>Metaphors Captured:</u>

Source: Deduced from Literature reviews

In general, the overall content and application of the measuring instruments of interview, observation, and discourse in relation to the matrix of data generation and management of the case studied is framed and revealed into a conceptualized model design of the cases studied in the manner portrayed in Figure 11.

**Figure 11: Context of Measuring Instruments**



Source: Based on measuring instruments excerpts

## 5.10 DATA GENERATION

### 5.10.1 Entering the Field and Retrieving Data

The activities involved in the data generation process were accomplished as per the format and conceptual frameworks indicated in the research design and methodological approach. The relationship created to facilitate the interactions and understanding with participants of each site was accomplished a priori to the actual fieldwork commenced. Before entering the fields of study, the overall profile of respondents and the activities in respective units of analysis were comprehended from the information provided by the personnel in charge of the cases studied and by the preliminary discussions and visits conducted thereafter. Subsequently, by presenting formal inquiry accompanied by letter of support secured from UNISA, permission required to enter into the field to proceed with the investigation was obtained (Elizondo-Schemelkes, 2011; Stillman, 2011). As much as possible, an introduction with respondents categorized as end users and practitioners were worked out beforehand, which bolstered the intimacy needed to smoothen the interactions that followed (Cooper, 2006, Kumar, 2005).

The consolidated relationship developed was also instrumental in containing the possible misunderstandings and lack of enthusiasm that could have surfaced in the process of interactions. As a result, the researcher was able to enjoy acceptance and cooperation from all respondents that enabled the generation of sufficient and genuine data and information (Cooper, 2006, Kumar, 2005; Mason, 2002). Each participant was made to have clear information regarding the intention of the study and the ethical foundations that were to be adhered. Almost all approached respondents, except few who feared the stigma, were willing and interested to participate in the study, which made the process of the fieldwork and the retrieval of data to go smooth. Based on the preliminary knowledge on the background and profile of participants, grouping and categorization according to the role they played was made in advance to the commencement of the data generation. Every measuring instrument designed and applied in the fields was effectively utilized by comparing against the predesigned checklist (Annex V) until “thick data” that could address the concerns stated in the research problem were generated. Such intimation was necessary in creating inspiration and forging lasting cordial relationship (Elizondo-Schemelkes, 2011; Stillman, 2011).

The first part of the visits with most of respondents was programmed for establishing acquaintances, consolidating relationships, and an overall introduction a prior to entering into the actual and in-depth interaction and investigation, except with some end-users where the contact was only once. The commencement of the actual measurement, which was the observation of the sites and general discourse with respondents, had to go through a “grand tour” in order to get the “initial pointers” that required especial focus in the cycles and visits of subsequent investigations (Mills *et al.*, 2013; Spradley, 2013). In the processes of the actual field research, the design of data gathering and the type of relationship established with respondents was being continuously weighed and “custom-tailored” in the sanctuary of the cases studied (Bhat, 2012; Creswell, 2009; Henning, 2004). In all field data gathering engagements, the researcher has taken at most care to control the varied but influencing factors that could have detracted the real meaning of the retrieved data such as dealing with less relevant respondents, accounting facilities and activities not part of the setting, and intrusion of foreign facts or events (Leedy & Ormord, 2010; Kumar, 2005). Taking such precautions, the data generation from the research fields was conducted within the frequency and span of time as indicated in Table 7.

**Table 7: Field Research Engagement**

Study Cases	Field Work Timing	Time Range	Frequency of Visits	Site Location
Traditional Medicine (TM)	2013-2014	13 months	15 times*	D/Birhan (135km)
Traditional Cosmetics (Tush)	2013-2014	6 months	7 times*	A. A.
Traditional Textile (Kaba)	2014- 2015	9 months	6 times	A. A.

Source: Field study register book

\*Including visits to supplementary fields

The data generation process has involved repeated contacts, in most cases, calling for more than one interactive visit with each respondent (Mouton, 2007; Kumar, 2005) except the practitioners who required the entire respective time ranges indicated in Table 7. The visits and duration of the study was longitudinal because the required visits to generate the data have gone from 6 up to 15 times for each case that ranged from 6 to 13 months. In order to ascertain the relevance of the data generated, the repeated visits and application of the designated measuring

instruments continued until levels of saturation and triangulation were obtained (White *et al.*, 2009; Dawson, 2002; Damgaard *et al.*, 2001). Although the researcher was prepared to give incentive payments to compensate for the extra time respondents spent with the researcher, while engaging during the repeated visits, he was obliged to effect payments only for one cancer patient in TM site from the contingency research budget account. The practitioners contacted and dealt with the data generation were, therefore, a healer of TM, service provider of traditional cosmetics—Tush, and designers of Traditional Textile—Kaba, while the end users were those who use the products or services provided by respective practitioners, and facilitators or aides who help the practitioners in routine duties (Table 8).

**Table 8: Research Participants by Size and Type**

Study Cases	No of Practitioners	No & Type of Users	Facilitators	Total
Traditional Medicine (TM)	1 healer	9 participants	1 plant gatherer	11
Traditional Cosmetics (Tush)	1 service provider	5 service recipients & 2 researchers	2 aides	10
Traditional Textile (Kaba)	2 (mother & daughter) designer	1 consumer & 1 retailer	-----	5

Source: Field Study Register Book

The process of data gathering from the investigations carried in the fields has endeavored to identify and understand:

- a) Role players and embedded values and qualities of the studied TTs;
- b) The basis in mentoring and developing successors of the skill or craft;
- c) Principles and ethics applied in producing and using the products or services;
- d) Inputs and tools or mechanisms of providing services and distribution of products;
- e) Uniqueness of products, services, and extent of competition;
- f) Challenges, problems, strengths, missing links, and future trends;,

- g) Basic facts excerpted that can answer the central question of the research (Kumar, 2005; Punch, 2000; Santora & James, 1995).

The process of data generation, which extended to all “action-based” dimensions (Mills et al., 2013; Oslon, 2010) and “symbolic representation,” has allowed the investigation of the tangible and intangible factors to extend into each unit of analysis’s actors, activities, occurrences of events, processes, inputs and outputs, time aspects, challenges and threats, problems and effects, role of stakeholders, feelings of participants, etc. (Mills *et al.*, 2013; Oslon, 2010; Spradley, 2013; Hammersmith, 2007). The frequency of contacts with designated respondents continued until sufficient and convincing data was retrieved or until no new categories emerged. Every time the frequency of the visits was increased, the intensity of intimation required to “mine data” that reflected deep feelings also increased. However, the duration of the interview was being checked to see if “saturation” was not running high (Swanborn; 2010; White *et al.*, 2009; Dawson & Catherine, 2002; Damgaard *et al.*, 200).

The data and information generated from each case during each visit was inscribed in a predesigned respective field note books by assigning numbers, scripts, annotations, and memos of meanings and effects in terms of their empirical construction and purposes of application (Cooper, 2006; Kumar, 2005). The inscription on notebooks began with a preliminary “jotting,” done by highlighting the “sense making” points captured from the fields (Alvesson, 2011; Silverman, 2010; Bazeley, 2009; Saldana, 2009). Preliminary jotting was used to start to code and format the data when collecting and writing in field notes. After every field visit was completed, the entire data generated from the fields were kept in respective field notebook and rewritten in a separate notebook segregated by the type of the instrument and by each case in order to facilitate data management, reference, and ensure custodian security. Rewriting the data from the field note books immediately after the winding of every visit was necessary so that all points of interview, observation, and discourse were fully integrated, ascertained, and triangulated before the events were forgotten (Silverman, 2010; Bazeley, 2009; Saldana, 2009). Since the language used as medium between the researcher and respondents was the same for interviewing and inscribing, there was no need to make a provision for transcription.

The generated data of inscriptions (words), transcriptions (from local records), descriptions (accounts, explanations, depictions) or memos of conceptual or theoretical ideas or reflections as

they came to the mind of the researcher during data collection process were further subjected to preliminary coding and categorizing in order to mark their empirical context (Vanden Hoonard, K. & Vanden Hoonard, M., 2008). In the process, new codes were assigned to emerging meanings (Babbie, 2010; Sillivan, 2009; Basit, 2003), which was also done side by side with the data generation activity that was in progress. As part of ensuring reliability, triangulation, and saturation of the data generated, audit of the activities and consent on the factuality of the data was secured from respondents (Yin, 2012; Sillivan, 2009; Dawson & Catherine, 2002), which was followed by tallying and charting the deduced responses with corresponding participants in a ramification format as charted in Tables 9,10, and 11. In effect, the data was scrutinized to ascertain no information, in relation to the units of analysis and the research questions, was missing. Every time data was coded and categorized from the field note books, there was a rechecking from where missing, misrepresented, and distorted facts were corrected (Kyureghian *et al.*, 2011; Babbie, 2010).

**Table 9: Type of Respondents on TM**

Anonymous Patients	Nature of Disease	Status of Disease	Medication taken	Responses	Remark from responses
Patient 1	Leukemia	Sick for 3 years, visited local and foreign hospitals. Finally, he was on the verge of death when he took TM	Syrup taken for four days	Improved condition	Severe diarrhea for four days
Patient 2	Chronic Asthma	Sick for 26 years. Used to visit many hospitals	Syrup taken for five days	100 % cured	No side effect noted
Patient 3	Cancerous tumor	Visited two referral hospitals but discharged as a hopeless	Syrup and Powder taken for a month	100 % cured	One day diarrhea
Patient 4	Cancerous lung	Sick for more than five years but not improvement	Syrup taken for five days	100 % cured	No side effect noted
Patient 5	Hebetates	Sick for 5 months. Visited hospital but no result. Finally referred to foreign hospitals	Syrup taken for 4 days	100 % cured	No side effect noted
Patient 6	Skin cancer	Sick for 2 years. Visited many hospitals but no result	A jelly ointment & syrup taken	100% cured	Mild diarrhea
Patient 7	Nerve	With the problem for 10 years	Ointment for two weeks	Not effective	Nor side effect noted

Patient 8	Classic Migraine	Suffered for more than 20 years	A powder taken with water for 12 days	100% cured	No side effect noted
Patient 9	Sickness of the backbone	Painful ailment for about 10 years	A powder boiled with honey taken for 2 weeks	So far good relief	No side effect noted
Researcher 10	Progressive vertigo	A problem that lasted for five years	A powder shaken in water taken for 10 days	Around 80% cure	No side effect noted since 1 year ago

Source: Field study register book

**Table 10: Type of Respondents on Tush**

Anonymous Respondents	Purpose of Visit	Status of Users	Type of Applications	Result
User 1	Skin care & relaxation	Dehydrated or dry skin	Smoke Bath and Jelly Ointment	Moisturized skin & relaxed feeling
User 2	Relaxation	Physical exhaustion	Smoke Bath	Relaxed feeling lasting up to a week
User 3	RH negative	Frequent abortions	Smoke Bath	100 %cured and gave safe birth
User 4	Gynecology problem	Unspecified	Smoke Bath	Fully cured
User 5	Gynecology problem	Pain and vaginal fluid	Smoke Bath	Fully cured
Researcher and his assistant	To study the experience	To feel the test	Smoke Bath	Amazing experience of relaxed mood

Source: Field study register book

**Table 11: Type of Respondents on Kaba**

Anonymous Respondents	Type of Relations	Purpose of Relations	Level of Product Acceptance	Remark
User 1	Commercial	Distributor	Very High	
User 2	Product Admirer	User	Very High	
User 3	Product Admirer	User	Very High	

Source: Field study register book

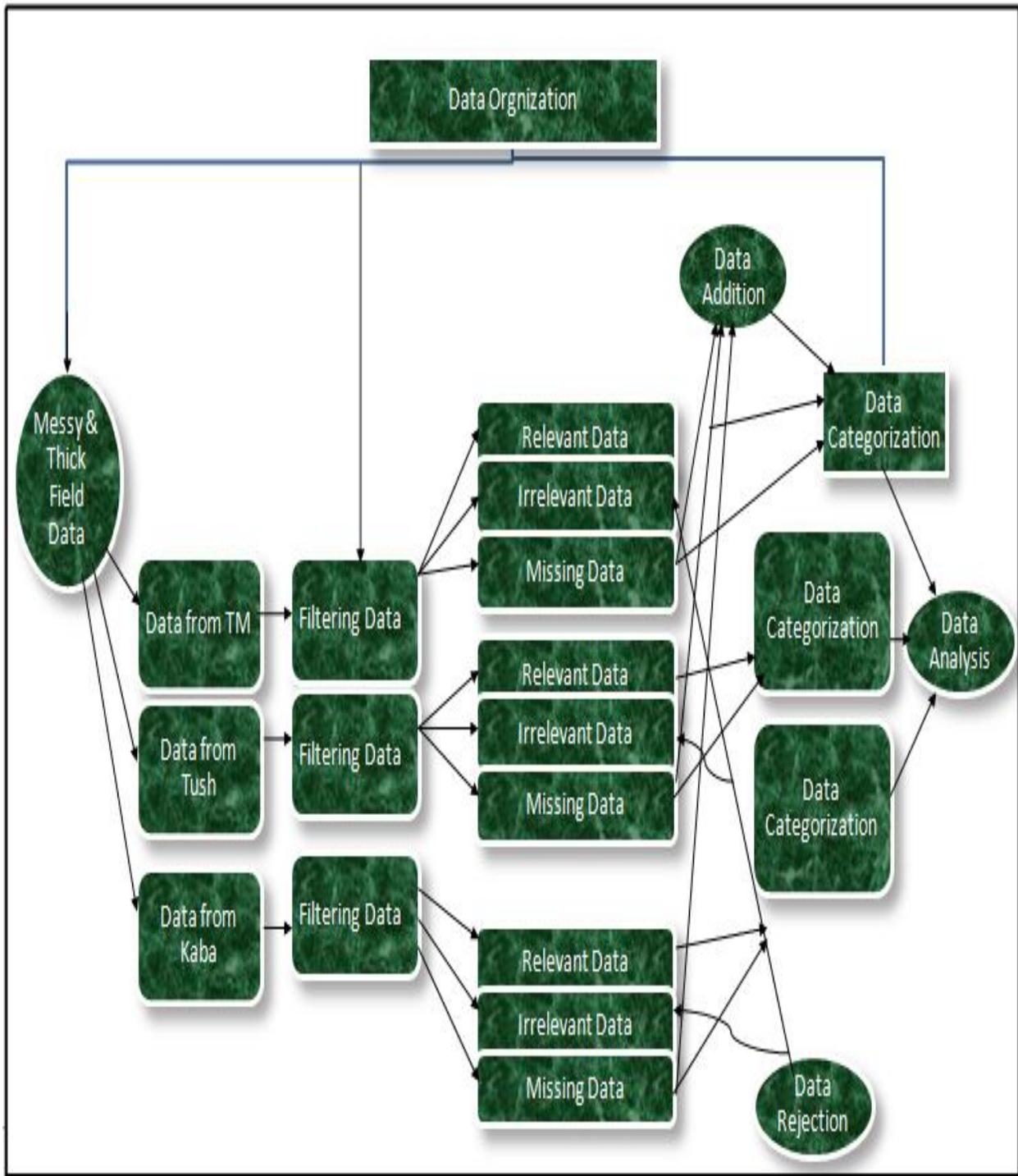
### 5.10.2 Field Exit

Before completing and vacating the field site, the researcher was convinced that the data required to address the research questions with their corroborating evidences were sufficiently generated, verified for completeness, their factuality ascertained, and that they were competent to conduct the next analytic works (Swanborn; 2010; White *et al.*, 2009; Dawson & Catherine, 2002; Damgaard *et al.*, 2001). Consequently, the response and cooperation of the research participants in providing the data and information the researcher was looking for was, indeed, found to be beyond expectation. The participants of the field study were so enthusiastic and zealous to support the field study. They were providing information without any reservation. At last, in an exit conference that heralded the winding up of the data generation engagement in each research field and with each respondent, as it was done in every starting and closing sessions, was carried with a statements of thanks expressed by the researcher to all respondents and facilitators to acknowledge the time and energy they spent to support the study (Creswell, 2009). In return, the reactions and feelings of many respondents, especially the practitioners, was full of enchantment and radiating hope that the study might result in alleviating the hardship they have been going through.

Based on the outcomes of this research, the hope of the participants expressed in the field exit conferences was that the marginalization the sectors have been forced to endure (except that of Kaba) might get mitigated, and the country that has been devoid of reaping the fruits of its technological resources due to its ignorance or illicit orchestrations perpetuated by sinister motives, might see the light of the days to come. In the exit conferences, it was made clear that the forged relationship with the researcher is going to continue up to the completion of the entire process of the research by reminding them that there could be intermittent contacts if issues in need of clarifications surface. Especially, practitioners were appreciated by the researcher for the unreserved cooperation and support they availed to the accomplishment of the study in a forward-looking manner. The remarks given to the practitioners by the researcher were to the extent of indicating the possibility of conducting further study afterwards that could help in their endeavors of conserving the TTs they own and value so much dearly. They were also given indications that the researcher could communicate the findings of the study if they want and also try to solicit technical support from advocators who might be willing to help them in alleviating

the plights they endure for practicing the daunting task of conserving TTs. Beside pacifying the participants of the field study, the researcher was also confident enough, at the field exit point, that the apparent activities of the data organization, conducted side by side with the data generation activities have culminated into a ramified format as shown in Figure 12 before embarking on the proper data analysis and interpretation activities dealt in Chapter 6.

**Figure 12: Managing Field Data**



Source: Based on data generation excerpts

### 5.10.3 Organization of Data

Before embarking on the proper data analysis and interpretation, organizing and reorganizing the generated “thick” and “messy” data in codes and categories was necessary (Alverson, 2011; Silverman, 2010; Saldana, 2009). To facilitate the coding and categorization of data, respondents in each field of study were identified numerically and their response to each question was equally given generic codes of numeric and alphabetic designates (Saldana, 2009; Seidel, 1998). As Alverson (2011) and Silverman (2010) have noted, codes were made to have smaller units of data representing meaningful themes, patterns, and relationships of interactions. In assigning codes and categories, examination of concurrence, overlap, sequence, proximity, and precedence of data was scrutinized (Ron, 2008; Dey, 1993). Codes sharing related characteristics or belonging to a family of a given data or concept were brought together from which the categorization and reorganization works had pondered (Alverson, 2011; Silverman, 2010; Saldana, 2009). The codes were also made to represent symbols, categories, concepts, perspectives, etc., in short phrases or words relevant to level each segment of the data structure generically (Sullivan, 2009; Benaquisto, 2008; Chenail, 2008). The organization of data from field notes was done in the form of inscriptions (words), transcriptions (from records), descriptions (explanations), all semantically sound (Bhat, 2012; Yemer, 2009; Walford, 2006).

In practical terms, the preliminary data coding, categorization, and annotation with corresponding remarks of analysis were done side by side all the way starting from the commencement of the data generation simultaneously (Sullivan, 2009; Benaquisto, 2008a; Chenail, 2008). The process of coding that facilitated the organization of data was expressed by circling, highlighting, bolding, underlining, and coloring significant and striking points worthy of attention on the field notebook (Sullivan, 2009; Benaquisto, 2008b; Chenail, 2008). In order to facilitate data management and ensure a secured custody of field notebooks, the entire data management process has followed the following 4 hierarchical steps for each studied case:

- a) Thick but Crude Field Notes—referring to the mass of “messy” raw data captured from the field and recorded in pre-formatted note books;
- b) Filtered Field Notes—refined data by “weeding” out redundant and irrelevant data from the formatted field note books;

- c) Categorization of Data—clustering similar data into designate sets that are believed to produce rich patterns of meanings;
- d) Abstracted Field Data—portraying rich and descriptive pattern of data by reading from the categories of the filtered data to reveal “local explanations” that were used as the basis for conducting the proper data analysis.

The first file of data organization refers to the “thick” and “messy” data contained in field notes as they were captured from interviews, observations, and discourse interactions made across the studied cases. The field notes in this file are full of details captured as much as they were uttered by respondents and observations made by the researcher. Memos and jots made by the researcher to clarify, stress, and question responses are also indicated and preserved in this field notes file. The second file deals with rewritten forms of the notes contained in the initial field notes, which was taken immediately after the researcher returned from the field visits with the intention of ensuring that none of the data generated were forgotten while inscribing in the field notes and reorganize to ease references for afterward functions and needs (Bhat, 2012; Alverson, 2011; Silverman, 2010; Benaquisto, 2008b). In this file, all the data generated from each case studied were refined, coded, and arranged in families. In addition, irrelevant and erroneous data and information were “weeded” out and further refined to sort out the irrelevant or wrongly recorded data without compromising its thickness. Data that needed farther clarification and questions that were not properly addressed were also sorted out and prepared to be addressed in additional rounds of visits. The third file has dealt with grouping the filtered data into similar categories from which patterns of meanings were drawn. Each category was having data and information that could be inferred to portray raw meanings captured from the study fields ramified in patterns or clusters before they were analyzed. In the final file, the filtered data was further trimmed into forms of abstractions segregated under different pattern levels of patterns from which the induced local meanings that represented the condensed but similar issues and concepts of units were established (Bhat, 2012; Alverson, 2011; Dey, 1993) (Annex I, II).

The data filtered from the “thick” and “messy” but crude field notes were taken as springboard for the data aggregated into categories by reflecting the “naturalistic environment” in each unit of analysis (Li, 2012; Whitelock *et al.*, 2012; Babbie, 2010). This was done in the form of assigning a priori codes (developed before examining the data), inductive codes (generated during the

examination of the data), co-occurring codes (overlapping codes), and face sheet codes (applying to a complete document or case) as relevant as the data turned out to be (Otur, 2011; Sullivan, 2009; Benaquisto, 2008c; Chenail, 2008). The reorganization of data was designed to reveal relationships and inductions between theories and the reality of the everyday life learnt in the field (Bhat, 2012; Walford, 2006) by adhering to the steps Lin (2012) stated:

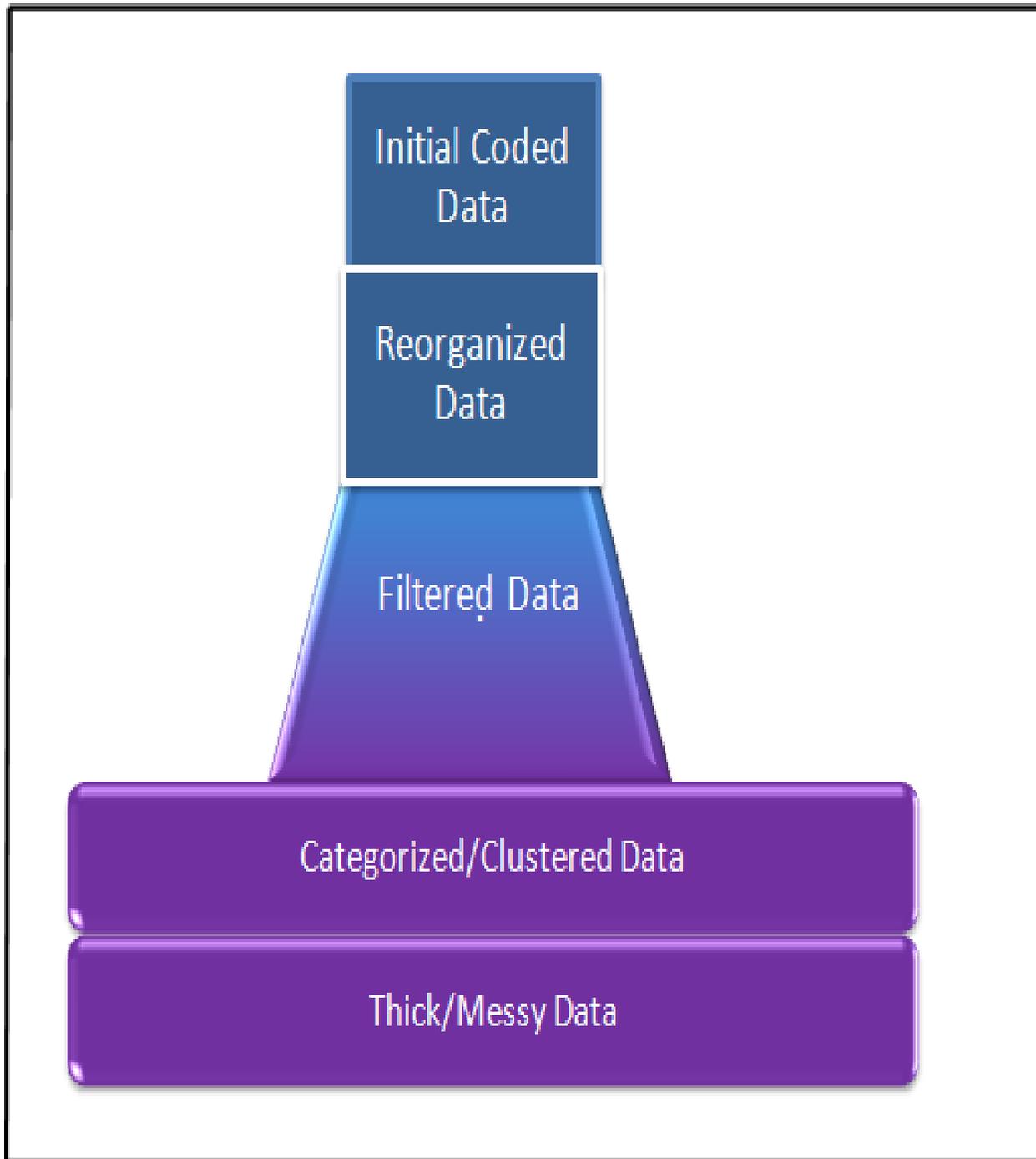
- a) Identify specific events as units of coding;
- b) Code each event in terms of its substance or content;
- c) Categorize related codes into open-ended groups'
- d) Further categorize grouped codes into higher level meta-categories (optional);
- e) Apply the same procedure in the entire process of coding during the analysis.

As Yin (2012) has stressed, data coding and categorization has continued until “theoretical saturation” was achieved by reconciling contradictions and sorting inconsistencies reflected in the data contents and structures. Even when there arose a need to reorganize the data in a different format believed to be effective for conducting the analysis, the entire or part of the data that was already categorized was rearranged to suit to the purpose of the analysis. To enable the coding of data in revealing the embedded concepts or inducing a theory, what Alverson (2011), Silverman (2010), and Saldana (2009) have indicated were considered as imperatives:

- a) Organizing the details to be arranged in a logical order;
- b) Categorize the data in clusters of meaningful groups;
- c) Interpretation of every instance for specific meaning in relation to the case;
- d) Identification of patterns that characterize the case more broadly than the specific cases

The generated data was so voluminous that a systematic design to scrutinize and organize was necessary. The patterns and meanings revealed in the process of memoing and reorganization of the data were essential to chart out the nature and extent of the data categories and clusters as complete records sufficient to conduct the data analysis. Though the data coding and clustering have been going side by side with the data generation (Sullivan, 2009; Benaquisto, 2008c; Chenail, 2008), further reorganization was made by using generic codes of representations of family or character similarities (Alverson, 2011; Silverman, 2010; Saldana, 2009). The overall portrayal of the data organization process is depicted in figure 13 as follows:

**Figure 13: Layers of Field Data Organization**



Source: Based on data organization excerpts

#### 5.10.4 Imputation of Data

In the process of data organization, the contents of the accomplished activities were scrutinized to ascertain that no data, in relation to the units of analysis and the research questions, were missing by looking into the details as indicated in the checklist (Annex V). Every time data was coded and categorized from the field note books, there was a rechecking from where missing and distorted facts were corrected (Kyureghian *et al.*, 2011; Babbie, 2010). The causes of the gaps in the data were identified whether it was from inadequate questioning, attrition of relevant participants, refusal to answer the questions, insufficient knowledge of respondents, recording errors, etc., and corrective measures were taken (Kyureghian *et al.*, 2011; Babbie, 2010). When a missing data was detected, the researcher has taken measures of “imputation” from the generated data or, in some cases, reconsidered additional fieldwork visits using redesigned measuring instruments (Kyureghian *et al.*, 2011). Because of the additional field visits conducted in two sites, some ambiguities found in a priori data were clarified, and minor gaps were mended by making grafts from the already generated data. This was done for the data captured from Kaba practitioners regarding the mentoring traditions of the craft, and one end user who was again contacted to get clarification and more information to fill gaps detected in field notes on therapeutic benefits of Tush practices. It was after the missing data were mended that the field work was taken as completed, saturated, and triangulated to proceed with the analytical works that followed. The approach of “imputation” to fill minor data gaps used were:

- a) “Grafting” and filling gaps from data dealing with same issues;
- b) Referring to response of other issues but by similar respondents;
- c) Taking data from the results of other measuring instruments on same issues.

### 5.11 SUMMARY

The research design and methodology used to conduct the study on understanding why TTs were not given the attentions and conservations they deserve, as far as they continue to play significant social and economic roles, and the secrets that helped the sector to sustain, despite the hostile environment, was a qualitative method that pondered from the Critical Theory Paradigm: a philosophical stance of world view of (Das *et al.*, 2008; Colton & Covert, 2007; Verbeke *et al.*, 1996). Based on this theoretical and methodological stance, the core constructs that have the

potential of defining the fate and versatility of conserving and transforming TTs of Ethiopia were identified to be *socio-cultural capital, leadership attitude, and entrepreneurial orientation*. The level of predictability of the relevant technological theories and the philosophical outlook the researcher has chosen have served as the critical viewing lenses to measure the role of the constructs in defining the secrets of sustenance and the predictability of their future vis-a-vis the underlying conceptual and theoretical frameworks.

Considering the level of marginalization and disorganization TTs of the country have endured (Punkhrust, 2010b; Yeneabat, 2007; Alemayehu, 2000), being often doomed to operate in shadow, the type of the qualitative research design assumed to be appropriate to conduct the research was found to be a Case Study Design. Case Study approach of research was preferred for the fact that the target population's "lived experiences" could be studied more naturally as bounded events of activities and realities in situations where the components of the cases cannot be dissected but comprehended in their entirety (Stake, 2013; Ryan, 2012; Yin, 2012). To conduct the research on the target population from which the sampled cases were drawn was taken as synonymous of the entire sector of TTs whose fate has been bounded to similar situations. That is the reason the cases captioned for this study were presumed to be sufficient in number and representative in terms of the sampling method, from which the findings could be inferred as transferable or generalizable to the target population (Lavrakas, 2008; John, 2007; Neergaard; 2007; Eisenhardt, 1989). The instruments of measurement found to be appropriate for qualitative method of research were also identified a priori, which had to be composed of interview, observation, and discourse (Creswell, 2009; Dul & Hak, 2008; Eisenhardt, 1989). In considering the instruments of measurement for capturing the data from the sampled cases, the reliability and capability of each instrument in terms of capturing and filtering the relevant data was well ascertained (Yin, 2012; Leedy & Ormord, 2010; Creswell, 2009; Dul & Hak, 2008).

After the designing of the methods and preparation of logistics was finalized, the process of data generation from the pre-defined fields of study, which included trips away from the capital, was conducted with repeated visits. After entering and interacting for a prolonged period of time with respondents "thick data" was captured. The data generated from the fields was then reorganized by making the process to pass through refining stages of recording thick data, filtering the crude data, categorizing the clusters, and abstracting from the filtered data to prepare

it for analysis. Going through such process was necessary to ensure that the data generated from the fields were properly and effectively organized and the foundation upon which the analysis pondered was complete, objective, and reliable (Swanborn; 2010; Ridder et al., 2009; White *et al.*, 2009; Grimm & Rihoux., 2006; Yin, 2003).

## CHAPTER SIX: DATA ANALYSIS AND INTERPRETATION

### 6.1 INTRODUCTION

The data generation process from the study field on which the data analysis and interpretation work was conducted has been accomplished in accordance to the conceptual and practical manifestations stipulated in the research design and methodology part of this study. In this chapter, the issues addressed are mainly those related to the activities of data analysis and interpretation, which were accomplished using relevant analytic models designed to extrapolate and manipulate qualitative data. The analysis of the data has focused to uncover the technological inhibitors and learn the secrets of their endurance that could be replicated or transferred to the domain of modern technologies, and work on methods relevant to conserve and transform the surviving ones for their socio-economic significances. The overall analysis of the empirical data was made by taking into account the need of constructing and interpreting the data through numerous iterations and corroborating evidences so as to achieve emergent grounded findings (Li, 2012; Stillman, 2011; Kanuka, 2010; Abeysekera, 2010). Relevant conceptual and theoretical models deduced from the literature review were used to relate and conduct an “in-depth” analysis (Li, 2012; Babbie, 2010; Vaivio, 2008).

Predominantly, the analysis has included interactional analysis such from which convergence or divergence of patterns and findings were underlined (Hillman, 2011; Creswell, 2009; Yemer, 2009; Yin, 2003). The data analysis and interpretation has presented detailed descriptions and discussions to show how the patterns contained in the cases studied were interconnected or conveying substantive meanings (Leedy & Ormord, 2005). The initial results of the analysis and interpretation were derived and consolidated in the process of breaking data into pieces as much as they were convenient to reveal characters and draw patterns by reading the indexed data (Stillman, 2011; Vaivio, 2008; Henning, 2004). From the analysis, tentative themes, concepts, and relationships among constructs within-site and across-sites were compared with each other in order to see if the evidences from each case fit well or poorly correlated with data and underlying theories. This has led to underline the applicability of the findings in terms of accepting or rejecting prevailing theories deduced from the literature review (Stake, 2005; Cooper, 2006; Yin, 2003, 1994). To conduct an in-depth analysis and ensure triangulation of emergent patterns and

convergence of findings, three models of analysis were applied where their synergy and internal integrity were scrutinized beforehand as discussed in the sections to follow.

## **6.2 MODELS OF DATA ANALYSIS**

Data analysis is a higher order of an “iterative” process that involves a constant comparison and interactions between data and analytical tools from which new conceptual postulates with the potential of developing, rejecting, or accepting the foundations of existing knowledge are established (Vanden-Hoonard & Vanden-Hoonard, 2008; Yin, 2003; Eisenhardt, 1989). As indicated in earlier chapters of the thesis, the reliability and quality of the data and information prepared for analysis and interpretation was ascertained through methods of triangulations and saturation by adhering to a systematic data coding and categorization methods (Creswell, 2009; Henning, 2004; Dawson & Catherine, 2002; Seidel, 1998). Though the data analysis, as appropriate to the nature of qualitative study, has commenced right from the data generation in the study fields and the subsequent reorganizing processes, delving deep into proper data analysis has taken after considering that:

- a) The entire data generation process has given confidence that the data was “thick”;
- b) The concerns of respondents were addressed competently;
- c) The process starting from data generation was geared to seek conceptual inductions but not unit generality;
- d) The research questions were addressed sufficiently in a manner to address the research problem (Yin, 2012; Stillman, 2011; Babbie, 2010; Shaw, 1999).

In formulating the design for the “in-depth” data analysis and interpretation, relevant conceptual and theoretical models deduced from the literature review were applied. The notions of an “in-depth” analysis in a case study connotes that the empirical data shall be interpreted in relation to theoretical concepts (meta-analysis), philosophical views (normative), and enrich the dimension of the inductions as much as the evidences could support (Li, 2012; Creswell, 2009; Hageman, 2008). The outcomes of the data analysis and interpretation were synthesized in order to produce results that enabled to answer the research questions and endorse or refute the formulated propositions as much as the inductive and deductive reasoning could justify (Li, 2012; Babbie, 2010; Mills, 2008). The viability of these findings was also seen in terms of

closing or narrowing the gaps deduced from the literature review (Pun & Nathai, 2011; Babbie, 2010; Punch, 2000). To arrive at the inductions, however, the data analysis and interpretation was designed in a way to present convincing arguments by using the following analytic approaches:

- a) Descriptive method—revealing the nature, settings, processes, relationships, systems, and actors of the sampled cases;
- b) Interpretation—showing how insights about the phenomenology are gained, new concepts and theoretical perspectives are developed, and the cause of the central problem that exists as deterrence in relation to conserving and transforming TTs are induced;
- c) Verification—revealing the construction and “trustworthiness” of the data analysis in terms of the relevant theories, propositions, and concepts with respect to TTs;
- d) Evaluation—looking into the viability of the methods through which the researcher ascertained the effectiveness of relevant theoretical concepts in respect to the analyzed empirical data (Otur, 2011).

The revelations of the data extrapolation have led to subsequent but higher data segmentation and categorization for further scrutiny in search of sound patterns and themes. Using the designated analytic models, the textual data that had passed through the process of data filtering, coding, and reorganization have been further extrapolated until the contents, magnitudes, and aspects of the entire perspective of events and practices surrounding the cases studied were revealed in a holistic fashion (Gold *et al.*, 2011; Babbie, 2010; Henning, 2004; Seidel, 1998). This approach has necessitated the need of delving deep into the following analytic activities:

- a) Reorganizing, reading, and coding the data;
- b) Categorizing and sub-categorizing the coded data;
- c) Searching and establishing patterns and meanings;
- d) Generating descriptions of themes from patterns of categories;
- e) Showing relationships, similarities, contradictions, and differences among categories;
- f) Advancing the themes into qualitative formulations;
- g) Concluding, deducing, and inducing meanings (Stillman, 2011; Leedy & Ormord, 2010; Creswell, 2009; Henning, 2004; Yin, 2003).

This process has revealed the recurring facts, consolidated the meanings captured, interpreted what people wanted and said, and what the researcher observed (Stillman, 2011; Kanuka, 2010; Abeysekera, 2010). The portrayal of the “concept mapping” that surfaced as a result of subsequent analysis deduced from the “nodes” of summarized themes and represented by linking lines, were tailored to fit into “matched patterns” (Guevara & Morgan, 2008; Trochim, 2005b). From these networks and links in “pattern matches” and “concept maps,” meanings embedded therein were revealed (Legget, 2012; Borner *et al.*, 2010; Hag & kinchin, 2008; Trochim, 2005b). That is to say, theories were induced from reading the “concept maps” reflecting the core categories of matched patterns of the social phenomena (Glaser, 2012; Christiansen, 2012). As stated by Yin (1994) and Eisenhardt (1989), each case was analyzed deeply and separately in “unidimensional” before “multidimensional” analysis was employed. This approach was followed because, “unidimensional analysis based on one meaningful social category tends to privilege and render dominant identity while obscuring the relationship between other identities, social context, histories, and lived experiences” (Ropers-Huilman & Winters, 2010:38). The system of analysis employed had the potential to investigate the subjects of the study by designing manageable units of analysis, which helped in understanding the underlying systemic implications and contradictions or tensions, and thereby pondered to induce a substantive knowledge or a grounded theory that could be “transferable” across similar situations (Yin, 2012; Boxenbaum, 2011; Creswell, 2009). In comprehending the conceptual “viewing lenses” the following analytic models promoted by seminal authors on qualitative data analysis were used (Hartman *et al.*, 2013; Li, 2012; Rishi & Gaur, 2012; Fay, 2011; Hillman, 2011; Babbie, 2010; Creswell, 2009; Yin, 2003):

- a) Thematic Analysis—building themes by looking at concepts from details
- b) Discourse Analysis—revealing deeply buried meanings from interactions of talk and text
- c) Cross-Case Analysis—synthesizing convergent or divergent patterns across the cases

### 6.2.1 Thematic Analysis

#### I) The Method

Thematic analysis is conceived as a “data reduction and analysis strategy by which qualitative data are segmented, categorized, summarized, and reconstructed in a way they capture the important concepts within the data set” (Ayres, 2008a: 868). In this analytic model,

methods of decomposing data using coding systems and reflexive readings were detailed so as to show how emergent patterns were revealed. Thematic analysis was applied to search for repetitive patterns overtly or latently found in qualitative data. These patterns or themes at a minimum have described and organized the possible observations and at maximum interpreted aspects of the phenomenon usually presented in meanings of networks or “web-like” illustrations (Hartman *et al.*, 2013; Rishi & Gaur, 2012; Fay, 2011). Lateral reading and interpretation of data as generated in the field was the starting point in conducting a meaningful “organic” analysis (Baseley, 2009; Yin, 2003). That is to say, the end outcome of thematic analysis was a description of patterns of emergent meanings and their properties revealed in the units of analysis in their natural settings resulted from close examination of the clustered data categories (Ezzy, 2002; Elizondo-Schemelke, 2011; Oturu, 2011; Stillman, 2011).

In fact, themes are not what respondents said but the understanding of the researcher in terms of the responses they convey without missing the consistency of meanings and the verbatim or quotes of responses (Hartman *et al.*, 2013; Rishi & Gaur, 2012; Fay, 2011). Theming was worked out by examining the data more than simple word frequency counts or “syntax associations” based on frequency and co-occurrence of key words (Phillips, 2002) established from substantive connections that entailed a “bit-by-bit” or “line-by-line” coding until “saturation” levels of regularities or irregularities were drawn (Bowen, 2009; Williams, 2008; Henning, 2004). The themes of the data were identified using code names assigned to more than one qualitative description conveying the same information (Rishi & Gaur, 2012; Fay, 2011) across groups common to more entities in forming “super-themes” or categories (Phillips, 2002). In matching themes, the category in rows were used to plot against those in column for specifying code names and patterns (Hartman *et al.*, 2013; Rishi & Gaur, 2012; Fay, 2011) that were abstracted from the complex data grounded both empirically (in the data) and conceptually (linked to the wider analytic context) (Maura, 2008; Williams, 2008; Henning, 2004). In fact, the thematic analysis conducted using coding and categorizing to extract and construct meanings from categories (Henning, 2004: 107) was done starting in the field study side by side with data generation (Firmin, 2008; Ayres, 2008) by ensuring that the data was:

- a) Technically integrated (link data from interview and observation);
- b) Ontologically founded (as constructions of real social or discourse of individuals);

- c) Epistemologically, knowledge and evidence were correlated to the reality of respondents and observations;
- d) Explanation was sufficient and applicable to a wider scope of the target population (transferability/generalization) (Li, 2012; Henning, 2004; Yin, 2003; Mason, 2002).

Ultimately, the data analysis work using the coding methods was viewed in relation to retroactive (historical data) and prospective (present revelation and the likely for future) concepts, practices, and predictions (Weick, 2010; Jans & Dittrich, 2004; Punch, 2000) where the organization of the refined data upon which the coding analysis was designed and conducted was ramified under the core categories as incorporated in Table 12.

**Table 12: Categorization of Data Clusters**

Study Cases	Type and Content of Data
Traditional Medicine	Background of the practice, practitioner and his patients; The setup of working areas, type and purpose of facilities and tools; Work processes, skills and roles of aides, and standards of practices; Types of medicines, sources of medicines, and dosages; Preparation of medicines, forms of medicines, method of applications; Sources and methods of gathering medicinal plants and other inputs; Diagnosing patients and methods of prescribing medicines; Condition of patients and reasons for their coming to the healer; Reaction of patients to the effects and results of the healing process; Overall acceptance of the practice and role of stakeholders; Contrasts between traditional and biomedicines; Method of promotion and marketing traditional medicine; Challenges and opportunities of traditional medicine.
Traditional Cosmetics	Background of practice, practitioner and the end-users; The setup of working areas, type and purpose of facilities and tools; Work processes, skill and role of aides, standards, and types of Tush services; Preparation of smoke bath and ointments, forms of services, and method of applications;

	<p>Sources and methods of gathering herbal plants and other inputs used in the preparation of the services;</p> <p>Purpose of the services provided to clients;</p> <p>Nature and reasons of clients coming to take the services;</p> <p>Reaction and feeling of patients regarding the effects and results of traditional smoke bath and ointments;</p> <p>Overall acceptance of the practice and role of stakeholders;</p> <p>Uniqueness of traditional cosmetics from that of modern spa and ointments;</p> <p>Method of promotion and marketing the service;</p> <p>Challenges and opportunities of traditional cosmetics.</p>
Traditional Textile	<p>Background of the art, designers and their end-users;</p> <p>The setup of working areas, type and purpose of facilities and tools;</p> <p>Work processes, skills required, types and standard of garment products;</p> <p>Sources and methods of acquiring materials and inputs;</p> <p>Systems of designing and level of technological support;</p> <p>Nature and motivation of customers who prefer cloak designs;</p> <p>Level of satisfaction and overall impression of customers;</p> <p>Overall acceptance of traditional textile production and role of stakeholders;</p> <p>Uniqueness of traditional textile design from modern textile products;</p> <p>Method of promotion and marketing the products;</p> <p>Challenges and opportunities of traditional textile production.</p>

Source: Data clustering worksheet

## II) Analysis at Data Coding Levels

In conducting the thematic analysis of data coding, pattern matching was used to compare similarities of observations to determine whether they match so as, at the end, to confirm or disconfirm the proposed propositions of the study (Woodside *et al.*, 2013; Hak & Dul, 2010; Ayres, 2008b). In fact, in entering into the proper data analysis, using the thematic analytical model, the generated data that have gone through stages of organization, filtering, reorganization, and categorization was analyzed using data analysis processes referred as open coding, axial coding, and selective coding as discussed below.

a) Open Coding (coding memos)

Open coding was used in the earliest phase of identifying and labeling themes or memoing raw data, which included labeling, delineating, linking, and renaming data units (Babbie, 2010; Oturu, 2011; Eisenhardt, 1989). The crude themes, concepts, and patterns induced from the data were further split into pieces and then reorganized and open codes assigned. In fact, open-coding was the first stage that lead to thematic analysis by dealing with emerging indicators, categories, dimensions, and patterns less redundant or duplicate data that escaped the filtering stage. In the coding process, care was taken not to destroy the natural meaning of the data due to “intensive coding” (Hartman et al., 2013; Oturu, 2011; Eisenhardt, 1989). The analysis of the data via open coding has shown the extent of the data and information the researcher has “mined” from each studied case by ascertaining that saturation levels were indeed attained (Hartman *et al.*, 2013; Rishi & Gaur, 2012; Fay, 2011). The coding of the data has enabled the researcher to draw patterns and themes inductively leading from lower stage to a higher level of analysis, which produced concepts that could be understood plainly from the surface. In analyzing the open coded data in the units of analysis, feelings and actions in terms of experiences and encounters were interpreted to reveal the underlying meanings of the lived experiences of respondents (Hartman *et al.*, 2013; Babbie, 2010; Oturu, 2011). The open coding stage of the analysis had incorporated breaking down data into discrete questions of what, where, who, when, and how in order to locate similar readings of conceptual labels “line by line” to bring an order and make sense of respondents information that matured to set the stage for axial coding (Annex VIII).

b) Axial Coding (conceptual memos)

Axial coding was used to position selected or core categories and codes in establishing connections and relationships, which implied that mere texts were converted into patterns of meanings revealing the lived experiences of respondents as conceptualized by the researcher (Hartman *et al.*, 2013; Fay, 2011; Babbie, 2010; Benaquisto, 2008). The conducted open coding was thereafter condensed into axial codes where the integration and grouping of similar data to make connections between themes of “collapsing/overlapping” categories of conceptual domains into single themes have created links of relationships among related open codes (Fay, 2011; Oturu, 2011; Babbie, 2010. Benaquisto, 2008). The process has continued until new incidents,

similarities, and differences aiming to integrate them around the “axes” of central categories were identified and exhausted (Hartman *et al.*, 2013; Rishi & Gaur, 2012; Oturu, 2011). The axial data coding was further scrutinized to reveal constructs of TTs, setting the stage for selective coding (Annex VIII).

c) Selective Coding (concept mapping)

Theoretical or selective coding analysis was used to explicate a graphic display of the story from the interconnectedness of the categories where one main category was related to another category with the intention of refining and integrating the central story by examining the relationship among the resultant axial codes (Hartman *et al.*, 2013; Rishi & Gaur, 2012; Fay, 2011; Oturu, 2011). The theoretical or selective coding has enabled to induce the central story from the analyzed axial data that need to be related to extant theories in the field so that the entire meaning and impact of the lived experiences of the cases studied becomes vividly understood. In the final part of the coding analysis, a selective or theoretical coding was “mapped” out from the core categories clustered around the axis where relationships of the fragmented theoretical skeletons were integrated and the emerging theory or models were established inductively and abductively (Hartman *et al.*, 2013; Fay, 2011; Glaser, 2012; Oturu, 2011). Still, there were data that did not fit into the dominant patterns of analysis or did not appear in the cross-sectional data settings, which needed a further assessment either to find the category where they can fit or abandon them as junk (Leedy & Ormord, 2010; O’Toole, 2010; Henning, 2004). Finally, the frequencies of the data analyzed thematically (Table 13) from the viewpoint of coding analysis has revealed conceptual themes defining the fate of TTs.

**Table 13: Data Coding Expressed Numerically**

Study case	Open coding units	Axial coding units	Theoretical coding units	Induced central concepts
TM	261	42	28	3
Tush	154	34	28	3
Kaba	130	30	26	3

Source: Counting the units of the codes

The splitting of the data into pieces and then reorganizing and manipulating until concepts and patterns of rich meanings were induced has finally resulted in open codes numbering to 261 in TM, 154 in Tush, and 130 in Kaba (Annex VIII). The coding analysis conducted on the results of the open coding across the cases studied has enabled the researcher to draw patterns and themes inductively that were condensed into axial codes numbering 42 for TM, 34 for Tush, and 30 for Kaba, which finally ended in to emergent theoretical themes numbering 3 each for TM, Tush, and Kab (Annex VIII). The variations in the number of the codes have indicated that the activities and interactions incorporated in the units of analysis do vary depending on the complexity of the contents embedded therein. Accordingly, the case study on TM, the most versatile and complicated due to the environmental pressures and the importance to the practicing public had to be investigated at a compatible level. The case of Tush and Kaba were relatively small and compact with less environmental interactions and pressures.

d) Analytic Reading of Data

The thick data generated from research fields were compiled, organized, filtered, and collated into categories of similarities or resemblances reflected through lateral, interpretive, and reflexive readings. Using the thematic data reading approach, substantive themes, concepts, and meanings were induced and related with the results of the data coding analysis. The potential of revealing emergent theoretical concepts from the analytical reading of data that extended to indicate the essence of relationships and associations between patterns of individual cases has served as a factor of meaning induction and triangulation as shown in Table 14:

**Table 14: Results of Analytic Reading of Data**

Study Case	Lateral	Interpretive	Reflective
TM	Many citizens depend on TM for health problems though operating under a hostile and protracted environment	TM is widely practiced in secret/shadow to escape punitive acts though they still play significant social and economic role	Inhibitors of TTs have denied the country from tapping the abandoned medical potentials and left users vulnerable to unchecked harms
Tush	The service is used to	Tush has cosmetics and	The spa & therapeutic values

	provide body relaxing & beautification benefits for women	medicinal values uniquely suited for females	lack government recognition which pushed the practice to the verge of extinction
Kaba	The technology deals with crafting of yarns unique designs & intended to be used on occasions and by dignitaries	The recognition given to the sector has resulted in the growth of markets and the motivation of designers	The affirmative measures given by government have saved the technology from extinction and paved the way for its transformation,
General patterns	TTs are widely used but remained weak and vulnerable when the environment is hostile but revives when the reverse is true	When TTs are denied acceptance, the practice remains secretive and end users operate in shadow	The benefits of TTs are huge but in constant extinction due to harsh measures by inhibitors deterring their conservation and transformation

Source: Data clustering worksheet

The non-linear thematic analysis conducted by reading the indexed data in a lateral, interpretive, and reflexive manner has enabled to discern semantic, logical, or theoretical links where themes, constructs, and domains of converging and diverging patterns were induced (Benaquisto, 2008c; Chenail, 2008c; Payne, 2004). As displayed in the above Table 14, lateral reading was used to look into the data of words, languages, interactions, formats, etc. as inscribed and memoed naturally or organically from the empirical data (Kanuka, 2010; Abeysekera, 2010; Weick, 2010; Chenail, 2008c) similar to the meanings derived from the open coding analysis. The meanings of the lateral readings resulting from the inductions of convergence and divergence patterns have indicated the extent TTs have been vulnerable or enduring depending on the hostile or embracing environments they encountered. In the interpretive reading of the indexed data, in depth analysis was conducted where implicit stories and feelings of the social settings represented by the phenomena (Benaquisto, 2008c; Payne, 2004; Mason, 2002) in par with reflections of the Axial Coding was induced. Subsequently, a reflexive reading was implied in generating, exploring, interpreting, inferring, and understanding the meanings of the data indexed in axial coding from the researcher's perspective (Maura, 2008;

Mason, 2002; Shaw, 1999) in par with the theoretical coding of the analysis. The inductions in terms of reflexivity was taken as a experienced by the engagement of the researcher with participants (Li, 2012; Stillman, 2011; Vaivio, 2008; Maura, 2008; Mason, 2002). The themes abstracted as emergent concepts were further synthesized so as to ensure the validity of the findings either in accepting, developing or rejecting extant theoretical models deduced from the literature review (Li, 2012; Cooper, 2006; Yin, 1994), which was guided by procedures set in a priori (Annex III), and as in the holistic but analytic explanations to follow.

### III) Analysis of the Cases Studied

#### a) Themes from TM Case Study

The analysis and interpretation of the data generated from the research field, where the case of TM was studied, has revealed the “lived experiences” of respondents in terms of overcoming their health problems using the skills and experiences practiced by the captioned traditional healer. The research participant practitioner believes that there is medication for all kind of diseases even for those terminal ones caused by metabolic dysfunctions. From the emergent thematic meanings indicated in the summary tables to follow, TM is perceived by respondents in the field of study that the practice is indigenous belonging to ancient Ethiopians. TM is believed to have been used in healing all kinds of diseases with the required levels of efficacy and potency, though their sustenance has been ever diminishing. The practitioner whose domicile is located on the periphery of the town called Debre Birhan, around 135 Kms away from the capital city where the field study was conducted, claims to have acquired the skill and knowledge of healing from experience, inheritance, coincidence, and from the benevolence of knowledgeable elders. Healing knowledge and practice is kept in secret by the practitioner even from family members for fear of theft by competitors and, in some cases, to prevent abuses in application by curios but ignorant adventurers. But, the belief with some respondents regarding the reason of keeping the practice in secrecy is because healers fears that if the knowledge of healing is exposed the potency and efficacy could be reduced or become ineffective, was also found to be another reason for the traditions of secrecy. Specially, knowledge and skill of TM in the hands of ordinary or illiterate people is discussed to be vulnerable to getting lost or being forgotten especially when the owner of the knowledge pass away.

All TMs being used by the practitioner are made of organic medicinal plants without any chemical combination. Medicinal plants in the form of particles or barks of woods, leaves, juice, roots, fruits, etc. are fetched from all over the country by the healer and by outsourcing to 35 collectors stationed in different localities where variety of medicinal plants grow. Collectors have to travel long distance that could involve enduring hardships extending up to confronting bandits, mounting terrains, enduring unfriendly climate, and confronting dangerous wildlife. In situations where the fetching of medicinal plants seem to entail real and evident risk, they are forced to have armed escorts. The plants are brought from the field dried or fresh, chopped and packed in sacks, bundles, or in jars, etc. Medicinal plants that grow in arid lands are more preferred by the healer because they yield more effectiveness than those growing in temperate and cold climatic zones. In fact, collectors have knowledge of the plants and some even know their uses in curing diseases. Clergies or *Debteras* of the church are preferred as collectors because they have the learning to recite selected psalms from the Bible that are believed to have the power of cleansing plants suspected to get stained by spirits or curses. Additional prerogative right that makes them a preferred gatherers by the healer emanates from the fact they can easily intimate liturgical manuscripts written in Ge'ez language that are believed to contain ancient medicinal records. Their accessibility to the compounds of churches and monasteries, which are an ideal sanctuaries of medicinal plants relatively saved from deforestation, also makes them the most preferred medicinal plant gatherers.

Diagnosis of patients by the healer is conducted using observation, interview, referring to medical records, or by touching sense indicators of the body. Unlike in biomedicine procedures, the diagnosis and prescription is done just in one go or in one “window.” The healer prescribes the dose of medicines by telling verbally or in writing specifying the amount, method, volume, frequency, timing, etc. patients need to adhere. The method of the application could be in the form of oral, ointment, smoke, steam, massage, shower, etc. to be taken before, after, or assorted with meals. The preparation of medicines by the healer is also kept in secret in his private house for reasons mentioned above except that he claims to have documented his knowledge for his own references. He also explained that the preparation of the medicines is done by drying, grinding, fermenting, boiling, blending, etc. of different medicinal plants to produce syrup, jelly, powder, etc. and finally they get packed in battles, plastics, jars, or wraps ready for prescription.

End users of TM visiting the healer were from all walks of life, especially those who reside in rural areas and the poor. In addition, affluent classes, Diasporas, and even opponents of the practice (officials, fanatics of the church, biomedicine practitioners, etc.) are also indicated as users, especially when they are contracted with terminal diseases often after they reached the stage of desperation. TM users who visit the healer are many, ranging from 20-50 per day including those who make their visit during the night to disguise their identity. Concerning the effectiveness of the medication, responding patients have confirmed that the results were found, more or less, to be as claimed by the healer. They have attested that they have not gone through noticeable risks or side effects except transit vomiting and diarrhea experienced by some cancer patients. In fact, many respondents have expressed their astonishment when they observe the healer treating hopeless cases. Two respondents, however, were skeptical while still using the medication because they were not yet cured as claimed by the healer.

From the interpretation of the themes, the economic and social values of TM that are believed to be immense where the majority of the population has relied for health and economic ends for generations, though the practice has never been recognized and appreciated by successive governments, in particular, and the wider public in general. The motive to realize the latent potentials in this regard is viewed by respondents as already wasted resource. They feel it is too late to recapitulate because they believe many indispensable TMs are already gone extinct due to the perpetuated marginalization. They also expressed a sense of regret of not being able to see the immense socio-economic values embedded in TMs realized as experienced by themselves and expressed by the practitioner. The accessibility and affordability of TM that goes up to providing freely to the poor has attracted the majority of the population to rely on the traditional healing. To the contrary, the practice has been tented as irrelevant, pseudo, dangerous, and unscientific by the attitudes of biased successive governments and by implicit enemies and/or competitors. Even many patients who have become cured prefer to go covert and were not willing to testify the results of TM to the investigation outside the healer's compound. Especially, affluent citizens, and HIV and STD patients do not want to be overt, even to their family members, that they have visited the traditional healer for medication. That was why many want to disguise their visits by making it during the night in a priori appointment.

As inferred from the responses of the respondents, the preaching of the church that associates the practices of TM as the making of evil spirits or “witchcrafts” is feared by many believers as being tantamount to committing a sin, which makes them to contemplate in using TM. The stigma of associating traditional healing to backward practices has also increased the rejection of the practice, especially by affluent patients who remain afar, or if they make a visit to the healer, often in secret and obscured. Many feel the environment TM is used to operate has been hostile, stigmatized, and outlawed to attract and engage practitioners and entrepreneurs who could have developed and commercialized the potentials of the sector. As revealed from the responses of the interviewee, no government has ever shown an interest to recognize, support, and endorse the medicinal practices of traditional healers. As a result, the responding healer has endured harassment and imprisonment that had extended up to demolishing his house and destruction of his medicinal plantation plot by local authorities, only for the reason of practicing TM. This kind of stigma and rejection against TM practices have created a culture of secrecy that ultimately resulted in beneficiaries to go in shadow and the healers to become secretive, which has been exacerbating the extinction of many TMs.

TM practices have been devoid of patent right, certification of standard, and judicial personality. Unabated failure to appreciate the embedded miraculous therapeutic potentials confirmed by respondents of the study, has deterred the initiations to conduct a proper research and promotional works that could have helped in alleviating the extinction, prosecution, and rejection the sector has endured. As a result of the marginalization and the stigma the practice suffers, end users are guided and informed about the healer and TM practice by “hear and say” or by word of mouth, which entails the danger of being distorted and even misleading. Hence, the core inhibiting factors as interpreted from results of the data analysis, that have made stigma, marginalization, and suspicion to reign in minds of the wider public against TM practices were induced to be:

- a. Discrediting damages made by pseudo practitioners who exploit the void in patent and certification have caused the public to fear and become suspicious about TM practices;
- b. Church teachings that tend to categorize traditional healing practices as attached to evil spirits and witchcrafts, which influenced believers to consider TM as a sinful act;

- c. Negative orientation of biomedicine practitioners who reject TM practices as scientifically unfounded practice;
- d. Punitive measures and rejectionist stand perpetuated by successive governments that have never tried to take TM as a political agenda, which created sense of insecurity and pushed the practice to extinction;
- e. Deforestation of medicinal plants has accelerated the demise of many inputs vital in preparing TM.

The inhibiting factors enumerated above have played a role in making TM practices as illegal, dangerous, uncertified, and lacking ethical standards. This could be taken as a main factor that has expedited the demise of many TMs and hibernation of the surviving practices. Especially, when it comes to the issue of conserving TM practices, respondents have a conviction that isolated individual possessions are the ones to be credited for serving as main instruments of conservation. Though insignificant, growing some medicinal plants in the compounds of gathers and the plot of the healer can be also taken as mere attempts to conserve the loss of medicinal plants from the reckless deforestation. On the other hand, the role socio-culture played as sanctuary in conserving TM practices has been found to be critical, though it is also getting eroded from time to time. On the other side, there are no signs of a daring leadership and entrepreneurial intervention that could venture to embrace a sector fast fading even from the socio-culture sanctuaries they have been embraced for generations. Hence, the findings of the thematic model used to analyze the data via coding analysis, analytic readings, and the interpretation of the emergent themes described above have led to the depiction of three inductive constructs: leadership, socio-culture, and entrepreneurship, which have played the role in defining the fate of TM. The centrality and criticality of these constructs induced from the lived experiences of TM case study is further explained in the summation Table 15 and in the ratio correlation of the coding analysis as shown in Figure 14.

**Table 15: Consolidated Emergent Themes of TM**

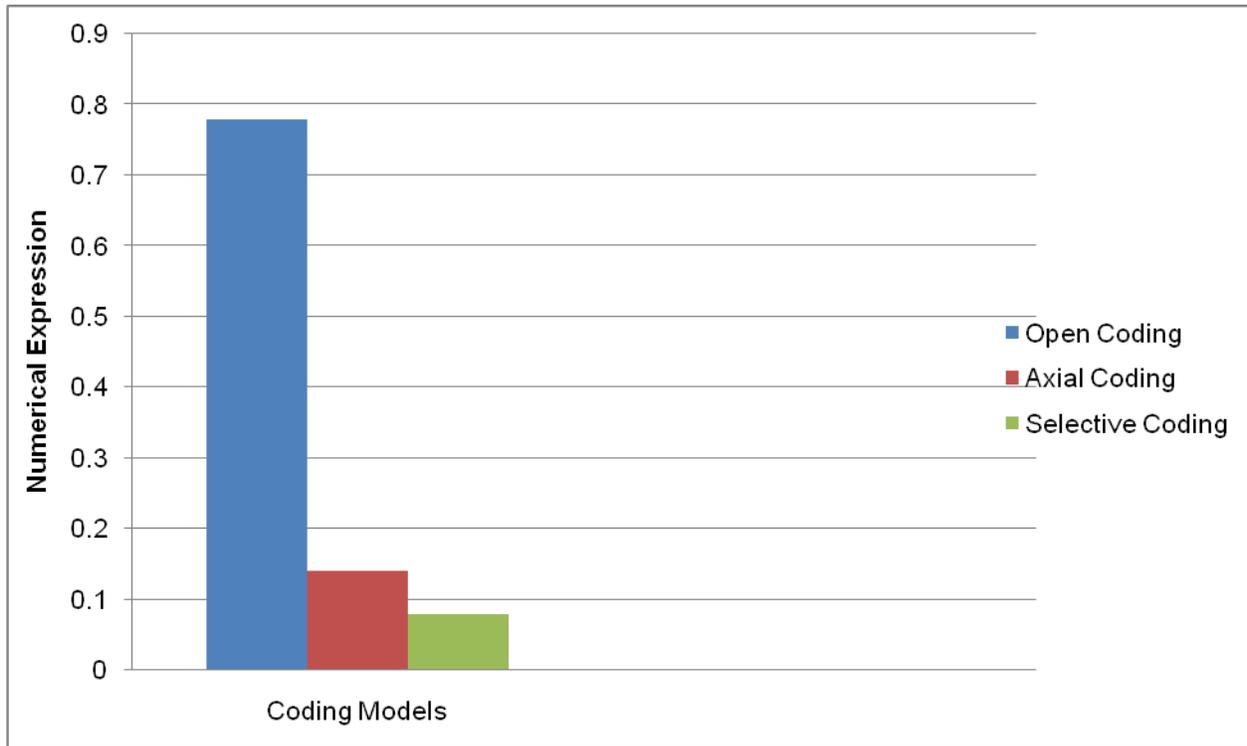
Emergent Themes	Embedded Thematic Meanings
History of TM	Historically TM has been practiced to cure all kinds of diseases and still used widely by the majority of the population though at a diminishing rate

Site and Expanse of users	The healer is stationed in the periphery of the town of destination and users are from all over the country with all kinds of ailments
Practitioner's Motivation	The healer was inspired to pursue TM after he observed the healing of his wound when a juice of plant was applied by coincidence
Mentoring of Knowledge & Skill	The skill and knowledge of TM of the healer was acquired from coincidences, investigating ancient manuscripts, mentoring by elders, benevolence of knowledgeable individuals, and by conducting own study
Sources of Medicines	The sources of the medicines used by the healer are entirely plants that are available throughout the country differing according to climatology and geological zones
Uses of TM	TMs of the healer are used to cure all diseases including terminal ones
Users of TM	The majority users are the poor, rural residents, traditionalists, and the desperate after contracting terminal diseases
Diagnosis and Prescription	Diagnosis is conducted by observation, interview, and referring medical records, and the dose is prescribed orally or in writing by indicating the amount, method, volume, frequency, time, and assortments needed
Results of medication	The effectiveness of TM, which extends up to healing terminal diseases is claimed by the healer and confirmed by almost all respondents
Complaints and Side effect	Most respondents have confirmed no side effects except transit vomiting and/or diarrhea by few
Setups and Facilities	The house has small compartment shared for residence and treatment, but the tools and facilities used in the process are kept in covert rooms
Inputs and preparations	TMs are prepared from organic flora and herbs in the form of syrup, jelly, powder, etc., packed in battles, plastics, jars, and wraps of pieces
Gathering of Plants	Input plants are gathered from all over the country by collectors and the healer encountering all sorts of hardships and risks humans & environment
Opponents and perceptions	Rejectionist attitude of governments, abhorrence by biomedicine practitioners, discrediting pseudo practitioners, and the bias of the church are evident making the environment of healers very hostile and suspicious

Socio- Economic Potential	The socio-economic potentials of TM are believed to be immense where the majority of the population still relies on though informally
Role of Stakeholders	The sector has never got proponents or associations who can stand to advocate and support the practices of the sector
Role of Government	Governments have been sworn enemies of TM, and have never been willing to endorse a single medicine to go official
Awareness Creation and Promotion	No stakeholder have taken responsibility either to promote or advise risks associated with TM, except to struggle by themselves in secret and users in shadow making information based on hear-say
Inhibitors of the Sector	Core inhibiting factors that have created the stigma, marginalization, and suspicion to reign in minds of the wider public against TM are: <ul style="list-style-type: none"> <li>a. Harassment and stigma by successive governments</li> <li>b. Damaging church teachings and agitations</li> <li>c. Rejection by biomedicine practitioners</li> <li>d. Discrediting acts of pseudo practitioners</li> <li>e. Conspiracy orchestrated by implicit/illicit enemies/competitors</li> <li>f. Deforestation of plants accelerating the demise of inputs</li> <li>g. Secretive hoarding of the knowledge in fear of stigma, accountably due to abuse by pseudo practitioners, and robbery in the absence of patent right</li> </ul>
Challenges and Threats	Many valuable medicinal knowledge and skills have vanished and the existing knowledge is continuously shrinking
Conservation of Skills/plants	Ancient manuscripts, sanctuary of monasteries, and gatherers and healers who plant in their backyard are conservation areas to be cited
Legal Framework	TM practitioners are devoid of legal personality, patent right, certification of professional standards, and real issues of security
Research Works	There are no in-depth and critical research works done on the subject of traditional healing practices initiating a shift in paradigm
Record keeping	Except for some records in Ge'ez, the vast knowledge and skill of TM is scattered, undocumented, and practiced in covert

Source: Thematic data analysis worksheet

**Figure 14: Thematic Data Coding—TM**



Source: Thematic data coding worksheet

b) Themes From Tush Case Study

Tush is a “household” traditional skin care technology mostly practiced in the communities of the practitioner where the knowledge and skill is passed from generation to generation customarily without records. Currently, Tush is provided in a very small scope in the capital city Addis Abeba but it is a common household practice in the practitioner’s place of birth far some 700kms away north of the capital. The skill owned by the respondent practitioner is kept in secret, except that she is trying to mentor her daughter on a job-training basis but she has not put her knowledge into records. She was motivated into the trade by the additional therapeutic effects embedded in Tush that she came to learn while working as a medical aide for MSF (Medecins Sans Frontiers) before 20 years. She claims that she is the only practitioner outside her community with the original knowledge and skill of practicing Tush while others who claim to provide the service following her suit in the capital city are pseudo practitioners without learning the roots of the skill and knowing the vital input plants.

The house where the practice is conducted is used for both work and residence. It is not conveniently laid out and is untidy. The house is rented and located in low-income quarters, but in the center of the capital city. The working rooms are poorly conditioned unable to regulate the temperature emitted from the Tush pit and the rooms are small, and at the same time of low standard. The tools used as masking gowns, shower rooms, heating pits, and resting mattresses are not conveniently designed and do not look hygienic. All inputs of the application are organic plants, without composite of any chemical ingredients, blended with butter where the preparation is kept and done in covert. The input plants are gathered from the practitioner's region and other far places mostly by employing contractual gatherers. The process of applying Tush starts by dressing a jelly material blended with butter over the naked body that has, thereafter, to be covered by a masking gown made of blanket before users sit on top of the heat and smoke emitting pit. The pit is designed to emit the smoke and heat directly into the groins and bath the inner body, excluding the face, which remains unmasked. After getting fully bathed by the smoke and heat for an hour, users shall take rest and drink honey juice. The juice is intended to restore dehydration, energize exhaustion, and cool the heat absorbed into the body. Finally, the end of the process gets over after taking a warm cleansing shower.

Besides the customarily benefits of the application indicated above, end users have confirmed that the practice has medicinal values especially useful for women. By comparing the advantages over modern spa, respondents have confirmed that the practice is beneficial as claimed by the practitioner without having any side effects or creating inconveniences. Customarily, the service by its virtue is intended for women, especially girls in bridal ceremonies. Tush is believed to have a multiplier effect in terms of medicating different diseases especially common to gynecology ailments on top of body neatness and fitness/maintenance gains. The practice is applied without following diagnostic routine procedures, but on demand bases. In consultation with the practitioner, there were also users from other regions including those from the Diaspora who even had tried to emulate the practice in USA. Though the awareness of practicing Tush is very limited and not widely known, the sector has not suffered a visible harassment but indifference, suspicion, and hesitance. In fact, the wider public is unaware and disinterested to know what Tush is all about except to look at it suspiciously. Marketing of the service is also hindered due to lack of awareness creation and promotional activities, which is mostly dependent on beneficiaries' word of mouth. The demand for the service is mostly seasonal that slacks

during Christians' fasting days because butter (anti-fasting) is blended as a component in the jelly prepared for application.

Noting the benefits one can get from using Tush by comparing with the advantages over modern spa, some respondents have proposed that the service indeed excels and should be extended to include men. Inspired by such encouragement, the researcher and his assistant have experienced the Tush bathing, which is taboo and not customarily for men, in a special arrangement disguised by the dark of the night. As a result, the researcher has confirmed that the practice is a relaxer and body cleanser as claimed by the practitioner and end users without creating inconveniences or noticeable side effects. Besides, even if the intention of Tush is for relaxation, body fitness, and skin care, the practitioner and some end users have claimed that the service also embodies therapeutic multiplier effects, which was attested by the research participants regarding curing of ailments mostly related to gynecology and dermatology. The practitioner was able to learn about the benefits of multiplier therapeutic effects for frequenters while working for MSF, which includes:

- a) They do not catch STD (sexually transmitted diseases) even if their partners do;
- b) Body odor is pleasant and the skin becomes clear and clean;
- c) The practice enhances physical fitness and natural beauty;
- d) Cysts and tumors germinated in wombs could be aborted or dissolved easily;
- e) The application is effective for weight lose;
- f) Dermatological problems are less common;
- g) Skin allergies can get easily treated;
- h) Menopause could be delayed for up to 65 years old;
- i) Rh factore, paralysis, nerve, and spinal cord patients can get cured;
- j) Gynecology related problems are less common;
- k) The practice is accepted as natural and organic makeup for women;
- l) Labor during delivery is minimal making the work of obstetrician easy.

The history of hardship surrounding the reality of Tush technology is not different from what is observed in TM. Despite the rejection the sector has endured, the irrefutable values attached to cultural expressions have helped the sector to sustain against the implicit and explicit counterproductive measures. The embedded spa and therapeutic values have given the practice

the impetus to survive for generations without getting the required attention, intervention, and recognition from responsible stakeholders, of course, restrictively to the enclaves of the owning communities. As complained by the practitioner, except to collect taxes and to create hindrance, the sector has never got government attention. The practitioner does not have any professional license or legal personality known to authorities except for a registration under “miscellaneous” for tax levying purpose only. That is one reason why the status of Tush is shrinking even in the community where it has been embraced. The entrepreneurial orientation is also so weak because the market and legal environment necessary for its development is not conducive. Efforts towards conservation and transformation of the sector are non-existent. Regardless of the economic, social, and therapeutic potentials, as respondents have asserted, no research work that could alleviate the deterring encounters has ever been done; showing that the core inhibiting factors for its conservation and transformation to be:

- a) Lack of government recognition and support in terms of providing legal personality, setting professional standards, issuing patent right, and ensuring security;
- b) Lack of entrepreneurial drives to create awareness and promote marketing of the values;
- c) Acts by pseudo practitioners who have been discrediting the true values of the service;
- d) Lack of access to financial, technical, and physical resources;
- e) Rampant deforestation that pushed many therapeutic plants used as inputs of the service to extinction.

It can be claimed that the social and cultural capital treasured by the practicing communities has served as sanctuary in harboring the technology of Tush. Otherwise, the actions and behaviors of successive governments have been detrimental and adamant to understand the practices of TTs, which is to blame for the wasted values and resources in this regard. Entrepreneurial orientation limitations have also contributed to the fate of Tush technology. It is regrettable that such a precious technological resources, has been doomed to wastage because the society was not fortunate enough to have entrepreneurs who can envisage the values that could have been commercialized and nurtured to guarantee its conservation and transformation. In general, the results of thematic model used to analyze the data via coding analysis, analytic readings, and the interpretation of the emergent themes narrated above have led to the depiction of three inductive constructs: leadership, socio-culture, and entrepreneurship. These constructs

have played the role of defining the fate of Tush technology where their centrality and criticality, as induced from the lived experiences of the case study, was found to be as indicted in the summation Table 16 and the ratio correlation of the coding analysis shown in Figure 15.

**Table 16: Consolidated Emergent Themes of Tush**

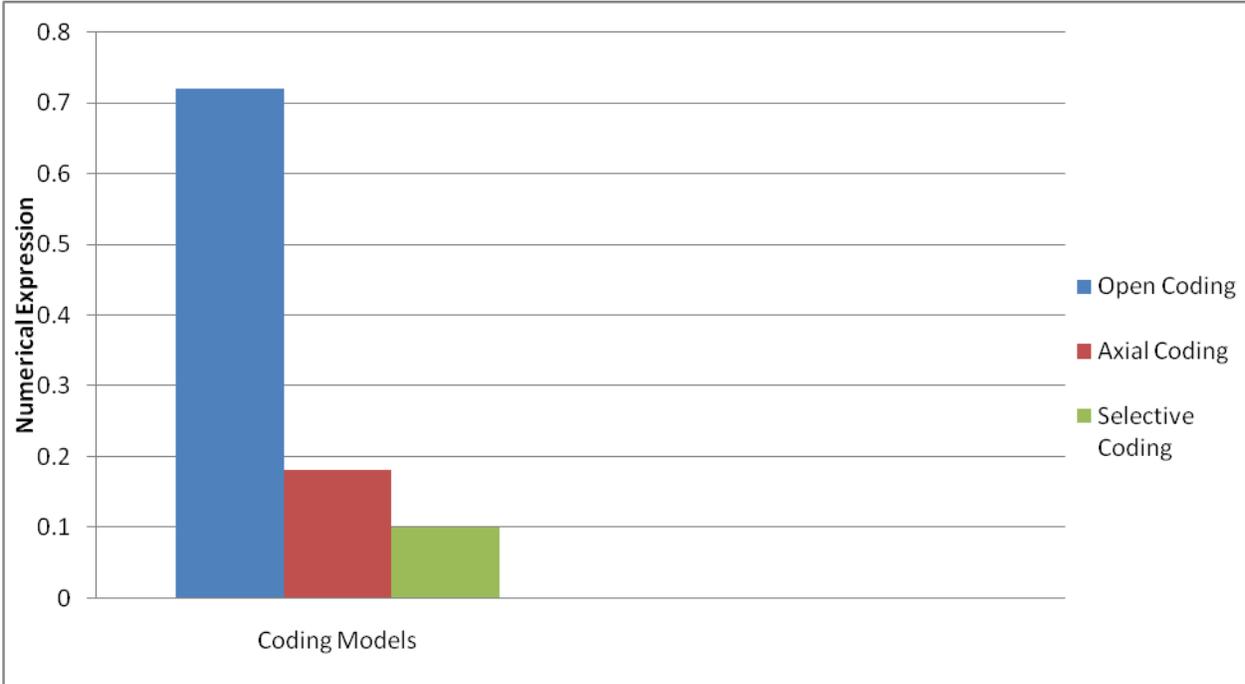
Categories of Emergent Themes	Embedded Thematic Meanings
History of the Technology	The practice of Tush, which had been in use around the royal circles for centuries as observed in edifice of the country's palaces is currently confined to few localities with some efforts to emulate in the capital city
Sites and Expanse of Users	The practitioner is located in low income area serving for users in the city and beyond who mostly belong to her region
Practitioner's Motivation	The practitioner is motivated to the trade by her community and by observing the health benefits of Tush frequenters while working with MSF
Mentoring of the Knowledge	The knowledge and skill of Tush, which is a household practice in her community, is mentored on the job by elders without keeping records
Sources of inputs	Plants that are used to make Tuh mostly grow in the practitioner's region
Uses of the Practice	Tush is used for body relaxation and cleansing, and treat gynecology and dermatology ailments
Users of the Practice	Only women, mostly from the practitioners locality, who appreciate the Tush are frequenters of the service
Diagnosis	Without following diagnostic routines, Tush is provided on demand bases
Results of the Service	Respondents prefer Tush than modern sauna because the feeling of relaxation lasts for days and their health conditions are enhanced
Complaints & side effects	Respondents have expressed that the application doesn't create any side effect or inconveniences
Setups and Facilities	The setup of the house, which is used both for work and residence is below standard, not convenient for users, and less tidy
Inputs and preparations	All inputs are organic plants blended with butter and the preparation, which is kept in covert, is in the form of powder, jelly, ointment, etc

Application of the Practice	The process starts by applying a jelly material over the body that has to be masked by a gown before users sit on top of the heat and smoke emitting pit and get fully bathed until exhaustion where after a honey juice is taken while resting to get restored before a cleansing bath is taken
Gathering of Plants	Plants are gathered from practitioner's region and other far places mostly by employing contractual workers though some are grown in her compound
Social acceptance and perceptions	The environment around which Tush is practiced is well accepted by society and end users though it is rarely known outside these enclaves
Opponents of Tush	As far as Tush is not widely known, there are no as such opponents of the practice, except ignorant and suspicious observers
Socio- Economic Potential	The potential of this technology in terms of relaxation and therapeutic aspects is found to be huge where one can't gain from modern spa
Role of Proponents	The sector doesn't have advocating bodies willing to understand the technology who can support in conserving and transforming
Role of Government	Except to collect taxes and to create hindrance, the sector has never got government recognition
Awareness and Promotion	The practice is unknown to the wider public, except in the practitioner's region, and promotion is made by word of mouth by beneficiaries
Inhibitors of the Sector	Inhibiting factors that have been pushing the sector into annihilation are: <ul style="list-style-type: none"> <li>a) Neglect by Government in taking affirmative measures</li> <li>b) Pseudo practitioners who have a discrediting impact on the practice</li> <li>c) Lack of access to financial and technical provisions</li> <li>d) Deforestation eroding many plants to extinction</li> </ul>
Legal Framework	Lack of official recognition has denied the practice from getting patent right and legal personality except issuing a trade license under miscellaneous for tax levying purpose
Conserving the Technology	No effort what so ever at government or advocators level except some plant grown in the compound of the practitioners to save them from deforestation
Challenges and	Due to lack of appreciation of the embedded values, the technology is on the

Threats	verge of extinction
Research Works	No research work has been done on Tush technology
Record keeping	The knowledge and skill of the practice is not kept in records but in the memory of the practitioner secretly

Source: Thematic data analysis worksheet

**Figure 15: Thematic Data Coding—Tush**



Source: Thematic data coding worksheet

c) Themes from Kaba Case Study

The respondent designer was attracted and inspired to the trade by the splendidly decorated Kaba products tailored to grace dignitaries and the church processions made by the skill of her aged mother who worked for 20 years in the workshop of the palace before the overthrow of the late emperor by the military regime. Her mother claims as the only survivor from the crew of designers used to produce original and genuine Kaba garment blaming the products currently in the market as “fake” that are detached from the original crafting skills. She has a serious complaint that pseudo practitioners, who use machine not hand, in designing and producing the Kaba garment are vices distorting the original quality and skill. She claims that the real and

original skill of crafting of Kaba exists only with her and her mother. Her designs are totally handmade that makes the products unique and able to portray the traditional qualities appealing to tailored markets. The skill is transmitted to the responding designer orally and on the job training by her mother. But currently, she is doing neither the coaching nor documenting the knowledge and skills as her mother did to her. She blames the youth who are disinterested and demean the value of owning traditional skills, though she stressed that she had tried hard to train some girls in vain. Because of such hurdles, she still seems to live in dilemma whether to abandon the practice because the work is so tedious and difficult to get aides, on the one hand, but also emulated by the affirmative measures government is giving to the sector, on the other.

The fabrics used as input for the production is provided by her employed weavers. The production process is indeed tedious that has to go through seven stages of crafting from start to finish. Though Kaba is an indigenous garment designing and decorating technology of the country, the decorative inputs materials called *Mukash* or *Work Zebo* are imported because many of the indigenous items have suffered extinction. To magnify the quality of decorating the entire design, embroidery work of silver, metallic, or gold ornaments are incorporated. Of course, if gold pieces are used, the product becomes more appealing but expensive. The inclusion of these components enhances the uniqueness of the product with a potential that can be transformed to encompass markets available around affluent classes of world fashion industry. Nowadays the original use of Kaba, which was confined only to grace royal members, dignitaries, and church processions, has expanded to include special occasions and celebrations conducted by the general public. The production house, which is used for both work and residence, is also very cramped because she feels that the workplace given for her by the government was not convenient for the nature of her work. Nevertheless, thanks to the affirmative measures the government started to take in supporting traditional and small scale textile technology practitioners, the respondent was inspired by the change of the ever skewed attitude at higher levels. The growing popularity and acceptance of her Kaba designs around the traditional markets due to attitudinal change evident in the society, as a result of the government's intervention, is rather the most motivating stance against her contemplations. Her mastery of the fascinating design and unique style, which is emulated by the affirmative measures, has made her more popular and even appealing to non-conventional markets too. In fact, the motive of the incumbent government in taking affirmative measures to support the SME entities dealing with

traditional textile practices emanates from the need to create employment opportunities and economic returns not for sake of giving a heed to the issue of conserving TTs per se.

Despite the overall marginalization of artisans perpetuated by government establishments, the royals and churches who have been frequenters of the Ethiopian culture of attire and costume, according to the responding designer, are credited for enabling the skill to remain conserved at least in the sanctuary of the palace and churches. On the other hand, the stigma and marginalization that went up to segregating artisans as outcastes at all echelons of the society had been a critical impediment for generations in nurturing and conserving the technologies that had never got the intervention they deserved. Artisans had a feeling that it was their products and services, not them, that were wanted. Especially, the Derg Regime had harassed and dispelled Kaba practitioners from the palace they count as their last sanctuary for centuries. As a result, all the artisans mentored by and for the palace services vanished and it was the mother of the respondent who only managed to survive and became a cause for the revival of the skill that is now getting nurtured including the mentoring of the respondent. Currently, however, the odds that have been haunting the sector for generation is defeated by the affirmative measures taken following with the advent of the incumbent government, which has saved the technology that was almost on the verge of extinction left under the mercy of the respondent's mother only.

The incumbent government is taking affirmative measures to support the traditional textile technology, which could herald the realization of its renaissance. In fact, the government has taken the entire textile sector as the main driver of its economic development and transformation programs. This motive has encouraged policy makers to avail lavish technical and financial resources to incubate the inner dynamism necessary for invigorating the traditional textile sector. Due to this intervention, the Kaba technology is experiencing transformation in designs, expanding its horizon of applications, and booming in transactions that has excelled into export markets. Other designers working in the market, though not with the original skill, are also helping the skill to flourish by copying the practice using machines, which of course, is poorer in quality than that made by hand—the hallmark of the product's uniqueness. As soon as the government began to nurture the sector, as expressed by the designer, it did not take time to observe the explosion of the latent economic and social potentials of the sector that was unthinkable just few years back. Small-scale associations are given ample support and protection

that extends to access free land and buildings, tax exemptions, technical trainings, access to financial services without collateral, legal protections, marketing and promotion opportunities, etc. The support is found to be instrumental for the revival of the skill and is luring the still hesitant responding designer convincingly to pursue with the trade.

As part of the affirmative measures taken by the government, the responding artisan has come across wider media coverage, which helped to promote and popularize her skill and products. Due to the fascinating artistic design of the product, the practitioner has transformed the conventional way of designing Kaba into modern styles of wear that can be used as casual and formal wears, especially made appealing to celebrities. In addition, her access to various trade fares conducted in and out of the country have enhanced the awareness level of the wider public contrary to the stigma prevailed for centuries. She is even given access to be part of many trade fare troops destined to markets and design centers of the world. Because of the marketing support, she has succeeded in selling her produces to head of states and dignitaries like those presented to President Nelson Mandela, Prime Minister Meles Zenawi, and 26 first ladies of African heads of states so far. The reality revealed in the case of Kaba technology is a solid testimony to confirm that the role of leadership in defining the fate of TTs is indeed decisive. As a result, the ground for the revival of TTs of textile is indeed becoming a real.

The changes and the revival that is taking place in traditional textile technology is so vivid in contrast to the hardship the practitioners of the sector were used to suffer for owning and practicing a technology they believed to be so dear personally and nationally. Though lack of entrepreneurial capability and orientation have been also blamed for the regrettable fate the sector was forced to endure, the subsequent motivation observed in taking and grasping the opportunities created thereafter are also found to be a major factor in creating and promoting markets of artisans. In summation, the centrality and criticality of leadership, entrepreneurship, and socio-culture induced from the lived experiences of Kaba case study is presented in the following Table 17 and in the ratio correlation of the coding analysis shown in Figure 16.

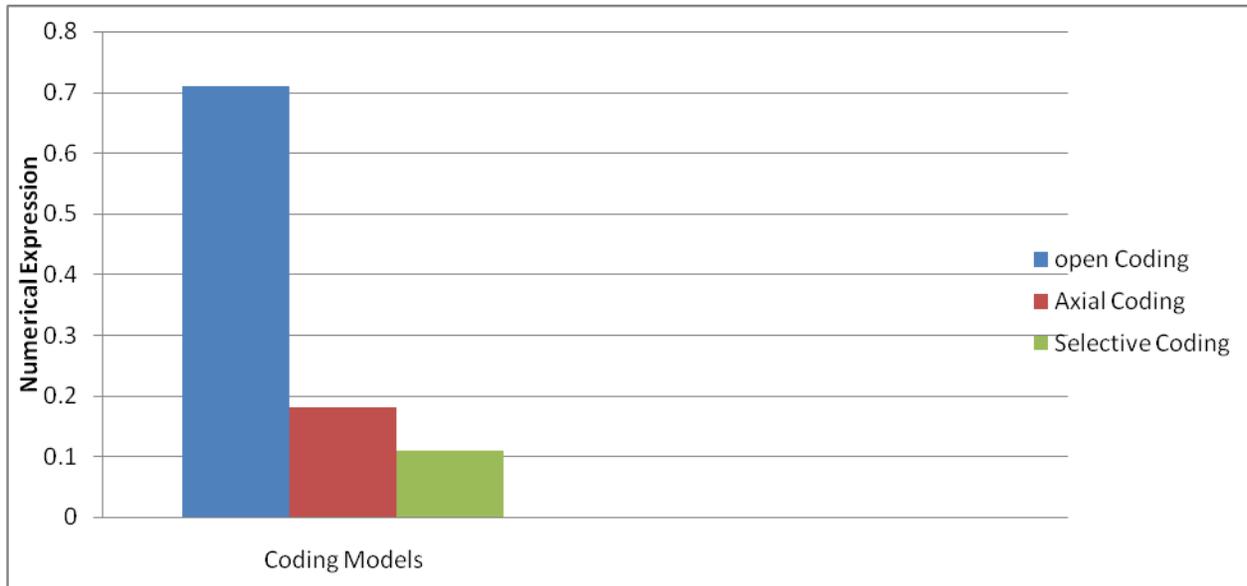
**Table 17: Consolidated Emergent Themes of Kaba**

Categories of Emergent Themes	Embedded Thematic Meanings
History of the technology	Kaba is an original and ancient garment design that has been in use to grace dignitaries of the royal families and clergies of the church
Sites and Users Expanse	The designer is located in a shanty zone of the city and the products are sold on order basis to users like the church, cultural attire shops, occasions, etc.
Practitioner's Motivation	Initially, the designer has been inspired by the skill of her mother and currently, by the affirmative measures taken by government
Knowledge and Mentoring	The practitioner and her mother have claimed to be the only genuine designers of Kaba where the mother used work in the palace and in turn she mentored her daughter though currently no effort of mentoring is done
Uses of the Practice	Originally, the product was used to grace and magnify high level personalities, decorate church processions, and cover church icons. Currently it has extended to mark occasions in the public arena and applied as formal and casual wear and as gift presented for VIPs
Users of the Practice	The church, royal families, dignitaries, and currently, celebrities, and personalities of public occasions are users of Kaba garment
Setups and Facilities	The work is done in a cramped condition in her small house used for both work and residence because she did not find the house provided by the government convenient. Singer machine and needles are the rudimentary tools in use
Processes of the Practice	The production of Kaba has to go through seven stages starting from weaving to finish supported by employed weavers.
Sources of inputs	Decorating materials are imported and the yarn to produce the Kaba garment is made by her employed weavers
Designs and Styles	Kaba which had limited purpose is currently diversified to embrace the markets of the wider public. To magnify the quality of decorating, the entire designing is made with silver, metallic, or gold ornamented embroidery
Effects of the	The product is highly accredited and accepted for reflecting the mark of

design	identity of dignitaries and gracing occasions
Cultural Perceptions	The stigma that had prevailed in the wider public, which was despising artisans is now defeated by the affirmative measures taken by the government
Role of Stakeholders	Though there are no such volunteer advocators, the government is taking all required affirmative and nurturing responsibilities the sector requires
Role of Government	Prior governments have been rejecting and marginalizing the artisan of the technology considering them as outcast citizens. With the current government, the sector is enjoying all round support that can realize its renaissance
Socio- Economic Potential	The traditional textile sector has already proved to be a viable economic and social activity believed to create high employment
Awareness and Promotion	The wide media coverage and various trade fares conducted in and out of the country have enhanced the awareness level of the wider public
Inhibitors of the Sector	Currently, pseudo practitioners are the only vices distorting the original quality and way of crafting
Challenges and Threats	The sector is surmounting the challenges and threats that has been ever confronting
Legal Framework	The trade is licensed and support is given by government to fulfill all legal requirements including certificates of patent and standardizations
Conservation of Knowledge	Due to the affirmative measures by government, the sector is nurtured but still Kaba in particular remains vulnerable
Research Works	No proper research work is done by researchers regarding Kaba technology
Record keeping	The designer is mentored without having any formal documentation nor is she documenting the knowledge and skills of crafting Kaba

Source: Thematic data analysis worksheet

**Figure 16: Thematic Data Coding—Kaba**



Source: Thematic data coding worksheet

## 6.2.2 Discourse Analysis

### I) The Method

Discourse analysis was employed to see how an interaction of holistic systems reproduce themselves, rather than as entities existing on an input-output basis, as outcomes of actions and context (Koskinen, 2009; Onwuegbuzie & Leech, 2008; Bucholtz, 2004; Lee, 2002). In this analytic model, the embedded meanings contained in the language and texts were analyzed and interpreted to draw the lived experiences of respondents loaded with deep feelings and emotions as a result of the internal and external challenges imposed against the traditional practices. Discourse analysis embeds an implicit “ideology critique” captured in the data generation process, which was not far from the societal issues around the world they understand without bothering to an “idealized” or “abstract” forms of expressing meanings using their language (Koskinen, 2009; Onwuegbuzie & Leech, 2008; Bucholtz, 2004; Lee, 2002). That is why the criticism that discourse could become a “floating epistemology” without having the connections with the “linguistic ontology” (Maynard, 2001; Spears, 1996) is found to be a mere fear detached from reality revealed in the fields of the study. Otherwise, it could be difficult to comprehend language without analyzing its usage in terms of expressed feelings, concerns, and meanings of societal beliefs and activities expressed by participants (Koskinen, 2009; Bucholtz, 2004; Lee,

2002). As Henning (2004: 129) has summarized, discourse analysis has to lead to recursive abstraction by understanding that the analysis is ultimately going to deal with human situation and social processes. Recursive data abstraction was used as a method of analysis “ideally suited to the study of systems so complex that they are best understood otherwise” (Floridi, 2010: 435); and as a dynamic analytic of inquiry reflecting methodological, logical, and cumulative processes (Floridi, 2010; Leech & Onwuegbuzie, 2008; Henning, 2004).

In employing discourse analysis, claims about “transferability” could be induced and how to report the result to the audience has been designed: all by presenting arguments evidentially (by showing evidences), interpretively, and evocatively or illustratively (Floridi, 2010; Henning, 2004; Klatt & Hiebert, 2001). Discourse Analysis used in this research has focused on the way respondents draw different interpretations regarding the context in which the interview took place, which was done by using recursive and discursive abstraction approaches (Floridi, 2010; Bucholtz, 2004; Lee, 2002; Maynard, 2001). The discourse data from the studied cases of TM, Tush, and Kaba were found to be rich in meanings coated with deep feelings, which had the potential to triangulate and fill gaps created from using other analytical models (Koskinen, 2009; Bucholtz, 2004; Lee, 2002; Maynard, 2001). Since discourse could not be produced without taking the context into consideration, the data was made to get connected to earlier and subsequent language productions without having a fixed and objective meaning but “colored” by situational factors (Madichie, 2011; Floridi, 2010; Nahl, 2010). The discursive manipulation was made to deal with “self-repeating” retrieval and analysis of data to reach rational abstractions “loaded” with striking meanings that were summarized and further summarized (summary of summaries) until a compact data portraying the situation was achieved (Otur, 2011; Nahl, 2010; Henning, 2004).

Ultimately, the patterns drawn from the spoken language have reflected the embedded feelings, emotions, and meanings in terms of past, present, and future perceptions they hold, which were not possible to capture with formalized approach or “singular epistemology,” located within the explicit values of historical and social context (Koskinen, 2009; Onwuegbuzie & Leech, 2008). The researcher looked at the generated information in a holistic manner to reflect patterns of inductive inquiry (Leech & Onwuegbuzie, 2008; Maynard, 2001; Klatt & Hiebert, 2001). The constructs emerged as concepts abstracted from the discourse analysis were assessed

to see if they fit well or poorly in terms of accepting, developing, or rejecting extant theories (Cooper, 2006; Yin, 1994). At the end, the analysis from the three cases has produced findings that helped to establish patterns of parallels or contradictions that were inferred as “transferable” findings to the target population where the specific findings of the data analysis conducted by using the discourse analysis model are discussed as follows:

## II) Analysis of the Cases Studied

### a) Themes from TM Case Study

The discourse data captured from interview interactions with respondents made on TM, then analyzed recursively, and discursively were found to be rich in contents of meanings coated with strong emotional expressions. The results have shown how far end users are going and taking risk in search of solutions against their ailments from traditional healers by defying the stigma, defamation, and humiliation they could suffer by members of the biased public. Many have responded on the dilemma they have lived between choosing the medication they believe to have the efficacy and potency of curing, on one hand, and get ostracized as a consequence, on the other. TM skills have endured for generations not because they got the support and recognition they deserve, as expressed by respondents, but encouraged by the inherent valves and the shield provided by the fortresses of social and cultural capital the practitioners had built across generations. However, the rejectionist environment has forced end users and practitioners to operate in shadow risking their security in the absence of accountability and non-standardized medical practices.

The recursive and discursive data analysis was found to be loaded with deep meaning and feelings, which was difficult to enumerate and portray in words. The feelings and admirations respondents reflected do to what they have gained as beneficiaries and witnessed as observers of the effects of TM was so deep where their body language was more vivid to convey their inner feelings than they could express using words. The researcher was stunned to learn how desperate people react and feel when they think they are elevated to resurrection from the looming death with the help of the traditional healer. Such feeling was evident when there was nothing they can do except to wait their final days hopelessly and desperately. At the same time, they regret such miraculous practices are doomed to extinction or merely continue to survive in shadow until they totally vanish due to the stigma and marginalization perpetuated by implicit opponents.

Respondents have expressed their feeling that TM is the right medication to deal with terminal diseases than with biomedicine, though responsible bodies want to neither hear nor heed to such notion and belief prevailing at grassroots levels.

On top of defending the practices as free from serious side effects, they also consider the service as freely provided in terms of cost. Even if they are obliged to pay, the amount is so minimal and incomparable with biomedicine for similar medication. In fact, the poor are not charged at all. They also have a fear that TM, which is potentially a huge resource, is ever being lost and marred because healers are discriminated, legal personality and patent rights are denied, pseudo practitioners are rampant and unchecked, and medicinal plants are suffering deforestation. The environment under which TM is operating is so hostile that people as developers, entrepreneurs, or even end users could not be motivated or attracted under normal practices: a blame falling on governments that have failed to appreciate and nurture the sector. The following Figures 17a-c by the courtesy of the healer are incorporated to reveal the application and effects of TM technologies.

*Figure 17a: A photo showing a patient of Gangrene being healed using TM*



Source: Courtesy of traditional healer

*Figure 17b: A photo showing when the patient was affected by Breast Cancer*



Source: Courtesy of traditional healer

*Figure 17c: A photo showing when the patient is cured from Breast Cancer using TM*



Source: Courtesy of traditional healer

## b) Themes from Tush Case Study

As the discourse analysis on the subject has shown, the way end users adore and feel the practice of Tush, regardless of its marginalization and the hurdles confronting the practitioner, the vast values and benefits have remained sanctioned except in the enclaves of the practitioner's community. The meanings contained in the discourses data of Tush were more of gratifying. The refreshment and skin care values gained from the application of the organic Tush confirmed by end users, was full of ecstasy. Their ecstatic expressions of the benefits they receive from using the application, not possible in modern spa, was incredible. The unnoticed therapeutic benefits frequenters could gain was also an added value but slipping away from the indigenous treasures of the country due to lack of recognition and affirmative measures. From the inductions of the discourse analysis, the Tush services could be taken as huge technological resource that could be mined by both pharmaceutical and cosmetics industries. Despite the rejection, the multiplier effects of Tush, especially in terms of therapeutic and spa benefits, have been the embedded values and benefits serving as a locomotive of the practice across generations. This can be concluded by underlining that the endurance of Tush technology was possible due to the embracing cultural and social value attributes though at a diminishing rate. It is the respondents' belief that Tush could turn out to be socially and economically beneficial even by extending the service to incorporate men users, which is still seen culturally as taboo. All these values make Tush a special beauty and health companion of women though the trade is in constant death by the acts of the aforementioned inhibitors, mainly the lack of recognition by successive governments. The following Figures 18a-c, based on the permission of the principal practitioner to go through the practice, are incorporated to magnify the application of Tush technology.

*Figure 18a: A photo showing when the researcher was preparing for the Tush Service*



Source: Researcher's experience

*Figure 18b: A photo showing when the researcher was experiencing the Tush*



Source: Researcher's experience

*Figure 18c: A photo showing when the researcher and his assistant were restoring dehydration and exhaustion from the Tush Service*



Source: Researcher's experience

### c) Themes from Kaba Case Study

The feelings and expressions portrayed by respondents have indicated the magnitude traditional textile practices were rejected and marginalized across generations at government and societal levels. To observe and feel the painful history practitioners have gone in the past revealed during the discursive interactions was a notable experience. The practitioners believe that it was their products, not the artisans, the wider public was looking for. They were ostracized and not accepted as members to the sanctum of the society by those who have been using and adoring their products. Thanks to the implicitly embracing social and cultural enclaves the technology of Kaba was able to survive under such harsh and rejectionist social and political environment. However, the discourses analysis on the current status of Kaba technology has produced result that was in direct contrast to what was observed in TM and Tush technologies. Due to the affirmative measures taken by government, the practitioners are emboldened and the sector has entered an era of rebirth. As soon as the incumbent government intervened to support small-scale traditional textile artisans as engines of economic growth, the skewed orientation started to evaporate and the vivid social and economic benefits started to take turn. As a result, entrepreneurial capabilities and orientations have grown to the extent of bringing the entire sector into a new dimension of enhanced productivity and transformation the sector has never seen or even dreamed before.

The inductions from the discourse analysis have revealed that the trade is getting great attention by policy makers as one of the driving factors of the economic and social fabrics. Ample technical, physical, and financial support is provided for those who are ready to pursue such occupation. The affirmative measures by the incumbent government are indeed salvations of the trade that transformed the sector, which was on the verge of extinction. In comparison to the stigma and marginalization, which lasted for generations, the designer of the Kaba finds it hard to believe that the demand and appreciation for the product is exploding and widening at levels of national and international markets. The following Figures 19a-c, based on the courtesy of the principal designer, are incorporated to magnify the crafting of Kaba technology.

*Figure 19a: a photo to visualize the craft of Kaba and dress technology*



Source: Courtesy of the designer

*Figure 19b: a photo to visualize the craft of stylish Kaba technology*



Source: Courtesy of the designer

*Figure 19c: a photo to visualize the craft of Kab-dress technology*



Source: Courtesy of the designer

#### d) Integrated Emergent Discourse Themes

In summation, the common semantic patterns induced from the discourse analysis conducted on the three study cases have shown a strong expressions of respondents loaded with deep meanings that extended into ramification of extreme categories. The categories depicted strong words where respondents straggled to tell their inner stories of astonishment, gratification, and despair they learnt when dealing with TT practices. For many, to witness old technologies with such level of excellence, even excelling and outperforming strides made in the modern technologies, was difficult to comprehend. It was beyond the imagination of respondents to learn that ancestors were able to invent such “ground breaking” techniques and methods unparalleled in subsequent offspring. At the same time, the regret they felt after learning that the country has been endowed with such rich technological resources but remained buried or gone extinct without releasing or even noticing the embedded potentials was painful. They regret the envisaged socio-economic benefits the country could have gained had it been able to appreciate and look inward and nurture indigenous resources. The feeling of many respondents that the country has endured through a dire backwardness in spite of owning such miraculous technologies was beyond their comprehension. The reasons and motives governments and the wider public have been adamant to recognize and embrace TTs, but fierce to curse and harass the practices was found to be unacceptable and irrational.

Respondents believe that, had there been an opportunity to recognize the practices and emulate entrepreneurial drives, the country’s past supremacy in civilization could not have been in a state of tatters. Respondents feel that the way practitioners and end users have been treated until many TTs were forced to get lost and the surviving ones to remain secretive and operate in shadow as tantamount to committing a grave crime against the country’s interests and sovereignty. At the same time, they admire the stamina of TT practitioners and the embracing communities that enabled the survival of at least the existing technologies. To the contrary, the feelings expressed by respondents regarding the intervention and support given to traditional textile technology, though it came after untold damages have been inflicted, has elevated the urge of traditionalists to come out with their marvelous innovations that expounded the artistic traces of ancestors. They were astonished how far the surviving TTs that had been dormant and buried could reverberate when affirmative measures are taken. This has led to the depiction of three inductive

constructs: leadership, socio-culture, and entrepreneurship (Table 18 and Figure 20) as core role players defining the fate of TTs.

**Table 18: Semantic Meanings Captured from Discourse Data**

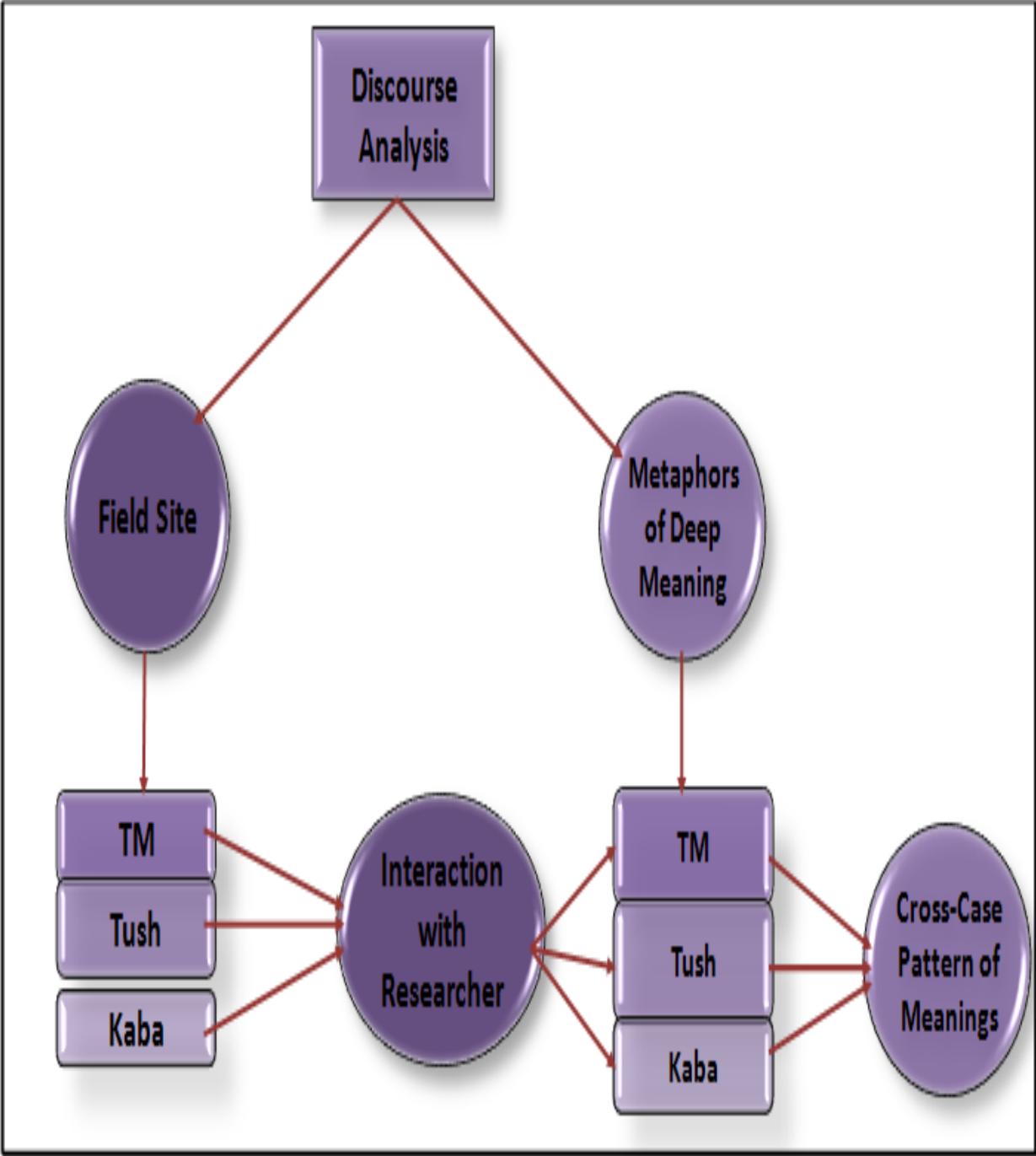
Study Case	Metaphors and allegories Reflected by Respondents
TM	<p>I am cured from the deadly cancer only here; unthinkable anywhere in the world</p> <p>I am absolved from sufferings; for me the healer is my God who created me anew</p> <p>I am stunned by the miracle that has restored my disfigured face</p> <p>I have no words to explain the ordeals I endured through many local and foreign hospital for years have come to be tackled here</p> <p>I am resurrected by this healer</p> <p>He is a person I rely on for my health problems more than modern medicine</p> <p>I was dead but thanks to him I am back to life</p> <p>This house of the healer is a miraculous fortress</p> <p>During my stay I have seen miraculous cures of terminally ill patients</p> <p>He snatched me from the jaws of death</p> <p>I have witnessed many dying patients reviving in the hands of the healer</p> <p>I have suffered a lot without knowing that we have such miraculous TMs</p> <p>It is pity such skills are rejected and forced to operate in shadow</p> <p>The stigma and phobia prevalent in the society is an obstacle for healers to grow and for patients to come and get cured</p> <p>Had it not been for lack of government support, there is no disease that can't be cured using TM</p> <p>Government is not able to see that the social and economic potentials of TM is more than many times of the Renaissance Dam combined</p> <p>Lack of responsible body is causing critical medicinal plants to go extinct</p> <p>Gathering scattered medicinal plants from all over the country is a daunting task</p> <p>I have benefited from the healing but I won't let know anyone even my children</p> <p>I am afraid to disclose my visit to the healer because it is considered as the making of evil spirit</p>

Tush	<p>There is nothing that makes me so great than when I use the Tush</p> <p>I remained relaxed and fresh at least for a week after I bath Tush</p> <p>My skin remains fresh and moisturized not dehydrated like in spa</p> <p>I have to come from Dubai at least once in six months only to enjoy Tush</p> <p>The facility is too traditional, which requires some upgrading</p> <p>Tush nurtures women who are the pillars of family, which needs affirmative action</p> <p>Anything that helps to improve the well being of women need to be uphold</p> <p>One time Tush is more than 7 day spa</p> <p>I love my body when I have gone through the Tush bathing</p> <p>The feeling of freshness and neatness is something I can't experience in spa</p> <p>There is nothing that makes me feel so cleansed other than Tush</p> <p>Tush is not noticed by authorities and the wider public</p> <p>The depletion of herbs is discouraging to continue with the practice</p> <p>Practicing Tush has become to struggle with pseudo practitioners, seek acceptance from authorities, toil to gather scanty herbs, look for farfetched support, etc.</p> <p>I am relieved of the muscle strains that I had to suffer for so long</p> <p>We have observed women with gynecology, paralysis, backbone pain, skin allergy, etc. problems getting cured</p> <p>Thanks to the practitioner, I came to give birth to three children when I already had lost any hope due to "Rh-negative" ailment</p>
Kaba	<p>It is difficult to believe that a sector which was ostracized has in fact come to see the light of the day</p> <p>Governments were killing our skill, thanks to the incumbent government for reversing the trend</p> <p>The incumbent government has reversed the neglect and suffering artists of textile in particular were doomed to endure</p> <p>The government has availed all necessary support including finance, working and marketing area/building, training, etc. nobody could have imagined</p> <p>The growth in income and respect in favor of artisans and designers is the result of favorable government policy towards the sector</p> <p>Government saved the profession, which was dying until only one designer was left</p>

	<p>We are provided with all kinds of support unless we lack the courage to exploit</p> <p>Though much has yet to be done, the encouragement, the access, the promotion, and respect we are getting makes us feel as if we are reborn</p> <p>No weaver wished his son to follow suit of his father; rather they wished their children to become guards or other mean occupation than a weaver</p> <p>Remembering the harassment traditional practitioners have gone through is hurting</p> <p>In the past people wanted our products but they despised our identity</p> <p>The sector have been ever serving our people and our country socially and economically but it never got the credit it deserved</p>
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Source: Discourse data analysis worksheet

Figure 20: Discursive Interactions



Source: Based on discourse analysis excerpts

### 6.2.3 Cross-Case Analysis

#### a) The Method

The third main component of the multimodal case analysis has dealt with Cross-Case Analysis. Cross-case analysis was used to achieve deep understanding of the underlying constructs by revealing broader pictures and common features of the locally grounded causalities (Ridder *et al.*, 2009; Eisenhardt, 1995). By examining cause and effect relationships reflected across the three studied cases, replicated themes and patterns of convergence or divergence were established (Grimm, 2006; Mathison, 2005; Salmador & Bueno, 2005). The contexts of the individually studied cases were subjected to cross-synthesis so as to reveal a cross-matched emergent findings relevant to the individual patterns and meanings where “common patterns” of overarching patterns transferable to the target population were drawn (Stake, 1995; Yin, 1994). Cross-sectional analysis was first taken as one of the preferred methods to enhance the rigor of inquiry, which was done by looking into the data from divergent angles by guarding the validity of the analysis against the observer’s bias (Singh, 2014; Lee *et al.*, 2010). Subsequently, the aggregation of patterns at a higher level from the individual cases was made by “making sense” of the common characteristics induced from the observations (Ryan, 2012; Mathison, 2005; Yin, 2003). The cross-matched constructs that revealed ramifications of similarities and differences (Mathison, 2005) were interpreted to see their meaning in terms of nurturing or deterring the survival of the indigenous TTs of the nation as indicated in Table 19.

Procedurally, the cross-sectional analysis was explored within a single case as a “standalone entity” and then proceeded to cross-case analysis in a meta-synthesis method in order to establish similarities and differences between pairs of categories and portray relationships apparent to the larger picture of the study (Li, 2012; Yin, 2012; O’Toole, 2010; Paterson, 2010; Babbie, 2010). Cross-sectional categorization was an important approach in this regard since the analysis has used “same lens to explore patterns and themes which occur across the data” (Mason, 2002:165) in dealing with different but multiple cases. The study has gone through a detailed analysis and exploration of each case’s history, profile, weaknesses, strength, actions, strategies, and environmental analysis (SWOT) in terms of the involved interactions and activities (Stake, 1995; Yin, 1994). The cross-case analysis has adapted some norms of standardization, which helped to infer reduction of data into “comparable units and categories” that commenced from the

backgrounds of the cross-site scenario running across to the multisite scenario. The within-case analysis has enabled to develop an in-depth understanding of the facts and meanings contained in the situation of each case that otherwise could have been overlooked or filtered out in cross-case analysis (Paterson, 2010; Yin, 2003; Mason, 2002). In fact, both the within- case and cross-case analysis often occurred in synergy and interactively (Paterson, 2010; Yin, 2003; Mason, 2002).

The intersectional manipulation of data has reinforced the triangulation of the within-case inductions by showing how the relationships in the individually lived experiences were reflexives of social structures that give the identities and the meanings same groups share (Ropers-Huilman & Winters, 2010; Paterson, 2010; Yin, 2003). In addition, the model has synchronized the induced patterns and aggregated them to a higher level by applying meta analysis methods so that predictions induced to the target population gets strength in accepting, developing or rejecting extant theories (Sandelowski & Barroso, 2007; Cooper, 2006; Henning, 2004; Yin, 1994). The syntheses or meta-analysis approach used in this case has enabled to aggregate, integrate, and triangulate the findings of each case and examined if the propositions were accepted or rejected by the inductions at integrated levels (Sandelowski & Barroso, 2007; Henning, 2004; Yin, 2003) as shown in the summary Table 19 and Figure 21.

**Table 19: Pattern Matching of Emergent Themes Across-Cases**

Category of Emergent Themes	TM	Kaba	Tush
Historical background	In has been in use starting from ancient times	An original garment of Ethiopia that has been in use starting before Christ	It has been practiced in the country for centuries
Sites and Expanse	The healer is placed in the periphery of the town and users are from all over the country	The designer is located in a shanty zone of the city and the products are sold all over the country	The practitioner is located in low income area serving for users in the city and beyond
Practitioner's Motivation	The healer was inspired by coincidence and by	The designer was inspired by her mother and the	The practitioner was motivated by the

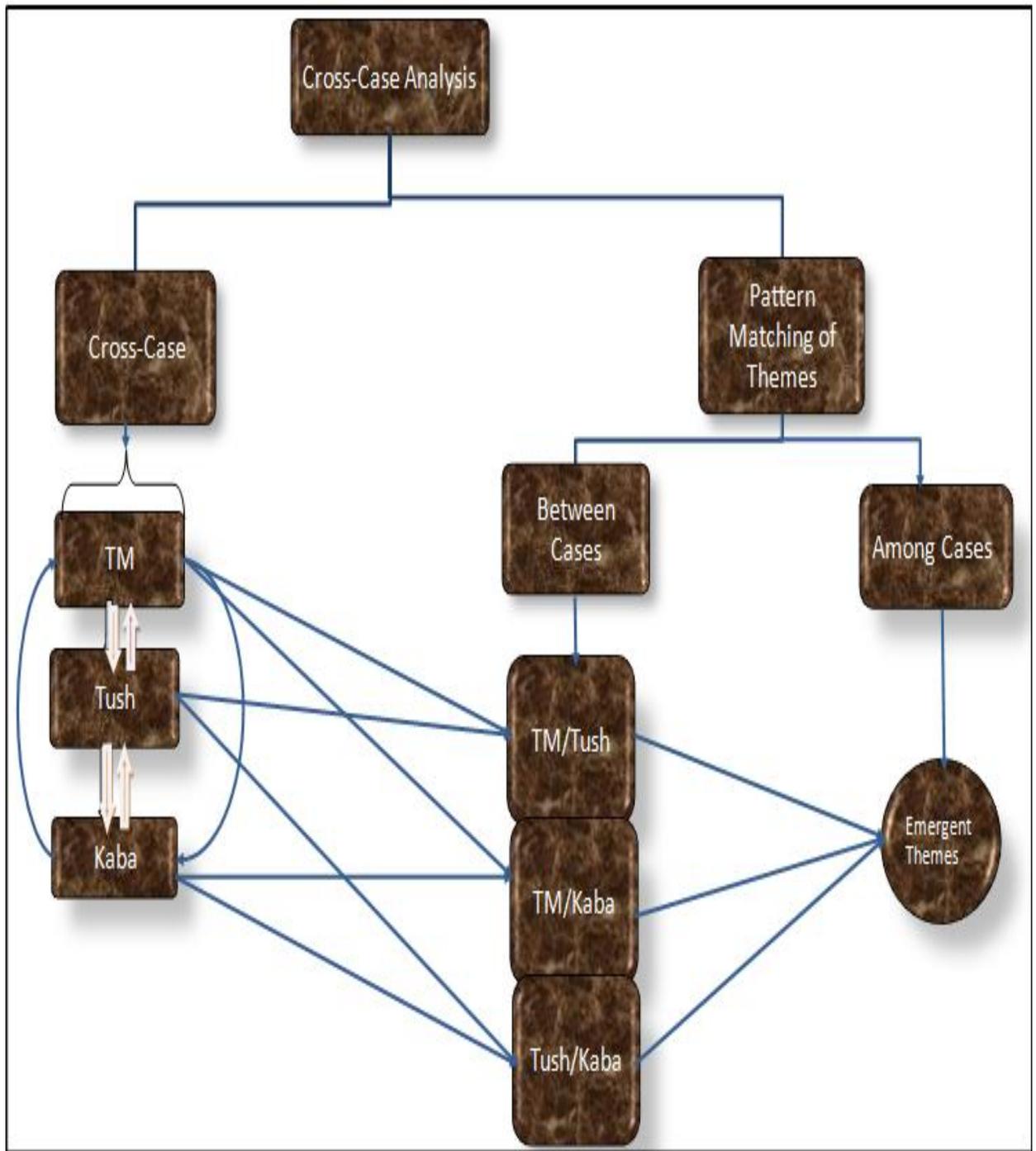
	mentors	current government's affirmative measures	therapeutic effects she observed
Knowledge and Mentoring	The healer acquired the knowledge from coincidence, practice, and elders	She acquired the skill by observing and being mentored by her mother	The practitioner learnt the knowledge by observing the customs in her community
Conservation of Knowledge	By keeping the healing knowledge in secret	By keeping the design skill in secret	By keeping the application knowledge in secret
Sources of Inputs	The medicines are prepared from organic flora and fauna secretly	Decorating materials are imported and the garment is made by her weavers	The application is prepared from herbal plants secretly
Uses of the Practice	Respondents confirmed TM cures many diseases including the terminal	The product is used to grace church icons and procession, and mark dignitaries	The application is used for dermatological, gynecological, Rh factor and nerve system ailments
Users of the Practice	The majority of citizens from all walks of life, especially the rural and poor citizens	The church, nobilities, dignitaries, and currently celebrities are designate users	Only women, mostly from the practitioners region, are frequenters of the service
Prescription and Application	Diagnosis is conducted using observation, interview, and referring medical records	Variety designs are crafted to reflect the socio-cultural heritages of the society	Without following diagnostic routines, the application is provided on demand bases
Setups and Facilities	One modest house is shared for residence and working with covert facilities	One cramped house is used both for work and residence with a sewing machine and knitting needles	One house is shared both for work and residence

Complaints and Side Effect	No respondent has complained except for transit vomiting and/or diarrhea	Respondents have confirmed the esthetic value of the designs	Respondent have confirmed that there are no side effects from the applications
Processes of the Practice	Medicines are prepared secretly in syrup, jelly, and powder forms and packed in bottles, plastics, jars, etc.	The production process has to go through seven stages to finish supported by employed weavers	The application is a jelly blend with butter where the preparation is kept in covert
Gathering of Inputs	Medicinal plants are fetched from all over the country by the healer and by outsourcing to collectors	Inputs are procured from import and local sources	Plants are gathered mostly from practitioner's region employing contractual collectors
Inputs and Preparations	TMs are prepared from medicinal plants packed in the form of syrup, jelly, and powder forms	Decorating materials are imported and the garment is made by hired weavers	Inputs are plants blended with butter and prepared in pieces, powder, and jelly
Results and Effects	Patients confirmed they are cured even from terminal diseases	The product is highly accredited for reflecting the mark of identity of users in ceremonial mood	Respondents confirmed that they have benefited from relaxing, skin care, and therapeutic effects
Cultural Norms and Perceptions	A skewed and suspicious perception has sustained for generations	The stigma is getting defeated by affirmative measures of the government	It is seen suspiciously and unknown by government and the wider public
Opponents of the Technologies	Urbanites, church and biomedicine orientations and governments	End users are applauding the rebirth of the innovative designs evident in the sector	Only suspicious observers and adamant government bodies
Socio-Economic	The potentials are believed to be immense	Currently engaging highest employment	A latent potential that can be exploited
Role of	There are no partners or	The government is taking	There are no partners or

Proponents or Stakeholders	advocates that can promote the sector	care of the sector	advocates that can promote the sector
Role of Government	Governments have been adamant to recognize and support the practice	Government is taking all required affirmative and nurturing responsibilities	The sector has never got government recognition and attention
Marketing and Promotion	Patients depend on word of mouth of users	Access to various trade fares conducted in and out of the country	The market for the service is dependent on users word of mouth
Awareness Creation	No official recognition either to promote or advise risks associated with the practice	The wide media coverage and government support are enhancing the awareness level of the wider public	Public awareness is non-existent and authorities are ignorant to support the sector
Inhibitors of the Sector	The church, biomedicine, pseudo healers, punitive governments, and deforestation are to blame	No inhibitors	Limitation of physical and financial resources, pseudo practitioners, and deforestation are to blame
Legal Framework	Healers are denied legal personality, patent right, and real issues of security	The works of the designer are licensed and enjoy all legal rights	The practitioners aren't given patent right but trade registration
Challenges and Threats	Many valuable medicinal knowledge and skills are ever vanishing	No threats	The knowledge and practices are on the verge of extinction
Conservation of Knowledge	Secretive individuals have served to conserve the existing practices	Due to affirmative measures by government, the skill is reviving	The practice is shrinking even in the community it used to survive
Research Works	There are no in-depth research works done on the subject	Relatively, some assessment works are conducted on the sector	No research work has been done on Tush technology
Record Keeping	Due to secretive culture, no record keeping, hence many are lost when practitioners pass away	The designer admits weakness in initiation to document & mentor the skills of crafting Kaba	The practice is not kept in records but in the memory of the practitioner secretly

Source: Cross-Case data analysis worksheet

Figure 21: Cross-Case Analytic Model



Source: Based on cross-case analysis excerpts

b) Cross-Case Pattern Matching

The cross-case synthesis depicted in the above Table 19 was sorted and tallied with the inductive themes in a matrix or “box scores” to test which theory or theme has matched across the individual cases (Woodside *et al.*, 2013; Ropers-Huilman & Winters, 2010; Paterson, 2010). The syntheses of the aggregated result of the analysis were cross-matched to see if they can competently guide to arrive at effective predictions that could be generalized to the target population (Woodside *et al.*, 2013; Weick, 2010; Henning, 2004). The predictions were ascertained by evaluating the orientation of the constructs in playing the role of supporting or deterring the nurture of indigenous skills across the sampled cases. It was not, however, as critiques commented that reducing findings of the cases to a common metric could destroy much of the integrity of individual findings; as far as qualitative meta-synthesis is not about summing up, averaging, or otherwise with the intention of reducing findings to a common metric (Prasad, 2005; Creswell, 2009; Wilkson & Birmingham, 2003; Kumar, 2005). Rather, it was used as enlarging the interpretative possibilities of the findings (Scurggs *et al.*, 2006; Schuurman & Veerman, 2001) by refining the degree of correlations (Cooper, 2006; Yin, 1994) as condensed abductions of emergent patterns as depicted in Table 20.

**Table 20: Correlation Among Cases**

Cases	Themes	Correlation	
		Numerical	Percentage
TM	28	TM/Tush= 27	96%
Tush	28	TM/Kaba=13	46%
Kaba	26	Tush/Kaba=14	50%
Common	10	TM/Tush/Kaba=10	36%

Source: Analysis model based on Table 19

The lateral cross-case and the matrix meta-synthesis models used in analyzing the results of the three studied cases have produced conceptual constructs that were important to induce predictable findings. The integration of the cross-case synthesis has revealed 27 common patterns of themes across TM and Tush, 13 patterns of themes across TM and Kaba, and 14 patterns of themes across Tush and Kaba. This shows that the similarity of the lived experiences

between TM and Tush was strongly correlated, which was at 96%, and with that of Kaba was 46%, while the correlation between Tush and Kaba has turned out to be 50%. In the cross-case synthesis, the pattern of theme matching between TM and Tush was found to be strong but when both were matched with that of Kaba, the result was remotely correlated. The overall common patterns of themes across the synthesized results of the three cases were also wide, which was affected by the fact that the cases studied were falling into situations of contrast. The mismatch between the high and low correlated categories came to be evident due to the intervention measures taken by the government with regard to the Kaba technology. That is why, the Kaba technology is enjoying revival and renovation, which constituted the basis of the mismatch of patterns of themes in the cross-case analysis.

Contrary to the punitive measures perpetuated by leadership, the technologies reeling to TM and Tush are surviving, though at a diminished rate, because they still managed to get sanctuary in socio-cultural capital of communities. On the other hand, the contrast is a real indicator of how the fate of the marginalized technologies could have turned to become robustly commercialized had they enjoyed a recognition and intervention from governments as proved in the situation of Kaba. The categories of constructs that were used as standard qualifiers in capturing the matched patterns of the cases studied were, indeed, found to be similar. This reality by itself is an endorsement that the sampled cases were actually representatives of the target population where the potency of the inductions to become replicable or transferable findings is sound. Despite the unabatedly waged warfare of harassment and marginalization, the patterns of the themes across the cases have shown the extent TTs could be noted as manifestos of society's historical and anthropological practices across generations, which makes them so dear to be abandoned especially by communities or individuals who inherited them.

The portrayed patterns have revealed that the destiny of TTs was more or less the same showing how they managed to endure in the sanctuary of socio-cultural capital without which there could not have been traces of technologies belonging to the remote past. One of the important factors that have been established from the cross-case analysis is also that they were original and genuine inventions of the country with the potential that could have been even heralded across the boundaries of the nation had they not been marred by implicit and explicit inhibitors. These opponents were acting in a counterproductive way because of ignorance, or as

some of research participants suspected, by political adversaries who had a deliberate motive of keeping the country at the bay of poverty and backwardness. Ultimately, the cross-case analytic model of the data analysis and interpretation narrated above has led to the depiction of three core inductive constructs: leadership, socio-culture, and entrepreneurship as decisive role players in defining the fate of TTs across the cases studied.

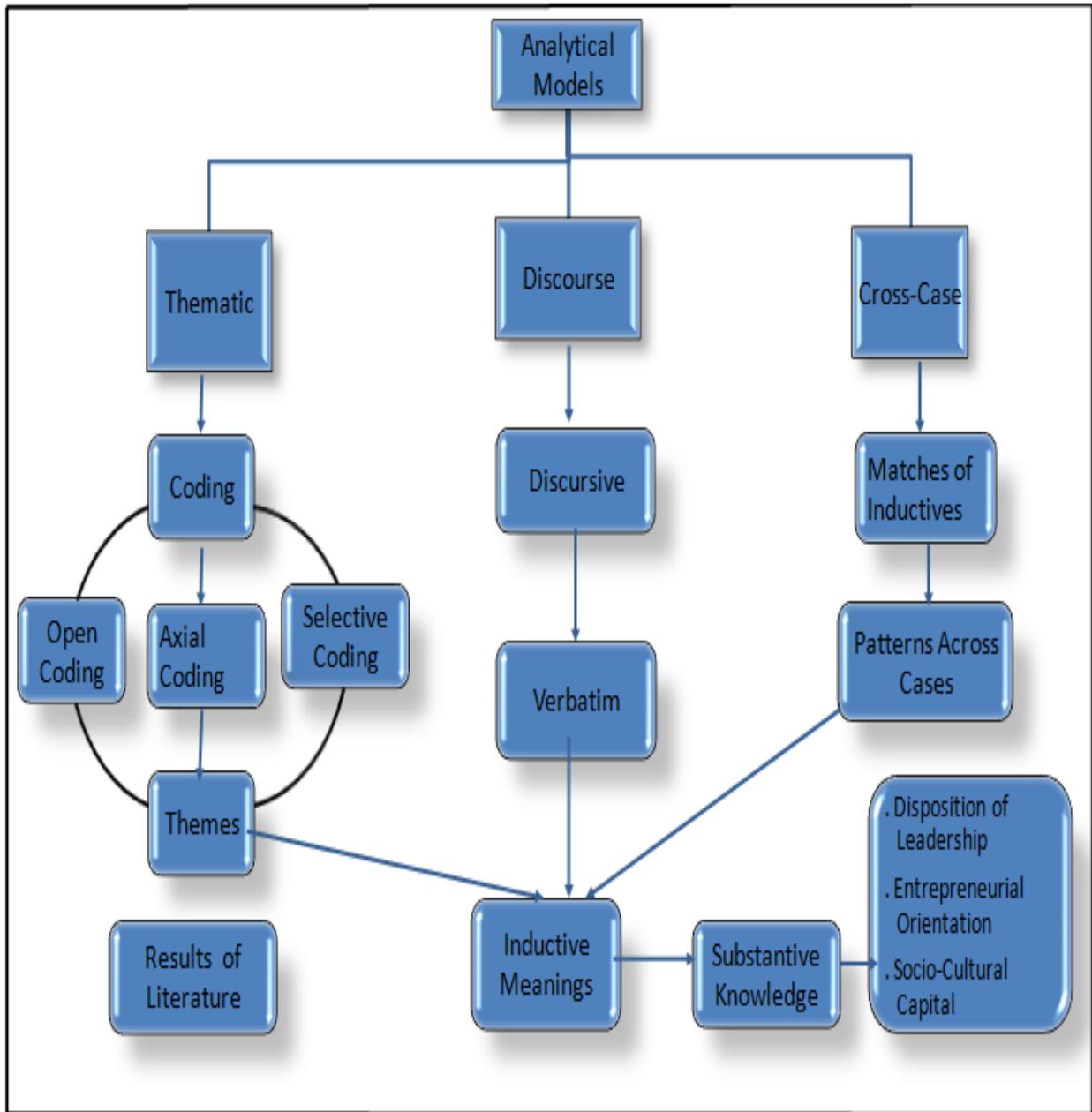
### **6.3 SUMMARY**

The data analysis process that commenced starting right from the data generation stage of each case (Babbie, 2010, Yin, 1994; Eisenhadit, 1989) was interrogated and extrapolated until common patterns were revealed and findings established (Gold *et al.*, 2011; Babbie, 2010; Henning, 2004; Seidel, 1998). The overall analysis of the empirical data by using the analytic models has focused on constructing and interpreting facts through numerous iterations between evidences (Li, 2012; Vaivio, 2008) from which recurring patterns were captured (Stillman, 2011; Kanuka, 2010; Abeysekera, 2010). Thematic analysis was conducted in order to induce themes of concepts by using coding, categorizing, integrating, and interpreting the data organized for manipulation and interrogation (Hoon, 2013; Yin, 2003). Discourse analysis was also used to analyze the talk and text data recursively and discursively to reveal meanings and triangulate the findings from the other analytic models by manipulating the contents of utterances captured naturally (Hoon, 2013; Ridder *et al.*, 2009). Similarly, cross-case analysis model was used to establish transferable patterns and themes by examining cause and effect relationships across the cases studied (Grimm, 2006; Salmador & Bueno, 2005) by consolidating the commonly reflected meanings and features (Ridder *et al.*, 2009; Eisenhardit, 1989).

Notably, the results of these analytic models have shown that the endurance of TTs have been due to the embracing sanctuary they have been securing in the social and cultural affiliations while the factors that have been harassing and rejecting the technologies were mainly those inhibiting behaviors belonging to the camp of leadership. As a result, the wider public was conceiving that TT practices are things that do not fit to the modern setting, but dead with the past. It is also depicted how an intervention by the leadership could be effective in turning the dying TTs into booming socio-economic resources as the vibrancy in the Kaba textile technology has proved. The actions of marginalization and stigma perpetuated against TTs are believed to have eroded the miraculous technological resources the country had lost into extinction. Even the

fate of the surviving ones could not be anything better except to witness the withering away of their survival one by one, which often becomes evident as time goes. However, the socio-economic benefits the country has been reaping from the application of TTs can be still referred as significant. Almost in all socio-economic activities of citizens, the role and benefits of TTs is still vital and visible. As emergent findings of the overall data analysis has revealed, (Figure 22), the renovation and growth evident with Kaba technology can be marked as a model of great innovation ancient societies that can resonate and get heralded beyond their time provided they got the chance to be conserved and nurtured.

**Figure 22: Integrated Data Analysis Model**



Source: Based on analytic models excerpts

## CHAPTER SEVEN: FINDINGS AND DISCUSSION

### 7.1 INTRODUCTION

The findings established from the data analysis and interpretation conducted in previous Chapter have revealed patterns of themes, concepts of constructs, and embedded meanings that could define the “lived experiences” of the target population. These findings were further scrutinized to draw parallels with the deductions of extant knowledge in order to substantiate and accredit the outcomes of this research. The problem statement, from which the presumed propositions were inferred is also scrutinized against the findings established by employing the data analysis and interpretation models treated in this thesis (Lavrakas, 2008; John, 2007; Malcolm *et al.*, 2009; Kumar, 2005). Hence, the findings in terms of induction form the empirical data analysis, deductions form the literature review, and the pragmatic abductions inferred from circumstantial evidences are discussed in the sections to follow. In addition, how the research problem was addressed and the predictability of the propositions confirmed in relation to extant theories is revealed. In this Chapter, the findings from the studied cases are discussed in order to provide sufficient information regarding the meanings embedded vis-a-vis answering the stipulated research questions and accepting or refuting the extant theories and proposed propositions. From the analytic models perspective, the inductions from the analysis are underlined and explained to show where the points converge or diverge in terms of establishing common patterns and meanings that could be transferable to the wider population.

The role of the core constructs in defining the fate of TTs is also explained to show the changes that could take place if intervention measures are initiated. Confirming whether the proposed propositions were accepted or rejected by the findings of the research is also another area that this chapter discusses. The discussion also shows the way each proposition was scrutinized and sees whether their predictability confirms with the inferences induced from the empirical data analysis in a manner applicable to the entire target population (Malcolm *et al.*, 2009; Lavrakas, 2008; John, 2007). The embedded meanings of the entire research are explained under sub-topics referring to the findings as induced and abducted from the data analysis and interpretation. In addition, discussions on results of the research questions, validation and invalidation of the proposed propositions and extant theories are also stipulated. In relation to the

inducted findings of the study, the relevance of the proposed propositions is discussed and their level of confirmation underlined within the context and deductions of the literature review. Ultimately, the overall results of the research are scrutinized against the extant technological theories and explained whether they have proved and accomplished a mission of theory building, theory-refutation, or theory-accepting (Bhat, 2012; Ridder *et al.*, 2009; Yin, 2009).

## **7.2 FINDINGS**

### **7.2.1 Findings of Thematic Analysis**

The overall emergent themes that resulted from the data analysis and interpretation using the thematic models have revealed meanings of the lived experiences of respondents that can be expressed in terms of the concepts understood and induced from the studied cases. The established findings were expanded to have an abductive form of reasoning because the conclusions were also influenced, on top of the inductive reasoning, by the inferences from the surroundings of the study fields where capturing exhaustive empirical data was not possible but resorting to incorporate judgments and pragmatic generalizations (LI, 2012; Lipscomb, 2012; Timmermans, 2012; Thomas, 2010; Peirce, 1903). Abduction in this research is used in making ‘fair guesses’ about the meaning of data during analysis, developing codes, and reorganizing in categories so that the insight and knowledge accumulation regarding the lived experiences of the research participants could be enhanced. As revealed in the organization and analysis of the data generated from respondents in each research field, the themes drawn from the coding analysis and analytic reading of data in terms of the experiences of respondents in using TTs are found, more or less, to be congruent. All observations regarding the benefits, problems, challenges, and potentials of TTs have revealed similar feelings and experiences acceptable almost to all employed measuring instruments. The findings also have shown the extent TTs can be invigorated provided the missing recognition and support from stakeholders is secured as demonstrated in Kaba garment case study. Though the background and the overall themes emerged from the three cases were of similar reflections, the affirmative measures taken by government in respect of Kaba garment have widened the deviation of the findings by making the cases studied to fall into two categories: favorable and unfavorable environment.

The Kaba technology has depicted the disparity and mismatch between the two categories of cases caused by the inhibitors. The affirmative measures taken by government has enabled the Kaba garment to take a stage in the extreme of the continuum towards the favorable end while the other two studied cases fall into the unfavorable situation to which the majority of TTs belong. Otherwise, the situation before the traditional textile sector got affirmative government measures, it was not any better than the debacles the two studied cases are still doomed to endure. Despite the harsh reality, however, the practices of TTs managed to sustain across generations, not because there was affirmative measures but because of the embedded social and cultural capital that harbored them, even if they are found to be at a diminishing landscape. Otherwise, had the inherent values and benefits were able to get the opportunity to be nurtured as in the case of Kaba that got a due attention since recent years, the entrepreneurial drive that could grab the opportunity and ensure their conservation could have taken a grip even by default. The reality is, however, the inhibitors damning traditional practices have been many in number and powerful or influential in squeezing TTs where, among them, the rejectionist and punitive stand of governments was found to be the core deterrence.

The negative impact exerted, especially on TM practices, by religious quarters and biomedicine practitioners was also not less than the damage the leadership has been inflicting. This shows that the stipulated core inhibitors were responsible for the wastage of the potentials embedded in TMs and prime causes for killing and pushing the healing practices into extinction. Traditional healers have been widely stigmatized despite their valuable services, which is one factor that forced them to reside in peripheries and go in shadow and secrecy—to escape the “draconian” attitudes of opponents. Consequently, the pressures caused by these inhibitors have forced, even the surviving practices, to go clandestine and try to survive as much as they could struggle. By the same token, the harsh reality endured in practicing the Tush technology was also discouraging. Regardless the benefits and significance of the practices were highly appreciated by respondents, the intervention to support the sector was non-existent. On the other hand, though there were not as such vividly confronting inhibitors who go after the practice, the denial of attention and support from responsible bodies, mainly the leadership, were found to be serious deterrence in saving the technology from extinction. In fact, the embedded spa and therapeutic values embraced by practicing communities should have given the sector the privilege to get nurtured, conserved, and commercialized.

### 7.2.2 Findings of Discourse Analysis

The findings from the discourse analysis, in terms of recursive and discursive manipulations of data, have shown that the knowledge and skills of TTs have endured for generations under dire circumstances, without getting the appreciation and recognition they deserve. The vastness of the values and benefits embedded in the technological practices being on use by many people on daily bases are found to be huge, which does not give any sense of rationality or justify leaving them abandoned. Especially, the significance of TM technology in alleviating the communal health problems, on the one hand, and exposing compatriots into unwarranted risks, on the other, without having any code of conduct that could govern the practice and/or impose responsibility is a worrying reality. The fear of sustaining unwarranted damages exacerbated by the reckless practices of pseudo practitioners has been a void exploited for agitation by implicit competitors and opponents. This is a clear indication of the extent the responsible governments have failed to give protection and guide citizens wondering in search of cure for their ailments form TM practitioners. In addition, the expression of respondents have shown how far they could go in taking risks for medication by struggling against the stigma, humiliation, and defamation they suffer in the face of biased members of communities.

The discourse analysis has also proven that, among the inhibitors, governments' skewed attitude and counterproductive measures were primarily responsible for the demise of many TM, in particular, and the wider TTs in general. Such punitive measures have forced end users and practitioners to operate in shadow risking their security and without warranty because of the absence of accountable and standardized healing practices. In effect, leadership has played a counterproductive role contrary to the perceived predictions where practitioners and end users alike have paid a price for their belief in pursuing TM. As far as leadership or successive governments were not willing to appreciate and create an enabling environment for practicing TTs, it was natural that the sector should remain in a succumbing environment that gets depleted up to extinction as time goes.

The analysis has also shown how entrepreneurial orientation deficiency was to blame for the failure to harness the latent potentials embedded, especially in Tush technology. As far as the sector remains valuable, without suffering a harsh segregation or harassment by authorities, except rejection, the opportunity to develop the sector by using entrepreneurial drives could have

been more feasible. Though the overall ground to develop and nurture entrepreneurial orientation has been full of impediments and hurdles because leadership was not able to create a conducive environment, it has failed to exploit the limited avenues that could have enabled to commercialize and exploit the potency embedded therein. The oppression against Tush, a technology known only by enclaves of communities who own it, was not better except in this case the practice has been simply ignored and denied recognition by government and the wider public. That is why lack of attention and affirmative measures by governments has been the main factor to blame for such a wasted resource. In fact, the discourse analysis on Tush has revealed multiplier effects in terms of therapeutic and spa benefits that have been serving as locomotives of the technology across generations. The inductions concluded from the expressions of respondents regarding their inner feelings were indeed supportive of the arguments that socio-cultural capital has served as a sanctuary of the overall TTs deep in its bosoms.

Contrary to the harsh measures the inhibitors excreted on TM and Tush technologies, the affirmative measures taken by government regarding traditional textile technology has become the main factor to absolve the sector from marginalization or extinction. The scenario is totally reversed and the environment of the sector is changed, which helped to realize the conservation and transformation of textile technologies. As soon as the incumbent government intervened to support small-scale traditional practitioners, the skewed orientation towards textile designers started to evaporate within a short span of time. Currently, the situation of the Kaba technology is found to be at the extreme end compared to the two cases though, historically, all have suffered the same stigma and marginalization, the situation in this regard is changed for good once and for all. This revelation can be taken as sufficient indicator that the same result could have been realized had the same conducive environment was replicated into the realm of TM and Tush technologies. Starting the time government took affirmative measures; entrepreneurs of the sector began to flourish and took the advantage of commercializing the economic potentials of the textile sector that has been buried for generations. That is why a weak entrepreneurial orientation created by the stigma and marginalizing environment of the sector, was to blame for the failure to harness the values embedded in social and cultural capital that was instrumental in conserving and transforming TTs. The impressive performance the sector is currently registering shows the decisiveness of government's role if TTs have to be conserved and transformed.

### 7.2.3 Findings of Cross-Case Analysis

The findings from the cross-case analysis perspective were able to reveal common patterns explicating the similarities of the lived experiences of respondents across the cases studied. The similarities of the patterns drawn from the analysis were so vivid to ascertain that the inductions were, indeed, interwoven with each other and reflectors of the realities surrounding the target population. The central themes connecting and explaining the constructs induced from the data analysis and synthesis of individual cases that were interrogated at different levels of information extrication and abstraction have shown the underlying practical and philosophical underpinnings of the central stories surrounding the sphere of the studied cases. It was from these central stories that emergent concepts revolving commonly around the sampled cases were inferred as defining theoretical bases of the lived experiences transferable to the target population. In fact, the level of integration among technological practices in similar ramification has shown a very strong correlation indicating that the environment under which they operate, more or less, has reflected the same “lived experiences.” To the contrary, the underpinning concepts, which resulted in weaker correlation, has indicated the fact that the environment under which they have been operating was turned out to be favorable in conserving and nurturing the technologies that have been once marginalized. This has led to conclude that when a given TT gets the opportunity to operate in a favorable environment, the probability it could be conserved and transformed becomes evident and promising.

On the other hand, if TTs are placed in a hostile environment, the technology gets diminished from time to time regardless of the embedded values that managed to sustain harbored in enclaves of communities. Nevertheless, the warfare waged against practicing TT by adversaries have never been a total destruction as one could imagine; though it is obvious many iconic TTs including the wonders used to construct the rock hewn churches of *Lalibela* and erect stelae of *Axum* have already vanished. The analysis has further shown that a considerable number of TTs of the country have sustained across generations contrary to the predictions of extant technological theories due to the embedded and innate values. These values are expressed in terms of historical account, social relations, cultural manifestations, economic benefits, expression of identity roots, and an overall sentimental attachment with the proprietorship that have been appreciated by successive practitioners and end users alike. Such societal values have

served, therefore, as the main reasons for TTs to get sanctuary in the society where they have been embraced to continue sustaining for the benefits of present and future generations. Patterns across the cases have shown the extent technologies could be taken as manifestos of society's historical and anthropological repositories, which makes them so iconic to abandon especially by communities or individuals who inherited them with a strong sense of ownership and belongingness: a secret that can be replicated to enrich the wider technological knowledge. At the same time, it has become clear that TTs could revive if there is a sincere government recognition and intervention as observed in the technology of Kaba garment production. The cross-case analysis has vividly demonstrated how far the role and responsibility of leadership has been defining the fate of TTs. To the contrary, the socio-culture capital of the society has been the major factors that helped the skills and practices to survive amidst the hardship created and perpetuated across successive governments.

#### 7.2.4 Consolidated Findings of the Analysis

As revealed from the matched patterns of similar meanings across the cases studied, in relation to the context of the literature reviewed and cited throughout the thesis, many TTs of the country that had reached the zenith of excellence in the distant past were not fortunate enough to become inherited resources for the benefit of subsequent generations in the content, context, and form they were invented. In fact, the benefits or significance of having a resolve to conserve and transform TT is not confined only to the opportunity of exploiting the idle and wasted resources only. It also provides a platform or latitude to germinate generic or new innovations too. Across the cases studied it was strongly concluded that the skewed perceptions of the people at leadership levels have been detrimental in exterminating or promoting the ancient technologies of the country. It was not because the indigenous technologies lacked applicability, potency, or efficacy that many had gone extinct, but due to lack of government appreciation, recognition, and intervention to embrace them. Either way, be it constructive or destructive, the role of the core constructs induced from the extrapolation of the data and information have established congruent patterns of findings that have the potency of being transferable or replicable to the target population.

The data analysis and interpretation conducted by using the three captioned analytic models have revealed the extent of the matched patterns of themes in terms of feelings, practices, and

beliefs regarding the benefits, problems, challenges, etc. they face. The matched themes have converged to demonstrate the potentials of exploiting TTs, on one hand, and the ordained stigma and marginalization despite many people continuing using them on daily basis, on the other. The patterned themes from which the findings were established have concertized how the lack of enabling leadership and dysfunctional entrepreneurial orientation have been responsible for the wasted values of the technological practices and became the prime inhibitors in dwarfing the derives to conserve and transform TTs. To the contrary, had it not been for the prevalence of embracing socio-cultural capital, even there could not have been any trace of TTs, leave alone to witness technologies playing significant role in the socio-economic arena of many communities.

On the other hand, in areas where the role of leadership was affirmative, the innovative practices and application of TTs was beyond imagination. Surprisingly, technologies that were despised and reached the verge of extinction were able to revive and become so potent to recap and stride forward as soon as recognition and affirmative measures of leadership intervention was secured. The outcome of the intervention was so amazing in terms of achieving an enhanced innovation, productivity, and quality until the demand boomed extending into export market. That is why the Kaba technology, which suffered harsh rejectionist measures for centuries, is witnessing and enjoying the nurture it deserves. In contrast, traditional technology practices in respect to TM and Tush are on the verge of extinction because of the unabated stigma triggered by implicit and explicit hostile government policies and biased dominant domains of the wider public, despite the vivid socio-economic significance these technologies have been contributing. Hence, the research findings as induced and abducted from the data analysis by using the three analytic models across the three cases studied could be capitulated as follows:

- 1) Historical roots and practices of the country's TTs:
  - a) All are indigenous innovations inherited from preceding generations
  - b) They are applied in all spectrums of the societal activities
  - c) Proprietorship of the technologies belongs to individuals and communities alike
  - d) They are transmitted from generation to generation as inherited proprietorship though at a diminishing rate
- 2) The sources of knowledge and skill of TTs:
  - a) Results of engaging innovative endeavors

- b) Inspiring coincidences by practitioners
  - c) Inheritances from elders or benevolence of knowledgeable individuals
  - d) Referring and modeling ancient scripts and legends
  - e) Beliefs in mysterious “revelations” like by dreams or spirits
- 3) Inputs and applications of TTs:
- a) Inputs are derived mostly from indigenous plants, animals, and minerals
  - b) Products and services are prepared or produced in secret and shadow
  - c) Need identification is done on demand bases, observation, and interview
- 4) Users of TT practices:
- a) Users come from all gamut of life
  - b) Frequenters are low income, rural residents, desperate users
- 5) Effects and outcomes of TT practices:
- a) There is no culture of recording the effects or outcomes of TT practices
  - b) TTs are used as lone, supplements, and complements to modern technologies
  - c) Embedded potency has given them the impetus to endure
- 6) The way TTs are perceived and accepted:
- a) Due to lack of standardization and certification, products and services are underestimated and in some cases feared, practitioners segregated, and users stigmatized
  - b) Traditionalist have a great confidence and belief on the effectiveness of TTs;
- 7) Inhibitors that have been despising and defeating TTs:
- a) Punitive and rejectionist measures by governments
  - b) The church condemns many traditional practices as if pursued by infidels
  - c) Biomedicine practitioners fear TM as unscientific and dangerous to the society
  - d) The wider public is suspicious and biased due to illicit agitations by opponents
  - e) Acts of pseudo practitioners have been discrediting TT practices and applications
  - f) Deforestation has hastened the extinction of plants used as inputs of TTs
- 8) Socio- Economic significance of TTs:
- a) The sector is providing significant economic and employment opportunities
  - b) Contribution in terms of welfare and anchoring societal cohesion is notable
  - c) They serve as locomotive in preserving ancient skills, civilizations, societal

philosophies, history, culture and identity values

- d) They are accessible and affordable to low income and rural residents
  - e) Used as alternative solution to desperate and terminally ill patients (TM)
- 9) Awareness creation activities of TTs:
- a) Practicing and application of many technologies are done in covert and in secret
  - b) Information sharing of the practices has been based on word-of-mouth
  - c) Opponents who are killing TTs are loud but proponents are passive
- 10) The reason TTs often operate in clandestine:
- a) Escape legal and political persecutions
  - b) Cover abuses by pseudo and imprudent practitioners
  - c) Defend reprisals from unchecked opponents
  - d) Fear of ostracizing by those who think the skill is the making of evil spirits
  - e) Self disguise to escape association that brands them as outcasts
  - f) Fear of robbery of knowledge by competitors where legal protection is void
- 11) Practitioners' motivations to preserve TTs:
- a) Economic, social, cultural, and emotional attachment they have with the practices
  - b) Acceptance of the practices and applications across generations by traditionalists
  - c) Existence of salient demand by a great deal of the public
- 12) Challenges confronting the survival of TT and safety of practitioners:
- a) Denial of the socio-economic and innate knowledge significance
  - b) Branding practitioners as outcasts, pseudo, and infidels, which is used as a pretext to reject, ostracize, and harass traditional practices by opponents
  - c) Unabated extinction of TTs with the values they embody due to lack of intervention and affirmative measures by responsible bodies
- 13) Factors that enabled TTs to survive:
- a) Predictable results and accessibility to the poor, rural citizens, and the needy
  - b) Cultural and identity compatibility of the practices
  - c) Sentimental attachment to ownership and inheritance
  - d) User friendly and procedural simplicity: a "one window service"
  - e) Secretive and shadow custodianship and practices to defend abuses, robbery, and punitive measures by overt and covert opponents

f) Tested experiences and prevalence of salient demand

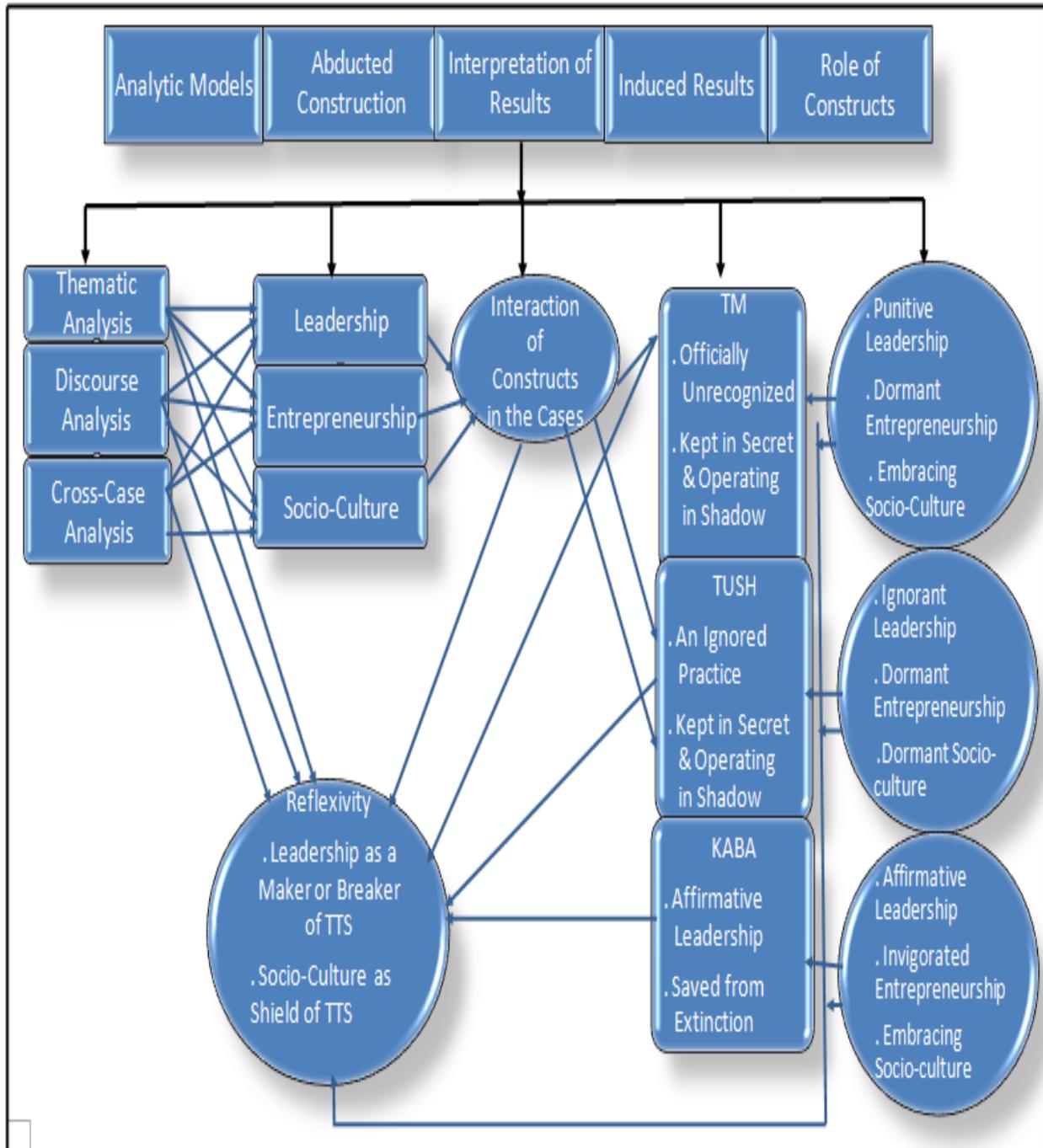
The endurance of TTs in defiance of the haunting generic inhibitors and technological predictions, on the one hand, and the failure to conserve and transform them for enhanced socio-economic benefits, on the other, were found to be real and unabated paradoxes prevalent across generations. The technological significances embedded in the economic, cultural, and social capital of the country that could have materialized by appreciating the resourcefulness of TTs have never been recognized or appreciated. The findings from the empirical data analysis and interpretation came to prove that the offenses spearheaded by inhibitors of TTs to get them annihilated have been challenged by the inherent technological competences, which continued to win the mind and heart of end users, though in an informal way and at a diminishing rate. This shows that, had there been intervention and support in deterring the counterproductive inhibitors, the performance of TTs that managed to survive under a punitive environment could have turned out even to excel the merits of some modern technologies. As a result, most of the practitioners had to live in peripheral areas with the intention of disguising and curtailing their visibility against the unwilling and unwelcoming members of their communities. End users who have to get the services or products were also forced to go undercover, sometimes even hiding their actions from family members, in fear of same consequences or reprisals where they have no guarantee for safety or legal protection against intrusive or inconspicuous damages and possible sinister motives. Hence the reflexivity on the findings apparent to the life and death of TTs can be further recapitulated as:

- a) Traditional technologies are not mere means of getting things done. More than that, they are versatile locomotives of society's history, culture, and identity;
- b) TTs serve as the basis for generic building blocks where the foundations of new innovations are laid down and erected way back in the time of ancestors;
- c) The survival of TT shows the extent the society embraces the traditional practices as a reflexive of deep connectedness with the history of the past in living and behaving;
- d) People who live by embracing their traditions have a spirit and endurance to uphold and sustain the inherited practices even amidst daunting challenges;

- e) TTs have the power of giving people the opportunity to adore the taste of their ancestors and make them alive and remain connected with them;
- f) Society's identity is engraved in culture, which is expressed via technologies;
- g) The embedded qualities and values of TTs are often compatible with the mindset of practicing societies, which gives the privilege to get embraced in socio-cultural capital;
- h) TTs are preferred and accepted by embracing societies because they have confidence of being practiced, tested, and accustomed for generations;
- i) The fact that TTs are innovations acquired through hard work or inherited from forefathers gives a strong sense of ownership difficult to abandon easily.

The idiographic and generic pattern matching at micro and macro levels of the data analysis were found to be congruent or in pattern across the data and the results induced. The generic level of pattern matching has shown the generalization or transferability of the triangulated inductions, which is from a case level formulation with inference to the target population. This has resulted in a substantive contribution to extant technological knowledge that extends beyond the applicability of the individual cases framed from the meta-syntheses either to support or reject the claims, and thereby, close the gaps deduced from the literature review (Hoon, 2013) by showing how they could answer the research questions substantively and support or reject the formulated propositions subsequently as illustrated in Figure 23.

**Figure 23: Results of Data Analysis**



Source: Based on discussions of findings excerpts

### 7.3 ROLE OF ABSTRACTED CONSTRUCTS

The core constructs deduced from the literature review and further reestablished by the inductions and abductions from the data analysis, interpretation, and synthesized findings conducted across the sampled cases were concluded to be Socio-Cultural capital, Leadership Attitude, and Entrepreneurial Orientation. The fate of TTs of the country has been defined by the interactions of these core constructs that have been playing a crucial role both as inhibitors and promoters of TTs. The proposed predictor propositions on the core constructs designed to serve as guiding principles were found to be in constant interaction until they cause the demise of many and survival of few but still significant technological heritages. The predictions stipulated by extant technological theories that the old ones are bound to be disrupted by new innovations is not attested as the daunting challenge facing TTs have been created contrary to the theories explicating the core constructs. On the other hand, the survival of some TTs across generations has come to be true because they have the values respected and internalized by practitioners and end users harbored in the social and cultural capital of practicing communities. Accordingly, the established three core constructs that have been defining the fate of TTs with a varied degree of power and influence in making or breaking their survival as abstracted from the assessments and investigations conducted on literature review deductions, field investigation inductions, and insightful pragmatic abductions are explained in the manner discussed below.

#### a) Attributes of Social and Cultural Capital

TTs are indigenous resources invented to solve social and economic problems of communities that were learnt from experiences and adapted from inheritances, which are presumed to be owned by practicing individuals or by communities as a whole. The sense of ownership of the technologies, both at individual and community levels, makes the practice related and identifiable to cultural and identity norms of given societies. That is why societies have been endeavoring to respect and protect the technologies they feel belongs to them from offences instigated by antagonists or inhibitors. As a result, the technologies were able to ensure their continued survival even though they have to operate in shadow and get shielded in the sanctuary of owning or appreciating societies. The social or communal acceptance of TTs has emanated

from the sense of ownership and expression of attached identity intricately woven and deeply rooted in their culture, which served as the main motive for harboring, at least with regard to the technologies that managed to survive. Otherwise, had it not been for the embracing social and cultural capital, the traditional practices that have been denied proper recognition and protection by responsible stakeholders, could not have been fortunate enough to endure, contrary to the predictions of extant technological theories.

The embracing social and cultural capital have served as deterring instruments against the offenses orchestrated by the camp of punitive and covert opponents where the end result of the push and pull of both angles has been defining the fate of TTs. The meta-synthesis in this respect has demonstrated the outcome when both forces of pull and push were in coherence like in Kaba, and in disagreement pushing the technologies further and further into the quagmire of extinction, like in TM and Tush. This has showed to what extent the elusive power and role of social and cultural capital was critical in ensuring the conservation or annihilation of TTs by either accepting or rejecting the technological practices. Due to the stigma and marginalization imposed on TTs, the relevant skills and knowledge have been mentored and kept with practitioners in secrecy mainly in oral form without being documented. The worrying problem of keeping and operating the practice in clandestine is, however, the risk that the practice could become more and more distorted and exposed to extinction as time and practitioners pass away.

The explanation of keeping the practices in secret and undocumented could be further inferred as emanating mostly from fear of leaving a trace that could contravene the confidentiality where there is no legal protection in case it falls in the hands of opponents or competitors; and in some cases, the vulnerability to be abused by misinformed users or pseudo practitioners. When an opportune time comes, the rare technologies that had been protected from ordeals in the sanctuary of the social fabrics such as that of the Kaba could get transformed to the extent of signifying economic and social benefits accruing to the country. The reintroduction of the Kaba technology to the market did not take time to prove a booming market, which showed that the social and cultural experience in harboring the technologies amid the hostile environment was indeed vital. The belief that values accepted by the construct of socio-culture capital have the ability to endure ordeals perpetuated by sworn enemies and inhibitors and transcend into the future is found to be a substantive finding of the cases studied.

The findings of the data analysis and interpretation, in fact, have indicated the significance of TTs that could have accrued for the benefit of the country but squandered and pushed to extinction by the overwhelming inhibiting forces. These resources could have had even a “spilled over” effect accruable to the entire humanity beyond the bounds of the nation, especially with that of TM technology observed in curing terminal diseases. The central point induced from the analysis with regard to social and cultural capital attributes is, therefore, that TTs have been taken as reflectors of inherited treasures, embodiments of culture, pillars of social norms, and tracers of the roots of identity, which helped them to be spared from total extinction because they were able to get social acceptance in respective communities. Indeed, social and cultural capital has served as a depository to sustain and as a vehicle to transcend the practices of the prevailing TT from generation to generation amid the harsh and hostile environment, at least to buy time while vanishing slowly.

b) Skewed Leadership Attitude

As the overall deductions and inductions have revealed, leadership is often found to be a force taking blunt measures to annihilate TTs, except in few instances where the role played was decisive as theoretically presumed. Generally, leadership has been denying the relevance of TTs and hastening their extermination by taking unabated punitive measures to the extent of ostracizing practitioners as cursed outcasts. Such an arrogant attitude prevailed across successive governments has forced many of the rare TTs to go extinct, a grave mistake that could be cited as main factor for keeping the country in the quagmire of poverty and underdevelopment prevalent up to its recent history. Lack of interest by successive governments to know the potentials embodied in TTs and absence of advocating bodies or institutions have deprived the nation from mining the socio-economic values that remained wasted. That is why the skewed attitude of leadership towards practitioners is found to be the main factor in perpetuating stigma, demise, despise, and marginalization the sector has suffered for generations: a core construct that denied the country from scoring technological strides. As a fact of the skewed attitude of leadership, many TTs have become extinct and those surviving are in a state of unabated deterioration despite the notable values established under the findings including:

- a) Accessibility of the technologies to citizens in terms of location and infrastructure;
- b) Affordability of the products or services that goes up to providing freely to the poor;

- c) Compatibility of the practice with the cultural norms and beliefs of the society;
- d) Sense of ownership of the technologies as earned or inherited from ancestors;
- e) Values of identity and pride attached to the innovative technological practices;
- f) Social, cultural, and economic opportunities and meanings created for the livelihood and wellbeing of the practicing communities and individuals.

Leadership has been ever adamant to recognize that a great deal of the population is continuing to rely on TTs for their spiritual, health, social, and economic interest. Simply taking punitive measures to annihilate the practice that could not convince practitioners and end users or deter them, at least from going clandestine, was found even to be more harmful in terms of safeguarding the interests and safety of vulnerable citizens. It must have been government's errand to either support if the practice is beneficial or totally outlaw and save citizens from manipulations if the practice is proved harmful instead of pursuing a blind rejectionist and implicit punitive measure. It is saddening to presume leadership has been a victim of "conspiracy theory" perpetuated by covert and sinister motives, which led to the agitation that indigenous products and services are unholy practices, inferior in quality, and harmful in application. To the contrary, the affirmative measures taken recently by the incumbent government at a time when the practice was about to vanish forever as a result of unabated harassments and stigma that continued for centuries by successive governments is a vivid testimony to show the extent TTs could have been exploited and transformed for the betterment of the nation.

The skill of designing Kaba garment that culminated to the verge of extinction during the Derg Regime is now absolved from total annihilation simply because there is a shift in government's skewed attitude in favor of embracing the technologies of the textile sector. The inference was rather an indicator how a change in attitude of leadership towards TTs can be pivotal if a total shift in the lived experience of the TTs was to be materialized. In situations where the intervention of government was absent, the urge to nurture them has continued to be miserable. This result has indicated the criticality of leadership's role if the renaissance of TTs is to be heralded and the dire situation to be reversed. The measures taken by government has also shown the extent the stigma prevailed in the wider public for generation on traditional practices can evaporate in a short time, which proved the decisiveness of the attitudes of leadership in deterring the effectiveness of the other inhibiting factors that have been also demeaning the

versatility of TTs. This shows that until TTs get recognition and affirmative measures, mainly by leadership, the future of the currently surviving TTs will remain bleak.

Due to the lack of appreciation and protection of trade secrets, the practitioners of TTs will not share or unveil the skills and knowledge they possess, which makes the conservation of the resources vulnerable to diminishing and extinction. The perseverance demonstrated by surviving TTs and the size of the population whose belief in traditional practices has never wavered shows the engraved qualities and values that should have stricken the curiosity of authoritative bodies and initiate them for intervention. Due to the unabated rejectionist stand by governments and the ever-stronger fight by opponents to detach citizens from their indigenous practices and heritages, the camp of suspicious actors against TTs practices have been growing and winning by the time. On the other hand, if the technological benefits respondents have stressed are taken into account, the reason they have been ordained to suffer stigma and marginalization becomes unconceivable. Governments should have made it a political agenda and gave an official recognition as a vital resource that need to be reckoned as far as many citizens have continued to rely on the technologies covertly or overtly. Even the efforts to conserve TTs in the sanctuary of the socio-cultural norms and entrepreneurial endeavors were also largely abortive due to the detractive and negated attitude of leadership in creating an enabling environment. Therefore, the findings of the data analysis has underlined that a skewed leadership attitude against TT, which is found to be the central factor in shaping the role of all constructs, has been the main responsible inhibitor for the demise of many indigenous practices.

#### c) Deficiency of Entrepreneurial Orientation

The technological values embedded in the social and cultural capital of communities that harbored the skills and practices for generations, though under a harsh and punitive environment, could have been exploited had there been a proper orientation regarding the role and responsibility of entrepreneurship. In fact, it was found to be passive that gets invigorated, to a large extent, when leadership assumes affirmative measures only but less visible to exploit the technological potentials even if they have been effectively applied in the sanctuary of practicing communities. Especially, when it comes to the need of commercializing the economic potential of TTs, the findings of the data analysis has revealed that no constructive entrepreneurial

orientation or motivation that could develop and exploit the huge but latent traditional resources was in place. That is why many innovations belonging to TTs were vanished and wasted because there has never been a vibrant and enlighten entrepreneurial actions and orientations.

As far as society attaches values to TTs beyond economic and social benefits like taking them as altars of expression of ancestral, cultural, and identity manifestation, the effort required by entrepreneurship to conserve them could have been a simpler, gratifying, and fruitful errand. It is unconceivable that such a huge indigenous resources that has been able to prevail across generations, could not lure the emergence of courageous entrepreneurs who could conserve and transform them by tackling the inhibitors or obstacles of the sector. It was only when government took affirmative measures that entrepreneurs were able to emerge bold toward commercializing TT products or services as seen in the Kaba technology. As a result, entrepreneurs were also motivated and the business started to flourish, which proved that this construct could not develop and operate easily under a hostile environment. That means leadership has been a critical factor, not only in defining the fate of TTs, but also in enabling the development of entrepreneurship that could have played a vital role in exploiting the technological resources that remained rusting and dying in the bosoms of the owning or practicing societies. In fact, lack of entrepreneurial dynamism was indeed found to be one of the main constructs that has failed even to nurture technologies with less stigma but lacking recognition and support such as that of Tush, which have reached the verge of total extinction.

The stigma and marginalization inflicted on traditional practices has not only deterred the development of entrepreneurs, but also discouraged and frightened many practitioners and end users to shy away that went up to abandoning their beliefs and practices reflected in centuries old societal traditions. That is to say, the limitation in entrepreneurial orientation has deterred the conservational endeavors that could have augmented the survival of the resources societies have been harboring amidst a harsh environment. Rather, to the dismay of TT practitioners, pseudo practitioners have used the void to commercialize false products and services that have been dangerous to the wellbeing of the public and discrediting genuine practitioners of the sector. The central point induced from the data analysis is, therefore, entrepreneurial orientation deficiency has contributed in denying societies the benefits that could have accrued from conserving and

exploiting many of the surviving and already vanished technological resources, which could have been instrumental in building innovative capabilities of the nation.

## 7.4 RESULTS OF RESEARCH QUESTIONS

The entire analytic and interpretation works conducted on the data generated from the cases studied have established findings that could fill the gaps deduced from the literature review and addressed the central question of the research problem. In addressing the research problem comprehensively, the stipulated central question was extricated into four sub-questions, which were further broken into a number of interview questions that were customized to fit into the situation of individual cases and respondents as detailed in the subscribed field notes (Annex IV). To tune the answers of the interview questions to the context and content of the central question, the results at micro or case level and inferentials at macro or target population level were abstracted from which deep meanings were deduced, induced, and abducted, which ultimately enabled to answer the research questions competently.

### 7.4.1 Results of Research Question 1

*Q1. How did TTs of Ethiopia sustained across generations contrary to the predictions of extant technological theories?*

#### *1) TM Technology:*

Contrary to the predictions of extant technological theories, TM has managed to sustain across generations, as stressed by respondents, because of their potency and efficacy in mitigating societal health and economic problems. Amidst the hostile and punitive environment, the appreciation by end users and practitioners has contributed to the sustainability of the practice as summarized below:

- a) TMs are embodiments of spiritual, health, social, cultural, and economic values that cannot be simply discarded even if alternatives were available;
- b) TMs are considered as proprietorship of practitioners earned from inheritances, retrieved from ancient records and legends, developed through hard practices to be considered as “brain child” of healers, or captured from inspiring coincidences;
- c) TMs have been able to win the confidence of healers and users because they have been predictable and tested by experiences and witnesses told across generations;

- d) TMs are fit and in tune with the culture of patients, easy and friendly to use and apply, which does not require to follow a complicated technical procedures like what is accustomed in hospitals, especially suitable to the rural population;
- e) TMs are accessible and affordable to many citizens that do not have the privilege of accessing biomedicine even if they want;
- f) TMs are made of organic inputs in a naturalistic manner, which does not require much infrastructure to set up and practice by healers;
- g) The intimacy patients establish with healers is more of humane and family type of relations, not mechanical type as observed in modern settings;
- h) More often TM services are available for all kind of diseases in “one-window” mostly completed in one visit with one healer and no referral procedures;
- i) Many users believe that the efficacy and potency of TMs outperform even biomedicine, especially when it comes to terminal diseases.

## *II) Tush Technology:*

Amidst the rejections and bias that prevailed unabated, the Tush technology managed to survive across generations because the owning communities have harbored the technological practices in their sanctuary. For women of the practicing communities, it has been unthinkable of any other cosmetics for their makeup other than to use Tush, which contributed to preserve the skill for generations. Fortunately, it was the responding practitioner’s experience with MSF as medical aide, which gave her the opportunity to know the medicinal “multiplier effects” of Tush she was not able to learn from her traditional mentors. Hence, the overarching cosmetics and therapeutic values indicated below have helped the practice to sustain:

- a) The body relaxing effect, keeping the skin cleansed, and its contribution as an agent of weight loss and physical fitness are appreciated by respondents;
- b) Women using Tush were observed not catching STD even if their partners do;
- c) Cysts and tumors germinated in wombs were aborted or dissolved easily;
- d) The service helps to ease and cure patients with nerve and spinal cord ailments;
- e) Dermatological problems were cured and less common with women using Tush

- f) Menopause was observed to be delayed up to 65 years of age;
- g) Rh-ve patients were getting cured and became able to give normal delivery;
- h) Gynecology problems are less common with frequenters of Tush.

### *III) Kaba Technology:*

The embedded secrets that enabled traditional textile technology to survive across generations amidst the harassment and marginalization that prevailed unabated for generations were factors relevant to the style and design capable of gracing dignitaries in ceremonial occasions. The wear is highly colorful and decorated to effectively serve as magnifier of official and cultural festivals. In churches, the Kaba garment is also used to cover and grace the symbol of the Arch of Covenant and iconic items, and also used as a gown to wear by the clergy during the procession of sermons. Finally, the affirmative measures taken by the incumbent government have inspired the only left master of the genuine Kaba designer to rescue the crafting tech from extinction. In addition, the skill of Kaba crafting using machine is flourishing, though not as original as the handmade—the pillar of its uniqueness for sustenance due to:

- a) A unique and artistic designs meticulously made by hand;
- b) A gracing overcoat used to mark designated figures and dignitaries;
- c) A prestigious wear that fits cultural ceremonies and processions;
- d) Sense of ownership and values of inheritance by practitioners and end users;
- Spiritual attachment because the garment is used in churches sermons.

## 7.4.2 Results of Research Question 2

*Q2. How significant have been the economic and social role played by TTs of the country?*

### *I) TM Technology:*

TMs of Ethiopia are not valued only for their therapeutic role but for multi-faceted socio-economic manifestations too. Without disregard to those who complain that TMs are not effective or even dangerous, the findings of the research have confirmed that the practice of the healer has helped many to get therapeutic and economic benefits. The practices in this regard that are not accounted in the national economy index but still appealing to respondents were:

- a) The charge for medication is nominal compared to the soaring prices of hospitals;
- b) Patients who are not cured are not obliged to pay for the service they received;

- c) The fact that traditional healers are easily accessible and located at proximate sites has been useful in saving huge time and money, especially for the rural population;
- d) The employment opportunity created by TM in terms of practitioners, aides, and collectors of medicinal plants is significant;
- e) The potential of commercializing the medicines, had they got the opportunity to be standardized and certified, is also believed to be so huge.

*II) Tush Technology:*

In terms of cosmetic values Tush has been very important especially for the communities owning the practice. Even though the current market is confined to small communities, the potential in terms of cosmetics and therapeutic values are immense social and economic benefits that can justify the urge to conserve the practice. This TT could have grown to a lucrative cosmetics industry level had there been recognition and support by government and awareness by the wider public. The responding frequent users were impressed by the benefits they enjoyed and, at the same time, wished to see the service popularized and expanded so that the nation can benefit from the resourceful skill so far confined and remaining in shadow. Women of the practicing community, who are traditionally a “must users,” have been benefiting in terms of health and physical fitness, mainly in preventing gynecological related ailments.

*III) Kaba Technology:*

The design of Kaba garment is a decorated overcoat wear mostly respected by dignitaries and the church, which makes the trade very prestigious and classic in gracing occasions, magnifying cultural events, and serving as a marker of identity. Unlike the ordeals in the past, the intervention by the incumbent government is helping the product to expand to the wider public arena like in wedding ceremonies and cultural occasions. This shows the significance of pursuing and nurturing the crafting of Kaba for the sake of promoting the socio-economic aspects that can still grow to a fashion industry the designer has already piloted.

7.4.3 Results of Research Question 3

Q3. *What are the generic inhibitors that have been operating against the conservation and transformation of the country's TTs?*

*I) TM Technology:*

Regardless of the socio-economic significance of TM, inhibitors have marred the potentials that could have been exploited. A contradiction has been going on for generations between the interest to grab the embedded socio-economic values, on the one hand, and the fear and phobia associated with the practice, on the other. Without belittling the risk that could be sustained, the vast benefits societies have been getting from TM, especially in curing terminal diseases, is still appreciated by many end users. The reason the sector remained flawed and the potentials wasted can be, therefore, ascribed to the inhibitors that can be summarized as:

- a) Lack of political will and ignorance of successive governments to give recognition and nurture TM;
- b) A skewed orientation of religious establishments, which branded TM practices as unholy and the making of evil spirits or witchcrafts;
- c) A despised stand by biomedicine practitioners that TM is a false promise, dangerous, and unfounded on scientific grounds;
- d) Discrediting pseudo practitioners who have been distorting the image of TM for the sake of making easy money by exploiting the voids in legal and patent rights;
- e) The rapid extinction of medicinal plants because of rampant deforestation, which made the conservation of TM full of hurdles on top of discouraged healers;
- f) Lapses and gaps in the legal framework denying accountability, standardization, security, and protection;
- g) Lack of advocates who can help to tame the odds haunting the sector that has been eroding the confidence of both sides: the practitioners and users alike;
- h) Weak entrepreneurial orientation to promote and commercialize TM by devising effective methods of reconciling and partnering with modern practices;
- i) Intrigues of opponents with political motives and agitation by competitors that local products are inferior or dangerous to use and apply;
- j) Lack of sense of responsibility and interest or knowledge by relevant institutions to promote and document TM practices.

## *II) Tush Technology:*

In fact, the wider public does not know the existence of such traditional cosmetics service. Previously, it was confined to the royal circles and to specific community members who are customarily users of the service. But, the way it has been sustaining so far does not give any

guarantee if the practice is to see the dawning of the future. In addition, strides in urbanization characterized by drifts from traditional practices have exasperated alienation of the new generations from embracing the practices of Tush: not daring for “backward cultures.” That is why the genuine but exhausted research participant practitioner fears the danger of extinction because of the persisting inhibitors like:

- a) Rejection and marginalization against the practice by successive governments;
- b) Absence of entrepreneurs who could have commercialized the trade;
- c) Prevalence of pseudo practitioners eroding the credibility of the practice;
- d) Extinction of plants used as organic input by deforestation;
- e) Lack of legal personality to pursue rights and demand protection;
- f) Lack of awareness creation to enlighten the general public by proponents.

### *III) Kaba Technology:*

Until recent times, harassment, stigma, and marginalization by inhibitors were the defining norms of Kaba crafting, but nowadays, it is changed and is going in the right direction. The inhibiting factors had pushed the practice into extinction until only one practitioner was left. Artisans were deprived of the appreciation, support, and respect they deserved by:

- a) Making it a taboo for ordinary citizens to wear the garment unless, on the top of designated nobility and the church, a title of social strata was bestowed;
- b) Discouraging and harassing designers and artists as outcasts;
- c) Depriving artisans from possession of land so as to make them destitute;
- d) Keeping practitioners confined in the sanctuary of palace so that the skill and knowledge of the craft is not adapted by “commons.”

By now the inhibiting factors of the sector have come to be history and the morale of traditional weavers is boosting. The bias and skewed orientation that has reigned in the public is also evaporating and there is lot of encouragement in persons and in media, which is actually energizing the respondent of the Kaba technology. As soon as government intervened to enable the small-scale textile practices, the innovativeness in designs and styles has made strides and the public has become a frequent buyer of the products. Officials who used to deprive artisans and derailing the general public from using the traditionally valued products are now compensating by giving the due recognition and support the sector deserve.

#### 7.4.4 Results of Research Question 4

*Q4. What are the replicable/transferable inductions that can enrich the body of technological knowledge?*

*1) TM Technology:*

TMs are taken as indigenous technological resources being tested and practiced for generations, which gives a sense of confidence for end users especially for those who do not have easy access to biomedicine. TMs are still embraced by devoted practitioners and loyal end users who have been benefiting from the embedded medicinal resources. Sufficient background knowledge and cultural attachment have been also enforcing the endeavors of conserving TMs. As a result, the induced qualities that helped TM to sustain, which can be replicable to enrich the body of technological knowledge are:

- a) Accessibility and affordability by end users;*
- b) Compatibility of practices with cultural and identity mindsets of the society;*
- c) Tailored in context without resorting to complement or substitute;*
- d) Procedural and technical simplicity comprehensible by end users;*
- e) Humane relationships and intimations with practitioners;*
- f) Confidence and predictability of outcomes by end users;*
- g) Sentimental attachment to ownership and respect to inheritances of ancestors;*
- h) Tested potency and efficacy even outdoing biomedicine in some ailments.*

The traditional healing practices were not completely annihilated by inhibitors due to the embedded values societies were able to give a heed. To the contrary, the oppression that continued for generations has been inflicting untold damage that served as the main stumbling block in deterring the conservation and transformation. Hence, if the surviving TMs need to be conserved and transformed, the generic inhibitors need to be deterred by:

- a) Making governments' rejectionist attitude responsible for the fate of TMs;*
- b) Creating a legal framework to ensure protection of patent rights and deter abuses;*
- c) Denying the ground for pseudo practitioners who distort the image of TM;*
- d) Preventing reckless deforestation, which is eroding the inputs of the knowledge;*
- e) Rationalizing the bias impairing public orientation created by implicit opponents.*

### *II) Tush Technology:*

The technology of Tush that is culturally aligned to the practices of communities with a sense of ownership of the cosmetics values, and the effectiveness experienced for generations, has helped to build confidence by end users and encouraged their resolve to harbor it due to:

- a) Accessibility and affordability by end users;
- b) Compatibility with cultural and identity mindsets of users;
- c) Intimation between practitioners and end users;
- d) Confidence and predictability of effects built over years of experience;
- e) Tested gynecological, dermatological, and body relaxing values;
- f) Sentimental attachment to ownership and inheritances from ancestors;
- g) Tested experience even outdoing modern technologies like in spa.

Tush technology is a resourceful skill although inhibitors have been deterring its conservation and transformation. Even in the communities where the technology has sought a sanctuary, the practice is believed to get dwindled from time to time, which is hastening its extinction. The service could have grown to modern cosmetics industry, had it not been for the hurdles created by inhibitors. Hence, the main inhibitors that have been haunting the survival of the technology that have to be deterred are:

- a) Ignorant governments that have been rejecting and disabling the practice;
- b) Void legal framework that should have provided personification and patent rights;
- c) Rampant pseudo practitioners who have been discrediting genuine practices;
- d) Reckless deforestation of herbal plants used to prepare the inputs.

### *III) Kaba Technology:*

In preserving and sustaining the uniqueness of Kaba, the role of the government has been decisive. As far as affirmative measures are secured, there is no doubt that the sector will continue to grow. As of now, the inhibiting factors that have been detrimental for centuries are gone forever. Practitioners and the public have started to break the inhibiting factors and biases that no one can become a barrier and dare to abandon a fruit already being harvested.

#### 7.4.5 Results of Central Question

*Q5. How did traditional technologies of Ethiopia continue to sustain across generations contrary to predictions of extant technological theories, and why have they been deterred from getting the conservation and transformation they deserved?*

The existing TTs of the country, believed to be a fraction of those doomed to extinction, have managed to sustain across generations amidst a hostile and harsh environment, which is contrary to predictions of extant technological theories. As to the findings revealed from the data analysis, the embedded values that have been helping in mitigation of socio-economic problems, in some cases, compatible or even outperforming successive technological innovations, and promoting social, cultural, and identity mindset of compatriots have been the accredited secrets that enabled the endurance of TTs as summarized below:

- a) The significance of social, health, and economic benefits accruing to the society;
- b) The sense of ownership and respect societies attached to inherited proprietorship;
- c) The intimacy and background knowledge between practitioners and end users;
- d) The confidence and effectiveness of TTs as proved from a prior experiences;
- e) Physical accessibility and financial affordability to many citizens;
- f) Conformity of technological practices to cultural and identity fervors of citizens.

Despite the fact that TTs have been instrumental in rendering a range of valuable services to the public, they have never been reciprocated with the conservation and transformation they deserved, both at macro and micro levels of the social and political stratum. The offenses against TTs have been spearheaded mainly by opponents who think their own interests and market leverages could be compromised if TTs were allowed to survive. In meeting the objectives of the opponents, successive governments and vocal quarters of the society have been instrumental in denying recognition and supporting TT practices, which has gone even up to waging punitive measures with a severity that can seal their annihilation. Such ill-motivated orientations and counterproductive measures against traditional practices have been serious generic inhibitors that have been defining the life or demise of TTs. Contrary to the core value factors that have been making TTs appealing across centuries, the inhibitors that have been waging wars of destruction and deterring the conservation and transformation of TTs are:

- a) Hostile and ostracizing environment perpetuated at macro and micro levels of the social and political stratum;

- b) Subversive and ignorant measures against TT practices by successive governments: the central and core generic inhibitor defining the life or demise of TTs;
- c) Offenses and intrigues by opponents who have hidden economic and political motives;
- d) Unchecked and discrediting TT practices by pseudo practitioners;
- e) Rejection and condemnations of many TTs by church establishments as unholy practices;
- f) Propagations by illicit opponents that TTs are symbols of backwardness, poor in quality and performance, and dangerous to the wider public;
- g) Destruction of auxiliary resources without which TTs could not be practiced.

In general, revealing the secrets that have enabled TTs to sustain across generations, against the prediction of extant technological theories and warfare spearheaded by opponents of traditional practices, was the central issue of this research. The data analysis has revealed findings that reflected the embodied economic, spiritual, sentimental, cultural, and identity spectrums of societies embedded in the technologies as the core secrets of endurance. This has shown the need of making technologies and innovations, not only a mere mechanical tools and systems, but embodiments of societies' aspirations expressed in terms of tangible and intangible value factors. On the other hand, if the indigenous technologies of the country are to be spared from total extinction and enable their sustenance or achieve rebirth, the conventional role of leadership practiced in the country characterized by ignorance and rejection has to be reversed. If leadership is able to take the responsibility it has to play, it is natural all other inhibiting factors that have been destructors of TTs will evaporate as proved in the data analysis of the Kaba case study. When the government started to take affirmative measures, the stigma also started to evaporate and the sector became beneficial until no one can become a barrier or deterrent. This shows the extent leadership has been a critical inhibiting factor as a "breaker or maker" of the fate of TTs, though socio-culture and entrepreneurship had also their respective roles to play.

## **7.5 SUBSTANTIVE FINDINGS**

### **7.5.1 Invalidating Extant Technological Theories**

Arguments that pondered from promoting the claims forwarded by proponents of Disruptive Innovation and Product-Life-Cycle theories (Kotler, 2000; Christenson, 1997; Jobber, 1997) have been scrutinized against the results of the empirical and conceptual data analysis and

interpretation. However, had it been for the predictions of extant technological theories, where new innovations shall destroy technologies established in a priori (Schiavone, 2011; Christenson, 1997; Jobber, 1997), there could not have been any domain of surviving Ethiopian technologies belonging to the remote past. Unlike the modern ones, the print of many TTs of Ethiopia has not faded as fast as “product-life-cycle” and “disruptive innovation” theories have predicted. They have, in fact, demonstrated the capability to sustain and communicate the culture, beliefs, and practices of ancestors as locomotives of history upheld for generations. At the same time, these technologies are not only proofs of civilization the society of ancestors were able to achieve, but also foundations and references for new innovations too. That is why the contrast between the established technological theories and the findings of the analysis has resulted in a mismatch. Instead, it was the core constructs established by the study that were found to be the main dysfunctional factors for disrupting the dynamism of TTs of the country.

Based on the overall findings, it was not the prediction of disruptive technologies, but the lack of appreciation, recognition, and intervention by leadership, ill-framed entrepreneurial orientations, and weak appreciation of the role socio-cultural capital have been playing that were taken as factors hastening the demise of TTs. The findings of the data analysis and interpretation have shown that the prediction of extant theories had a little impact, but the long standing campaign perpetuated by the established inhibitors, especially the leadership that has been detrimental in wiping out the fabrics of TTs. Deviation from the roles indicated in leadership theories that have been evolving starting from the great man and traits theories up to the emerging Quantum and Transcendental leadership theories (Sheared & Kakabadse, 2009; Bass & Riggio, 2006; Liu, 2007b; Piotrowski, 2006), have been a deterring or a promoting forces in the conservation and transformation of TTs. When the role of leadership was reversed to affirmative measures, the result was found to be so robust indicting the decisiveness of leadership, not emergent innovations, that have been defining the fate of TTs. The core point that can be concluded against the deductions of the literature review is, therefore, extant theories have not proved to be the main forces of disrupting or wiping out old innovations of the country, which is a real gap that the findings of this research has now addressed.

On the other hand, the deduced literature gap on why the expatriate technologies were not a panaceas to developmental problems in the history of backward nations at the level they have demonstrated in the countries of their origin (Ajei, 2007; Ekekwe, 2010) was found to be due to

the incompatibility with the socio-cultural mindset of recipients. That is, if expatriate technologies were to prove versatile and became a panacea to the developmental challenges, as the analysis has shown, they had to win the mindset of the recipient societies, which mostly gives high regard to owned indigenous technologies. It was not due to lack of modern technologies that the development of the country was protracted, but the problem of adaptation and assimilation with cultural norms and mindset of the target societies who were not willing to give up their societal and identity values embedded in indigenous technological practices. It was, more or less, after a long and harsh warfare to replace or adulterate indigenous cultures was waged that alien technologies were able to hold the ground in a gradual pace. As a result, the mindset that has been embracing TTs becomes ruptured to be replaced by foreign technologies that are getting slowly but surely assimilated.

The conspiracy orchestrated by the camp of TT opponents has been insistently brainwashing societies to drop and detach themselves from their original technological practices. To create bias and erode the bases of TTs, opponents have been conducting psychological offences by branding indigenous practices as marks of obsolescence. They were taken as if designated for the poor or marginalized classes of the society, which forced practitioners and end users alike to abandon most of their technological resources just to find themselves in a “cultural confusion” (Punkhrust 2010; Ekekwe, 2010; Ajei, 2007; Yeneabat, 2007). This approach continued until total assimilation was achieved by polarizing indigenous cultures and their derivative TTs. The behavior of technocrats who grew ignorant of the rooted cultures by the day, and got more and more brainwashed by foreign inculcations, have been also factors who contributed to the hastened extinction or adulteration of TTs.

On the other hand, no matter how old a technology could be, if the cultural norms and societal mindset continues to be embracing, the survival of TTs is warranted even if confronted by hostile and biased offenses. In this regard, socio-cultural capital has played a decisive role in defining whether a given technology is to be disrupted or conserved by harboring the practices and practitioners in the sanctuary of communities, which defies the very premises of extant technological theories. Similarly, entrepreneurship that is seen as economic driver to exploit opportunities and innovations by taking risks that can help establish new or widening existing markets of small or medium size enterprises (SME) (Casson, 2010; Schendel, 1990; Rubtsova, et

al, 2004) was also dysfunctional due to lack of an enabling environment. Hence, on top of disproving the relevance of extant technological theories in terms of TTs, the literature gap why foreign technologies were not developmental panaceas in the way they were to the countries of their origin, was found to be due to a framed societal mindset that was not permeable to cross-fertilization with alien technologies.

### 7.5.2 Validating the Proposed Propositions

The propositions that were formulated to guide the course of the overall research and predict the theoretical frameworks of the core constructs were indeed found to be relevant after the data analysis and interpretation has shown why the conservation and transformation of TTs have been deterred or promoted as a consequence of the actions of the core constructs. The contribution of social and cultural capital in harboring the survival of TTs by shielding against the offenses of inhibitors has been a magnificent revelation to reckon upon. The role and responsibility of leadership has also proven how punitive or affirmative measures by governments have turned out to be a deterrence or an enabler in nurturing TTs as in the disadvantaged cases of TM and Tush and as in the advantaged case of Kaba technologies. The finding of these core constructs has underlined the extent TTs can be annihilated or conserved from extinction depending on the stand leadership pursues. Conceptually, entrepreneurship also had a role to play in commercializing and exploiting latent resources, but when it comes to TTs, its role has been confined only when leadership was able to create a conducive and mature environment. These findings, therefore, are sufficient outcomes of the data analysis and interpretation to prove whether the proposed propositions were valid to predict and explain the lived experience surrounding TTs of the country as stipulated hereunder.

*P1. The endurance of TTs across generations, in defiance of what relevant technological theories profess, is a result of the embedded socio-cultural capital attributes that has served as a shield against disruptive innovations.*

This proposition is found to be valid as proved by the data analysis and interpretation made on the studied TT practices that showed how socio-cultural capital served as a shield in enduring in defiance to the hostile and punitive environment perpetuated across generations. The surviving TTs have been spared from the depleting offences spearheaded by the camp of implicit and

explicit opponents because they have been shielded and embraced in the sanctuary of social and cultural capital of practicing communities: a proof to credit the social and cultural fabrics for enabling their sustenance, at least with the technologies that managed to survive. The assertion of the formulated proposition in this regard has gone contrary to extant theory predictions because the socio-cultural construct that creates, harbors, and shields TTs cannot be explained by disruptive technological theories. It is also established that a society has to relinquish valuing its culture, belief, and norms if TTs innovated to explain and serve the purposes are to vanish.

The findings have indeed shown how a technology, beyond being a tool or method, serves as a factor of expression of socio-cultural norms by making its application easy and compatible to the mindset and comprehension of its inventors and promoters. The extant theories on socio-culture state that culture is intangible “public good” with shared “values and beliefs” that is inherited from ancestors and transmitted to next generations live as much as it remains conserved (Casson, 2010; Prasad, 2005; De Gues, 1997). That is why, in Bourdieu’s (1996) view, social capital and cultural capital that have been harboring TTs are taken as relevant constructs in which significant economic and technological resources are embedded. The potentials inherent in social and cultural capital can be realized as much as affirmative measures by a willing and capable leadership is initiated, and also appreciated by entrepreneurs too. Hence, the proposed proposition in this regard is endorsed after proving that existing TTs were able to survive shielded against impending hurdles by getting embraced and protected in the sanctuaries of social and cultural capital.

*P2. A skewed attitude of leadership, not the prediction of relevant technological theories, has been responsible for the extinction and a deterrence to conserve and transform TTs.*

The proposition on leadership was also established valid as proved based on affirmative and punitive measures governments have been taking on the practices of TTs alternatively. Where leadership has perpetuated a stigma and rejectionist attitude, TTs were forced to go extinct or forced to go secret and operate in shadow, as long as they were able to resist the pressures. On the contrary, when government takes affirmative measures like in the case of the Kaba garment technology that was already on the verge of extinction, a vibrant revival emerges. As the views of Thomas (2011) and Yergler & Obolensky (2011) have asserted, leadership should have been a process that has to keep abreast with the dynamics of society by becoming able to lead the

interactions taking place in society, which was rather a missed prediction when it comes to the realm of TTs of the country. Leadership has not only been aloof and detached from the life of the led, which is vividly established in the findings of the cases, but went far to become antagonistic against their beliefs and actions. In this regard, leadership has failed to perceive the beliefs and mindset of the society that could have helped in prevailing the demanded TTs through the influence of inspirational and motivational methods (Vigoda-Gadot, 2007; Hiebert & Klatt, 2001) rather than excreting punitive power and authority against the actions and practices of practitioners who had a good reason to defend their trades.

The contemporary perception of leadership to understand it as a process of giving purpose, meaning, and guidance to the attainment of collective objectives and meeting goals, by addressing shared vision that can appeal to the ideological orientation and “self-perception” of the led (Green, 2011; Killian et al, 2011; Vigoda-Gadot, 2007; Dannhauser, 2007), has gone astray when it comes to realm of TTs. As Killian et al. (2011), Rogers (2011), and Rausch et al. (2010) have stressed, leadership is about realizing the purpose of followers by motivating to rally them behind shared objectives within a context of individual and group values, which have been found to be to the contrary in the reality of the studied cases of TTs. In line with the benefits that could accrue from the conservation of TTs, there are scholars that have gone up to advocating the rebirth of an Agrarian model of leadership characterized by its independence, family focused, ethical, organic, natural, conservationist, community oriented, etc. (Green & McCann, 2011). For Green and McCann (2011) looking back to the primitive model of leadership is essential because the attributes were as stated above, which is urged to be followed in order to address current leadership gaps inferred as a failure to harness the wasted socio-cultural and technological resources belonging to the past. To look into the past does not mean to resist change. Rather it is about giving ancient resources the opportunity to transform or blend within the context of their dynamism compatible to the challenges posed by the environment. In fact, what is needed is transformation, because change could also refer to situations that have to rule out the existence of iconic and marvelous old technological resources upon which the new has also to be erected (Green & McCann, 2011; McCann, 2011; Killian *et al.*, 2011). Hence, as discussed in Chapter 2 in the theoretical framework of the research, the induced skewed leadership attitude has contravened with the extant theories predicted in the relevant leadership theories.

*P3. Entrepreneurial orientation deficiency has been an inhibitor to harness and commercialize TTs.*

The proposition on the criticality of entrepreneurial orientation in harnessing, conserving, commercializing, and transforming TTs was found to be valid as proved by the deductions from the literature review and the foundations of the theoretical framework. That was how the postulated prediction was taken as a proactive economic function with the ability of spotting and exploiting opportunities for arbitrage and innovation by establishing new or widening existing markets of SME (Casson, 2010; Schendel, 1990; Lucas, 1981). It is deduced that the sector of TT could have been an area where entrepreneurs could develop and exploit if an economic vibrancy was to be enhanced. Had entrepreneurship embraced TTs, it could have played a crucial role in realizing economic growth, innovation, and in building competitive leverages (Fairoz et al., 2010; Stevenson & Gumpert, 1985; Shane & Venkataraman, 2000) of the country's technological and commercial developments. However, as induced from empirical data, lack of entrepreneurship orientation within the TTs sector has deterred the exploitation of the latent potentials that has been embraced by the socio-cultural capital

The effectiveness of the predictions of entrepreneurial theories could be more realistic if they are seen in conjunction with social and cultural capital theory (Ferri et al., 2009; Rubtsova et al., 2004; Bourdieu, 2000). By looking into the article produced by Ferri et al. (2009), it can be easily realized how social capital can be used to aggregate gains or compensate loses of entrepreneurs. Of course, the findings have confirmed that TTs are nurtured and commercialized when there is a conducive environment for the development of entrepreneurship. When the legal and political environment was found to be stiff and stunted, as in the case of the studied TTs, the entrepreneurial drive also plunges into shadow and pseudo practitioners take the center stage to manipulate the void in an unethical and discrediting manner that could even jeopardy the interests and security of end users. Considering the theoretical background of entrepreneurship illustrated in the theoretical framework of the study, which could have contributed to the endeavor of conserving and nurturing TTs but found to be otherwise is, therefore, proved to be dysfunctional as the prediction stated in the proposition.

In conclusion, as Michaelides and Theologou (2010) and Trochim (2005a) have indicated, the proposition of the study has proved that socio-cultural capital was embracing TTs while

leadership was lacking the imputes to appreciate and recognize the captive opportunities embedded in TTs. On the other hand, an ill-framed entrepreneurial orientations, and weak appreciation of the socio-cultural capital that could have been utilized to the benefit of concerned communities, practitioners, and end users is taken as a regrettable loss. Hence, the tentative guess that led to conceptualize the propositions that were able to define the underlying facts of TTs and seek inductive alternative solutions in mitigating the haunting generic inhibitors were, indeed, found to be relevant propositions. The endorsement of these propositions has finally enabled to conclude that the inductions are trustworthy predictors transferable to the target population surrounding TTs.

### 7.5.3 Breaking and Disproving Entrenched Taboos and Misconceptions

TT practices of Ethiopia have been marred by taboos and misconceptions, which became one of the main reasons in deterring the drive to conserve, transform, and exploit the embodied technological and socio-economic values across generations. Misunderstanding the nature and purpose of TTs has denied the society from accessing the knowledge and skills accumulated across centuries that could have had helped in registering significant socio-economic returns and contribute to the developmental endeavors of the nation. The rejectionist stand perpetuated by the wider public of the country has demeaned the value of many miraculous innovations. As a result, artisans and traditionalists who managed to inherit and practice TTs have been seen as outcasts or marginalized sects, and in worst cases, branded as belonging to the camps of evil spirit or witchcraft. Such skewed views and beliefs against TT practices have derailed people's view and consider ancient knowledge and tools as irrelevant objects or acts that have to be taken as taboos or sinful exercises where people could not dare even to try to understand them leave alone to practice or apply in a trespassing or transgressing manner. Such misconception and taboos are believed to have been induced by illicit motives perpetuated covertly and overtly across ages, especially when it comes to the issues of healing ailments and activities of fabrication of products and services (Gish *et al.*, 2007; Henze, 2000; Pankhurst, 1997).

The effects of taboos and misconceptions prevalent in the society have ultimately culminated to bias, rejection, marginalization, ostracizing, etc. of TTs. such impediments that have been based on derailed sentimental beliefs like that of Tush to be a gender sensitive was found to be groundless. As demonstrated by the live participation of the researcher and his assistant (Figure

18a-c), practicing Tush by non-female has not resulted in any demon or curse as the people around the circle feared; though the request to practice it was highly resisted by the practitioner. The belief that the knowledge or skill of TM as to be derived from evil spirit that could turn out to be fatal or ineffective, if the implicit dictations are not adhered or transgressed was also disproved by the participation of the researcher in taking some medications in the healing process (Table 9). The healing processes and effects that the medicines are practically prepared from herbal plants not derived from the power of spirits or as false promises and dangerous prescriptions, as opponents or biased members of the society propagate, was empirically disproved. Hence, breaking the taboos and misconceptions that have been distorting and ravaging the embedded values was induced and understood from the data analysis and interpretation that TTs are indeed:

- a) Not a mere means of getting things done. More than that, they are live and versatile testimonial locomotives of society's history, culture, and identity;
- b) New innovations have strings that attach them to past but surviving or lost technologies upon which TTs serve as building blocks or basis of technological foundations and traces;
- c) Attachment to TTs enables societies to reflect deep sentimental connectedness with their ancestors, which gives them the power of tracing their roots and feel alive throughout the history that belongs to them;
- d) People who work and live embracing TTs have the confidence to own a cumulative skills and innovative spirit;
- e) TTs are products of real and innovative minds that have the capability to solve evident encounters, reveal expressions of sentimental feelings and emotions, and transform the state of humankind.

Such vivid values have enabled many TTs to sustain though the unaccounted extinction because of the consequences of the enumerated deterrence are believed to be so huge. Even the application and acceptance of the surviving TTs that are proved to have irrepressible significance are heavily compromised due to the baseless rejectionist attitudes emanating from many skewed perspectives. Nevertheless, when it comes to the subject of the prevailing taboos and misconception regarding TTs, they are refuted as proved by the empirical findings derived from

the study of participants that included the live experiences demonstrated by the researcher, which has broken and disproved the misconceptions entrenched against TTs.

#### 7.5.4 Emergent Composite Case Study Design

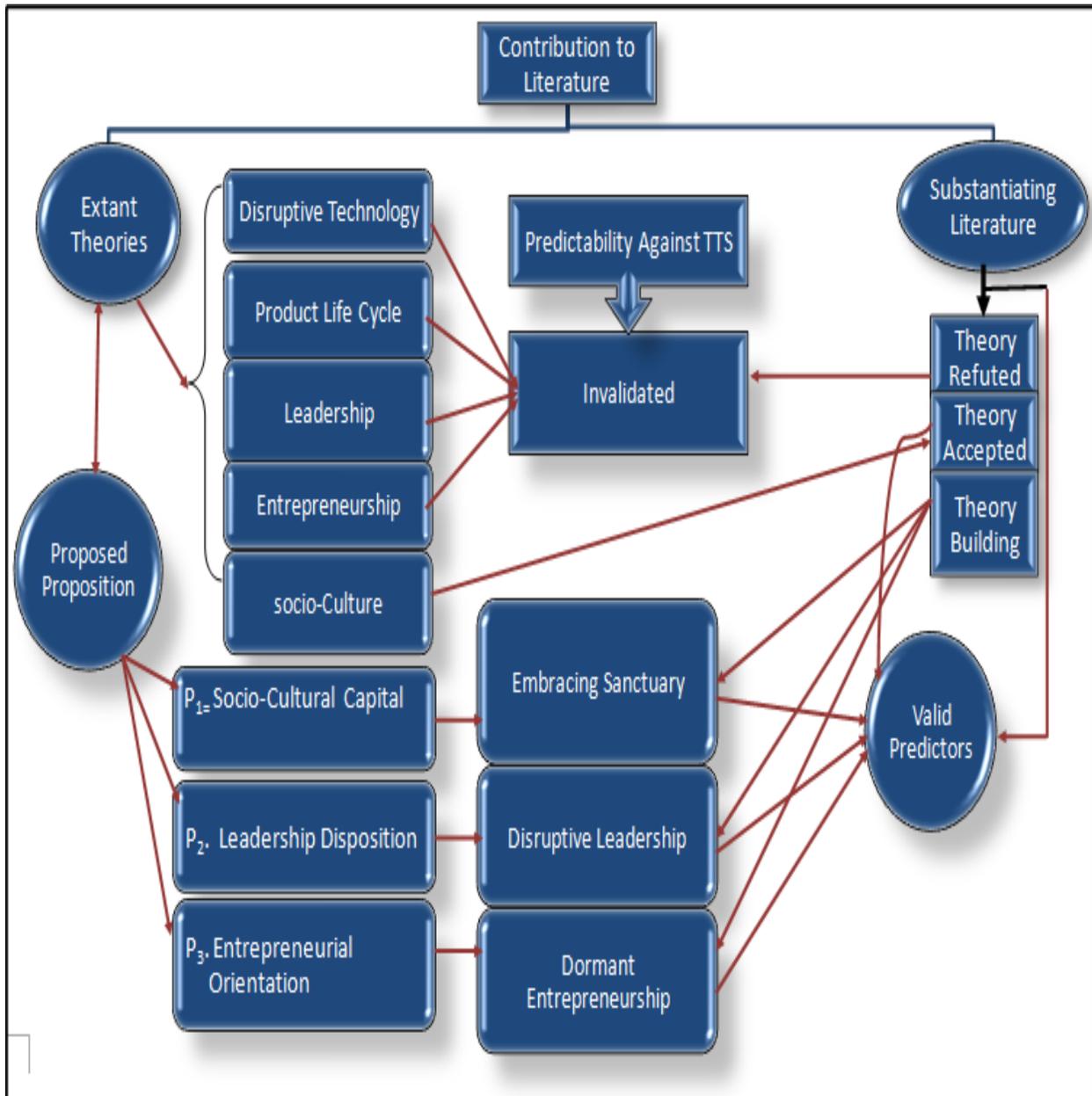
The data generation in the study fields, in particular, and the processes involved in the data analysis and interpretation, in general, have gravitated the researcher to incorporate additional methodological designs that were not planned in a priori including Grounded Theory (Glaser, 2012, 1968; Li, 2012), Ethnography (Bajc, 2012; Lehoux *et al.*, 2010), and Action Research (dealing with practical and participatory involvement of the researcher equally with the pace of participants in the fields of the study) (Jacobson, 2008; Frey, online). The additional methodological designs reflected in the research process were pursued not by design but by default that emanated from the eagerness to delve deep into the real life so as to comprehensively understand and feel the situation live. This revelation has resulted in the need of redesigning the contextual basis of a case study method so as to competently reflect and accommodate the encountered methodological challenges that went beyond proving or disproving the stipulated propositions (Glaser, 2012, 1968; Creswell, 2009; Li, 2012; Yin, 2003, 1994). The in-depth emersion of the researcher into the sanctum of the study fields was also turned out to reflect an Ethnographic Design by default where the practical engagement has required an assimilation with participants and the working environment that consumed a prolonged study period of interactions though not with a deliberate intention but from an urge to internalize their feelings and experiences (Bajc, 2012; Lehoux *et al.*, 2010)

Similarly, the emersion of the researcher deep into the study environment as the situation dictated without a preplanned action has created the potential of reinforcing the spectrum of the predicted constructs or discovering a new knowledge not initially anticipated or coined in the propositions of the study that could be taken as an outcome related to a Grounded Theory research (Glaser, 2012, 1968; Creswell, 2009; Li, 2012; Yin, 2003, 1994). The researcher was convinced that in situations wherever there is a mystery or secretive practices there is a grounded knowledge that could be unraveled. Accordingly, the induction from grounded theory methodological approach has shown how society can preserve technological skills and practices in secretive environment across generations without having any documented records even when they are engulfed by daunting encounters as far as they continue to embody tangible and

symbolic value returns. It is through this method that TTs are still surviving and proving viable, especially where in the case of TM 80% of the society continues to seek traditional medication (WHO, 2005; Kassaye, 2006).

When it comes to the Action Research (though not part of qualitative methodological design but that of quantitative methodology), the practical and participatory engagement of the researcher has gone up to delving deep into the “lived experiences” of participants by participating and owning the processes of TM and Tush as discussed in chapters 5 and 6. Action research was revealed by default while interacting to understand and appreciate the challenges, problems, and benefits of traditional practices of participants by doing and feeling for the self. Though the initial intention of the researcher was to deeply understand the cases studied in the manner indicated in the plan of the research, the methodological approach was gravitated into Action Research without a priori conception, by excluding the quantitative but qualitative face of the empirical data. As a result, of the interplay of these methodological approaches, a case study design can be categorized into two levels where level 1 deals with the conventional design and level 2 with the induced substantive findings of the research that falls beyond the sphere of the conventional case study design. The level 2 is induced from the processes and findings of the study, which revealed out that ethnography, grounded theory, and action research designs were revealed to be part and parcel of the case study process. These unintended additional designs surfaced in the course of the field study have ultimately shaped and strengthened the findings resulted from of deductive, inductive, and abductive reasoning by employing a Composite Case Study methodological design (Bajc, 2012; Lehoux *et al.*, 2010; Martin, 2009). Hence, examination of the additional constructs within the embodiment of a case study becomes necessary if research works to be conducted within a case study design have to be an in-depth and become versatile, which increases the potency of achieving a substantive and transferable findings as framed in Figure 24.

**Figure 24: Contribution to Literature**



Source: Based on the inductions of the analysis

## 7.6 SUMMARY

The lived experiences induced from the “idiographic” or on accounts of individual respondent of each case, in conjunction with the literature resources in terms of the deduction of conceptual frames and abductions of empirical inferences, have revealed matched pattern either conversely or inversely that ultimately culminated in formulating substantive findings applicable across the sampled cases. There was not a significant difference between the expressed feelings and meanings of respondents while answering the interview questions in terms of describing their lived experiences and the observation conducted by the researcher, which indicated that the actors in each sector were victims of common inhibitors or beneficiaries of affirmative measures in the same magnitude. That means, the impact of the core constructs in defining the fate of TTs was, more or less, the same, either in conserving or in rejecting TT practices. It is also induced that TTs are not mere tools and methods only. They embody philosophical views and sentimental attachments where development of a nation is a farfetched errand if societies and leadership ailed to respect and nurture indigenous technological resources (Green & McCann, 2011; McClelland, 1961). In this regard, Ethiopia is a case in point that has endured underdevelopment because it has been unable to nurture miraculous own technologies. These revelations are reinforced by the additional methodological approaches that were underlined as emergent induction not incorporated in the priori design but by default.

The findings revealed from the studied cases were that the extent of conserving and transforming TTs was dependent on the role played by the core constructs in general and leadership in particular. In situations where the stand of leadership was not to recognize and support TTs, the effect was observed to be marginalization and rejection, which could extend up to pushing the practices into shadow or extinction, if not extinction. When the role of leadership was found to be affirmative, the findings have shown the extent the technologies are conserved and transformed, thereby benefiting all stakeholders but mainly the practitioners and the end users. That is why the issue of conserving or hastening the demise of TTs depends, not on the values and potentials embedded therein solely, but on the role and belief of leadership, which is taken as the main factor to blame for the wasted potential the country could have tapped. The sector enjoying the intervention of the government has demonstrated an impressive transformation in the economic and social sphere of the country, while on the contrary, TTs that

are denied the support have remained crippled and on their way to extinction. The performance of the sector enjoying the support of leadership is registering growth and revival, which could be taken as a proof that the role of government is ever decisive if TTs have to be conserved and transformed.

On the other hand, entrepreneurship was found to play an opportunistic role only to be found activated in situations where leadership took affirmative measures. The weakening of entrepreneurial orientation deficiency, due to the stigma and marginalization of the sector propagated at wider levels, was also to blame for failing to harness the values embedded in social and cultural capital, which could have been instrumental in conserving and transforming TTs. Rather, it was the social and cultural capital that is credited for enabling TTs to survive by harboring in its bosoms, which otherwise could have been annihilated without leaving a trace for present and future generations. Based on the turnout of these constructs, the results of the research questions were sought and inferred in a manner to satisfy the curiosity of the researcher and address the worries contained in the central question of the research. Accordingly, the central question of the research, which focused on getting answers why TTs were deterred from getting conservation and transformation and what helped the surviving ones to endure despite the rejection and marginalization they have been doomed to suffer, was addressed by relating to the established findings.

It can be summarized that the practices of TTs were able to sustain because of the benefits that have been mitigating social and economic problems of the societies even if they had to operate in a harsh and illegal conditions. Understanding how TTs endured could be also used to enrich the overall technological knowledge. Besides, it is the researcher's belief that the findings from the study can have a broader developmental relevance that could be replicated in to other African societies who are customarily used to indigenous technologies embedded in their deep rooted traditions (Ekekwe, 2010; Ajei, 20007; Kassaye *et al.*, 2006). The skills and practices have endured for generations under difficult circumstances without getting the support and recognition they deserve. As a result, the predictability of the extant theories regarding the dynamism of technologies was disproved and rejected regarding their relevance to TTs. Neither product life cycle nor disruptive innovation theories were able to prove how TTs managed to sustain instead of getting defeated as predicted. The same goes to leadership and entrepreneurship theories.

They were not able to enhance the versatility of the socio-economic values embedded in the technologies of ancient origin. It is only the social and cultural capital that was found to be workable as predicted in the extant theories and presumed in the outlined propositions.

## **CHAPTER EIGHT: SUMMARY, CONCLUSION, AND RECOMMENDATIONS**

### **8.1 SUMMARY**

#### **8.1.1 Overview and Significance of the Study**

In the long history of mankind the oldest tools and methods belonging to TTs were invented and devised for the purpose of easing and countering the challenges of nature that have gone through endless dynamism of evolutions and revolutions where the death of the old has been giving birth to the advanced new (Green & McCann, 2011; Kotler, 2000; Christensen, 1997). However, the print of many TTs in Ethiopia has not faded as fast as “disruptive innovation” or “product-life-cycle” theories have predicted (Kotler, 2000; Christensen, 1997). In fact, they have, served as records of history demonstrating the capability to sustain and communicate cultures, beliefs, and practices of ancestors upheld across generations. These technologies were not only proofs of civilization the society of ancestors were able to achieve, but also the basis and references for new and advanced innovations that appeared subsequently (Green & McCann, 2011; Klein *et al.*, 2005; Plumer, 2004). The earliest technological emergence, specifically found in Ethiopia, was indicated by the crafting of rudimentary stone tools, which are considered as the oldest and earliest mankind ever invented (Klein *et al.*, 2005; Fanta, 2004).

Following the path where the old gives birth to the new, technological innovations have been evolving and revolving from primitive to civilization, from levels of rudimentary to sophistication, and from incremental to radical that has culminated to the present day revelations (Zaleski, 2011; Moskowitz, 2009; Rollings & Earnest, 2006; Plumer, 2004). The irony is, however, the deduction from the reviewed literature and inductions and abductions from the data analysis of the subject have depicted conceptual gaps on technology and the extent of marginalization and stigma prevailed across generations. These depictions are underlined as main obstacles in rescuing the skills, techniques, and tools from extinction though many have shown endurance and perseverance across centuries by keeping the skills in private or in secrecy and operating in shadow or in peripheral areas (Thampapillai, 2010; Avella & Vazquez, 2010; Waskey, 2009). That is why, to answer the research question an investigation on TT specific to Ethiopia was undertaken. At the end, the results of the investigation have revealed how TTs managed to survive across time contrary to the predictions of product-life-cycle theory (Jiano, 2011; Kotler, 2000; Christenson, 1997) and disruptive innovation theory (Jiano, 2011; Kotler,

2000; Christenson, 1997). The survival of such technologies show that they, in fact, have a sustained demand, which is appealing even to the settings of modern day markets (Thampapillai, 2010; Cunningham & Young, 2009; Wallis *et al.*, 2004).

Ethiopia's recorded and visible traces of civilization can be taken as evidence to demonstrate the prominence of its traditional knowledge that has been able to transcend across time (Klein *et al.*, 2005; Fanta, 2004). Many of the customary technological traditions and methods the country is still treasuring and experiencing can be seen as a proof of the versatility of TTs. However, as time goes, TTs of the country have been getting more and more swarmed, defeated, uprooted, dwindled, and detached from the socio-cultural fabrics of the country; not because all of them were lagging behind compared to modern innovations, but because they have been rejected and marginalized on the pretext that they were tools and methods belonging to the past with no relevance to the way modern life operates. Especially, lack of advocating bodies who dare to question the unfounded marginalization and appreciate the significance these technologies could have played in the socio-economic life of the country have aggravated their demise. There have not been vocal voices to challenge why such TTs should become targets of implicit and explicit offenses of competitors and adversaries in spite of the ascertained huge factual and potential values. Even in places where the benefits of such technological resources are so vivid, lack of affirmative measures has deterred them from revealing the values and competences they have been ever demonstrating.

In fact, the importance of TTs is not to be viewed only from the angle of social and economic values. They are also stocks of ancestors' aesthetic values, documents of history, and manifestos of anthropological life that could enable successive generations to study and understand their roots anchored in the remote past. This rationale alone could have been taken as sound justification to consider TTs as rare heritages that need utmost conservation against their destruction emanating from deliberate or ignorant measures. Even if there could be opponents who do not want to see TTs active and alive, at least there should not have been resistance against restoring and conserving them as heritage resources for tourism and historical records. The distortions and rejections TTs used to suffer while they are still playing a significant role in socio-cultural and economic life of communities, though mostly forced to be kept in secret and

operate in shadow, should have been taken as a justified cause to stand for their advocacy instead of pushing them to extinction.

### 8.1.2 Initiation of the Study

All the technological innovations the country was able to register in its long history did not get the chance to be conserved and transformed in a way they could be transferred to successive generations either as applicable tools and methods or as iconic heritage resources. These technologies, indeed, had enabled the nation to become one of the ancient leading centers of world civilizations (Yineger *et al.*, 2008; Serbessa, 2006; Tolossa, 2006). Nevertheless, the inhibitors from within who were victims of ignorance and possibly, as stooges of external predators, were naïve enough to recognize that the country had established its own foundations of civilization resulted from the application of advanced technologies of their times (Yineger *et al.*, 2008; Serbessa, 2006; Tolossa, 2006). The inhibitors were, rather, pushing to expedite the demise of TTs simply to adapt the luring but depleting foreign technologies without taking into context the cultural and symbolic meanings embedded therein (Yineger *et al.*, 2008; Serbessa, 2006; Tolossa, 2006). The survival of many TTs benefiting practitioners in particular and the society in general amidst the harsh and antagonistic environment has attracted the researcher's curiosity to raise a central question that needed to be answered by conducting this research. In fact, the mismatch between the cultural norms defining indigenous technologies and the context of alien technologies that could not be easily cross-fertilized with the recipients' mindset framed by cultural norms, could be taken as one factor for the ordeal of backwardness the country had been forced to endure. If the economic and social values embedded in the surviving TTs were to be exploited, the causes for rejecting the sector, as indicated in the results of the analysis, should have been tackled and their importance in terms socio-economic benefits appreciated.

Based on the central question and objectives of the research, a proposition that was presumed to define the fate of TTs was coined in a set of three conceptualized statements by showing how the extant technological theories were not sufficient to become sound predictors (Leedy & Ormord, 2010; Malcolm *et al.*, 2009; Kumar, 2005). Setting and defining a proposition from the outset was necessary in order to tame and direct the approach of the entire research before unnecessary temptations and disarray of directions haunted the efforts of the study (Dul & Hak, 2008; Yin, 2003). If the role of TTs in the economic and social spheres of the country was

considered, the neglect and marginalization to conserve and transform the sector for maximum application and exploitation becomes unjustified. Contrary to the repressive and biased perception against TTs by inhibitors, however, the technologies of Ethiopia has managed to endure against the measures of counterproductive forces and against the assertions of technological theory predictions, which prompted the coining of the research question. Though untold skills and knowledge of TTs have already gone extinct, endeavoring to identify and record those still surviving in explicit and implicit locations need to be heeded by responsible citizens before the remaining totally vanishes. That is why promoting awareness creation programs and initiating intervention measures by unveiling the generic inhibitors based on research outcomes before the exotic technological resources are gone forever, without leaving a trace of their roots, has become a point of grave concern.

### 8.1.3 The Study Approach and Methodology

Defining the philosophical and theoretical basis under which the research of the cases studied was necessary if the apparent descriptions, explanations, and assumptions of the methodological approach were to be taken as sensible and acceptable (Lorenzo, 2010; Henning, 2004). As Henning (2004) and Eisenhardt (1989) have stressed, placing the research in appropriate theoretical paradigm that shaped the theoretical framework of relevant constructs was vital. In line with this perspective, analyzing the relevance of extant theoretical frameworks in relation to the proposed predictions regarding the technological dynamism in general and TTs in particular has served as a springboard of conducting the field research. Accordingly, the viewing “lens” of world outlook was found to be Critical Theory where meanings of life are produced depending on the interactions between the researchers and participants (Duncan & Watson, 2010). This paradigm, in turn, has demanded that the approach of looking into the ontology and epistemology of the study should ponder from the angle of qualitative methodology through which understanding the core constructs defining the fate of TTs depends on conceptual frames and semantic relationships apparent to the subjects of the study (Andriopoulo & Slater, 2013; Costantino, 2008; Gayling, 2002). Accordingly, the inferred core constructs defining the fate of TTs were found to be *Social and Cultural Capital*, *Leadership Attitude*, and *Entrepreneurial Orientation* that were measured and understood vis-a-vis the predictability of the extant technological theories (Yin, 1994; Eisenhardt, 1989).

Considering the level of marginalization and disorganization TTs of Ethiopia have endured (Pankhrust, 2010; Yeneabat, 2007; Alemayehu, 2000), the type of the qualitative design assumed to be appropriate to conduct the research was established to be a Case Study Design. Case study design was preferred for the fact that the target population could be studied more effectively as “bounded” events and situations of activities and realities in situations where the components of the cases cannot be studied by dissecting but by comprehending the entirety (Stake, 2013; Ryan, 2012; Yin, 2012). Similarly, the target population from which the sampled cases were drawn has referred to the entire sector of TT practices of Ethiopia as a bounded entity. The sampled cases of the study were also taken to be sufficient from which the findings were induced and conceptualized as generalizable or transferable insights to the target population (Sakaran & Bougie, 2009; Bethlehem, 2009; Lavrakas, 2008; John, 2007; Neergaard; 2007; Eisenhardt, 1989). The instruments of measurement found to be appropriate for qualitative method of the research were also identified in a priori and were composed of interview, observation, and discourse (Creswell, 2009; Dul & Hak, 2008; Eisenhardt, 1989). In considering the instruments of measurement for capturing the data from the study field, their reliability and capability in terms of capturing and filtering the relevant data was scrutinized a priori (Leedy & Ormord, 2010; Creswell, 2009; Dul & Hak, 2008).

After finalizing the designing of the methods and preparation of logistics, the process of data generation from the pre-sampled fields of study, which included trips into distant areas, a permission to enter the field of study from the concerned personnel was secured (Cooper, 2006; Kumar, 2005). Entering the field of study, which included sites of TM, Tush, and Kaba, an empirical data regarding the profiles, activities, and interactions of practitioners, end users, and aides were captured using the measuring instruments. The data captured from the field has explored tangible and intangible information as they unfolded in the process of measuring social setups, sentimental expressions, economic activities, challenges and confrontations, threats and opportunities, and cultural manifestations of the cases studied. To enhance the confidence and reliability of the data generated, the design of the instruments was made in such a way that triangulation was considered and consent from respondents was secured (Yin, 2012; Babbie, 2010; Creswell, 2009).

#### 8.1.4 The Investigation Processes and Established Findings

It was after confidence on the data generated was achieved that the researcher felt comfortable to take the data as fit for conducting the next step in the research process, which dealt with data analysis and interpretation as part of the research methodology. This was done following the filtering and reorganization of the data generated from the field (Swanborn; 2010; White *et al.*, 2009; Dawson, 2002). Though the data coding, categorization, and analysis have been going side by side with the data generation process (Sullivan, 2009; Benaquisto, 2008; Chenail, 2008), further reorganization was made based on generic codes of numeric and alphabet representations of family or character similarities (Alverson, 2011; Silverman, 2010; Saldana, 2009). The analysis process has commenced starting from the data generation stage where “transferability logic” was reached (Babbie, 2010; Yin, 1994; Eisenhadit, 1989). The generated data were interrogated meticulously and extrapolated throughout the analysis and interpretation stage until common patterns explaining the cases studied were revealed and findings established (Gold *et al.*, 2011; Babbie, 2010; Henning, 2004; Seidel, 1998). The analytic models used to interrogate the data captured from the field of the sampled cases were thematic, discourse, and cross-case analysis (Gold *et al.*, 2011; Babbie, 2010; Henning, 2004).

As a result of the analysis and interpretation, the themes emerged from the data analysis have revealed experiences, social and cultural manifestations until authentic meanings that had the potential to answer the research questions were revealed. The analysis and interpretation have induced findings that demonstrated the extent the inhibiting factors have affected the survival and versatility of TTs. On the other hand, it became clear how TTs managed to survive and could revive, especially if government takes affirmative measures as indicated in findings from the analysis of the Kaba technology. In situations where leadership was against the conservation and nurture of TTs, adversaries either from ignorance or from the motivation of competition or dogmatic beliefs were harsh and strong in hunting down and defaming the viability and credibility of traditional practitioners. The impact of leadership on the other constructs was also found to be highly deterministic especially when it comes to entrepreneurship. Hence, the issue of conserving or hastening the demise of TTs depends not solely on the values and potentials embedded therein but on the role and belief of leadership in terms of nurturing or cursing TTs. That was the reason, in most cases, the knowledge and practice of TTs has been kept in secret in

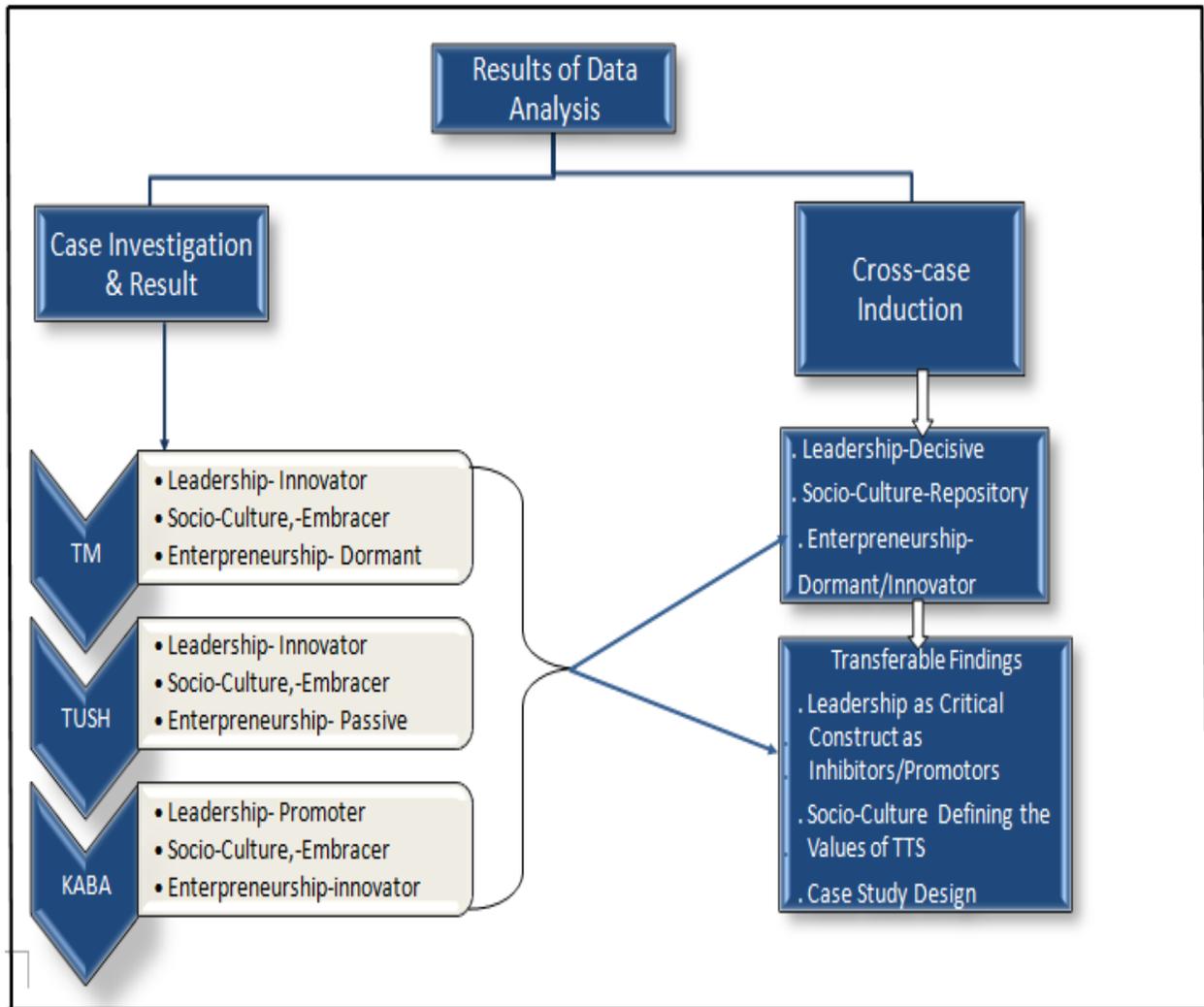
fear of the offenses often spearheaded by antagonist camps where, in the process, many skills and knowledge were distorted and lost forever. In general, the findings established by this research can be summarized in terms of:

- a) **Theoretical Contribution**—where the data analysis and interpretation on the extant theories related to the research topic are found to be no more unquestionable predictors. The results of the data analysis and interpretation, cross-triangulated with the excerpts from the literature review, have shown that the dominant theories reviewed in this thesis are indeed in need of retuning. Accordingly, the criticality of socio-cultural capital in any societal activities is found to be of profound magnitude. The underestimation of the pivotal role socio-cultural capital theory can play in alleviating societal hurdles need to be elevated to reflect the pivotal role the construct can play. The emphasis given to the predictability of disruptive innovation and product life cycle theories in terms of the dynamism of technology also need to be re-examined where in defiance to these theories many TT have managed to endure. Similarly, entrepreneurial theories are not found to be self reliant predictors. They are not as such able to stand by themselves. They need a conducive environment if they have to be meaningful in creating socio-economic dynamism and vibrancy.
- b) **Methodological Contribution**—as discussed in chapter five, case study is one of the qualitative methods that can stand by itself in conducting a qualitative research. However, in conducting an in-depth case study, other research methods like ethnography, grounded theory, and action research are found interplaying in the process simultaneously; not intentionally but by default. Hence, this research has shown how a composite case study design can get induced and revealed as a solidified methodology with a potency of high-level triangulation applicable in conducting a qualitative research designated by a case study.
- c) **Contribution to Leadership Practices**—the conventional theories on leadership discussed in chapters dealing with theoretical framework and literature review are not found to be sufficient to predict how humanity could be absolved from socio-economic and political quagmire societies have been ever enduring. Extant predictor theories in this regard have failed to guide both the leader and the led in their pursuit of achieving better life and

performance. Hence, the need to look for a better predictor theory that could help to overcome extant but dysfunctional leadership practices need to be pioneered. In the pursuit of devising better leadership principles, rather, more than the extant theories, the emerging quantum and transcendental theoretical outlooks portrayed in theoretical framework and literature review of the thesis need to be expounded. However, more than these, leadership principles that can capture and predict the lived experiences underlying the dynamism of societies have rather to be explored. Accordingly, the data analysis and interpretation conducted by this research has shown how the engagement of people becomes effective when they are given the opportunity to lead themselves. That how the induction concluded from the research has established that the role of leaders could becomes more meaningful if their role is redirected to enable people to lead themselves than opting to lead them under unqualified, biased, or misguided terms of a designate leader.

To portray the issues raised, the processes conducted, and the results established figuratively, the overall activities dealt in this research are summarized and illustrated in Figure 25.

**Figure 25: Summary of Data Analysis and Findings**



Source: Based on the summary of data analysis

## 8.2 CONCLUSION

The dire situations ancient technologies have been situated has sparked a grave concern, as reflected in the background information and the deductions from the literature review, which became a cause for the initiation to conduct this research. The research problem postulated in the life of TTs of Ethiopia has shown the extent conservation endeavors were hindered, and the secrets that have enabled the staggering endurance contrary to extant technological theory predictions. As a result, the findings of the research conducted on conserving and transforming TTs are, therefore, believed to help in reclaiming the buried potential of traditional practices that have managed to survive in defiance of the rejection and marginalization perpetuated across generations. The indigenous technologies known for their organic and culture friendly characteristics could have been the sources of competitive leverages in terms of economic and social development had there been the will and enlightened responsible bodies. As indicated in the narrations dealing with Ethiopia's past and present history, the vastness of TTs has been tremendous in type and expanse though the economic and social benefits that should have been accrued has never been recognized and utilized.

The limitations to appreciate the potentials of such resources at leadership and societal levels could be even blamed for the ordeals of backwardness the country has gone as recoded in its recent history. This is difficult to comprehend for a country that has been innovative and endowed with such miraculous technological resources to have lived in backwardness where it's competitive and comparative advantages could have resonated even beyond its boundaries. Instead of appreciating TT practitioners and understand what their potential could mean to the betterment and development of the country, they were treated with suspicion and rejection by branding them to be conceived as marks of backwardness and technically belonging to the buried past. Leadership across the history of the country was not able to reckon that the development of the western world was still rooted on the foundations of their indigenous technologies, which evolved into industrial revolution and beyond (Shibata & Kodama, 2008; Davis & Davis, 1998; Gray, 1984; McClelland, 1961). Leadership must have noted that the process of reinventing and advancing indigenous technologies generically was behind the success of all developmental endeavors (Shibata & Kodama, 2008; Davies, 1998; Gray, 1984), which is based on the ability

and commitment to conserve and transform indigenous technologies (Shibata & Kodama, 2008; Davies, 1998; Gray, 1984; McClelland, 1961).

Looking into the tacit contribution to the gross domestic product (GDP) of the country and the resultant employment opportunities, however, the unabated neglect to conserve and transform TTs (Wang *et al.*, 2011; Kassaye *et al.*, 2006; Kifleyesus, 2004) is found to be a haunting concern. Nevertheless, due to the embedded values appreciated at grass root levels, many TTs are surviving across centuries, even if many were forced to operate under a shadow or peripheral zones (Thampapillai, 2010; Avella & Vazquez, 2010; Waskey, 2009). The survival of such technologies shows that they, in fact, have a sustained demand for the inherited quality they possess, which is appealing even to the modern day markets where advanced innovations are constantly emerging and disrupting (Cunningham & Young, 2009; Christensen, 1997). The sustenance of these technologies across generations and the significance they still continued to demonstrate was then where the predictability of extant technological theories was questioned. In addition to the unpredictability of extant technological theories, leaders in the history of the country were cited as main stumbling blocks in taking measures of sustaining and conserving the indigenous skills (Pankhurst, 2010; Tolossa, 2006; Yeneabat, 2007). It was saddening that leaders of the country were going as far as despising and neglecting artisans and practitioners as outcasts who had been endeavoring to save ancient technologies from extinction (Pankhurst, 2010; Tolossa, 2006; Yeneabat, 2007). That means the presumed role of leadership was found to be dysfunctional when it comes to the way TTs of the country have been conceived and treated.

The reason of perseverance demonstrated by TTs, amidst the neglect and stigma that extended up to despising their existence for centuries, was not articulated in literatures of the relevant theories of technologies the researcher has accessed and reviewed. The survival of old indigenous technologies that should have gone extinct in accordance to the law of product-life-cycle or disruptive innovation theories, but not playing a decisive role in social and economic development, are contradictions not generalized by technological or leadership theoretical predictions. In fact, the reason the extant technological theories were not realized as predicted and leadership roles have been ill-conceived in a counterproductive manner regarding the management of indigenous technologies is a clear literature gap the planned research has tried to address and fill. Leadership theories, which are meant to play a critical role of leading by

defining and nurturing the destiny of development programs have not become evident in enabling and nurturing indigenous skills (Khoza, 2009; Johnson-Sirleaf, 2006; Maathai, 2009).

The role of entrepreneurship was also indicated to have been weak in playing a role of conserving and commercializing TTs. The latent but impressive technological strides ancestors of the country were able to innovate and conserve could have been revitalized had there been able and conscious entrepreneurship orientation in place. Entrepreneurs should have thrived to harness the potentials embedded in TTs that have continued to be valued and embraced by owning and practicing communities (Sheard *et al.*, 2011; Windsor, 2007; Munroe, 2006). It was when entrepreneurs were motivated and inspired that, mainly small-scale businesses could have come to fill economic and employment gaps not covered by business conglomerates (Sheard *et al.*, 2011; Giusta, 2010; Windsor, 2007; Munroe, 2006). In fact, the existence of socially networked relationships could have served as a conducive atmosphere for the development of entrepreneurs in imitating and introducing useful and viable enterprises (Ferri, 2009; Bourdieu, 1991). Rather, it is the social and cultural capital that was found to be conducive in embracing TT practices and practitioners as presumed in the predictive propositions. To harness socio-cultural capital, leadership should have played a pivotal role in nurturing the culture that promotes technological advancement in society and deter the perceptions of stigmatizing artisans and end users (Yeneabat, 2007). Overall, the lack of entrepreneurial driving lever has denied the country from exploiting the latent economy and enjoying services of social entrepreneurship (Audretsch, 2012; Shibata & Kodama, 2008; Schempeter, 2004; Gray, 1984).

Based on the findings of the data analysis, the results of the research questions were inferred in manner to address the worries reflected in the central question of the study. The central question of the research, which focused on getting answers why TTs were deterred from getting conserved and transformed, and how they managed to survive despite the reinjection and marginalization they have been enduring, is addressed by relating to the findings established from the data analysis. Since the findings have shown that the stand and the role of leadership was a decisive factor either to promote or discourage practicing TTs, the answer to the research questions were also tuned and thought in light of these findings. From this perspective, it was concluded that TTs were able to sustain because of the embedded values that were beneficial in terms of mitigating social and economic problems of the societies even if they have to operate in

harsh and unwelcoming environment. On the other hand, in spite of the uses accepted by practicing societies, their conservation and transformation has been hampered by ignorance and misguided leadership measures that denied the recognition and support the sectors demanded. To the contrary, the predictability of the extant theories regarding TTs was in all cases disproved, and hence, rejected when it comes to TTs. Neither product life cycle nor disruptive innovation theories were congruent with the dynamism that enabled TTs to sustain.

In general, it is natural that human beings are resourceful creatures who have been innovating riches and wonders of the world as evident in their past and present historical revelations. Such potentials, however, have been released when leadership was willing and capable to create an enabling environment. Understanding how they endured could be also used to enrich the overall technological knowledge. Besides, it is the researcher's belief that the established findings from the study can have a broader developmental relevance that could be replicated in to a wider spectrum (Ekekwe, 2010; Ajei, 20007; Kassaye, 2004). However, in defiance to the harsh reality and contrary to the overall crippling problem reflected in the traditional sector, some TTs of the country were able to endure due to inherent and embedded qualities the research has uncovered and, at the same time, became able to reveal the inhibitors that were deterring calling the urge for their conservation and transformation.

### **8.3 RECOMMENDATIONS**

#### 1) Recognize the Significance of TTs

The socio-economic significance of TTs attributable to the country, as indicated in the analysis of the study, has been considerable. Many TTs are still alleviating the socio-economic challenges of citizens though at a diminishing rate and in a backward settings. Had they got the affirmative measures they deserved, their impact in moving the country forward could have been beyond anyone's imagination. One of the critical problems causing the demise and marginalization of TTs has been the lack of a will and appetite to recognize the usefulness of the sector, which was instrumental in making the nation one of the ancient civilization centers of the world (Henze, 2000; Levin, 2000). Apart from the values of tangible and intangible heritages, providing a huge employment opportunity for citizens and contributing a sizable economic return to the national GDP (CSA, 2015, 2002) could have been cited as significant value that should not have been

ignored and marginalized. The values so far materialized from the sector, largely, have been accounted without being pronounced in the attributes of the national economy index, because they mostly have been kept in secret and operating in shadow. As far as the socio-economic benefits being reaped from TT practices continued to remain significant, appropriate nurturing and conservation measures should have been instituted, which could have enabled the country to enjoy competitive economic and technological leverages. Technological, cultural, social, economic, historical, and psychological advantages, which could have taken the development of the country a step forward, were in most cases, cursed to perish because stakeholders were not able to recognize and appreciate the multifaceted values embodied in TTs.

The long overdue agenda to recognize the significant role played by TTs, mostly pervasive in the shadow economy (Tadajewski, 2009; Friedrich, 2006; Williams, 2006), implies that many skills and tools are vanishing without having the chance to be accounted and rejuvenated in a way that ensures their conservation. In fact Javalgi et al. (2011) and Maiga *et al.* (2011) have emphasized the need for the incumbent era to be an age of “knowledge-driven” economy being bolstered by embracing and looking back into traditional skills that are organic and green if the developmental endeavors are to sustain and bring added advantages. Especially when the benefits of TTs are vivid and significant to today and the coming generation in many forms giving them a due attention and devising intervention measures that can bolster and invigorate their conservation and application becomes necessary. In real terms, the intervention has to extend to include salvaging of skills and methods from those that are no more active or those gone extinct as part of heritage conservation endeavors. Advocating for the renaissance of ancient technologies is not as such for the sake of advancing technology per se. It must be understood as the renaissance of the human capital by unlocking the latent potentials accumulated in the past. If leadership was keen enough to appreciate the contribution and the wider meaning of TTs, rescuing the practices from the trap of the adversaries that have been pushing to seal their extinction could have been deterred and the ignored vitality reversed.

## 2) Resolve Causes of Conflicts and Biases

Among the factors that have been pushing hard to wipe out the existence of TTs, as established in the findings of the research, were rejection and biases at the wider public level perpetuated by opponents whose motives are believed to emanate from a broader political

motives, ignorance regarding the embedded values, and conflict of interests. The presence of shrewd motives emanating from conflict of interests expressed through destructive agitations against the sustenance of TTs can be inferred from the way compatriots are made to despise their traditions, which obscured the country from making developmental strides. The general public is made to believe TTs are poor in quality, dangerous to apply, and figuring them as marks of backwardness, which became the cause for traditional practitioners to keep the skill in secret and the applications in shadow. Hence, if TTs have to revive and unlock the potentials for the betterment of the country, reconciling the causes of differences with those who became biased or have entered into conflicts need to be worked out on lasting basis. Branding TTs to the extent as horrifying and “unholy” practices or as cheap and backward activities that belong to the ostracized, outcasts, poor, and uncivilized quarters of society also have to be corrected and reoriented. The wider public has to be provided with knowledge and information that reveals the true nature, values, meanings, uses, and purposes of TTs. TTs need to get an access into an equal play ground to compete and prove their versatility based on merits not humiliation grounded on orchestrated defamation and biases.

### 3) Introduce Regulatory Frameworks and Patent Rights

If the significance of TTs to the society in terms of providing services and economy leverages is recognized, introducing regulatory frameworks based on just and legal grounds becomes apparent. Literally, TT practices do not have legal personality, patent rights, and standard of products and services, which leaves end users exposed and vulnerable to exploitation, abuse, or collateral damage. If their right or interests are violated by any TT practitioner, there are no legal frames and norms defined by law that can help them to claim compensation or lodge litigations. Recognition TTs implies that practitioners and end users relations could be also contractual and valid. One of the reasons many TT practitioners prefer to operate in shadow and in remote or peripheral areas as clandestine entities could be taken as a way of evading accountability in times end users sustain damages as consequences of their actions or defend their security and interests in the absence of a caretaker authorities to whom they can appeal. They also have to keep their practices secured from those who could robe and compete them or who could abuse the application in a wrong way for which they could not get protection and defend their rights by establishing legal cases.

To the contrary, the reason end users also prefer to use and visit TTs in shadow is mainly to avoid defamation and marginalization by the biased sectors of the society. The gap in this regard has also initiated pseudo practitioners to exploit end users by pretending that they are genuine traditional practitioners because there is no legal ground to scrutinize for certification of merits. This shows the need for having a legal framework that governs the practices and introduce standards of TTs where they have to be registered to make their skill, methods, and tools acceptable and known explicitly. Such measures could help TT practitioners to secure patent rights for their technologies so that they can endeavor to promote, conserve, and transform with confidence in an overt manner. End users also could have the right to use products and services that are legally authorized and standardized where, if a problem that could compromise their interest encounters, they could pose legal and contractual claims confidently. In general, the legal framework needs to create an enabling environment where traditional practitioners are respected, end users protected, and the technologies conserved.

#### 4) Create Synergy Between TTs and MTs

Due to the harassment and marginalization TTs of Ethiopia have been forced to endure, the technological supremacy the country had over others was eroded and in some cases completely destroyed or overtaken. Though, there are still many TTs whose effectiveness surpasses many counterparts belonging to modern technologies, the more and more citizens are detached from their traditional roots, the more TTs come closer to their demise than survival. Furthermore, the hostile attitude MT practitioners and affluent users have towards TTs is also a source of concern that have been hastening the extinction of these rare technologies. In fact, the implicit cause of the conflict between the two camps emanates from the desire to dominate the competition for similar products and services. The souring of the contradiction has escalated to a level where MT practitioners have been damning TTs on the pretext that the practices are ineffective and dangerous to end users, though the inherent cause of the conflict and bias has also emanated from rival interests reflecting the philosophical orientations upon which the diverging foundations are anchored. To reconcile the different world views and conceptions so as to make both camps to work in integration could not be as such feasible. Rather, effort has to be waged to provide a space based on understanding and establish synergy where they can complement in the endeavors of advancing science and technology. The gap of conflict of interests,

misunderstanding, and mistrust that have been prevailing for generations has to be managed and reconciled wisely so that the country could become more beneficial from both ends. This job can be carried by creating an enabling and conducive environment where practitioner of both sides can work together, under the auspices of relevant authorities who could help to reconcile and narrow the gaps of mistrust, based on appreciating the qualities and values of TTs so that they can join skills and practices for a complementary and cumulative impact.

#### 5) Institute Organs Entrusted with Looking After TTs

Organization creates systems and norms to own and manage tangible and intangible resources, which otherwise, could go in disarray, or ineffectively applied in the process of interaction, production, or utilization (Tellis et al., 2009; Alavin et al., 2005; Gupta et al., 2000). Forming institutions that can handle legal, physical, financial, social, marketing, technical, etc. issues that are critical components of any undertaking (Cunningham, 2010; Narayanan *et al.*, 2003; De Gues, 1997) are factors devoid from the realm of TTs of the country. Heterogeneous interests, which are often the causes of conflicts and very much evident and affecting the versatility of TTs can be tamed and defended only if there are organizations who can advocate and take the responsibility of reconciling and balancing varied interests and straightening skewed orientations (Summers, 2010; Blazejewski, 2009; Stumpf, 1995). Many TTs are believed to have gone extinct not because they lack values to warrant their nurture and conservation, but because they were not able to get the opportunity to be appreciated by the wider public through the advocacy of entrusted institutions that could have promoted the core activities of TTs by:

- a) Conducting research works and take inventory;
- b) Standardizing and certifying applications and practices;
- c) Identifying and commercializing traditional products and services;
- d) Conducting marketing and awareness creation activities;
- e) Designing appropriate strategies of conservation and transformation;
- f) Nurturing and empowering innovators and practitioners;
- g) Providing security and protection by enacting legal frameworks.

However, to ensure the future of TTs, in the view of Ho *et al.* (2011) and Killian *et al.* (2011), building organizational capacity gives the guarantee in bringing a change and dynamism with

equal pace the external environment changes. The basis for a resolve to harness and “unleash” latent resources and innovate new products and services that can fall into the domain of total quality management (TQM), can be materialized by building competitive leverages based on indigenous skills. Practically, to talk about organizing businesses in the traditional domain has been a remote concept. Still the tangible and intangible resources could be wasted unless systems and norms on how to account, manage, and deploy them is instituted (Pun & Nathai, 2011; Gonis *et al.*, 2011; School, 2003). Conserving such unique resources, which are abundant in areas of traditional practices of the country, could be the basis upon which competitive edges that can ensure continuous learning and innovations can be built. The capability of organizations should not be limited to manage resources and skills only. They have also to be attentive in institutionalizing knowledge and skills possessed by communities and scattered individuals. As indicated by Bock et al (2005), organizations often fail to transfer knowledge and skill into organizational resources: a critical limitation in the domains of traditional practices of the country. The proposed institution has to pay special attention to TTs that are still proving active and viable but marginalized like the cases of TM and Tush. An effort need to be waged to bring TM skills from clandestine to the overt world by establishing capabilities that can go up to forming traditional or herbal centers. The same backing needs to be given to the practices of Tush, at least by consolidating the skills and creating organization capabilities like forming franchise outlets. Such institutions have to create conducive atmosphere for innovators and practitioners. Innovation can take place only in an enabling environment. Recognizing innovations has to become a culture and norm of leadership and society, which cannot be realized without having a responsible and entrusted institutions. The responsibility of the institution that has to be organized to conserve and promote TTs in the way of the context of this thesis, has also to address the issue of salvaging the ruined and inactive technologies from which historical, technical, and anthropological heritages can be retrieved.

#### 6) Incorporate TTs in Educational Curriculum

Education is perceived as a critical instrument to empower people by making them understand their environment, appreciate their cultural and historical values, and enable them to interact effectively with communities (Fraser, 2014; Biesta, 2009; Sterling, 2001). Besides losing socio-economic turnabouts, generations detached and devoid of knowing the foundation of their

history and culture could be victims of identity crises (Yineger *et al.*, 2008; Tolossa, 2006). Though the country is endowed with ample artifacts that tell the technological richness and culture of innovativeness, they are, in most cases, excluded from the educational curriculum, which implies the history of ancestors is left untold and unrecorded. It is through education that people can learn and become aware of their surroundings and history as well as initiate answers to questions and scrutinize norms and practices of past and present societies (Fraser, 2014; Biesta, 2009; Sterling, 2001). TT practitioners are lost in the debacles because their knowledge and skills could not be heard as they are detached from the main stream of education: a critical instrument to inform subsequent generations. That is the reason the extinction of TTs became expounded starting the time the national educational medium supposed to reflect and disseminate the technological knowledge accumulated across generations of the society was encroached by alien methodologies and approaches of educational system (Yineger *et al.*, 2008; Tolossa, 2006).

According to Serbessa (2006), the learning-teaching model being used in Ethiopia originated from the traditions of the west, which is full of deviants from the national traditions practiced for centuries has affected the quality and perception of education per se in the context of nationalism. The replacement of the old curriculum by the western model has forced the society to abandon its culture and TTs, which were the basis of advancing and laying the foundations of the society's technological innovations and philosophical views (Yineger *et al.*, 2008; Kassaye *et al.*, 2006; Tolossa, 2006). Students had to learn western education based on the agitation that the domestic system was backward that cannot serve the aspirations of the modern world. They were not made to know what belongs to them but pursue alien curricula where they were inculcated to believe that they have to learn the foreign curriculum if they are to become really educated (Kassaye *et al.*, 2006; Tolossa, 2006). This has made the country to become a “battle” of technologies and cultures belonging to the country and the west. Of course, the domestic technological and intellectual fabrics that lack a curriculum backing have been slowly but surely defeated. That is why, if TTs are to revive and get conserved, new generations need to know about the inherited values, history, roots, and resources through the medium of education (Bekele, 2007; Kassaye *et al.*, 2006; Fassil, 2003).

The naïve intention of the western educational curriculum proponents was to benefit the country from science and technology but without being able to see that their actions will alienate

the country from its roots of history, knowledge, culture, language, philosophy, art, and even social norms (Yineger *et al.*, 2008; Bekele, 2007; Tolossa, 2006). However, the educational system and the derivative cultural hegemony were initially not able to either get fully internalized or give impetus to the indigenous dynamism without which development has proved to be a farfetched errand. Of course, the domestic technological and intellectual fabrics has been getting more and more defeated as time passed. Subsequent generations were getting more and more alienated from knowing what belongs to them except adapting and assimilating to alien cultures through the medium of imported and imposed educational curriculum. As far as education is not used as an instrument of knowing and developing societal values and beliefs through the teaching learning process, the roots and resources created by past and present generations will crumble without leaving traces of TTs, which could be an ignorant and regrettable destruction against the interests of subsequent generations.

#### 7) Revive Education of Ge'ez Language and Alphabet

Ge'ez is an ancient language and alphabet of the country, which emerged and was extensively used as a medium in ancient Ethiopian and the Orthodox Church sermons stretching for centuries. The foundation of ancient Ethiopia's education, communication, script, and philosophical orientations were knitted in this language and its manuscripts, which currently is on the verge of extinction. The Ge'ez language and alphabet is believed to have harbored the technological tools and philosophical orientations of the country's long history. That is why, the revival and understanding of the language and Alphabet is believed to help in knowing the variety of skills and knowledge owned by preceding generations. This implies that if we lost the language, we lost the indigenous knowledge, socio-cultural norms, and symbols of identity embedded therein. TTs of Ethiopia inscribed in Ge'ez scripts are storytellers of the "lived experiences" of past generations; but they hardly have readers and interpreters. To uncover the expanse of TTs that have been in application and comprehend those still surviving, resolving to revive the language and its scripts could serve as a crucial instrument in unlocking the treasures belonging to the past but still relevant. To fully understand the history of Ethiopia, it is necessary that one has to comprehend this ancient language and its inscriptions (Belay, 2007; Pankhurst, 2001). To conserve such values from further destruction, a program designed to gather and store all kind of manuscripts in Ge'ez abandoned and looted, including those transported into foreign

countries need to be traced, retrieved, and managed in a tailored libraries if the country has to regain the foundations of its lost socio-economic values and its long-lived identity.

The number and type of scripts documented in Ge'ez are believed to be huge where most of them reside in the sanctuary of monasteries and churches all over the country. A considerable size of manuscripts are also believed to be in big libraries of the world illegally ransacked mainly during wars by fugitives and renegades (Pankhurst, 2010; Zewde, 2002; Levin, 2000). Though the number of citizens who know and use the language has shown a dramatic shrink, it is often the clergies of the churches still frequenters although their focus is on reciting manuscripts dealing with prayers and religious fervors. Among the traditional skills and knowledge contained in Ge'ez manuscripts, descriptions of traditional medicines are believed to be wide and evident (Tollosa, 2006; Kassaye *et al.*, 2006; Pankhurst, 1990). That is why the importance of commissioning a study on the secrets of knowledge contained in the manuscripts of Ge'ez and reviving the education of the subject is suggested as a future area of research from which the forgotten experiences of the country belonging to the remote past could be heralded.

#### 8) Inventory and Documentation of TTs

If TTs are to be conserved and transformed, knowing the visible and invisible magnitude of their nature as tools, methods, purpose, content, application, level of acceptance, frequenting areas and people, sources, ownership, custodianship, size, age, etc. becomes necessary. Taking inventory and documenting TTs will enhance the sphere of the intellectual capital the country could own. An intellectual capital, which is the only reliable resource entities can rely on in building their competitive advantages (Bock *et al.*, 2005; Gupta *et al.*, 2000), could be captured from secretive and hoarding practitioners of TTs scattered all over the country. The biggest challenge of traditional practitioners or institutions is their failure to manage, capture, share, and disseminate the knowledge and skills they inherited (Bock *et al.*, 2005; Gupta *et al.*, 2000). They have been getting dropped one after another not because they lack the merit for competitiveness but because they failed to institutionalize and manage the knowledge and skills they own (Alavin *et al.*, 2005; Bock *et al.*, 2005; Gupta *et al.*, 2000). Conducting an inventory and documentation can serve as “launching pad” in conserving TTs either to transform them for further application or conserve them as historical relics and heritages that need to be preserved. In fact, historians, anthropologists, geologists, tourists, academicians, citizens, etc. could be cited as potential

groups who could benefit from such undertakings. To make the inventory a successful venture, a special program that initiates and motivates knowledgeable communities or custodians to come forward to share their knowledge and skill or spare the tools and methods they possess needs to be studied and implemented.

#### 9) Establish Therapeutic Plants Conservation Sites

Many TTs, especially those belonging to medicine and cosmetics practices are based, largely, on inputs derived from plants. The availability of these plants is, therefore, a crucial component if the endeavor to conserve and transform TTs is to be achieved. As much as the therapeutic and other input plants are identified, conservation sites that suit the nature of their biodiversity have to be organized and protected. Before opting to conduct a further study on the use and effectiveness of the plants, appropriate climatology zones need to be piloted for the initially identified plants where they can be germinated. To manage and run such sites effectively, the job need to be entrusted into a well-trained botanists. The conservation process for the plants whose effectiveness is established has to be supported by introducing large scale farming lots that can produce input harvests at commercial levels to supply traditional cosmetics and pharmaceutical factories presumed to be established subsequently.

#### 10) Ascertain the Effectiveness of TTs Through Scientific Methods

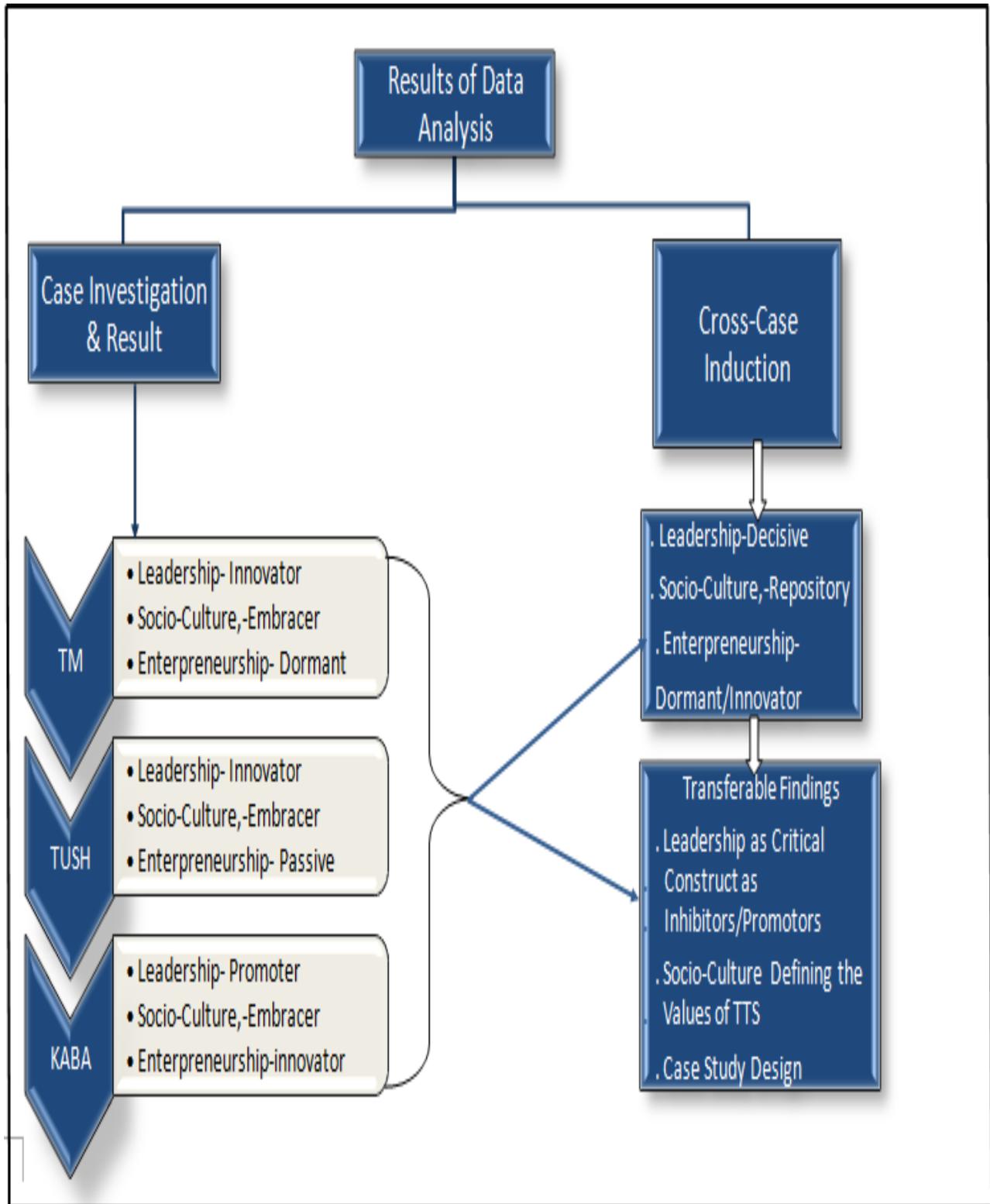
As claimed by respondents and practitioners in the study field, the socio-economic benefits of using TTs are widely applauded. There were, however, some respondents who were skeptical on the effectiveness of some technologies, which could be taken as natural and representing the exceptions encountering in any undertaking. Nevertheless, the complaints aired by participants and the bias prevalent in the wider public should not be underestimated. Rather responsible bodies need to give attention and intervene so that the doubts and suspicion many people feel could be cleared, and the benefits ascertained by end users could be accredited consequently. The complaints and the bias reflected are indeed damaging the viability and acceptance of TT practices. As a result, even the obviously effective technologies are also denied the acceptance at the level they deserve. That is why many valuable traditional practices are doomed to remain as extinct and wasted resources. This reality, therefore, calls for an intervention measures by concerned entities to prove the effectiveness or the risk of these technologies scientifically if citizens have to be protected from undue harms, and reveal or enhance the unnoticed or

marginalized benefits that could accrue to the socio-economic benefits of the nation. Generally, the conceptualized research process (Figure 26) and the results established can have a practical bearing only if they are converted to become practical at a level worth the effort through the implementation of the concluding recommendations.

#### 11) Popularize and Commercialize Surviving TTs

Any product or service can endure as far as it has material or esthetic values that can be monetized or expressed symbolically. Enumerating the history, culture, language, art, script, including the sites, customs, etc. where the practices of TTs have been embedded and owned by past and present generations could reveal enormous socio-economic values if they are conserved and commercialized. The country needs to regret for the opportunities it has lost for not giving the due regard to internalize and appreciate the added values that could have been earned from its indigenous technological resources. The embedded values of TTs revealed in this study have helped traditional practices to endure but below what they could have bestowed to the society. Many TTs are believed to have gone extinct not because they lack values to warrant their nurture and conservation, but because they were not able to get the opportunity to be known and appreciated by the wider public through the instrumentality of marketing and promotional works. That is why a suggestion to conduct a research of identifying the relevant infrastructural setup and overall resource pool together with devising methods and approaches of commercialization in a way that can help the sector to release the latent potentials becomes necessary. By employing commercialization measures, the conservation of the technologies whose viability was demonstrated across centuries can be realized and transformed into small scale industries of SMEs that can be promoted based on indigenous competitive leverages (Zaleski, 2011; Bock *et al.*, 2005) where enhancing the performance of TT firms scalable into the mainstream of the national economy can be taken as the ultimate achievements of the study.

**Figure 26: Conceptual Framework of the Research Routes**



Source: Based on summation of the study processes

## 8.4 SUGGESTIONS FOR FUTURE RESEARCH

Addressing a given research question will automatically give rise to a new or generative research questions demanding a tailored answers that could call to go through similar process all over again (Leech & Onwuegbuzie, 2008; Henning, 2004). In the quest for further research, initiations and suggestions aiming at understanding the past and predicting prospects of the future are appetites that will continue haunting the minds of engaging intellectuals and scholars (Fraser, 2014; Marlow, 2013; Klatt & Hiebert, 2001). Research works are not necessarily about new additions; but could be also endeavors to test and confirm the findings of studies that were already done but still suspected to have flaws, or found to be outdated by inquisitive minds (Marlow, 2013; Gras *et al.*, 2011; Yaprak, 2008). This implies that a research work by researchers will continue to embark on:

- a) Correcting mistakes or false presumption of conceptions or findings;
- b) Refuting accepted norms by producing substantive findings;
- c) Developing the foundations of existing knowledge;
- d) Clarifying and intimating skeptical norms and findings;
- e) Innovating or inducing new frontiers of knowledge (Fraser, 2014; Marlow, 2013; Gras *et al.*, 2011; Yaprak, 2008).

The direction of future research can remain to swing in disarray if directions are not set by preceding or senior researchers (Fraser, 2014; Marlow, 2013; Gras *et al.*, 2011). One of the approaches to streamline the endeavor in this regard is, therefore, to forward suggestions for future research by looking into the issues of integration and synergy in relation to the available stocks of knowledge and the researches already undertaken (Marlow, 2013; Gras *et al.*, 2011; Yaprak, 2008). If the issue of conducting a future research is viewed from the perspective of TTs of Ethiopia, the subject becomes even contentious requiring an urgent intervention so that deterrence against extinctions could be initiated. There could also arise minds that challenge the relevance of promoting a research by those who think TTs have no relevance to present and future as they are matters or subjects belonging to the past that is already closed. On the other hand, there could be proponents of the subject who feel and believe that the issue of saving TTs is an overdue agenda if historical, social, cultural, philosophical, and economic values embedded therein are to be spared from extinction.

In addition, prioritizing studies on TT issues, considering the urgency required in terms of saving those vulnerable to extinction by initiating an immediate intervention based on the findings of a priori researchers could be also of paramount importance when suggestions are forwarded in advance. With this conviction, the need for suggesting future research works on TTs based on relevance or urgency becomes imperative. In situations where there are not enough resources and conducive situations that can allow and accommodate more research works at a time, the only option available is just to go for prioritizing leaving many more others to perish unless they are fortunate enough to sustain by their inherent dynamisms. Under such dictating situations, the more feasible approach to prioritize among the competing research needs surrounding the subject could be to suggest those identified on the basis of having relation to this study so as to ensure generic enrichment of the findings (Leech & Onwuegbuzie, 2008; Henning, 2004; Klatt & Hiebert, 2001). With this viewing background, the following areas of TTs intimately related to this research are suggested to be interests of future research demanding an immediate commencement.

#### 1) Expanding the Portfolio of Researched TTs

This research done on TTs of Ethiopia has indicated vividly the buried socio-economic resources that could have had tremendous benefits. It is a saddening story for a nation that was indeed a pioneer of many technologies induced to be conceived as “where it all began” has failed from becoming a bastion of innovations (Sobania, 2010; Henze, 2000; Levin, 2000). Furthermore, the most disgracing phenomena is the fact such iconic technological resources that have been glaring with past generations are not known or appreciated, at least as records or legends of the country’s history. The situation under which the surviving TTs are found to operate is mostly in clandestine, which is not clearly known to the general public. Due to the harassment and marginalization practitioners were forced to endure, the knowledge is kept in secret making it difficult to understand the practices and resources of the sector in their entirety. This indicates that an initiation to conduct a research in the sector could not be “business as usual.” That is why a pervasive future research on TTs is suggested so that more and more technologies that are still in shadow or buried can be revealed and become valuable resources in building competitive advantages or alleviate and fill many social and economic gaps. The speed the portfolio of studied TTs grows determines the advantages that can be exploited from the

latent resources before many are destined to fade. In the absence of documented information or willing storytellers, conducting a tailored investigation could not be as such easy. Efforts by future researchers will require delving into a great deal of planning peculiar to cultural and emotional attachments that could surface in conducting such a sensational study.

## 2) Revealing the Social and Philosophical foundation Circumventing TTs

Many respondents have expressed their deep and emotional attachment to uses and practices of TTs. In the process of discursive data gathering, some even went up to becoming irritated to compare TTs with modern technologies. They reflected unwavering belief that TTs are mysterious revelations with surpassing and incomparable potency and efficacy. Especially, the psychology and belief of practitioners and some end users were so sensational where they see TTs as their “brain child” or “gift of God” or as inheritance from respected forefathers that deserve a due mystification. Despite the marginalization and punitive measures TTs have been enduring, the devotees never seem to abandon their practices even under harsh circumstances. On the other hand, there are many biased quarters of the society who abhor the practices and uses of TTs, eagerly wishing and waging to see their complete annihilation. Some people also go to the extent of branding TTs as products and makings of “witchcrafts,” which shows the extremes of beliefs promoted in viewing TTs as significant resources or as vectors of evil spirits. Such contradicting stands, therefore, requires the commissioning of an in-depth study to understand the underlying psychological, spiritual, and philosophical underpinnings of TTs.

## 3) Investigating the Impact of Practicing and Applying TTs in Clandestine

As revealed in this research, to escape harassment and marginalization spearheaded by opponents, and in some cases, to mystify the practices, many TTs are forced to keep their knowledge and skills in secret and the applications in shadow. As far as there have been wars and threats against upholding the practices by despising opponents, it can be inferred that many were annihilated at the time they were confronted with the challenge while those surviving staggeringly are the result of the ability to go clandestine. Whether they survived or perished, the other issue that need to be revealed by future researches is the necessity to understand the impact of operating and keeping TTs in shadow from the perspective of benefiting or harming end users and ensuring the conservation of the practices. On the other hand, though the general indications on the significance of TTs in terms of economic, social, and psychological values were assessed

and appreciated in this research, the level of their expanse and importance while operating in covert need to be measured and concretized unequivocally. Hence, the problems and challenges that have forced TTs to go covert and the positive or negative consequences of operating in clandestine need to be evaluated and fully comprehended.

#### 4) Deterring Threats Against Indigenous Languages

Language is a pillar of societal and cultural norms and practices with embedded beliefs, values, and conceptual orientations that defines the identity of societies (Stake, 2013; Donmoyer, 2013; Zaleski, 2011; Cousin, 2010). Allowing a language to be annihilated is to accept the death of a given society's technological skills and methods, culture, communal norms, beliefs, and roots of identity. Encroachments on language, especially in the globalized world, are a testing phenomenon that gets grip unconsciously and without notice. No doubt, the encroachment of language is definitely the erosion of culture and identity, which could become a worry of nationalists who struggle to conserve the heritages of humanity. As far as the concern in this regard is resonating, understanding the level of encroachment that can help to devise appropriate intervention measures of conserving languages is imperative. To do the job, conducting a research on the level of encroachment in general and specifically in languages like the threats looming over *Amharic*, the official language of the country, is proposed to be conducted by future researchers. The intrusion of foreign words emanates from the need to find symbols for new expressions and by misguided luring motives that go up to replacing the existing ones. Those who think using adulterated language as symbols of modernization are in fact vectors threatening the survival of indigenous languages. Especially, the current trend in the usage of local languages by replacing existing words is likely to result in stunted growth and subsequent death of national heritages embedded in languages. The most worrying practice in this regard is the inclination to adapt foreign words for new expressions when the alternative is available in the generic or other national language resources. The adulteration, intrusion, and hybridization of the language are, therefore, likely to result in the extinction of many cultural and symbolic values unless an intervention measure based on a research outcome is initiated. In addition, the hegemony of local dialects and that of minorities by dominant languages of the nation is also of great concern in terms of conserving the embedded socio-cultural values and roots of societal identities, which demands future researchers to look into.

## 8.5 REFLECTIVE CONCLUSION

Throughout the contents of this thesis, the study has tried to show the significance of TTs, on one hand, and the chronic challenges, mainly those emanating from the attitudes of leadership, on the other. The findings of the research have demonstrated the extent TTs have been relevant in pioneering not only ancient civilizations but also the contribution they still are making to the socio-economic fabrics of practicing communities. However, they are in most cases branded and marginalized as irrelevant to the modern settings or dangerous to end users whether it is viewed from the angle of scientific views or religious fervors by the dominant deterrents. Such skewed attitudes have made the splendid values embedded in TTs to remain unrecognized and unappreciated by the general public, and the leadership in particular, which initiated the researcher to reflect on the role of the core construct underlined throughout the study processes.

The stipulated core constructs deduced from the cases studied have been behaving as sworn enemies of traditional practices where artisans and traditionalists have been falling victims of marginalization and rejection perpetuated across generations mainly by the actors at the helm of leadership. Leadership was not willing either to understand nor appreciate the inherent values TTs used to signify by creating an environment where compatriots could be able to overcome the daunting socio-economic problems they have been forced to endure. As a result, the magnificent innovations belonging to the category of TTs have remained wasted and many gone extinct due to the adamant attitude and disoriented role played by leadership, which became the basis for questioning the criticality and viability of the construct in becoming a panacea to the problems TT practitioners encountered. The conventional and emergent conceptions on leadership is that it defines the optimal matrix of relationship needed to prevail between the leaders and the led, where the leader directs or shows the way forward with a purpose to:

- a) Attain excellence at cognitive, skill, and action levels;
- b) Mission accomplishment based on perceived and shared goals;
- c) Develop mindset and patterns for instituting coherent behaviors;
- d) Ensure best and effective norms and actions;
- e) Create capacity that can adapt to turbulent changes;
- f) Devise systems and mindset for creating human and physical capital;

- g) Create an enabling environment to release latent resources, etc. (Yergler & Obolensky, 2011; Wang, 2011; Vigoda-Gadot, 2007 ; Bass & Riggio, 2006; Hiebert & Klatt, 200).

Leadership at societal and organizational levels is practiced using the influence and power of inspirational, expertise, or coerce (Yergler & Obolensky, 2011; Thomas, 2011; Wang, 2011; Sihag, 2009; Vigoda-Gadot, 2007 ; Bass & Riggio, 2006; Hiebert & Klatt, 2001). The key factor noted by these authors is that to lead means to show the way the subject people or followers need to pursue. However, if the quagmire of misery and suffering humanity has been doomed to endure is to be counted, it could be concluded that leadership was the most failed profession. Due to this reality, societal challenges across generations are getting ever daunting and scoring successes or achieving tranquility is getting ever crippled or compromised because the conception has been ever skewed. This perspective of the argument is proved by showing that the actions and outlook of leadership is dysfunctional, at least when it comes to the arena of TTs of the cases this research has undertaken. If society has to overcome the hurdles that have been encountering, it becomes impossible to operate under the guidance of a dysfunctional leadership orientation unless the concept and outlook of the construct, which is based on leading or showing the way for the led, is retuned into a concept of enabling the led to mind their business ethically and equitably. The prevailing leadership concept and practices have turned humanity to become a messy creature of the planet, which has squandered the natural and innate potentials humans in particular, and the nature, in general were endowed.

Hence, it had become imperative that the concept of leadership has to be returned from LEADING to ENABLING where the led know what is best for them better than the “prescriptions” issued from a designate leadership; often detached from the reality in the ground and less knowledgeable regarding the “lived experiences” down at the grassroots. Dysfunctional leadership in the realm of TTs have resulted in failure and inability to comprehend the situation and aspiration of the led who often reflect advancement and innovativeness excelling beyond the grasp of those supposed to lead and show the way to pursue. It was due to the fact that leaders who were detached from the “lived experiences” of TT practitioners were made to lead that it became the main reason in crippling the capabilities and resources embedded therein. It is natural that a leader cannot deliver to the expectation of the led as far as the mindset is framed based on perceptions of leading or showing the way forward without living the “lived experiences” of the

led. Under any circumstance, the innate talents in a given leader could not be better or even at par with the inexhaustible creativity and intelligence of individual members of the wider mass or the led. Hence, to look for delivering leaders with exceeding capabilities that could understand and internalize the potentials and versatilities of the led could be a futile errand: a remark that could lead to instigate and inspire researchers and scholars to scrutinize the conventional concept and role of leadership so far reigning, which is not organic, and hence, in need of retuning.

The concept of “organic” in this premises denotes that the effectiveness of leading is not seasoned by changing situational leaders but firmly entrenched in natural and traditional perspectives (Green& McCann, 2011; Jane & Jiang, 2010; Quinn, 1996). The world could be a better place if only the way people are led is no more under the terms of the detached leadership but under the convictions and beliefs of the led by the led, which implies that the led have to be **ENABLED TO LEAD THEMSELVES**, without being influenced or coerced by the terms leaders set as being practiced conventionally. As induced from the cases studied, if humanity was given a free will to lead by itself, the societal gains from the talents and innovations that remained wasted could have been immense. Even the manifestations of many daunting encounters confronting humanity could have been surmounted if a conducive leader-follower environment that could enable resourceful individuals or groups to mind their will was to prevail. That is why the overall situation of leading, as induced from the research, in the sense of conventional role and perception of **LEADERSHIP** has become questionable, and instead, a proposition to embrace the concept of **ENABLERSHIP** recommended. Enablership gives freedom and latitude for the led to reveal their potentials and develop skills where they are best at, than to wait for leaders to tell them what to do that could never come right and true in terms of their capabilities, expectations and beliefs unless elements of enabling are incorporated.

If the led are to continue to be told what to do and how to mind their businesses and deal with their beliefs, humanity will never get what it deserves and could not be what its potentials could allow. As far as the innovativeness and intelligence of the masses are left buried and wasted, the chance of individual leaders who could come to the throne by design or chance, presumed to excel or at least be at par with the merits of the led, and at the same time, assume the role of relieving, absolving, and rescuing the challenges confronting the led will continue to be a farfetched errand. Hence, the endeavors of future researches and academic discourses in this

regard could bear fruit if they dwell on showing, not on how to lead as proxy of citizens or followers, but on developing ENABLERSHIP, to enable society or followers to lead and mind their interests and concerns within the settings of the natural or organic norms because knowledge is grounded in grassroots. Society need to be enabled to mind their own business unlike the present style of leadership marred by coercers or imposers driven by sectarian interest or party political affiliations. Enabling people is not a matter of giving a chance to lead themselves by themselves only but to provide them with affirmative gestures too, which makes a leader a real enabler. Otherwise, to expect for an effective LEADERSHIP that could be at par with ENABLERSHIP could be tantamount to search for born or acquired enablers without being naïve for personal or partisan gains who could be found once in a time like the selfless Mandela, Gandhi, or mother Teresa. Society is hungry for leadership that can make life successful, enjoyable, and meaningful to the level the embedded potentials could release. Whereas, the conventional leadership is observed in becoming more of stifling and in extreme scenarios tantamount to a yoke manifested in derailing, wasting, exploiting, or deterring the led from accessing and revealing their innate potentials that could have enabled them to excel in their performance and achievements.

As the data analysis and interpretation narrated in Chapter 6 has revealed, the conceived leadership role was found to be the core deterrence in conserving and transforming the technological potentials and opportunities embedded in the social capital of communities. The miserable failure to utilize the marvelous technological inventions, mainly in the cases like TM and Tush could have helped in alleviating many health ailments had it not been hampered and deterred by the destructive attitudes and ill-conceived counterproductive measures of leadership. The practitioners of TTs should not have been condemned for continuing to serve their communities. Instead, they should have been accredited for the patriotic role they played in conserving the innovations of ancient technological skills to the extent of harboring in clandestine environments. Leadership placed afar from the terms and mindset could not understand and appreciate their aspirations and the captive resources, which is contrary to the “presumed” roles of leadership. This shows the extent leadership and the led are coexisting in disarray, which calls, as Bosch (1991) has reflected, for a pioneering perception “qualitatively different” that could solve existing anomalies that are unable to solve emerging problems

through searching new models of shifting paradigms that could attract more and more scholars until the extant “problem ridden paradigm” is refuted.

To the contrary, when people are given the chance to pursue their innovative skills and motivations, the amazing result that could be achieved is as observed in the case of the Kaba case study, which resulted from the enabling and affirmative environment the incumbent government was able to extend. This sector has been downtrodden by the harsh and impeding measures of destructive leadership roles until it reached the verge of extinction when, at the end of the day, it was fortunate enough to get rebirth as soon as leadership was willing to bolster the practice and absolve from the yoke of oppression by creating an enabling environment for TT practitioners. When leadership enabled the sector to operate on its own terms, it did not take time to invigorate the latent potentials and innovative minds that have been buried for generations. On the other hand, TM and Tush that have been accepted by end users as miraculous ancient technologies, are being oppressed and pushed to the limits of extinction. Hence, failure of leadership to understand and enable people in the grassroots to overcome their problems innovatively could be taken as inductive and transferable generic problem for all the misery humanity has been ever doomed to endure. If leadership was capable and willing to make societies free from dominations, coercion, and oppression, by creating an enabling environment, there could not have been a limit to the strides of innovations and civilizations as registered, here and there, in the changing paradigms of past and present world.

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## ANNEXES

### ANNEX I: DATA GENERATION AND ANALYSIS PROTOCOL

Preparing a pre-designed guideline/protocol used in the process of data generation and analysis is important because it shows the way of having effective and productive interaction between the researcher and respondents. Data generation and analysis protocol (rules, procedures, and questions) designed to direct the field study and the analysis processes, based on concepts extracted from different literature resources focusing on research methodologies, in general, and qualitative methodologies in particular, in a manner to answer the sub-questions of the central question, shall be followed by the researcher (Creswell, 2009; Lewis-Beck et al., 2004; Kumar, 2004; Yin, 2003; Tellis, 1997; Eisenhardt, 1989). This guideline is intended to have effective and productive engagement in the field study by showing the covert and overt productive steps and processes the researcher has to follow. The approach enables to become flexible, avoid haphazard and disorganized actions, and preclude wastage of efforts and resources (Creswell, 2009; Lewis-Beck et al., 2004a). The contents of guidelines or operational memos stipulated in the instruments could help the researcher to give a due attention to the field study beforehand are:

- a) Identifying the site where the study could be conducted;
- b) Making the environment conducive for interactions with participants;
- c) The method of recording the captured data;
- d) The way respondents have to be identified and selected;
- e) The nature of the actors, events, and processes to be studied;
- f) The documents or materials to refer;
- g) The need of decisions to make by the researcher on the spot;
- h) How to close or open the topic and probe to new or seek more data;
- i) How to word the questions in the process of interactions;
- j) Methods used for counterchecking of the processes;
- k) The manner of analyzing the data and reporting results (Creswell, 2009; Lewis-Beck, et al, 2004a; Henning, 2004).

In the process, the cost and frustration from conducting a study that is not well planned and guided could be reduced or avoided by adopting a purposeful and disciplined approach. The data generation and analysis procedure is designed in detail to show clearly how to conduct the data generation and analysis procedures from the start to the finish. The procedure includes the approach in interacting with respondents and sequencing of data generation and analysis (Creswell, 2009). The data generation process has to start by deciding and ensuring the reliability of instruments of measurements believed to be appropriate for the purpose. Taking Creswell's (2009) advice, the data generated in such a way shall be recorded in a pre-designed field note book, which have a space for the heading, indicating site of study, interviewer, interviewee(s), and a space to record responses between questions. Every time data is coded or categorized a

rechecking process will be conducted from where missing, misrepresented, and distorted facts have to be corrected. The data generation process is considered as completed after all the data required is generated, verified for completeness, and factually ascertained for conducting the data analysis (Leedy & Ormord, 2010; Creswell, 2009; Kumar, 2005; Caldwell & Charles, 2000). The research questions are also sequenced from ice-breaker to more depth where there is the need for probe after 4-5 questions followed by explanation of their ideas in a discourse manner (Henning, 2004). Creswell (2009) has also reminded researchers the need to clarify why the site was chosen, what activities are to be conducted in the study process, how the result is to be reported, and how sensitive issues are going to be managed. Finally, a statement of thanks to acknowledge the time and energy spent to support the study need to be expressed by the researcher to respondents and facilitators at the of closing every session (Creswell, 2009; Henning, 2004; Mouton, 2001).

The most referred sources cited to organize the data generation and analysis guidelines and procedures, checklists, reporting results, and framing interview questionnaires were: Punch (2000), Prasad (2005), Creswell (2009), Wilkson & Birmingham (2003), Kumar (2005), Leedy and Ormord (2010), Blaxter et al. (2006), Culdwell & Charles (2000), Peterson (2000), etc. The following points were, therefore, concepts and techniques extracted and blended from the seminal works of these authors, which were relevant in shaping, addressing, and limiting the contents and boundaries of the research work's guidelines:

### 1.1 Data Generation Guideline

- 1.1.1 The case study shall be conducted in the premises of three purposely sampled traditional technology centers or practitioners;
- 1.1.2 The status, profile, and address of traditional technology centers or producers shall be learnt from parties who have the responsibility of overseeing or advocating them, which are in this case, small-scale agency, trade licensing bureau, trade directory, and association of traditional healers and weavers;
- 1.1.3 Seek to the type and role of stakeholders who are engaged with the cases of the study as partners, regulators, end users or beneficiates of the traditional products or services;
- 1.1.4 After contacting the people of the selected cases, a discussion to secure permission and on the way forward shall be conducted with responsible personnel until an agreement and workable schedule is reached;
- 1.1.5 If the initially selected ones are not willing to embrace the study project, others from the similar sample list shall be sought in the same manner;
- 1.1.6 To set a schedule, the type of data to be solicited and the type of respondents to be included at individual or at focus group discussions shall be agreed with the persons in charge;
- 1.1.7 Resources and time frame that are necessary to conduct the study shall be organized before the field work commences;

- 1.1.8 As per the schedule of the meeting, the researcher and his assistant shall continue visiting or convening in the premises of the case of study until the entire program scheduled with respondents/participants winds up;
- 1.1.9 The data to be captured shall be inscribed and annotated in the developed field note, code book or format designed for the purpose;
- 1.1.10 As the case may be, reestablish and maintain a field note format that is convenient to capture the generated data and to include the understanding and interpretation of the researcher as the process rolls;
- 1.1.11 To get an in-depth understanding on issues addressed by interview or observation, a deliberate conversation or discursive can be carried with respondents believed to be well informed in an informal setting;
- 1.1.12 To solicit data from discourse on talk or freely flowing conversation, in the process of interview or observation, with individuals or groups of the research can be conducted without having a pre-planned program;
- 1.1.13 Literature materials and transcription of conversations that refer to the cases under study shall be identified and the data and the characteristics they contain shall be captured and corroborated to the field note;
- 1.1.14 The data secured or generated shall be transcribed and annotated immediately and will be related to points that need to be clarified or consolidated in relation to each research sub-questions;
- 1.1.15 Identify the questions that are appropriate for each case and respondent in advance and make sure to use the right instrument for the right data generation process;
- 1.1.16 On top of interview responses and observations, seek for more historical data by asking for oral or documented sources from the identified stakeholders;
- 1.1.17 Make sure your interviewees and observations are sufficient and representative of the population or sites of the cases and issues that need to be addressed;
- 1.1.18 See if those respondents who are supposed to be there are indeed involved and ensure that enough time and frequency is allowed for the meeting or observing the recurring activities;
- 1.1.19 Counter check for data reliability through the application of triangulation methods by including relevant data not covered by the relevant instrument as far as they surface in the process of the study;
- 1.1.20 Make sure to use the right instrument for the right data generation.

## 1.2 Interview Guideline

- 1.2.1 List number and profile of respondents/interviewees and informants before the program is launched;
- 1.2.2 Consider focus group interview if respondents' reflect similar composition by taking "group dynamics" into account;
- 1.2.3 Make a provision to cover and interview all members of a case understudy if they are equal or less than ten;

- 1.2.4 At a time not more than five interviewees will be made to participate in the interview process;
- 1.2.5 Identify a suitable location or venue to convene and to carry the interview process so that distracting pit falls are avoided;
- 1.2.6 The aim of the interview in particular and that of the study in general will be explained to the interviewees and the responsible personnel;
- 1.2.7 Respondents shall be rest assured that the data generated will be kept as indicated in the consent form and no ethical transgression will ever take place;
- 1.2.8 Make sure if everyone included in the interview list has received the agenda and is psychologically prepared for the interview interaction and a brain storming session is included in the schedule;
- 1.2.9 As much as possible, ask respondents to provide documents that can support or supplement the data or augment the information they provide;
- 1.2.10 Time table and frequency of contacts will be explained and interviewees will be reassured of ethical issues;
- 1.2.11 To refresh the process there shall be a break at an interval of the session possibly not more than every hour of session and not more than twice within a day;
- 1.2.12 Be strict in following the time table set for every scheduled meeting by allowing enough time for the meeting process;
- 1.2.13 Raise the right question to the right respondent and make sure they have grasped the questions raised in terms of traditional technologies and the respective constructs;
- 1.2.14 Make sure respondents answer is clear and directed to the question and at the same time try to capture more story the respondents want to tell;
- 1.2.15 Record respondents view in a manner suitable to the instrument of measurement specified and evaluate if every meeting has accomplished the intended purpose;
- 1.2.16 Remember to give a clear list of assignments interviewees have to work and come for the next meeting without forgetting that there is a close follow-up on the progress on previous assignments;
- 1.2.17 Don't put words in "people's mouth", which could deprive the extraction of data
- 1.2.18 Keep your reactions to yourself; don't try to influence the story they have to tell;
- 1.2.19 Identify suitable data capturing and recording systems and record responses "verbatim" separate of the researchers' understanding;
- 1.2.20 Make sure that the same questions is raised to different respondent in order to triangulate data;
- 1.2.21 Make sure the respondents answer is clear and directed to the question even if the answers are for the questions not raised by the researcher;
- 1.2.22 Try to capture more story the respondents want to tell, which could help to uncover information the interviewees are aware of;
- 1.2.23 Don't end the session unless the case in hand is fully comprehended;

1.2.24 Interviewees will be consoled to feel free to ask and to comment and the need for continued relationship will be stressed;

1.2.25 The interviewer will devise means of connecting the relationship with respondents of the case understudy until the job is finished.

### 1.3 Observational Guideline

1.3.1 Indicate the area of interest or inquiry where specifically observation is required either to augment or complement the generation of data via interview;

1.3.2 Design a clear and detailed observation program relevant to the setting of the case in order to avoid redundancy or skipping of events that need to be observed;

1.3.3 Set your agenda of observation to be conducted separately or simultaneously while employing other instruments of data generation;

1.3.4 If prior arrangement is required, give a clear list of assignments and schedule to the concerned personnel or facilitators in the site of the unit of analysis;

1.3.5 Ascertain if those personnel or events expected are the right ones and indeed are present there at the right time;

1.3.6 Asses if the environment and the process are relevant to conduct observation, which has to be conducted in a natural manner a as usual ;

1.3.7 Considering the situation and convenience of the event to be observed, specify the appropriate time for starting and ending the observation process;

1.3.8 Recognize and be alert if there is any unwanted effect due to the commissioning of the observation on the process or the people being observed;

1.3.9 As much as possible, the researcher needs to remain neutral and relatively quite during the observation process;

1.3.10 Assess if the researcher's visibility as an observer does matter with regard to reactions from members in the case understudy and the quality of the data to be generated;

1.3.11 In times when the observation is to go overt, have someone to introduce you to the people and their processes to be watched;

1.3.12 Make sure if at all your age, sex, ethnicity, dress, etc. is not likely to affect or distort your observational activities;

1.3.13 Arrange your field note into columns of recording the observation and interpretation of what you understand before the event is forgotten;

1.3.14 Assess if observational method is enough to answer the specified questions or if you need to include participants as additional data sources.

### 1.4 Data Analysis Guideline

1.4.1 Understand the background, motivation, and psychological makeup of respondents, who could be practitioners, end users, suppliers, partners, advocates, etc. to see how their culture may affect their response;

- 1.4.2 Check if the objectives and goals for the meeting are clearly stated and understood by every respondent;
- 1.4.3 Look into gaps that need to be covered by focusing on the actual rather than on the abstract/hypothetical aspects of the topic;
- 1.4.4 Confirm if the methods and models designed are appropriate for analyzing the generated data type;
- 1.4.5 Check if the codes and categories of the data retrieved from the field in primary and secondary format are convenient to conduct the analysis;
- 1.4.6 Try to conceive the situation of traditional technologies from the perspective of the respondents, practitioners, end users, policy makers, etc.;
- 1.4.7 Try to note if there is a marked evolution in the tools and products as compared to their original practices;
- 1.4.8 Comprehend how traditional practices have been surmounting problems and challenges against survival and transformation;
- 1.4.9 Assess if the skills are open to all or monopolized by influential or original owners of the trade;
- 1.4.10 Evaluate the extent the traditional occupation improves the life of the artisans as revealed from existing practices;
- 1.4.11 Assess the role of government agencies in enhancing or discouraging the traditional practices;
- 1.4.12 Remember that you are not necessarily getting the facts as to satisfy the research questions.

## **ANNEX II: DATA GENERATION AND ANALYSIS PROCEDURES**

The plan and design of data generation becomes effective if only the process from beginning to finish is meticulously planned, observed, and implemented. The guidelines and procedures designed to show the steps and flows of the data generation process could be instrumental in achieving the depth of data and information that could be sufficient to answer the research question. The methods and instruments of measurements intended to be applied in executing data generation need to be well comprehended and pursued throughout the engagement. The data generation procedures are detailed approaches showing the process from the start to the finish, which will include respondents and sequencing of data generation steps (Creswell, 2009). The process of data generation will start by deciding and ensuring reliability of instruments of measurements believed to be appropriate for the purpose. The most relevant instruments on measurements to be used in the data generation of the cases to be studied will be mainly interview and observation. The repeated generations of data using each instrument of measurement will continue until level of saturation is obtained. The data generation process will be completed after all the data required is generated, verified for completeness, and factuality is ascertained to be ready for conducting the analysis (Leedy & Ormord, 2010; Creswell, 2009; Kumar, 2005; Lewis-Beck et al., 2004a; Caldwell & Charles, 2000). The procedures to be followed in data generation engagement are, therefore, going to be interview and observation as indicated hereunder:

### **1.5 Interview Procedure**

#### **2.1.1 Prior Interview**

- a. Interviewees will be identified beforehand and essential background information regarding the knowledge and attachment of respondents to the case to be studied will be evaluated;
- b. The setting for conducting the interview activities will be inspected for their suitability and appropriateness every time the program kicks off;
- c. Sort out a set of interview questions tailored to the interviewee, choosing from among the questions listed in the attached interview guiding questions;
- d. Send interview questions ahead of interview with covering letter asking for any documents, data and resources that may be helpful to be identified where possible prior to interview in case respondents want to raise questions that require clarity;

- e. Send an introduction note, schedule, a website address and short blurb and contact details of interviewer in case respondents want to raise concerns before the commencement of the interview.

#### 2.1.2 During Interview

- a. The interview process will be conducted with individuals or with focus group at a time in a manner and schedule set beforehand;
- b. the researcher will introduce an introduction regarding the mission of the research and the method of interaction will be explained to participants;
- c. A soothing and consoling expressions will be extended to the extent respondents are relaxed to enter into free and easy interactions;
- d. In every visit and interview, the discussion to be conducted will go from general to specific, and from overview to depth until the inner kernel of the processes and “lived experiences” are fully captured through repeated visits and interactions;
- e. Beyond the actual meaning of the information uttered by respondents, the researcher will closely look into the feelings, implied meanings, and emotional reactions interviewees could portray, which will be considered as a real reflection of their lived experience;
- f. Data generated using the instrument of interview will be recorded in script in a predesigned field note book in the way the researcher understood with the research sub-questions in mind by corroborating available evidences;
- g. All data generated will be documented in field notes, reconciled and cumulated subsequently, which is to be organized and summarized every time the process is adjourned where if a deviation or a gap is observed a further refining field work will be considered;
- h. The data generating process will continue until a thick description of data and information is captured from the entire setting and all the research questions are well addressed to the satisfaction of the researcher;
- i. At the end of interview ask for consent form to be signed, which will be used as authentication of their views;
- j. Inform interviewees that a transcript will be provided for confirmation of their views, clarification, and amendment if need be after the process is completed;
- k. Respondents will be reminded for the need of their unreserved cooperation in future re-visits or telephone contacts by the researcher in case more data is required or a missing data has to be retrieved;
- l. After finalizing the data generation process is completed, a farewell program will be organized where all the respondents of the study and facilitators of the premises will be appreciated until their contribution and cooperation is acknowledged officially.

### 2.1.3 Post Interview

- a. The retrieved data will be coded in the code book or format as raw as they are retrieved where similar data will be identified so as to create appropriate categories and verify for relevance and sufficiency;
- b. Data in field notes will be serialized and organized into categories by using identification codes under the topic of the units of analysis and will be re-classified according to concurrence, overlap, sequence, proximity, and precedence;
- c. The data to be captured in a field note will be categorized under exploratory, descriptive, and explanatory type of processes and re-examine if classification of field notes are according to the organization and coding format arranged a priori;
- d. Each category will be further refined, broken or merged into relevant and manageable segments of categories, which will be accomplished in terms of the traced relationships among the data;
- e. After organization of data into a logical whole, trace missing data by splitting, sorting, and slicing data and categories will be conducted;
- f. The strength and weakness in the process of capturing the data and the nature of the interaction with respondents will be evaluated so that the next step can be reinforced;
- g. From the refined categories of data, a system of recording will be designed: classifying, coding units (identifying units), open coding, axial coding, selective coding, memoing, concept mapping, etc.;
- h. Data in each category will be edited to look for forgotten questions not asked, forgotten to record responses, or wrongly classified responses;
- i. Data in categories will be checked for completeness of contents, for internal consistency of reports and records, and to see if the information is sufficiently descriptive (for qualitative analysis);
- j. The sufficiency and competence of the data and information retrieved to conduct the analytical work will be assessed before the chapter of data generation is closed;
- k. Complete face sheet information and enter into database by identifying action points that need to be focused;
- l. Write letter of thanks to interviewee and ask for confirmation of promised materials and any information needed if the data/information retrieved is not found to be sufficient;
- m. Write up contextual interview notes as deduced or induced from the organized field notes;
- n. Establish results in relation to research sub-questions that are going to be used in analysis.

#### 2.1.4 Focus Group Interview Procedure (Optional)

- a) If the size of respondent within the given set of the cases to be studied exceeds six, conducting focus group interview could be warranted;
- b) The setting where the focus group interview is conducted has to sufficient and convenient for the job to be done or for making respondents feel comfortable and feel at ease;  
The focus of the setting where the group interview is conducted has to be sufficient and convenient  
Not only has a consent to interview members of focus group have to be secured a priori, but also the approval of the owner or manager of the cases to be studied;
- e) The entire process of interviewing focus groups has to be based on sincerity and not on expert or moral level of supremacy from either side;
- f) The researcher need to secure the consent of the group to convene repeatedly until the data and knowledge to be generated reaches a level of saturation;
- g) As much as possible members of the focus group shall be homogenous or reflect communality so that sharing of ideas can be heard across the group;
- h) If respondents feel a sense of insecurity as a result of interview forwarded or the discourse in progress, the researcher has to apologize and switch to more consolatory questions immediately;
- i) The researcher shall give sufficient time to every member on equity bases as far as they have something to say;
- j) Care has to be taken not to pose abusive questions or give comments that could offend the entire focus ;
- k) In order to save the integrity of the group or to achieve the objectives of the engagement, the expression of respondents that could be destructive need to be closely supervised;
- l) The researcher need to watch the process of turn taking of responding so that dominant members are not monopolizing the seen;
- m) Member of the group who could reflect lack of confidence has to be encouraged, coached, and soothed to play their role effectively;  
If the spent by the group seems to compromise their earning, the researcher must consider putting aside a budget that can compensate the earning they might be forced to forego.

#### 2.2 Observational Procedure

- a) Observational method on all processes, activities, events, facilities, artifacts, persons, structures, relations, products, uses, applications, inputs, partners, working environment, etc. will be included in the data generation schedule;
- b) The setting for conducting the observational activities will be inspected for their suitability and appropriateness every time the program begins;

- c) Observational activities will be conducted throughout the process of interviewing and visits of all compartments of the site, the processes, activities, and events;
- d) The observational study will look into all the activities, processes, and actions within the case understudy without being formal or in a non-participant status;
- e) From the site of the cases understudy, available secondary data sources and artifacts will be reviewed and the data they contained will be observed and generated;
- f) Hermeneutics of secondary sources of all documents, records, memos available in the custody of case understudy noted during observation or furnished by respondents will be scrutinized;
- g) The semiotics of artifacts and processing tools available will be observed, clarifications asked, meanings interpreted, and narrative notes will be taken;
- h) The retrieved data will be coded in the data code book or format as raw as retrieved;
- i) Data obtained from observation will be entered into code books designed for such instrument of measurement;
- j) Data generated will be re-classified according to concurrence, overlap, sequence, proximity, and precedence;
- k) Categorization and coding of data in terms of common themes or research sub-question will be conducted;
- l) Further reorganization of data in terms of the traced relationships among the data will be conducted;
- m) Results in relation to the research sub-questions from the reorganized and coded data will be established.

## 2.2 Data Analysis Procedure

- a) Systematic identification of interrelationships, tabulation of frequency of characteristics, and pattern matching among the categories will be conducted;
- b) If data or information is missing or is found to be not competent to address the research question, which kind of “amputation” to apply will be decided;
- c) Causes for missing data to be filled by imputation shall be identified either as attrition of participants, inadequate system, problem of design, etc.;
- d) The amputation method could include deletion, average value, predicting or regression, taking expected data, etc.;
- e) Every data in each category will be checked to see if all research questions are addressed sufficiently;
- f) Conduct a re-coding task of the categorized and finalized data as following:
  - 1) Construct a composite (overall view, generalization)
  - 2) Divide data in to segments for commonalities of categories of themes by using “open coding” approach
  - 3) Establish interconnections and relations among categories and sub-categories by using “axial coding”

- 4) Combining categories and sub-categories to form a story line of the phenomena by using “selective coding”
  - 5) Write-up narrations of the result of the analysis by “memoing” the processes and interactions that led to the outcomes
  - 6) Deduce or induce the ideas and background knowledge or information of the analyzed data in a “concept mapping” style of every category
- g) After the analysis is done, patterns regarding frequency, magnitude, structures, processes, causes, and consequences of the patterns in each category will be revealed or discovered;
  - h) Identify the main themes across all or some of the classified and categorized data;
  - i) Integrate themes of relationships and responses in to a text format, which will enable to sketch the flow of narrations;
  - j) Apply appropriate analytical models and methods that can address the research questions;
  - k) Develop or apply analytical/statistical tools to interpret and explain the data;
  - l) Tabulate the frequency of each characteristics by synthesizing into an overall portrait of the cases being studied;
  - m) The application of the concepts, models, and logic will be contrasted and results will be underlined, which will lead to establish a generalized induction and prediction;
  - n) Analyze the meaning and implication of the processed information in order to deduce or induce the final outcome of the study;
  - o) Group statements into “meaning units”, seek divergent perspectives, synthesis and generalization as deduced from patterns from broader characteristics;
  - p) A cross-case synthesis will be conducted in a “case oriented” or “variable oriented” settings to formulate generalizable/transferable concepts and models;
  - q) The result of the analysis will be concluded using an “analytical inductive” or “eliminative inductive” as appropriate in generating a substantive knowledge based on analytical models;
  - r) The meaning/implication and the underlying structures and beliefs of the matched patterns will be explained by interpreting the broader characteristics and judgment of the composite at single instance and at category levels of analysis;
  - s) The impact and meaning of the empirical data on the lived experience or the practical life and reality will be underlined in constructing categories, and then, emerging themes and prediction by using the meaning of the empirical data contrasted and clarified using models, concepts, or theories;
  - t) Construction of theory from the categories and interactions by showing how actions/interactions lead to other actions with typical sequences of events being laid and prescription of theory;
  - u) The meaning or implication of the inductive/deductive reasoning in terms of relevant constructs will be evaluated and portray how the induction/deduction addressed the research questions is going to be narrated;
  - v) Recommend measures to take by showing how to implement the recommended solutions draw an action plan;
  - w) Establish monitoring and feed back systems of the implementation process.

### **ANNEX III: REPORTING RESULTS**

The design, plan, guidelines, and procedures of data generation and methods/models of analysis used to reorganize, manipulate, and establish patterns will be revealed in respective reports of results at relevant stages. The report of data generation and analysis results from the cases studied will start by stating the reason why conducting the study in general was important and in particular the cases selected to be studied. A detailed description of the facts reflected in conducting the cases studied and the nature of the data generated from the facts and events of the case will be narrated and illustrated. All the steps and processes that are part of the study have to be documented and reported at every stage. The field data has to be inscribed in a field note book which will serve as a report for the next stage of coding and categorizing of data. This in turn will produce an organized data on which an in-depth analysis will be conducted. The findings of the analysis will be further interpreted and an induction concluded which will be established or reported as an outcome of the study.

Considering Creswell's (2009) approach, reporting the results of the study implies developing a description and themes from the data that could convey multiple perspectives of respondents, the settings, experiences, a theory from grounded theory, or an in-depth analysis of the cases studied. In the report, quotes from interview with interpretations, relating metaphors with analysis, comparison of outcomes with theories or concepts and focusing on participants' perceptions and experiences and conversations reflecting cultural sensitivity will be stressed and embedded. As Creswell (2009) has clarified, the findings of the study, the settings, actors, events, processes, ethical considerations, data collecting strategies, verifications using triangulations, member checking, long or repeated observations, peer examination, adapting participatory modes, and clarification on bias will be sufficiently addressed in the thesis. As much as possible, the thesis will be made easy to engage readers by showing the practical works accomplished in the scene of the field study and by revealing the analysis processes, which will take into account the following points:

- 3.1 Indicate the rationale for studying the topic in general and the selected cases in particular;
- 3.2 Briefly portray the review of the related literature and describe the relevant methodology and data analysis approach;
- 3.3 Show the detailed description of the people, places, facts, events, etc. involved in the study;

- 3.4 Describe the nature, place, and method of the data collected and discuss the patterns found from the analysis of the study in relation to the research central question and sub-questions;
- 3.5 Connect the purpose of the study and the findings of the analysis into a substantive and larger scheme of lived experiences;
- 3.6 Describe the content and background of the research question and enumerate the places, time, and material studied throughout the course;
- 3.7 Define the characteristics of the cases studied and the results revealed
- 3.8 Show how coding or rating procedures are designed and applied;
- 3.9 Indicate methods and tools used to work on tabulation of patterns that the data reflect;
- 3.10 Be a “bullet-proof” in demonstrating facts and in reasoning arguments;
- 3.11 In designing and narrating the results in the report, engage with the reader;
- 3.12 Set the scene of the cases studied and results revealed by linking to practice;
- 3.13 Consolidate drafts of every sub-topic and write a draft for each topic;
- 3.14 Make sure the flow of the report is maintained;
- 3.15 After editing final draft produce a final report;
- 3.16 Make sure the write-up is concise and integrated.

## **ANNEX IV: INTERVIEW GUIDING QUESTIONS**

The research work on the subject under study relies on data that is going to be generated by employing interview and observation method. The design of these data generation methods have taken into consideration the need to mine and reveal hidden knowledge, feelings, and emotions of respondents, and the ramification of processes and applications. Different materials that can be accessed in the sites of the study or libraries that are related to the subject can be also used to stimulate the discussion in the interview process. Meantime, respondents will be encouraged to air their feelings if what they want to utter is not contained in the interview question. From the interview questions, the appropriate ones will be sorted out in reference to their suitability to participants in the premises of the cases under study. The interview questions with operators and beneficiaries or clients are designed to address not only factual and visible data but the feelings and emotions that can be reflected by respondents too. The interview questions are made to show how traditional technologies have been evolving or dying and their likely future. The questioning process will make the objectives and contents clear and free of any influence or bias so that the true actions and perceptions of respondents can be revealed (Kumar, 2005; Wilkinson & Birmingham, 2003; Blaxter et al., 2006) in terms of the following categories:

- a) Background information in terms of respondents and the entity;
- b) Acquisition of traditional knowledge and skills;
- c) Inputs, techniques, and instruments used;
- d) Preparation and application of practices;
- e) Products and services resulting from the process;
- f) Chains, stages, and composition of processes;
- g) Types of products and services to be delivered;
- h) Recruiting employees and aides;
- i) Promoting and marketing of products and services;
- j) Nature of end product users;
- k) Feedbacks on success and failure rates;
- l) Economic and social deductions;
- m) Role of stakeholders and prospects.

Hence, interview questions that could answer the sub-questions of the central question of the research are going to guide the researcher in interacting with respondents. The questioning process will make the objectives and contents clear and free of any influence or bias so that the true actions and perceptions of respondents can be revealed (Kumar, 2005; Wilkinson & Birmingham, 2003; Blaxter et al., 2006). Overall, methodological and instrumentation concepts from literature materials by Leedy & Ormord (2010), Creswell (2009), Creswell, (2009), Blaxter et al., (2006), Kumar (2005), Prasad (2005), Wilknsnson & Birmingham (2003), Lewis-Beck et al. (2004a), Henning (2004), Lewis-Beck et al. (2004), Kumar (2004), Henning (2004), Yin (2003), Mouton (2001), Punch (2000), Tellis (1997), Eisenhardt (1989), etc. are the most referred resources to craft the interview questions in the manner indicated below.

## Research Questions

### *1. Interview Questions for Operators*

#### Research Sub-Question 1

*How did TTs of Ethiopia manage to sustain across generations contrary to the predictions of extant technological theories?*

- a) Explain if there are conducive government policies and institutional setups to support the sector;
- b) What are the conditions relevant authorities ask to accept or reject recognition or issuing licenses to practice traditional technologies?
- c) Who are the proponents or advocates with proactive measure to promote the sector and help overcome obstacles;
- d) How do you explain your relationship with your community and local authorities?

#### Research Sub-Question 2

*How significant have been the economic and social role played by TTs of the country?*

- a) How do you come to be inspired and mentored as an artisan or practitioner of the traditional technology you are engaged?
- b) What is the background of the people often engaged as practitioners and end users of the sector?

- c) What kind of tools, inputs, facilities, and aides do you have to organize in order to produce or deliver?
- d) Who are your customers and how do you conduct the marketing or awareness creation activity to reach them?
- e) How do you explain the economic, employment, and social values of traditional technologies accruing to practitioners, communities, and the public?
- f) What intervention measures can be taken to maximize the social values and economic returns that can be generated from traditional technologies?

#### Research Sub-Question 3

*What are the generic inhibitors that have been working against the conservation and transformation of the country's TTs?*

- a) As far as people continue to use or appreciate the practice, what hindered its conservations and transformation into modernity?
- b) What are the internal or external challenges or opponents often haunting the traditional practices in which you are engaged?
- c) To what extent are same practitioners unified or in conflict in raising common voices and confronting the challenges of the sector?
- d) How do people perceive the values and practices of traditional technologies?

#### Research Sub-Question 4

*What are the replicated or transferable unique qualities or secrets that can enrich the technological knowledge, on one hand, and deter the depleting inhibitors, on the other hand, if the renaissance of the country's TTs, whose fate has been ever extinction, is to be heralded?*

- a) What remarkable skills and lessons can be learnt from traditional technologies that could be replicated into the modern ones?
- b) What are the secrets that have been helping traditional technologies to sustain across centuries in defiance of opponents and competition spearheaded by modern technologies?
- c) Why do people continue to use products and services from traditional technologies when options of modernity are available?

d) What short and long term intervention can be taken to conserve and transform the qualities embedded in traditional technologies?

2 *Interview Questions for End-Users/Customers*

- a) Could you tell your name and address?
- b) What was the information you got about the practitioner of the trade?
- c) To what extent do the products or services meet your demands or solve your problems?
- d) How do you think traditional product or services are valued over modern ones?
- e) How do your friends or community members conceive the traditional practice?
- f) What do you recommend to your product or service provider if you think the service or the products have to be further improved or conserved?
- g) What can you suggest regarding the use or values of the products/services?
- h) Any other issue you may need to add with respect to the issue?

## ANNEX V: CHECKLISTS

A checklist will inquire actions and steps designed to ensure that the vital activities in the process starting from data generation up to reporting results are properly addressed (Andrews, 2008; Benaquisto, 2008). They are “back-ups” where the effect of missing one or more of the important points is feared to distort or mar the process of the study. The checklist will give an insight into the important points and steps that the research cannot offer to miss or undermine while getting engaged in data generation, analysis, and reporting the results (Leedy & Ormord, 2010; Blaxter, 2006). A checklist is meant to ensure that the vital activities in the process starting from data generation up to reporting results are properly addressed. If the study result is to be taken as complete as expected, addressing the core points indicated in the checklist will become critical. That is why indentifying the core activities in the process and highlighting them in the checklist becomes critical. The scope of the checklist is made to extend to incorporate points that can remind the researcher about the aim of the research project, the tools employed, clarity of the questions asked and responses retrieved, and identifying gaps that are omitted, overlooked, or not accessed (Leedy & Ormord, 2010; Creswell, 2009). Checklists serve as instruments to ensure the prevalence or absence of an attribute and to count the prevalence or accomplishment of an item or event (Andrews, 2008) in the manner the process was planned initially.

In addition, a check list gives a focus to issues that have relevance in ensuring the consent, anonymity and confidentiality of respondents (Leedy & Ormord, 2010; Blaxter, 2006). The checklist will ensure that vital personal rights of respondents are respected or not violated as a result of conducting this research work by indentifying the core actions and activities conducted by the researcher. The scope of the checklist is made to extend to incorporate points that can remind the researcher if respondents’ interests are not crossed or compromised (Leedy & Ormord, 2010; Creswell, 2009). A checklist could be open-ended to give a general direction or reminder or exhaustive and structured to fall into a predetermined category (Andrews, 2008). The scope of the checklist extends to incorporate points that can remind the researcher about the aim of the research project, the tools employed, the clarity of the questions asked and the responses retrieved, and the identification of the gaps that are omitted, overlooked, or not accessed (Creswell, 2009; Benaquisto, 2008). If multidimensional data generating approaches are employed, challenges that can compromise the output of data, thoroughly following the

design and plan of data generation, and validity and reliability of instruments of measurement have to be ascertained (Leedy & Ormord, 2010). Steps and issues designed to conduct the research through identified methods and tools have also to be adhered. The checklist prepared in advance helps in monitoring and ensuring the procedural flow and implementation of the study according to the required ethics of conduct when human factor is involved. Monitoring and ensuring the procedural flow and implementation of the study according to the timetable set is crucial. The application of a checklist shall remind the researcher to ascertain that most relevant issues are not omitted or overlooked while conducting the study (Leedy & Ormord, 2010; Blaxter, 2006), by taking the points indicated hereunder:

### 3.17 Data Generation Checklist

- 3.17.1 Are the methods or techniques and instruments for data collection appropriate and described adequately?
- 3.17.2 Are the instruments relevant and the timing appropriate in addressing the internal and external validity of the study?
- 3.17.3 Are sufficient and multiple sources used to collect data from a variety of participants over an appropriate length of time?
- 3.17.4 Is the sample described in sufficient detail and are criteria for the selection of participants, informants, or materials presented?
- 3.17.5 Are the roles of the researcher and participants made clear?
- 3.17.6 Does the researcher identify any assumptions, beliefs, values, or biases that might influence data collection or analysis?
- 3.17.7 Are the roles of the researcher and participants made clear and are the data analysis techniques appropriate for the research question, methodology, and theoretical framework?
- 3.17.8 Does visibility during observation matter and are data analysis techniques explicitly addressed?
- 3.17.9 Do data analysis techniques allow for revision and reinterpretation as new data come to light?
- 3.17.10 Is triangulation of the various data sources addressed and are sufficient data reported to supported the conclusion drawn?

- 3.17.11 Are tables, figures, and graphics easy to read and interpret and do they enhance the readers ability to understand the study?
- 3.17.12 Are any irrelevant and unnecessary data reported, and if so, what should be deleted and are discrepant data discussed and reconciled?
- 3.17.13 Have the setting and observations been sufficiently described to present a convincing case?
- 3.17.14 Are participants voices used to support the assertions and present multiple perspectives?
- 3.17.15 Is the report detailed enough that the findings can be compared to other studies in other contexts?
- 3.17.16 Is the discussion congruent worth the research question and the rationale for the study?
- 3.17.17 Are implications for theory and/or practices discussed?
- 3.17.18 Have other scholars in the field reviewed the proposal or rapport and do they agree that the approach, methodology, and conclusions are appropriate?
- 3.17.19 Have participants in the project read the report? Do they agree with the findings
- 3.17.20 Locate where the relevant secondary data resources are available;
- 3.17.21 Prioritize secondary sources according to relevance;
- 3.17.22 Identify the type of relevant data contained in each resource;
- 3.17.23 Scan across the materials to decide to which items to give priority.
- 3.17.24 Data Analysis Checklist
- 3.17.25 Make concepts, theories, and explanations related to the analysis process;
- 3.17.26 Are the underlying assumptions clearly stipulated?
- 3.17.27 How well supported and convincing is the argument?
- 3.17.28 How are clustering of units of meanings used to extract general themes?
- 3.17.29 Is the results section clearly or logically organized?
- 3.17.30 Is the type of analysis appropriate for the level of measurement adopted?
- 3.17.31 Are the tables and figures clearly constructed and understandable?
- 3.17.32 Are analytical schematic models developed and incorporated?
- 3.17.33 Are coding, grouping, and annotating data used for data organization and manipulation convincing?
- 3.17.34 Have you produced summaries and synopsis version of data gathering from the cases explored?

- 3.17.35 Apply analytical and statistical tools to interpret, explain, educe, and predict the meaning and outcomes of the data;
- 3.17.36 Is the data analysis appropriate for the research question, methodology and theoretical framework?
- 3.17.37 Do data analysis techniques explicitly described and allow for revision and reinterpretation as new data come to light?
- 3.17.38 If used, are tables, figures, and other graphics easy to read and interpret? Do they enhance the reader's ability to understand the study?
- 3.17.39 Is triangulation of the various data sources addressed? Are sufficient data reported to support the conclusions drawn?
- 3.17.40 Are any irrelevant and unnecessary data reported? If so, what should be deleted?
- 3.17.41 Have the setting and observations been sufficiently described to present a convincing case?
- 3.17.42 Are participant 'voices' used to support the assertions and present multiple perceptions?
- 3.17.43 Is the report detailed enough that the findings can be compared to other studies in other contexts?
- 3.17.44 Is the discussion congruent with the research question and rationale for the study?
- 3.17.45 Are implications for theory and/or practice discussed?
- 3.17.46 Have other scholars in the field reviewed the proposal or report?
- 3.17.47 Show how to concretize the core problem and implement the recommended solutions by drawing an action plan;
- 3.17.48 What measures are proposed to ensure effective implementation of the recommendations resulting from the study?
- 3.17.49 Have participants in the study project read the report? Do they agree with its findings?
- 3.17.50 Are the methods/techniques and instruments for data collection appropriate from the angle of human values and rights?
- 3.17.51 Is there a program of briefing respondents to make them aware of the motives, advantages, and results of the research work?
- 3.17.52 Have you made respondents aware that their participation is based on their free consent?
- 3.17.53 Are respondents made to be aware of issues like anonymity and confidentiality?

- 3.17.54 Are the data collection instruments sufficient to retrieve the required data from every respondent?
- 3.17.55 Does the data generation process consider the cost to respondents if they have to be engaged for a length of time?
- 3.17.56 Is the method of approaching and selection of respondents fairly presented?
- 3.17.57 Are the roles of the researcher and participants made clear?
- 3.17.58 Is the researcher clear with assumptions, beliefs, values, or biases that might affect the feeling of respondents?
- 3.17.59 Are there provisions in place in case as a result of the research damage to respondents sustain?
- 3.17.60 Is a budget set aside in case respondents are forced to forgo their income due to their engagement in the research work?
- 3.17.61 Are the setting for conducting interview convenient for respondents?
- 3.17.62 Will participants differing voices given a due regard?
- 3.17.63 Is a mechanism of informing respondents about the outcome of the research in place?
- 3.17.64 Are respondents allowed to countercheck if their testimonies are properly captured?

## ANNEX VI: ETHICAL CLEARANCE CERTIFICATE

Graduate School of Business Leadership, University of South Africa PO Box 392, Unisa, 0003, South Africa  
Cnr Janadel and Alexandra Avenue, Midrand, 1685, Tel: +27 11 652 0000, Fax: 011 652 0299  
Website: [www.sblunisa.ac.za](http://www.sblunisa.ac.za)



31 January 2014

Ref: # 2013\_DBL\_028 (FA: Addis Ababa)

Mr Negassi Yosseph G-Egziabher: Student Researcher [+251911211238; negasiyos@gmail.com]  
Dr Tariku Atomsa: Supervisor [+251912675488; Tarikuatom1959@gmail.com]

### GRADUATE SCHOOL OF BUSINESS LEADERSHIP RESEARCH ETHICS REVIEW COMMITTEE (GSBL RERC)

This is to certify that the application for ethics clearance submitted by  
Mr Negassi Yosseph G-Egziabher: (student # 72521090) in the fulfilment of a  
Doctoral Degree in Business Leadership:

### Generic Inhibitors to conserve and transform Traditional Technologies of Ethiopia has received ethics approval

The revised research ethics application for the abovementioned research project was reviewed by a sub-committee of the GSBL RERC in compliance with the Unisa Policy on Research Ethics, on 31 January 2014 and final approval is granted.

The GSBL RERC would like to sensitise the researcher of the following aspects:

- The need for credible translation of Amharic (native language) to English for publication purposes of the thesis and possible articles.
- Please submit the amended interview schedule after completion and prior to fieldwork.
- In the informed consent letter to the participants you should clarify the role of the fieldworkers to enhance informed consent.

This certificate is valid for the duration of the project. Please be advised that the committee needs to be informed should any part of the research methodology as outlined in the ethics application [2013\_DBL\_028 (FA: Addis Ababa)] change in any way or if any ethical problems are encountered during the course of the study. The Graduate School of Business Leadership Research Ethics Review Committee wishes you all the best with this research undertaking.

Kind regards,

Dr RG Visagie  
Chairperson of the Research Ethics Review Committee, GSBL, UNISA  
+2712-429 2478/ Visagrg@unisa.ac.za

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## ANNEX VII: CONSENTS OF PRINCIPAL PARTICIPANTS

Date: 23-11-2013

### Expression of Consent

Based on the request of Mr Negassi Yosseph G/egziabher supported by UNISA's letter to cooperate, I hereby express my willingness to allow access to my work-site and provide my knowledge and practices on traditional medicine. Besides, I will also cooperate to avail information he may require from my aids and customers who are willing to share their experience in this regard.

Dereje meges Argaw Daud

Manager/Owner

Herbal medicines clinic

Address:

Region Amhara

Sub City/City Debreberhan

Woreda D/Berhan

Kebelle 06

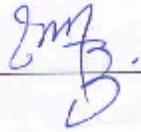
House Number 1153

Telephone 0912139135 / 0912805450

Date: 02/11/13

### Expression of Consent

Based on the request of Mr Negassi Yosseph G/ogziabher supported by UNISA's letter to cooperate, I hereby express my willingness to allow access to my work-site and provide my knowledge and practices on traditional textile technology. Besides, I will also cooperate to avail information he may require from my aids and customers who are willing to share their experience in this regard.

AYELE NEGASH 

Manager

Maya Ethiopia PLC

Address:

Region Addis Ababa

Sub City Centre

Woreda \_\_\_\_\_

Kebelle \_\_\_\_\_

House Number 636

Telephone 0911864820

Date: 20/11/2013

### Expression of Consent

Based on the request of Mr Negassi Yoseph G/ogziabher supported by UNISA's letter to cooperate, I hereby express my willingness to allow access to my work-site and provide information regarding my profession on traditional cosmetics/make-up services and applications. Besides, I will also cooperate to avail information he may require from my aids and customers who are willing to share their experience in this regard.

Hewana Bekelle 

Manager/Owner

Asadi Raya Hewana Smoke bath

Address:

Region Addis Ababa

Sub City Gerji./Bole

Woreda 13

Kebelle 10

House Number 3478

Telephone +251 911 627106

## ANNEX VIII: CONDENSED RESULTS OF CODING ANALAYSIS

### a) Excerpted Themes of Axial Codes

<b><i>TM</i></b>	<b><i>Tush</i></b>	<b><i>Kaba</i></b>
<p><i>History of the Technology</i></p> <p><i>Practitioner’s Motivation</i></p> <p><i>Sites and Expanse</i></p> <p><i>Knowledge and Mentoring</i></p> <p><i>Floras and Herbs</i></p> <p><i>Uses of the Practice</i></p> <p><i>Users of the Practice</i></p> <p><i>Diagnosis and Prescription</i></p> <p><i>Results and Effects</i></p> <p><i>Complaints and Side effect</i></p> <p><i>Setups and Facilities</i></p> <p><i>Inputs and processes</i></p> <p><i>Gathering of Plants</i></p> <p><i>Cultural Norms and Perceptions</i></p> <p><i>Proponents and Opponents of the Practice</i></p> <p><i>Socio- Economic Potential</i></p> <p><i>Role of Stakeholders</i></p> <p><i>Role of Government</i></p> <p><i>Awareness Creation and Marketing</i></p> <p><i>Inhibitors of the Sector</i></p> <p><i>Conservation and Transforming</i></p> <p><i>Legal Framework</i></p> <p><i>Research Works</i></p> <p><i>Record keeping</i></p> <p><i>History of the Technology</i></p>	<p><i>Sites and Expanse</i></p> <p><i>Practitioner’s Motivation</i></p> <p><i>Floras and Herbs</i></p> <p><i>Uses of the Practice</i></p> <p><i>Users of the Practice</i></p> <p><i>Diagnosis and Prescription</i></p> <p><i>Results and Effects</i></p> <p><i>Setups and Facilities</i></p> <p><i>Inputs and processes</i></p> <p><i>Gathering of Plants</i></p> <p><i>Cultural Norms and Perceptions</i></p> <p><i>Proponents and Opponents of the Practice</i></p> <p><i>Socio- Economic Potential</i></p> <p><i>Role of Partners</i></p> <p><i>Role of Government</i></p> <p><i>Awareness Creation and Marketing</i></p> <p><i>Inhibitors of the Sector</i></p> <p><i>Legal Framework</i></p> <p><i>Conserving and Transforming</i></p> <p><i>Research Works</i></p> <p><i>Record keeping</i></p> <p><i>History of the Technology</i></p>	<p><i>Sites and Expanse</i></p> <p><i>Practitioner’s Motivation</i></p> <p><i>Knowledge and Mentoring</i></p> <p><i>Uses of the Practice</i></p> <p><i>Setups and Facilities</i></p> <p><i>Inputs and processes</i></p> <p><i>Results and Effects</i></p> <p><i>Public Perception</i></p> <p><i>Role of Partners</i></p> <p><i>Role of Government</i></p> <p><i>Awareness Creation and Marketing</i></p> <p><i>Inhibitors of the Sector</i></p> <p><i>Legal Framework</i></p> <p><i>Conserving and Transforming</i></p> <p><i>Research Works</i></p> <p><i>Record keeping</i></p>

### b) Excerpted Concepts of Selective Codes

#### 1) Mapped Concepts—TM

### *1.1 Leadership*

- a) Leadership has been ignorant and adamant to play its role by taking responsibility of knowing and appreciating the fact that a great deal of the population is still relying on the vanishing TM as a basic medicine and as an alternative for those who couldn't access modern medicine, or for the sake of those having unwavering belief in TM, like the holy water
- b) Leadership has failed to serve the nation by exploiting the potential of the medicinal plants, which deprived the nation from utilizing the inherited huge resources and even contribute to the world in curing terminal diseases that have been testing the sophistication of modern medicine
- c) It is an irony to see that governments have never been able to conduct research or make an official visit in at least a single TM despite the fact that a great deal of the population is still relying on TM, which require either to promote the sector if the practice is found to beneficial or to protect citizens from harm
- d) Due to the harassment and stigma spearheaded by successive governments, almost all TM practices have been forced to remain secretive (even from family members), and not willing to share their knowledge to successors because they feel unsecured for fear of reprisal, abuse, and loss or robbery of ownership by officials and opponents except to provide their services to the needy in shadow
- e) TM has been ever dying at a diminishing rate because leadership has been its historical opponent denying its existence and practice that deterred the attitude to support its conservation if hurdles created in the form of rejection, harassment, and ostracizing until a great deal of the resource is forced to go to extinction
- f) The task of conserving TM has never been an errand of governments except the healers themselves mostly without documenting or sharing the knowledge, which could be inferred as emanating mostly from fear of leaving a trace that could contravene the principle of secrecy in case it falls in the hands of defiant opponents/competitors of TTs

### *1.2 Socio-Culture*

- a) Despite offences against TM from leadership, the practices have managed to survive across generations because they have values respected and internalized in the life and culture of practitioners and end users. The script of Ge'ez, which has been attached to the

teachings of the church, has served as a main instrument in conserving most of the existing TMs by secretive healers, whereas the knowledge kept in the memory of laymen have been weathering as they passed away

- b) The sense of ownership and expression of identity with the huge social values intricately woven in the practices of TM as innovations and resources of forefathers used to overcome health problems of citizens has been rooted in the culture of the society as inherited in oral form or undocumented, which has helped at least the survival of the existing, though at a diminishing rate because the sector have been denied proper recognition, awareness creation, and marketing activities
- c) Society is caught in limbo between the believe that TM is effective and full of efficacy and potency tested for generations and the fear that it is not practiced by knowledgeable healers as biomedicine warns and the biases emanating from the preaches of the church associating the practice with evil spirits or witchcrafts, though many still continue to embrace the practice even if it has to be done secretly and in shadow to shield from stigma, harassment, and marginalization inflicted against practitioners
- d) The environment of the general public regarding practicing TM is found to be skewed, suspicious, and hostile due to impositions and rejection by official policies, biomedicine orientations, teachings of the church, pseudo practitioners, and opponents of TM, which have forced most healers and users to go in shadow and the practice to remain secretive in the sanctuary of communities
- e) The social and economic values and potentials embedded in TM that could have benefited the country enormously has been squandered and pushed to extinction because of successive governments' denial and rejection to understand, recognize, conserve, and commercialize the practices by taking affirmative measures either to support if they are beneficial or to deter if harmful instead to grossly push them to vanish

### *1.3 Entrepreneurship*

- a) TM is applied to all sorts of diseases and the users are mostly from rural, poor citizens, traditionalists, disadvantaged groups, is a clear indication how the embodied social and economic values has been huge that should have been scrutinized and exploited
- b) Conflicts of interest emanating from fear and professional complexes by modern medicine practitioners and from those who fear the competition are to blame for the war

of neglect and harassment against TM, which could have been corrected by innovative entrepreneurs by relating to the embedded socio-culture capital

- c) Lack of awareness of the knowledge and skills of TM resources inherited from elders tested across generations has prevented entrepreneurs from getting attracted into the sector and commercialize the resources in a way to benefit them and their society by refining the effectiveness and transforming the tools and methods of application
- d) Lack of bold entrepreneurial initiation and orientation to understand the medicinal heritage of the country and the lack of a will to counter the impediments has deterred TM from becoming commercialized and utilized
- e) Ignorance of the social capital that harbors the practices of TM has created a stigma to even consider its commercialization while the real fact is that society still has the sense of ownership and considers it as expression of identity, which has continued to keep the practice in custody even in a difficult situation; and still continues to use the service though entrepreneurs have failed to notice and recognize the values that could have been materialized

The main factors that have become the core inhibitors of TM practices have been rejection, marginalization, and stigma by successive governments, bias and stigma by the general public, lack of attention to conduct research works, and deforestation has made many medicinal plants to go extinct because there has never been an entrepreneurship drive in place that could have changed the dire situation

## 2) Mapped Concepts—Tush

### *2.1 Leadership*

- a) Leadership has never paid attention to understand the reason why people continue to use traditional smoke bath so as to give the necessary support they deserve or to deter if the practice is found to be harmful to society
- b) The skills and knowledge regarding Tush have managed to survive not because there were conducive and nurturing environment created by leadership but because there were people who value and embrace the traditional practices.

- c) It is irony the government never fails to collect levies from a sector which could not give a due recognition as observed in the license issued which doesn't have even proper name but simply to categorize it under miscellaneous
- d) The marginalization and rejection of the traditional practices by leadership has entailed the loss of the huge resources that could have materialized from applying Tush which could have been accounted in terms psychological values and economic returns due to the failure of leadership to appreciate and nurture the traditional practices
- e) The practice of Tush has remained crippled due to lack of affirmative action by leadership and the none existence of awareness, and deforestation, which is making it difficult to access and gather the required input plants
- f) Tush is on the verge of extinction regardless of the skin care and therapeutic value potentials, which could have been of great importance socially and economically by surpassing compared to the counterpart of modern services where the blame is falling on leadership
- g) Due to lack of protection of trade secrets by institutions, the practitioner never dares to share or expose the skills and knowledge of traditional smoke bath, which makes the conservation of the associated resources vulnerable to extinction

## *2.2 Socio-Culture*

- a) Communities and individuals who know and value the results from traditional smoke bath practices are the ones who have helped the practice to survive across generations in the absence of a responsible stakeholder
- b) The wider public is unaware and disinterested to know about traditional smoke bath, which make them indifferent either to support or oppose the practice
- c) Tush is used for skin care but the embedded therapeutic values acclaimed by women who adore the practice especially from the locality where it is still practiced are the main users, where the inputs mostly consisting of special and organic plants that are prepared secretly are claimed to be effective for the purpose they are intended though the wider public does not have information to form a specific perception except to look at it suspiciously

## *2.3 Entrepreneurship*

- a) Ignorance about the potential of the resource has prevented entrepreneurial derives from getting motivated to commercialize by devising appropriate measures that could help to develop and tap the latent potentials

The economic and medicinal values of Tush is huge but the non existence of entrepreneurial awareness, knowledge, and attention required has made the sector a wasted resource. The irony is that many entrepreneurs compete in modern sauna trade while the Tush trade, which is at hand and more effective than sauna is in extinction due to lack of attention to appreciate and commercialize the embedded values

### 3) Mapped Concepts—Kaba

#### 3.1 *Leadership*

- a) The skill of designing Kaba, which had reached the verge of extinction during the Derg Regime, was kept in memory of practitioners and transmitted orally and on the job training without keeping documents
- b) The current affirmative measures taken by government has created a conducive environment for the design and production of Kaba. Pseudo practitioners who using machine instead of the hand to produce the garment could create unethical competition and distort the true quality of the design that could eventually discourage true designers thereby risking its conservation
- c) The intervention of government which has come at a time when the sector was almost to die for ever by harassments and stigma that continued for centuries inflicted by successive governments is a gesture that the technology of Kaba is conserved and on its way of being transformed
- d) The recognition and intervention in terms of creating an enabling environment in technical, financial, and marketing aspect, the trade got from government has revitalized the rebirth of the sector whereby the designer of the Kaba is highly motivated to conserve and transform the trade into robust and modernity

#### 3.2 *Socio-Culture*

- a) The demand for Kaba especially by the church and the nobility has helped the practice to endure in the enclaves of the of monasteries and palaces across generations

b) The use of Kaba has now transcended from the domain of the nobility into the wider public by incorporating different but applicable designs and styles that are found to be relevant in gracing and marking occasions and celebration conducted by the public, which made the design to have a special place value in the socio-culture settings of the country

### *3.3 Entrepreneurship*

- a) The use of Kaba, which was originally intended to grace dignitaries in the palace and the church, has now extended to serve at present to VIPs and include the wider public by incorporating new styles and applications, which could be further commercialized using the conducive environment created for the trade by government
- b) Kaba is decorated using metallic, silver and gold ornaments to look magnificent, which helped the garment to gain public perceptions as a wear culturally tailored to fit into occasions and celebrations that can be exploited by entrepreneurs even to the international market of celebrities.