Innovation Value Chain for Ethiopian Leather Industries

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A Thesis Submitted to the School of Graduate Studies of Addis Ababa University in Partial Fulfillment of the Degree of Master of Science in

Mechanical Engineering

Industrial Engineering Stream

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Addis Ababa University

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October, 2018

ADDIS ABABA UNIVERSITY

ADDIS ABABA INSTITUTE OF TECHNOLOGY

SCHOOL OF MECHANICAL AND INDUSTRIAL ENGINEERING

This is to certify that the thesis prepared by Berihun Negash, entitled innovation value chain for Ethiopian leather industries and submitted in partial fulfillment of the requirements for the degree of master of science in Mechanical and Industrial Engineering complies with the regulations of the university and meets the accepted standards with respect to originality and quality.

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Declaration

I, **BerihunNegash**, declare that the masters research entitled "**Innovation Value Chain for Ethiopian Leather Industries in case Leather industry development institutes**" is my original research work. All sources that I utilized in the paper are properly cited and acknowledged. I also confidently declare that the paper is not submitted to any academic institution to acquire any academic reward.

The research work was done under the guidance of DrShewit W/Gebriel and Mr. ShimelsTilahun (PhD Candidate), at Addis Ababa University, Addis Ababa Institute of Technology in School of Mechanical and Industrial Engineering.

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Acknowledgement

First and foremost, I would like to thank from the depth of my heart to Almighty GOD for giving me the strength and faith through with this research paper.

Next, I would like to thank my advisor, to go Dr.-Shiewit W/Gebrieal, who shaped my research structure and provided me with the kind instructions and comments. I am also indebted to thank my Co-advisor, Mr. ShimelisPhD candidate) who helped me in the detail guidance of my research work.

I am also be indebted and thankful to Dire Dawa University, Institute of Technology and departments of textile engineering for given me opportunity and provided all facilities for me to study here. I would also to extend my thankfulness to all Addis Ababa University, institute of Technology, industrial engineering stream staffs for their valuable comment through the progress of the study.

I would like to say thank you for all my friends and colleagues for their support appreciations and discussions .and the Last but not the least I would like to thanks to my parents for their financial and spiritual support throughout my thesis and my life in general. Their love and encouragement have enabled me to reach to this education level.

Abstract

This study examined innovation in the value chain of Ethiopian leather industries. It furthermore addressed the multifaceted challenges and barriers for knowledge management (knowledge acquiring, knowledge conversion and knowledge diffusion) across the value chain of Ethiopian leather industries. The Ethiopian leather sector is a priority sector which has a lack of human power in both pre-slaughter and post-slaughter techniques or process which affects the whole value chains of the leather industries. Given this reality livestock (raw hide, raw skin) and finished leather products are less compute in global market and the leather industries are not more profitable as compare with other priority sectors. Different value chain models have been developed to optimize the flow of material with in industries. Among others, porter's VC model which focused on primary and supportive activities for material flow. The researcher used both primary and secondary data and analyzed using SPSS software. Furthermore, this study used factor loading as in put for confirmative factor analysis using AMOS software to checked up either all innovation value chain factors are conformed or not to propose innovation value chain structural models based on CFA fit indices. The major findings were the selected evaluation factors, KA (knowledge acquiring evaluation factors), KC (knowledge conversion factors) and KD (knowledge diffusion factors) are confirmed to proposed innovation value chain structural model which recommended for Ethiopian leather industries. Finally, it can also use for other industries with same adjustment.

Key words: Innovation, value chain, knowledge management, leather industries

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Acronyms and Abbreviations

GTP Growth and transformation plan

LIDI Leather industry development institutes

IVC Innovation value chain

KM Knowledge management

ELIA Ethiopian leather industries Association

CLRI Central leather research of industry

KA Knowledge acquiring

KC knowledge conversion

KD knowledge diffusion

SECI social. external, combination and internalization

AC absorptive capacity

VC value chain

CFA confirmative factor analysis

SPSS statistical package for social science

AMOS analysis of moment structure

Chapter One

Back ground and justification

1.1. Introductions

In Ethiopia Due to the growing economic concerns of today, increasing attention is given to the leather sector. Furthermore, producing a competitive product through innovation value chain in global market is very vital as the leather sector is priority sector for Ethiopia. In Ethiopia, the manufacturing of leather at industrial scale started in1920s by producing leather for horse seat back. The seat back (Kroch) required as one of the elements in fighting against the any local wars at formerly manufactured in "as Kokoda" now called Addis Ababa tannery (Birhanu 2014).

Ethiopia aspires to become a middle-income country within the coming decade, thereby lifting tens of millions of its people out of poverty. To realize this goal, the Ethiopian government adopted the five-year Growth and Transformation Plans (Wakeford et al. 2017)

According to Berhanu (2016), Growth and Transformation Plan of Ethiopia (GTP), the leather industry sector has been given high priority through interventions in various areas. However, Ethiopia's leather industry is currently at nascent stage. Furthermore, it has low quality and low competitive leather products in global market because of limited Innovations value chain. In other side the innovation is also important to grow the organization. Based on Berhanu (2016) the growing systems of the organization can measure in terms profit. In addition to, the innovation can occur knowledge, experience, efficiency and quality (Sullivan 2008). According to the authors the processes can make by introducing something new. As such, it can be radical or incremental, and it can be applied to products, processes, or services and in any organization.

Hence, innovation has a vital role to play in realizing Ethiopia's producing high competitive leather product in global market through innovation value chain and knowledge management for Ethiopia's leather industry.

1.2 Problem statement

Ethiopian has the largest number of livestock in Africa Yiheyis (2014),. However, the input live stocks for Ethiopian leather industries are only cattle hide, goat skin and sheep skins. The government takes the Ethiopian leather industries as one of the priority sector and back bone for economic growth of the country. According to (Ankelba 2017), the leather industries aged for many years and passes through different challenges, and it is still decline in its export performance as limited material destination and service delivery problems. This can affect economically growth and the strategies of the country.

According to ankleba (2017), reviews, service deliver in GTP-IIwere unsatisfied for Ethiopians leather industries; the industry is experiencing lower export competitiveness in comparison to selected countries.

Summery main problems or challenges of Ethiopian leather industries are

- There is no skill full human power about raw hide, skin and fin leather industries of Ethiopia
- Low qualities of output products LIDI reports (2016)
- Low qualities of hide and skins Ethiopian industry minister reports (2016)
- Less innovation process but not innovation value chain activities Ankelba reports (2017)
- There is weak knowledge management policy across the chain starting from husbandry to finished leathers

There for, the major problems of Ethiopian leather industries are skill gap(sharing) among employees or across the value chain, lack of investing raw material and low market potential due to low qualities of products. Due to this sometimes, raw material rejected during slaughtering and post slaughtering, losing semi-finished and finished products across the value chains of Ethiopian leather industries. This is also one major reason that is resulting low market potential in global market, high work in process and absence of strong value chain in Ethiopian leather industries.

1.3 Basic research questions

- What are the main common activities and challenges of value chain in Ethiopian leather industries?

- What are the barriers of knowledge management across the value chain of Ethiopian leather processing?
- How to develop innovation value chain model that can focus creating, converting and diffusing of knowledge across the value chains of Ethiopian leather processing?

1.3 Objectives

1.3.1 General objectives

The main objective of this research is to design innovation value chain and knowledge management system for Ethiopian leather industry.

1.3.2 Specific objectives

- To assess the exits value chain of Ethiopian leather industries mainly in knowledge management.
- To understand the factors to management the barriers of knowledge management across the value chain.
- To Propose innovation value chain model for Ethiopian leather industries

1.4 Significance of the study

The outcome of this research will contribute to body of knowledge in value chain management and identifies the future thematic research areas. And the innovation value chain design will be validated for selected case leather industry in Ethiopia. This design will recommend assisting by stockholders or government to implement and use in order to reducing the factors affecting the leather out puts starting from livestock in to delivery products and producing of estimated leather product by using additional raw hide and skin (product up grading) and increasing value added by changing the mix of activities conducted within the industries.

1.5 Scope of research

The research mainly give attention on the assessment of the existing problems of the Ethiopian leather industries value chain starting from the husbandry stage to finished leathers in order to develop a model which focuses knowledge management across value chain. To identify knowledge management factors and innovation value chain activities at each stage of value chain, the research uses the observation and interview with expertise method. To develop a model which shows innovation value chain can improve the firm size and market structures of Ethiopian leather

industries. The study uses SPPS with AMOS software to analyze the data and model development respectively. The detailed innovation value chain development process of industries was the target of this research.

1.6 Limitations of the research

The research examines key problems of Ethiopian leather industries with particular areas of innovation and knowledge management in the value chains of Ethiopian leather industries. Thus, the existing value chain and knowledge management of the industry is studied in detail to identify the core problem in the industry. The studied areas are LIDI (leather industry development institutes),Sheba leather industries, ELIA (Ethiopian leather industry association) and RAYA regions for comparing with traditional knowledge. This has done through analysis previous studies and existing factors a or measures.

The major limitation for this study was collecting accurate data. the process is hampered due to lack of knowledge across the value chain, in addition to lack of reliable information. The un certainty that can arise from each data gathering mechanism has also its own impact in the quality of data. These problems have been solved by use of systematic data gathering and taking correction actions of secondary data by discussion with representative workers in the industries.

1.7 Organization of the thesis

The study has six chapters. The first chapter includes introduction and problems of study, it also embraces background of statements of problems, limitation and significance of study; the second chapter discuses about related literature reviews focused on value chain, innovation activities, innovation value chain and knowledge management; the third chapter shows traditional tanning in Raya Peoples and their knowledge managements; the fourth chapter gives the methodology of data collection and analysis. The fifth chapter includes results and discussion it also shows the finding and developments of frame work. The six chapters show the proposed or recommended model and its guidance to use. The final chapter contains conclusion, recommendations, future direction, references used and annex.

Chapter Two

Literature Review

Researches need to be informed by existing knowledge in subject area. The literature review helps to identify, organize and to get basic theoretical information and knowledge to strengthen the research out puts. In this research the literature review focused on, innovation, and innovation value chain and knowledge management. As results of the review, existing gapes which need further research are identified.

2.1 Definitions and history of innovation concepts

In literature there are numerous definitions of the concept of innovations. The pioneering research in the field was done by Schumpeter in 1934.He was the first author to recognize innovation as product, process and organizational changes. But as the authors suggestion the concept of innovation do not necessarily do derived from new and scientific discovers but may arise from existing technologies and their application in anew context Hana (2013). His idea and researches have been developed by a number of authors and scholars.

Based in different authors point of view the innovation of market and product are low when take of firms and the quality with price decreases that is take sale happened. According to (Nagasimha and Kanagal etal. 2015) purpose of innovation is for improving and increasing the delivery of superior meaning and superior value to the customer while making it relevant, different or new valuable from costumer's will be the stand point. Innovation process is a way of new investigating things for companies or sectors as it leads the global competitive advantages to (Gamal etal. 2011). According to Birkinshaw(2011) innovation is the life blood of any large organization. Innovation focuses on the five general forms including diversification of the existing pool of product and service; introduction of completely new items and developments of participation models (Attarnezhad 2013). Product, process, organizational/managerial and market innovations constitute the main body of innovation categories (Hjalager 2010) introduction of new products, new production methods, exploration of new markets, conquering of new sources of supply and new ways of organizing business.

The authors (Andersson 2016) suggest that Innovation is a new idea. It is more effective device or process, the ideation, development, and commercialization of substantially new products,

Services or businesses – facilitates the development of new sources of competitive advantage (detection 2013).

Introduction and diffusion of new knowledge techniques and products helps to ensure resource efficiency and green growth (Wakeford et al. 2017).

2.2 Types of Innovation

Table 1 : Main Types of Innovation and Their Definitions

No,	Type of innovation	Definition	Problems	Finding	Authors
1	**Product innovation**	Product innovation to be the totality of both the commercial performance (market success of new product) and the project performance (internal efficiency) or quality of the final product and the overall cost reduction effort. The effect of both the technology pushes (to build better confidence and enable them to exploit the knowledge in their external environment easily) and market pull (To forecast unmet market needs and align their response accordingly) strategies on the product innovation performance are higher in the case of privately owned manufacturing firms.	In Ethiopia the contribution of the agriculture sector to the GDP is getting lower annually and the manufacturing sector is slowly picking the pace.	innovation strategy is positively related to product innovation performance	(K.T.Beyene1 2016)
2	Processes innovation	New ways of producing goods and service. It is the implementation of a new or significantly improved Production or delivery method. This includes significant changes in techniques, equipment and/or software. processes innovation can be planned to minimize production delivery costs to improve the quality or produce new product across the value chain.	Environmental impact	It can be profitable & can be create environmental benefits	(ÖZER 2012)
3	Marketing innovation	Innovation for marketing is mostly focusing on the common marketing concepts The Marketing of innovation particularizes the common marketing concepts into the innovating process focusing in the decreasing of risks, uncertainty, and optimization of resources, product development and customer relationship**.**	The Sensational impact of marketing innovation in firm performance	Quantitative and qualitative approach	(CASCIO 2001)
4	**Organizational innovation**	The diffusion of new ideas in to organization can take as measurement for the intra firm diffusion of different organizational practice. The organization had taken as procedural or structural organizational innovations.	Limited research in the thematic areas of organization innovation	The further development of an adequate methodology for an organizational	(Armbrustera 2008)

			measurement with large scale survey.	innovation monitoring system.	

2.3 Factors affect innovation activities

Understand the factors that affect the innovation performance could a great benefit to be addressed on the great requirement measurement. Based on Gamal (2011) innovation activities are all scientific, technological, organizational, financial and commercial steps which are intended to, lead to implementation innovations. Some innovations activities are themselves innovative other are not novel activities but are necessary for implementation of innovation eased on the great requirement measurement.

TABLE 2: FACTORS AFFECTING INNOVATION ACTIVITIES

	Knowledge factors	Lack of qualified personnel (e.g. engineering and technical skills), either inside the enterprise or in the labor market. Lack of information on technology / marketing , deficiencies in the availably of external/ foreign service , difficulties to make solid relationship in global market and Lack value chain partner in global market
2	Institutional factors	lack of reliable infrastructure, such as electricity and telecommunications Weak property rights, including intellectual property rights (IPR), implying that enterprises are not able to protect their innovation issues from limitation by their competitors. Additional instructional factors just like high cost of doing business arising from the legal/regulatory environment (corruptions, excessive red tape, and difficulty in obtaining licenses and permit onerous on regulations and tax rules.
3	Cost factories	More perceived risks , duet rated quality output and Lack of skill in time management Less economical (finance)sources to invest latest technology Expensive innovation example when gathering and acquiring of information Transportation(logistic) cost
4	Market factories	Uncertainty of customers for input or raw materials and innovative products and service. High challenge for investing new frames Less global marketing computations

Source: EOCD/manual 2005/innovation for green industrialization/Egypt innovate 2011

2.4 Value chain

Global value chain links firm workers and consumers around the world and often provide a stepping-stone for firms and workers in developing countries to participate into the global economy (Gereffi &Karina etal. 2016). World Bank Group (2014) reports that, Global value chains (GVCs) have become a dominant feature of the world economy, involving countries at all levels of development, from the poorest to the most advanced.

According to (Kumar & Rajeev 2016), Value chains encompass the full range of activities and services required to bring a products or services from its conception to sale in its final market whether local, national, international or global. Value chain is a combination of different policies, trade agreements and rules based on the value chain, and combines value chain or service with the supplier or different manufacturers, then transforms and integrates it into the end users (Mike et al. 2000).

Different types of policies, trade agreement, rules & regulation and infrastructure scarcity value chain is the demand of the time which helps to find out the actual value of the organization. Value chain describes the full range of activities which are required to bring product or service from conception, through different phase of production (involving a combination of physical transformation and inputs of various producer services) delivery to final consumers, and final disposal after use.

According to Ndaro et al (2016) defined that, value chain is the techniques or systematic sequence of processes or activities that integrates various input to come up with added value on leather for competitiveness. According leather industry minister report (2016) leather industry value chain has the full range of activities required to bring leather products (e.g. footwear, garments and goods) to the final consumers passing through the different phases of production, processing and delivery.The leather value chain has three processing stages; each stage requiring different combination of material in puts, labor and capital (Umar S.M1 2015)). The different stage of leather industries is raw material recovery that has direct links with animal production the second stage is tanning and finishing processes which requires a lot of capital and the third is leather production stage which needs labor intensive activity.

2.5 innovation value chain

The idea of IVC was suggest by Hansen and Birkenshaw (2007) with a model which suggest an integrated process of transforming ideas into commercial out puts. This process contains three phases namely idea generation, idea conversion and finally diffusion.

Value Chain Innovation This area looks at the possible changes that could be made to increase the value added in the value chain activities. Generally based on Hansen and Birkinshaw(2016) point of view This innovation value chain comprises six activities: sourcing ideas outside the company, generating ideas across units in a company, generating ideas internally in a unit, selecting ideas for funding, developing ideas into products or proven practices, and diffusing those products and practices.

BY Martin Gooch in (2012) the role that industry, government and academia can play in facilitating and motivating Canadian ag-food innovation at the business level, leading to a more competitive ag-food industry. Because closely aligned value chains are forming much slower in the Canada ag-food industries than other industries. Value chain has gained much significance in the contemporary commercial and business environment of the globe (Abdelhadi 2017). The limitation of this author is that it only focusing on value chain development, not focusing innovation and idea management.

It is necessary to tackle value chain innovation that creates new value by people, goods and processes in the supply chain that links “MAKE” (manufacturing), “CARRY” (logistics) “SELL” (retail and services) (Yutaka 2015).

The Innovation value chain is a model inclusive of knowledge sourcing, innovation production and value production (Hseih 2011).

Innovation value chain is one of the assessment tools that can be used to assess innovation process in a given organization and identify the weaknesses of the innovation process in the organization which needs to improve on some of areas relate the processes (shake et al. 2014)and identify the weaknesses of the innovation process in the organization. Need to improve on some of areas relate the processes along the idea generation, conversion and diffusion phase.

2.5.1. Knowledge Acquisition

Knowledge acquisition is the processes of knowledge sourcing from external and internal environment. Knowledge acquisition is a very broad topic but in this research paper it defined in organization perspectives from different sources, and the managerial issues that must be considered. The sources categorized as internal and external sourcing of knowledge acquisition.

External sources of acquisition knowledge

In organization or business working environment the main sources for acquisition knowledge are customers, suppliers, competitors, and partners. The above external factors of knowledge acquisition can be summarized

Customer

Customers itself consists of knowledge for, about and from customers for acquiring of knowledge.

The summery of three kinds of customer's knowledge

TABLE 3:SUMMARIES OF CUSTOMERS I KNOWLEDGE ACQUIRING

types	contributions
knowledge about customer	The kind of knowledge that enables us to know the customer better, to understand their motivations, and to address them better. Includes requirements, expectations, and purchasing activities.
knowledge from customer	The kind of knowledge that deals with the feedback from customers regarding products, suppliers, and markets. It can be used to improve organizations' products and services.
knowledge for customers	The knowledge that the customers can gain in order to satisfy their knowledge needs. It can include product, market, and supplier knowledge. It can be sourced within the organization or from other external sources like other customers and competitors (Zanjani, et. al., 2008).

Source: environmental management tool 2008

Suppliers

Chan (2009) presents a classification for supplier knowledge based on the concepts outlined by Gerber et al (2002) regarding customer knowledge. These are: It is also very important to

knowledge acquisition. It Includes data and information which can be processed and used as building blocks for new knowledge creation

Competitors

According to Fuglsang, Sandbox & Sorensen (2011), the empirical tourism studies have shown that competitors are an important source of knowledge for innovation. They also suggested that bring the competitors by browsing website and absorbing them or participating in their activities. This deserves mention but it is a fairly straightforward aspect of KM. It simply involves collecting, organizing and presenting the data, information, and knowledge that the firm has acquired in such a way that one can search, retrieve, and analyze it. Some of this fall within the scope of information management, but it is particularly the process of using these components to create better decisions and new knowledge that is of interest here.

IT systems are very useful in this case, since the sources are largely explicit and presumably require frequent updating and manipulation. Data mining and analysis, document management systems with suitable search functions and expert systems are most relevant here.

Partners

Alliances intended to increase knowledge are a valuable potential resource. However, these must be properly managed. Key success factors include fostering trust, learning from your partner, and effectively managing the creation of knowledge relevant to both parties. Knowledge transfer can be facilitated by personnel exchanges, common projects and other forms of regular interaction, technology sharing, etc. (Gamble & Blackwell,2001). Their suggestion also focuses on understanding of how tacit knowledge could be acquired through communication, collaboration, and socialization for extending of communities of practice.

2.5.2 Knowledge acquisition in leather industries

The authors Ilkhamova (2017) suggest that the increase of the number of footwear and leather small and medium enterprises that have taken place in recent years is not accompanied by formation of corresponding professional training system for the enterprises especially for assistants and medium level specialists. Therefore, the basic requirement is that the staff will have knowledge both in Technique, technology and material science fields.

Leather industry is facing different challenges to survive in international market (Hassan et al. 2011). First of them is the use of Hi-tech expertise for superiority products and availability of expert manpower to provide the needs of the world market. There for almost all the factories or indictors that directly or indirectly influence employee retentions are correlated.

According to Nonka (2011) organizational knowledge is created through a continuous dialogue between tacit and explicit knowledge. He suggests that knowledge can be creating through of communication individuals, organization and society using different models**.**

Internal sources of knowledge acquisition

Cultures

Culture shows a strong and positive impact on organizational knowledge creation (song et al., 2008)

According to song(2008), culture has critical role on knowledge creation of organizational learning through different methods.

Organizational culture adjusted to new conditions and favoring knowledge management: Organizational culture adjusted to new conditions and favoring knowledge: intellectual programs of human behavior favoring the creation and

Transfer of knowledge, continuous learning, teamwork, and mutual trust in

Interpersonal relationships (kilmek,etal., 2011).

Trust

Based on, Wat and Shaffer (2005) found that trust has a mediating role between perceived fairness and leader-member exchange, and organizational Citizenship behavior in Hong Kong investment banking. Kath et al. (201Niu (2010) investigated the mediating role of trust in high tech industries and found that trust played a partial mediating role between industrial cluster and involvement in knowledge obtaining

2.6. Knowledge Absorption

Cohen and Leviathan notify a tradeoff between external and internal knowledge, when long-lasting organizational structures tend to weaken the use of more diverse knowledge sources. Inter disciplinary team member's knowledge absorption ability, keep the absorption of external knowledge, including access, transformation and utilization, to promote knowledge open flow and high efficiency transfer Knowledge absorption in business depends on formal activities, but also

the informal processes of socialization through the developments of relevant and extensive informal network (Ziqi et al. 2017).

According to the authors Evans and Bosua (2014), the performance of firm to learn through gathering external knowledge and internal learning which involves knowledge creation) is both influence a firm's innovation capacity, and ultimately determines its innovative performance.

The way the knowledge conversion and creation processes are presented by IkujiroNonaka and his coworkers suggest that the evolving spiral is possible mainly because of the input of knowledge generation from within explicit and tacit knowledge grow in both quality and quantity during the process of knowledge conversion (Andrei 2013).

Knowledge conversion process the conversion of tactic to tactic knowledge (socialization) tactic to explicit (externalization) explicit to tactic (internalization) explicit to explicit (combination) (Byosiere et al. 2008)According to Esterhuizen (2011), the SECI cycle represents a model that includes two types of knowledge actions that is by interactions of tacit knowledge and explicit knowledge.

Based on Knowledge conversion ways combine and interact in a spiral movement, they create new knowledge and, as a result, they can create innovation. According to the SECI Process, knowledge is created by the individual and it can be organizationally amplified by tacit knowledge conversion and vice versa (Silva 2013).

2.6.1. Factors of knowledge absorption

Knowledge absorption, as a factor within absorptive capacity first introduced assesses the value of an organizations ability to learn and the potential impact of knowledge acquisition on performance. The frequency of knowledge absorption affects knowledge flows within an organization.

Organization itself can be structured in many different ways, depending on its goals, adopted culture and various other aspects.

2.6.1.1 Internal factors

Prior related knowledge

It has positive impact on absorb capacity because it presents the ability to perform its three main activities: announce the value of new knowledge, convert or assimilate it, and apply it to

commercial ends (Levinthal et al. 1990). And they defined Absorptive capacity is path-dependent**,** resulting from the cumulative nature of knowledge.

According the authors Zahra and George (2002) the knowledge absorption capacity is influenced by the contribution of past experience to the organizational memory.

Individual (employ) knowledge absorptive capacity

A well firm level can aggregate the different absorptive capacities of its employees is determined by its combinative capabilities (ChiFang 2010). Based on Veniding (2000) the level of education and academic degrees (thinking) of employees affects knowledge absorption capacity through the knowledge assimilation. The employ in high education level has better ne knowledge absorption in that area.

Organizational structure

Based on Matović (2016) organizational structure allows the expressed allocation of responsibilities for different functions and processes to different entities such as the branch, department, workgroup and individuals. Communication network represents the scope and strength of structural connections that brings flows of information and knowledge to different organizational units (Kurki 2017)absorptive capacity (AC) has become widely acknowledged framework when concerning internal and external transfers of information and knowledge in organizations

Cross-functional communication

Based on Boch and Volberda (1999), cross functional creates opportunity for the internal transfer of knowledge within the firm. Better internal communication enhances social integration mechanisms, which lower the barriers to information-sharing and increase the efficiency of assimilation and transformation capabilities.

Diversity of backgrounds and knowledge

According to Cohen and Leviathan (1990) it provides a variety of perspectives from which to process the acquired knowledge, leading to new associations, linkages, and innovations. Based on their perspective It also increases the chance the new knowledge will be somewhat related to knowledge already in the firm, facilitating its assimilation. The authors suggested that Gatekeepers are important to absorptive capacity. They are specialized roles present both within organization, where they serve as boundary spanners between the firm’s subunits, as well as outside the

organization where they interface with its external knowledge environment (Lakhani& King 2011)

Organizational culture

By Nikola and Matovic (2016), Culture shapes the processes by which new knowledge is created, legitimated, and distributed in organizations. According to Fang Chi Wu (2010) Especially the distribution of power, also has great influence on absorptive capacity. The author suggested that When knowledge –sharing is well encouraged, this makes employees willing to share different information and further create new ideas. By Veniding (2000), human resource management practices are another variable that affects the degree to which a firm can acquire and assimilate new knowledge.

2.6.1.2 External Factors

Gathering information and knowledge from a variety of sources in a firm's external environment is central to innovation (Sawyer et al. 2014).

According to Wu (2011), the external knowledge environments are important to knowledge absorptive capacity. The authors Nona and Takeuchi (1995) knowledge-creating company operate in an open system in which it constantly interacts with its outside environment by exchanging knowledge.

Trust Relationship

Trust relationship is the key influencing factor of knowledge absorptive capacity in the service outsourcing enterprises (Zhi-xiong 2017). Building a trust relationship between service outsourcing enterprises must meet four conditions: understanding, profitable, predictable and faith worthy. The author suggested that the trust relationship has effect on knowledge acquisition, knowledge digestion, knowledge transformation, knowledge utilization in the process of knowledge absorption. Trust as the willingness to be vulnerable to the actions of another party based on the expectation that the other will perform particular action important to the trust or, irrespective of the ability to monitor or control that other party (Zhang 2014).

2.7 Knowledge diffusion

Knowledge diffusion is the necessary condition of new knowledge producing in the process of organizational learning (Geng Xiaoqing & Runquing 2008)Network participation can provide effective knowledge diffusion between local firms and industrial discrete (Linus 2002) they

suggest that network production is important to knowledge dispersion, value chain across the boundary of firm and national border. Knowledge diffusion and utilization also called knowledge transfer, up take or translations, has become a high priority for the health research community (Evelyn 2003).

Tracing knowledge diffusion between science and technology is a challenging issue due to the complexity of identifying emerging patterns in a diverse range of possible processes (Haomei and Diana 2011). Therefore, they conclude that the work has practical implications on resource allocation, strategic planning, and science policy. In contrast interacting in person matters to the economy at large, business visits are predominantly viewed as consumption expenditures rather than as a long-term investment in knowledge production and diffusion (Mariacristina 2016)

Knowledge-based economy taking in to count the sources, paths and underlying mechanisms of knowledge diffusion, the primary role of innovation policy is to create Varity of mechanisms to facilitate the capture and assimilation of local and external knowledge (Corinne 2010). The major finding of this article is the complexity of knowledge diffusion.

Challenges at workplace safety hazards, high cost, loss of productivity, organizational competitiveness, absence of collaboration among universities, industries, and top management commitment advantage and top management awareness absence has negative impact of work place and health both in international and national level (Jilchaa 2017). He also concluded that to curve this alarming unsafe workplace, research study is one of the key techniques and Knowledge diffusion conceptual model has been developed for any end users. He recommended it is also important to see directions of the future research regarding how inter- sectorial collaboration and hub sectors of industry will influence knowledge transfer and diffusion. The main gap of this article is it not focusing on chain of work place environment.

The interaction and communication among skilled workers are the most effective means of knowledge transfer, diffusion, and interflow.

Factors affect to knowledge diffusion in communities' distance, knowledge gap, learning ability and willingness to share (Nen-Ting et al. 2016). Based on Tasi(2001) and Tiwana(2008) Inter-organizational knowledge diffusion processes can be affected by various factors such as an organization's centrality . From the above main factors affecting the knowledge diffusions are

Social Network structure

Social network refers to the articulation of asocial relationship, among individuals, families, villages, communities and son on (Dawn 2016). It is also indicating that the structural characteristics of networks have an influence on organizational performance (Topco 2011). The author suggested that the nature of a social network is one of interactions and connections that form the foundations of relationships (Liu et al. 2015).The social network can be measure that identifies nodes in crucial positions are referred to as centrality or prestige measures. Knowledge diffusion takes place when an agent broad cast his knowledge to agents to whom he is directly connected an agent broadcasts his knowledge to the agents to whom he is directly connected (Cowan et al. 1992). And the author suggested that Knowledge creation arises when agents receive new knowledge which is combined with their existing knowledge stocks. Based on Hansen (1999) investigated the effect of the tie strength on knowledge transfer and found that strong ties promote the transfer of complex knowledge, while weak ties promote the transfer of simple knowledge. And knowledge collaboration network refers to the mechanism and process of integrating knowledge distributed in a network to achieve its goal.

Centrality

Based on reporter of tobacco (2011), an important part of network centrality is for participation in an innovative capacity in network. According to the author of Borgatti (2005), suggested that Centrality measures, or at least popular interpretations of these measures, make implicit assumptions about the manner in which traffic flows through a network. Applications include identifying the most influential person(s) in a social network.

According to Dawn (2016) there are three types of centrality, degree centralities, between centrality and closeness centrality. The author also defined each types of centrality as follows. Degree centrality is the structure pointer used to calculate the most main factor of a person in a group network. Between centrality means that if an actor is on the track of many communications. Networks, the actor occupy an important position. The actor has the ability to control the association of the other two. Closeness centrality means an actor can contact with many people directly or indirectly in the network.

2.8 Knowledge Management

Based on the authors of Marjila and Edlira (2015), currently Knowledge Management is one of the hottest issues for all world industries, service, information researchers and for the whole economic development. According to Bose(2002), in a broader sense, knowledge management is the fusion of people, processes and IT to produce radical and fundamentally new ways to create, share and retain knowledge. It can be defined in the perspectives of peoples who create, share and use knowledge, and who comprise organization culture that nurtures and stimulates knowledge sharing.

By the authors Dell & Hubert (2015) Knowledge management makes available the right knowledge to the right people at the right time to deal with complex and ever-changing organizational environment. Based on Egyptian Banking reports of (2012) Knowledge management occurs on individual, team, organizational and inter-organizational levels and brings together people, processes, culture and technology to fulfill its purpose.

Different authors defined the knowledge management in their different perspectives. According to Dalkir (2005), knowledge management defined as systematic coordination of the resources of an organization in order to value added and innovation. He also suggested that the coordination has achieved through creating, transferring and diffusing of knowledge. Based on King (2009) the process of knowledge management involves knowledge a question, creation, refinement, storage, transferring, sharing and utilization are importing for any organization.

Based on the authors Cândido (2013), Knowledge management is a complex activity for human beings due to its intangible, dynamic and intrinsic assets. But it is critical important for the survival and development of organizations. He suggested that the variables included in this work be applied in other types of networks, such as Local Productive Arrangements (APLs), or in other economic sectors.

The origins of the knowledge management field differentiating between tacit and explicit knowledge and describing the SECI/be model (Annika 2004). The Annika (2004) suggested that the SECI/ ba model supports new service development and innovations in the network from both the research methodological and case companies´ points of view. The knowledge sources of service development and how knowledge is created shared and utilized in networks for the creation of new innovative services and developing current services.

The primary contribution of the paper is in describing network knowledge Management methods supporting tacit and explicit service knowledge management. According to Adrian (2005) business process involves the processing of customer knowledge to pursue the goals of RM. Usually, it also involves direct customer contact and the exchange of information or services between enterprise and customer. Such processes are either positively affected by the customer delivering or receiving information.

Generally, Bose (2002) suggests that knowledge management is the fusion of people, processes and IT to produce radical and fundamentally new ways or innovation to a creating, absorb and diffusing of knowledge. It can be defined in the perspectives of peoples who create, share and use knowledge, and who comprise organization culture that nurtures and stimulates knowledge sharing.

According to Becerra-Fernandez (2010), Knowledge management makes avail right people at the right time to deal with complex and ever-changing organizational environment.

According to Egyptian banking sector reports (2012, Knowledge management occurs on individual, team, organizational and inter-organizational levels and brings together people, processes, culture and technology to fulfill its purpose.

2.8.1 Factors affecting Knowledge management organization

There are four factors that can affect knowledge management implementation in construction organization include organizational factors, individual factors, technological factors and KM (knowledge management factors) (Alarabi et al. 2012). They suggest that these factors should be considered for successful implementations of knowledge management.

No,	Factors	Perspectives
1	Organizational factor	Represents the internal factors affecting organization top management and organizational
2	Individual factor	Represents the internal factors affecting organization Training, knowledge sharing culture and motivation to share knowledge
3	Technological factors	Representing different tools used for knowledge management such as IT, EKN…
4	Km related factors	Those internal and external aspects that influence KM in the construction industry

TABLE 4: SUMMARIES OF INNOVATION VALUE CHAIN FACTORS

2.9 Innovation Value chain and knowledge management models

Michael E,Porter in(1985) developed a value chain model for manufacturing sector with five primary activities and four supporting activities. But porter generic value chain model is no used for cases in the value system of other sectors. However, it can be used as stepping stone for developing the value chains for other sectors. After that a value chain model for steel manufacturing sector is developed based on the porter's principle using a case of an integrated steel plant with five primary activities and six supporting activities (Acharyulu et al. 2015).

The main gaps of most of the value chains were not focused on knowledge management across the value chain. By using analytical frame work According to (Chan 2007) the predictive analytic models consist of quantitative and algorithmic methods of analysis to create projections, forecasts, extrapolations and predictions. The problem of predictive analytic model is limitation in knowledge creation, forward looking value creation model that combines the important concepts of value chain management and predictive.

Knowledge Management (KM) success model that incorporates the quality of available knowledge and KM systems built to share and reuse knowledge such as determinants of users' perception of usefulness and user satisfaction- ion with an organization's KM practice.

The operational processes present the processes of actually carrying out KM, Knowledge collection, sharing, update (Kucza 2001). According to kucza (2001) the knowledge management processes used for both operational and management processes.

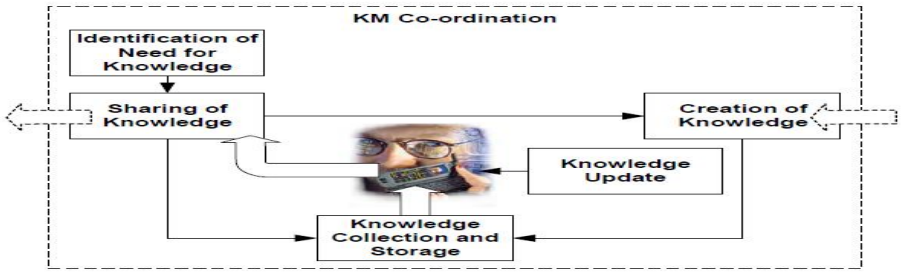


FIGURE 1 KNOWLEDGE CREATION

Source: Technical Research Centre of Finland Espoo, 2001

From the figure of the main processes model the rectangle lying behind all other processes. The operational processes are presented as the following main processes: identification of need, sharing, creation, collection and storage and update. And there are two processes that represent the main processes sharing in the model: Knowledge pull and Knowledge push.

The general concept of the process model is that within the co-coordinating processes the operational processes are planned and initiated. All the models have different implications in value chain and knowledge management aspects. However, in many application areas, the value chain and knowledge management have their own gap. The gapes of value chain models are they didn't focus on innovation and knowledge management and from the literature review perspectives there is no innovation value chain model and knowledge management leather industries.

The Summery of the Literature in Table Form See In Appendix -3

1.10 Summery from the Reviewed Literature Perspective and Gap Finding

In the literature survey discussed from section 2.1 to section 2.9 the concept of innovation in organization, product, processes and market perspectives. The value chain and innovation value chain have been studied. The knowledge management includes knowledge creation, knowledge conversion and knowledge diffusion also assed. Different value chain models for manufacturing industry such as, Michel porters' value chain; predictive analytic models, knowledge management and knowledge diffusion model for value chain and knowledge management have been discussed. Therefore, viewed articles are categorized based on their context. The purpose of the study, proposed structural innovation value chain and manage knowledge for Ethiopian leather industries. In the summarized study, design innovation value chain and knowledge management of and use of tool to develop value chain model and material flow across the value chain of leather industries are focused.

However, the concept of innovation value chain and knowledge management in leather industries by using different tools for acquiring knowledge, conversion and diffusion knowledge across the value chain of leather industries are not given due lack of attention.

From the summarized literature perspective, the important of innovation value chain were to improve value added activities through idea creation, idea conversion and idea diffusion across the value chains of an organization.

There for based on the researcher literature review there is no designing innovation value chain and knowledge management for leather industries using different tools. Such representations are not doing for leather industries rather than representing material flow, strategy and policy, production and marketing system in organization. This new way is very vital for Ethiopian leather industries as the leather industries is the priority sector for Ethiopia and have many challenges and problems starting from livestock to customer satisfaction.

Chapter Three

Research Methodology

3 .1 Research Design and Methodology

This chapter contains the research design and methodology used in the research paper. It gives a general description of the research approaches and steps of the research, and then follows by showing a mixed-method approach based on systematic review of research methodology for data collection and analysis and adopts to analysis the system innovation of selected case Ethiopian leather industries.

3.1.1 Research design

The research used research design to answer the research questions. The researcher used both qualitative and quantitative methodology is essentially motivated by the need to get an insight into the level of implementation and the challenges of successful the evaluation factors of innovation value chain in Ethiopian leather industries farther more to RAYAN traditional local tanners. The design helps the researcher to organize ideas in a form whereby it makes easy and understand for the researcher to look forwards.

3.2 Research methodology

This study used research methodology to apply the plan. First step sample survey is preparing for selected case leather industries to generate data on innovation value chain and knowledge management and associate factors, sourceof knowledge acquisition (external and internal knowledge sourcing),knowledge absorption (External and internal factors) and knowledge diffusion (social networks).

The second step involves semi-structured interview with the key role-players in the leather industries. The semi structured interview focusing on some open-ended questions for the selected case leather industries. The information gathers from the expertise mostly

It is a way to systematically solve the research problem. To meets the main objectives of the research; mixed approach methods and combination of primary and secondary source of data have been used.

The data gathering methods are discussed in the following sections.

3.2.1 Data collection

The proposed data collection way of methods includes observation, interview, questionnaire and secondary data.

The data were collected from the Ethiopian leather industries development institutes (LIDI), the Ethiopian leather industries association (ELIA), the Sheba leather industries and from RYAN traditional local tanners.

a, Observation

According to Yin(203), observation is a scientific tool and method of data collection for the researcher ,when it uses as formulated research purpose, systematically planned and recorded and subjected to checks and controls on validity reliability of the data. During the observation method, the information is sought by way of investigator's own direct observation method without asking from the respondent. The main advantageous of this method is that subjective bias is eliminated, if observation is done accurately. Secondly the information obtained under this method relates to what is currently happening, it is not complicated by either the past behavior future intentions or attitudes. Thirdly this method is independent of respondents' willing to respond and as

In case the observation is characterized by a careful definition of the units to be observed, the style of recording of observed information, standardized conditions of observations and selection of pertinent data of observation is called structured observation. But when observations to take place without these characteristics to be thought of in advance, the same were termed as unstructured observation. Structured observation is considered appropriate in descriptive studies, whereas in an exploratory study the observational procedure is most likely to be relatively unstructured (korthi, 2004).For this reason, in this research the researcher used observation as a tool for collecting information and data.

The researcher visited the leather industries development institutes, Ethiopian leather industries association, Sheba leather industries and Raya local or traditional raw hide and skin tanner and users

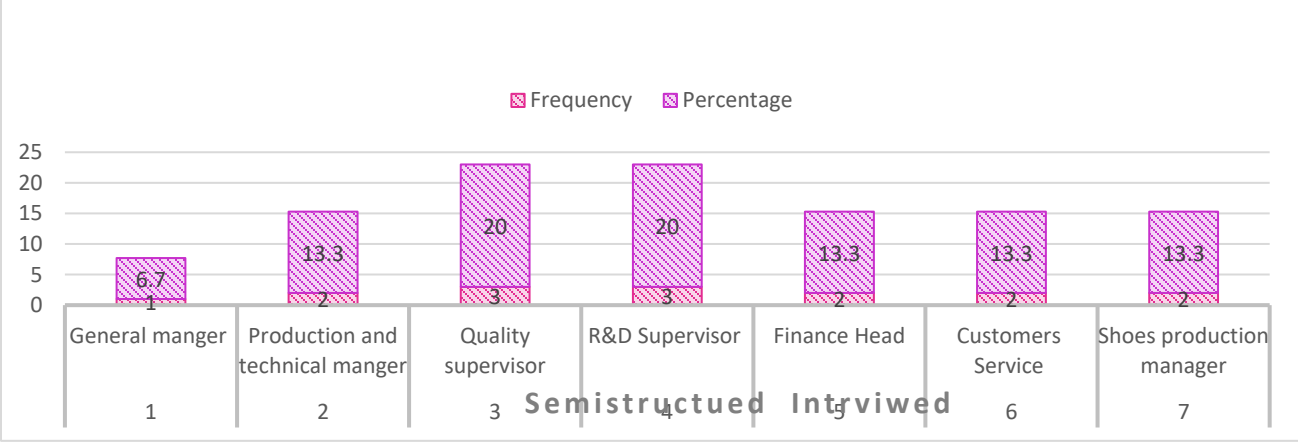
b, Semi -structure Interview

The main point of this interview was to get detailed information which is not traced through the other data collection methods.In this case key informants or actors are selecting from the , research expert from LIDI, Ethiopian leather industries association, Sheba leather industries .The interview

were conduct to collect general information regarding Ethiopian leather industries value chain and other innovation processes with selected focusing areas targeting to understand the existing situation in Ethiopian leather industries value chain and knowledge management

and the core problems ,root causes and devise mitigating the challenges or problems related to value chain and knowledge management. The interviewees with the under-listed titles were actively consulted during the study as shown below

Figure 2: Semi Structured Interview Results



C, Questionnaire

Based on Harris and Brown (2010) point of the main tool to collect information in practical research is questionnaire, because of that the researcher can decide on the sample and the types of questions to be asked. the primary data can be collected based on the researcher's complete questionnaire. The important part of the collecting primary data using questionnaire is to answer the specific research questions. First step sample survey is prepared for selected case leather industries to generate data on innovation activities and associate factors, source of existing value chain and partnerships using the set of closed-ended and open-ended questions.

The designed are distributed by the researcher to the concerned members in leather g industries. Furthermore, this study, the researcher distributed two questionnaires, the first to know the existing value chain of Ethiopian leather industries and second to prioritize the innovation in the value chain of Ethiopian leather industries.

d, Questionnaire design

A set of 50 raw IVC(innovation value chain) and KM (knowledge management) were initially obtained from different literature review of previous studies on innovation value chain and knowledge management evaluation factors or success criteria. Theseevaluation factors are

classified under five innovation value chain perspectives. The categorized IVC evaluation factors designed the basis of questionnaire survey.

In this study the questionnaire were developed and used to collect the relevant data related to innovation value chain and knowledge management of the selected leather industries (appendix 3).

e, Secondary data

Collections of secondary data is doing through gathering from website related organizational related data sources, articles, magazines and other published sources. Secondary data entails the proactive seeking of existing data in both qualitative and quantitative research. It can also help to interpret the primary data. All secondary data is observing from LIDI (leather industries development institutes) from Sheba leather industry and ELIA (Ethiopian leather industry association).

3.2 Data analysis and model development

After the collection of primary data and secondary data. The data analyzed by SPSS 21 was followed. The analysis was focusing on existing Ethiopian leather industries, knowledge acquiring, knowledge conversion and knowledge diffusion across the value chain. Second different charts and tables were used to analyze the factors of knowledge management and innovation value chain. And finally, innovation value chain model was developing and proposed by using **AMOS** software. Furthermore, it is **firm level type** of model but focusing on innovation in the value chain and knowledge management across the value chain. And the ultimate goal of the proposed model is to size the firm and market structure of Ethiopian leather industries. To create new idea, to convert new idea and to diffuse the knowledge across the value chains of Ethiopian leather industries.

Research frame work:

The overall research methodology and the steps followed in this research is mention in the following figures the research frame work methodology

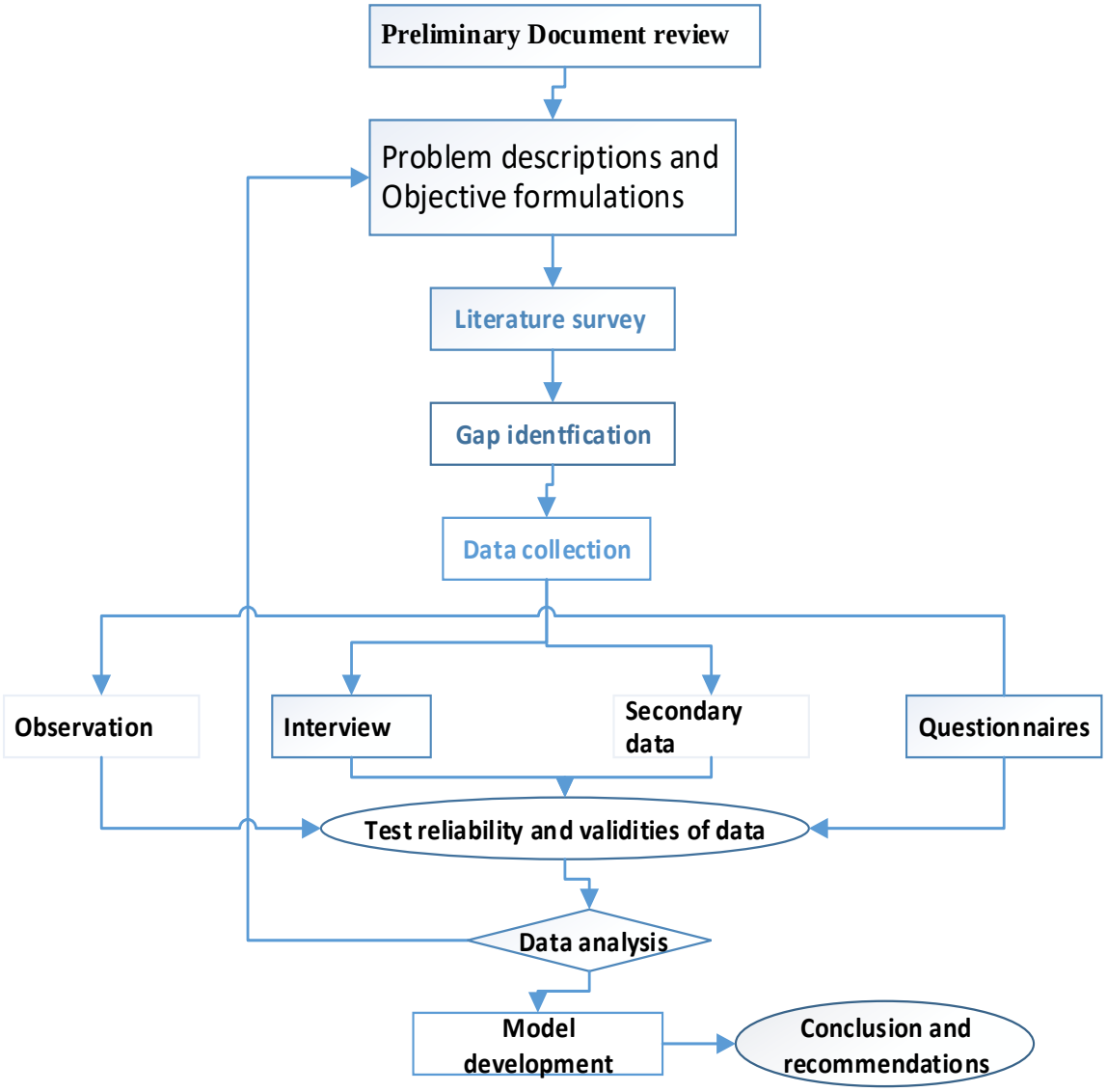


FIGURE 3:RESEARCH FRAME WORK

Chapter Four

4. Existing Situational Analysis of Ethiopian Leather Industries value chain and value stream mapping.

4.1Existing Situational Analysis of Leather industry value chain

Based on the literature parts of this study Ethiopia leather industries has an immerse capacities to generate value addition, employment, exports and other triggers other multipliers effects across the economy since it has a large livestock resources and competitively priced labor force. the leather industries have the full range of activities required to bring leather product to the final consumers passing through the different phases of production, processing and delivery.

The following issues such as weak governance, such as weak governance, production of sub standards products and explorations of other value chain actors, have fare reaching negative impact for value chain sustainably.

Based on Ethiopian industry minister reports, leather Tanneries in Ethiopia have a competitive advantage with regards to prices of raw hides and skins. Therefore, prevailing prices of finished leather, Ethiopian firms are enjoying superior gross margins than Kenya, Uganda and Zimbabwe.

Finished leather Gross Margin Analysis

TABLE 5:FINISHED LEATHER GROSS MARGINS

Countries	Raw hides and skins (US$)	Global finished leather price (US$)	Gross Margins (US$)
Ethiopia	0.28	1.30to 1.75	1.02-1,47
Kenya	0.90	1.30 to 1.75	0.10-0.85
Uganda	1.00	1.30 to 1.75	0.30-.75
Zimbabwe	1.00	1.30 to 1.75	0.30-0/75

Source; LIDI2016

The table and the illustrate that tanneries in Ethiopia have a competitive advantage with regard to the prices of raw hide and skins. Based on prevailing prices of finished leather, Ethiopian firms are enjoying superior gross margins than Kenya, Uganda and Zimbabwe.

Performance of the Ethiopian Leather Industry 2010-2015

Capacity Utilization

Capacity utilization is the relationships between output that is the procced with in installed resources.in Ethiopian leather industry capacity utilization is generally leveled around 80 to 85% are considered to be optimal. Based on the Ethiopian industry minister reports tanning of sheep and goat skins capacity utilizations was 41% and bovine hides utilization were 79.44%.

The low capacity utilization has been attributed to a number of constraints, which, among them include: shortage of quality raw materials, foreign currency shortage, cash flow challenges among tanneries; inadequate managerial capacities across the value chain; low global market of leather and leather products.

Tanneries and foot wear utilization

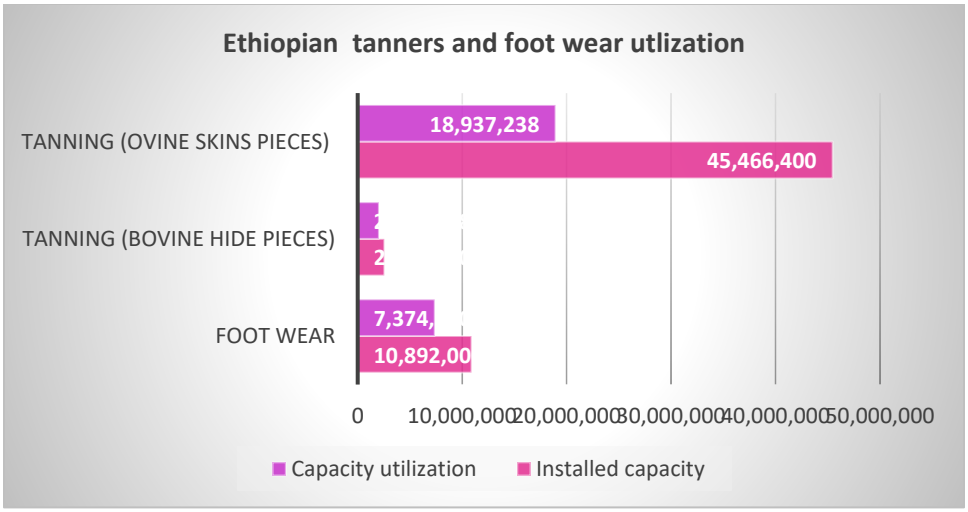


Figure 4: Tanners and Foot Wear Capacity Utilization

Source: LIDI 2016

From the graph illustration if the operating below, optimum capacity increased the average cost per unit of production, consequently undermining the profit of the sector in the global marketing system. The root cause of low capacity utilization in the value chain is cash follow situation the majority tanners were reported weak and approximately 75%of the tanneries failed to pay suppliers of raw hides and skins within reasonable period of 60 days. The researcher concludes that if remain unchecked, threatens the viability farmers, hide and skins collectors, and consequently the whole Ethiopian leather industries.

Existing factors constraints with the growth of Ethiopian leather industries

Shortage of quality raw hides and skins

Based on the researcher observation (2018) the shortage of hide and skins is being worsened because of low quality associated with pre and post slaughter defects. There is a high level of backyard slaughtering in Ethiopia, including in big towns.

Lack of awareness in the in the farm land causes major and minor defects across the value chain and the finished out put products.

Hide and Skin Production Capacity Utilization In 2015

Sources: Ethiopian Ministry industry 2016

Figure 5 : hide and skin capacity utilization

From the above result the Ethiopian leather industries use 64% bovine hides and 36% ovine hides as input resources. whereas the shortage of quality hides and skins contributed to low capacity utilization, however, other factors such as weak supply chain management, scarcity of working capacity, weak market demand of livestock and finished leather. Furthermore, cash flow problems a significant role.

Inadequate Managerial and Human Resource Capacity

According to industry minister reports of (2016), Skill full management system is organizing and coordinating of the activities of business in order to achieve predefine objectives. Human resources are important in leather tanning, foot wear and leather good manufacturing. Not only the human is important for the above-mentioned process but also it is important across value chain of Ethiopian

leather industries. Ethiopian leather industries value chain needs innovation and knowledge management, intensive high knowledge, well trained operators for machines .in order to understand the root cause or it is important to break down the specific capabilities and skills required at the various level of the leather value chain.

Segment	Top leader ship	Middle management	Supervision	Operations
Slighter facilities	Very weak	Most key functional managerial positions are occupied with	Weak	Weak
Hide and skins	Very weak		Weak	Weak
Merchants				
Tanning		Personal with limited qualification and experience or they are not manned at all.	Fair	Fair
Wet blue	Good		Good	Good
Crust	Good		Good	Good
Finished leather	Very week		Week	Weak
Foot wear	Very week		Week	Weak
Leather goods	Very week		Week	Weak

Source: Industry minster 2016

The illustration from the above table (industry minster) reports show that managerial capacity is very weak across the value chain. However, it's negative impacts on the lower values of the chain was not visible before 2012, as the sector was mainly exporting crust. the management skill required in the manufacturing and exporting of crust, which is a commodity whose usage is not narrowly defined.

From this perspective the researcher decide that innovation value chain and knowledge management is a key solution for managerial skill capacity development and the other problems across the Ethiopian leather industries.

Long Lead Time of Inputs

Sourcing of inputs like chemicals from abroad is also found to be problematic duet long lead time, un-availability of chemicals locally and bureaucratic procedures of the custom office**.**

4.2 Ethiopian Traditional Tanners and Leather Industrial Value Chain Stream Mapping

Value Chain Stream Mapping

Value Stream Mapping (VSM) is a standardized way of documenting (mapping) processes and information/material flows as they are and applying a systematic way to analyze these processes in order to identify various waste and target specific areas for improvement.

According to ManojBhalwankar and Sachi MA stud (2014), value stream are focusing in all elements both value added and non-value added which occurs to a given product from its inception through delivery to the customers. They suggest that Value Stream Mapping (VSM) mainly deals with three steps: current state map, future state map and action plan.

A value stream includes all activities value adding, non-value adding and supporting activities that are essential to produce new product or service to customers (Alexander Sunk etal. 2016).

Based on sunka (2016) value stream mapping comprises four methods consisting of the steps 'choose a product family', 'draw a current-condition map', 'develop a target-condition' and 'implementation of target-condition' as well as an action plan' to monitor the implementation, to describe measures (what, by whom, until when) to improve the value To measure the flow of activities, produce one specific product for customers must measures time

By Brown (2009) A value stream is all the actions required to bring a product through the main flows essential to nearly every product. The author suggests that value stream up map mean the not only the activities of the product, but also the management and information systems that support the basic processes as well.

According to Brown the Value Stream solutions should focus on the following three areas.

Traditional Knowledge Management

By the author Anthropologist Johnson defines traditional knowledge as a body of knowledge built by a group of people living in close contact with nature. It includes a system of classification, a set of empirical observations about the local environment and a system of self-management that governs resource use.

According to Johnson the characteristics of traditional knowledge are including

- ✓ Creation over a long period of time which can be passed down from generation to generation either orally or by different means.
- ✓ Constant improvement as new knowledge is integrated to the existing

- ✓ Bothe creativity and development of knowledge is the result of team(group) effort.

According Hansen and Justin (203) traditional knowledge can be consider as information that people in a given community, based on experience and adaption to local and environments have developed over time. They suggest that knowledge is used to sustain the community and its culture and to maintain genetic resource necessary for the continued survival of the community.

Traditional knowledge acquisition for Ankeleba leather making

Handicrafts are not commodities merely produced by hand, but something created by local tanners whose energy and spiritual outlook were translated into products with the aid of raw materials, tools and his skills (Gebremichael, 2016)

Traditional hide and skin tanners produce different semi finishing manual leathers, the common ones include bags, wallets, belts, crop absorber's (aybet), loketa, mechagna, korcha and for praying book(Dewitt) and in dega place they wear hadigi (traditional cloth) for prevent rain fall and clouds. From Traditional tanners (hand crafts) acquiring (creating) of their knowledge are to solve the challenges that are happening in their life of living. Acquiring of knowledge is based on the information, experiences and traditional knowledge from generation to generation.

The local raw bovine hide and ovine skin tanners explained that skill was acquired from their grandfather, brothers, and relatives or other male and female tanners in their communities through oral and practice.

The traditional processing of leather is more complex that requires many energy, time, chemical and mechanical operations. The knowledge is acquired starting from the slaughter of hide and skin to producing of expected leather.

Knowledge conversion in making of ankleba leather for carrying babies

In traditional knowledge management leather tanner's peoples are using both tacit and explicit knowledge but mostly they used tacit knowledge because they focus on their individual knowledge rather than explicit due to lack of documented or articulated knowledge transferring.

To making ankelba leather they used tacit knowledge because of the challenges to carry their babies on their bake .to solved this problem the ancient peoples thinks to produce ankelba leather from the goat or calf skins around Raya. this is partly due to the fact that much of Ethiopian traditional knowledge exist in leather tanners from oral or it is learned from elders through share practice and trial and error experimentation.

Mechanisms used to convert the knowledge from skin into ankleba leather

Starting from the slaughter stage they use different mechanisms and parameters to produce the semi-finished leather (Ankelba). Based on the absorbed or experience of their knowledge of the slaughter techniques.

They use different size of knife, Salts to preserve, water to washing(soaking) of the skin to produce semi-finished leather(alnkelba). The following is the most important to summarized the knowledge conversion or absorption of the hand craft of leather(tanners) to produces ankelba

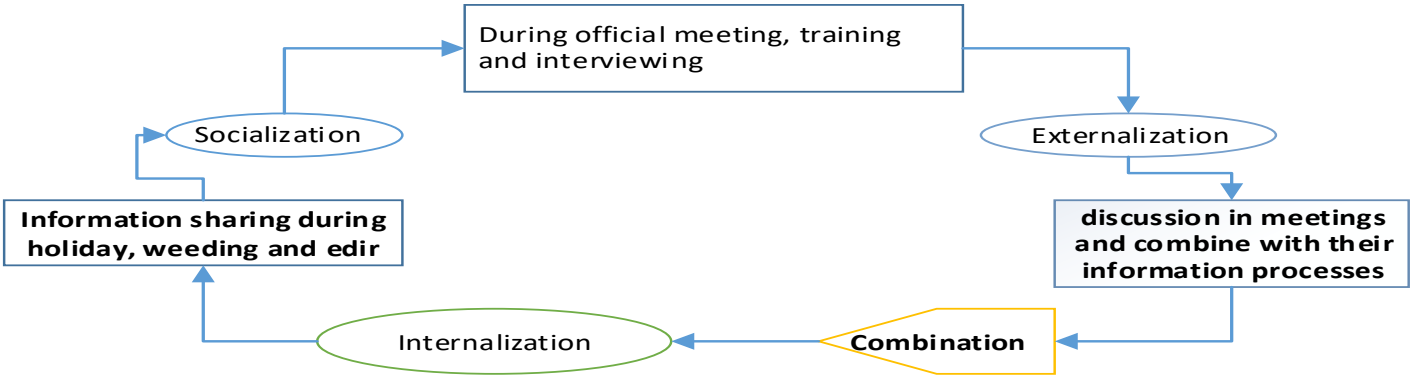


Figure 6TraditionalKnowledge Management

Source: from the researcher absorbed data based on Nonaka's SECI Framework (2013)

Traditional knowing diffusion in tanning the ovine skin and calf skins to produce ankelba leather

The leather hand craft (traditional tanners) are used different types of standards, tools and parameters to diffuse their absorbed knowledge to making traditional leather products. They start from their slaughtering techniques to prevent the defects that happened during slaughtering and to produce their estimated out puts. The estimated out puts of Rayan peoples are ankelba, sleeping mat, mechagna, giraf, large crop absorber(Abet), small crop absorber(lokota) as mentioned in the following pictures.

AnklebaAybetmechagna

FIGURE 7 : RAYAN LEATHER PRODUCTS

These are the main traditional leather products of Rayan people.

This research focused how knowledge is acquired, converts and diffused in local knowledge of Rayan people to convert bovine skin and calf skin in to Ankeleba leather.

In traditional alnkelba leather tanned they used mostly, gaze, butter, time and sari bet. List out the main steps in traditional raw hide and skin converting processes, how many days does it take to produce a single product based on the type product. purpose of using bovine hide and oven skins, problems facing purchasing of raw hide and skin, social status of tanners and types of tanning agents. This research focused how knowledge is acquired, convert and diffused in local knowledge of Rayan people to convert bovine skin and calf skin in to Ankeleba (for carrying babies) and loketa (for crop absorption) leather for different purpose.

Knowledge used in Slaughtering stage before slaughter the ovine animal or calf they consider what will be the estimated output. duringslaughtertechniques they used different size and shapes of knifes to prevent the defects that happened during slaughtering processes. From the researcher observation in slaughtering stage because of lack of more absorbed knowledge the major defect is high and it is difficult to recover in traditional tanning processes.

Lack skill in slaughtering in abattoirs

traditional slaughtering problems

Knowledge in preservation stage

The main objectives of preservation are to keep the raw bovine hide and ovine skin in good condition and to prevent from putrefaction (red heat defects). Traditionally they use salt preservation method to dry and prevent from bacterial putrefaction.

Traditional Soaking processes

In traditional soaking processes they use water to remove the salt, dirty and other natural fats of hide and skin.

Traditional tanning processes

Tanning in traditional knowledge context is the processes of converting of hide and skin in to semi-finished durable leather for different purposes.

All the indigenous tanners interviewed response that the traditional tanned lathers are decline from time to time due to lack of attention. Traditional tanners are using different traditional natural chemicals agents, mechanisms and standards to convert raw hide and skin in to usable traditional leathers.

Chemicals used in traditional tanners to produce sleeping matt.

Material Chemicals

Raw cattle hideoil, tirubiru,gule , engule,telba

Parameters or standards

Hot water

Time (3-4 days)

Out put out put of traditional tanning process for RAYA peoples

N.B the General concept of this research is to understand how traditional knowledge is acquired, absorptive and diffused in indigenous tanners to produce different traditional semi-finished leather and design new innovation value chain with Ethiopian leather industries.

Factors affecting the traditional knowledge of Rayan people in tanning processes

Socio-economic factors

According to the researcher absorbed data gender, age, education, languages spoken, migration status especially to Arabic emirates has great impacts in socioeconomic of Rayan people.

Family or House hold data the absorbed from local tanners are size of family, tenure of farm animals, farm size, tools, transports, house size, food and shelter, qualities of water and constructions of materials.

4.2 Identifications of Traditional Hide and Skin Tanning Criteria in Raya Peoples

The following factors are considered in this study as determine criteria for identifications of tradition knowledge in Rayan local tanners.

Resource potential

Natural hide and skin resources that exists in Raya region may be used in the future. For example, all cattle hide around Raya is potential resources as long as it has not used yet.

Cultural leather products

Cultural leather product that found in Raya are unique and when the researcher observed and compare with other parts it is important for future research. As the researcher observed the Rayan cultural leather can use as investment for large Ethiopian by creating and using knowledge management and innovation value chain between them.

Geographical nearness

The close proximity of traditional tanners' members make on round work to be performed easily. Furthermore, having groups of that produce estimated output products and services in close proximity. And improve the ability of traditionalknowledge usefulness to make traditional tanning -wide in their product offerings. The close geographical proximity also helps them for frequent and effective information flow among them.

Market potential

The expected output cost of all traditional leather suppliers in a market certain period influence creation new innovation value chain. Since the RAYAN peoples have different traditional leather products have their own values in the local marketing system

To select best traditional leather manufacturing area Fuuy-AHP approach is introduced. The fuzzy-AHP approach method allows a complex multi decisions in order to structure in to a hierarchy descending from an overall objective to various criteria, subcritical until to achieve lowest level. First, the overall objective of traditional leather making problem has been identified which was best area traditional leather manufacturing using cattle hide and vital for innovation value chain of Ethiopian leather industries.

To identified. the best traditional manufacturing value chain, as explained above, four criteria were selected by researcher observations and experts interviewed based on judgment value. Finally, the cattle husbandry and traditional leather manufacture areas laid down at the last level of the hierarchy. The following shows the hierarchical structure of the aim of, factors(criteria) and alternatives.

Pair-Wise Comparison for Selecting Study Area using AHP method.

Factors used for comparison.

- Traditional knowledge
- Market potential
- Geographical proximity
- Water resource
- Cultural leather products
- Raw hide availability

Alternative study Area

- Raya
- Dire Dawa city
- Addis Ababa
- Mekelle

No.	Relative scale	Judgment value
1	Low	1
2	Medium	3
3	High	5
4	Extremely high	7

The above judgment values are the value based on the traditional knowledge management experts interviewed and observation of data collection method. Furthermore, the researcher considered Ryaya for seeing traditional knowledge because they have lots of traditional knowledge in leather processing cultures.

Number of comparisons has been found using the following formula.

No. of comparison $=\frac{n(n-1)}{2}$ where as "n" stands for number of selected cases or things that has been used for comparison.

Therefore, number of comparisons is = $\frac{4(4-1)}{2}$

$=4\times3/2 =$ **6** which is number of comparisons

Based on the above formula we have 4by 4 reciprocal matrix from paired comparison given.

	A.A.	MEK.	Raya	DD.
A.A.	1	7	5	3
MEK.	1/7	1	5	1
Raya	1/5	1/5	1	7
DD	1/3	1	1/7	1

	A.A.	MEK.	Raya	DD.
A.A.	1	7	5	3
MEK.	1/7	1	5	1
Raya	1/5	1/5	1	7
DD	1/3	1	1/7	1
	176/105	**46/5**	**78/7**	**12**

We sum each column of the reciprocal matrix to get

Then we divide each element of the matrix with the sum of its column, we have normalized relative weight. The sum of each column is 1.

The normalized principal Eigen vector can be obtained by averaging across the rows as follows:

	A. A	MEK.	Raya	DD.
A.A.	1	7	5	3
Raya	1/7	1	5	1
Mek.	1/5	1/5	1	7
DD	1/3	1	1/7	1
	176/105	**46/5**	**78/7**	**12**

=

	A.A.	**MEK.**	**Raya**	**DD.**
A.A.	105/176	35/46	3 5/78	1/4
Raya	15/176	5/46	35/78	1/12
Mek.	21/176	1/46	7/78	7/12
DD	35/176	5/46	1/78	1/12
	1	**1**	**1**	**1**

	A.A.		**MEK.**		**Raya**		**DD.**
A.A.	105/176	+	35/46	+	3 5/78	+	1/4
MEK.	15/176	+	5/46	+	35/78	+	1/12
Raya.	21/176	+	1/46	+	7/78	+	7/12

0.56
0.73
0.81
0.403

From the above normalized Eigen vector, shows that the sum of element in priority vector is 1. The priority vector shows relative weights among the variables or things that we compare. In this case, Addis Ababa **56 %**, Mekele is**73 %,**Raya is**81**%, and Dire Dawa is **40.3**|%.

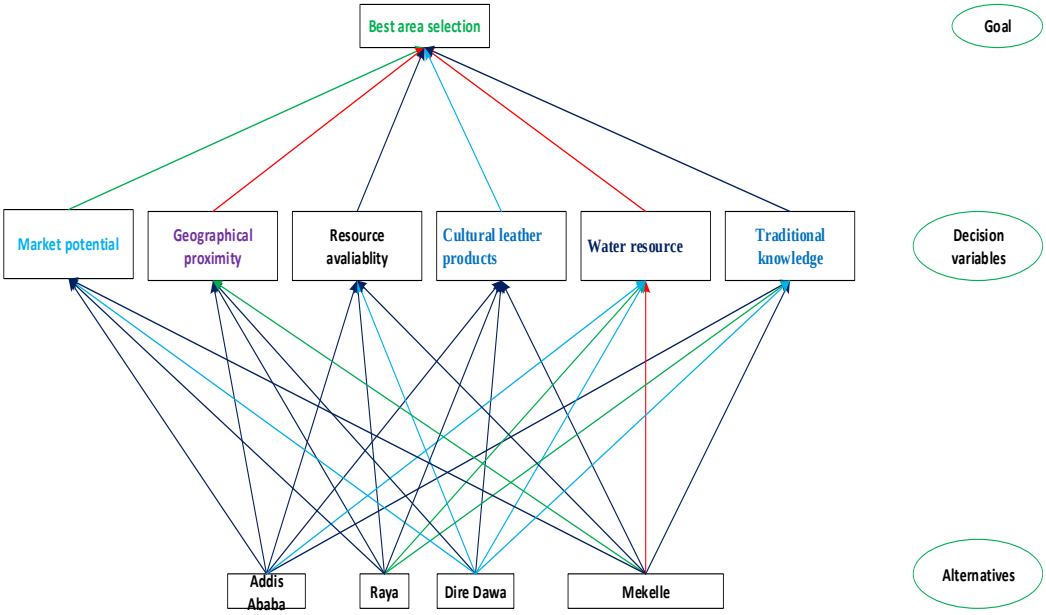


Figure 8 : Analytical Hierarchy Process Used for Study Area

According to the result, traditional knowledge (tanners) should be first assessed According of the above result RAYA 81%, MEKELLE73%. Addis Ababa56% and diredawa40%.

Gaps from the observations of traditional knowledge in Raya people of tanning process

- The peoples have lack of skill Technically to producing leather
- Less Attention of the local people to Absorption of traditional knowledge from generation to generation.
- There no new technology investment for local tanners.

As the researcher's view that different journals and observed data from local peoples there is no research focus on traditional knowledge management and innovation value chain between local tanneries and leather industries.

From the gap of traditional knowledge management of local tanners and innovation value chain of leather industries this research will focus on how to design innovation value chain and knowledge management between local(traditional) tanners and Ethiopian leather industries using system dynamics. Such representations are not for leather industries rather than representing primary and supportive activities operational and management issue (porter's principle).

Value chain stream mapping

Value Stream Mapping (VSM) is a standardized way of documenting (mapping) processes and information/material flows as they are and applying a systematic way to analyze these processes in order to identify various waste and target specific areas for improvement.

According to ManojBhalwankar and Sachi MA stud (2014), value stream are focusing in all elements both value added and non-value added which occurs to a given product from its inception through delivery to the customers. They suggest that Value Stream Mapping (VSM) mainly deals with three steps: current state map, future state map and action plan.

A value stream includes all activities value adding, non-value adding and supporting activities that are essential to produce new product or service to customers (Alexander Sunk etal. 2016).

Based on sunka (2016) value stream mapping comprises four methods consisting of the steps 'choose a product family', 'draw a current-condition map', 'develop a target-condition' and 'implementation of target-condition' as well as an action plan' to monitor the implementation, to describe measures (what, by whom, until when) to improve the valueTo measure the flow of activities, produce one specific product for customers must measures time

By **Brown (2009)**A value stream is all the actions required to bring a product through the main flows essential to nearly every product. The author suggests that value stream up map mean the not only the activities of the product, but also the management and information systems that support the basic processes as well.

According to Brown the Value Stream solutions should focus on the following three areas.

Existing value chain stream mappings of traditional tanners of RAYAN peoples

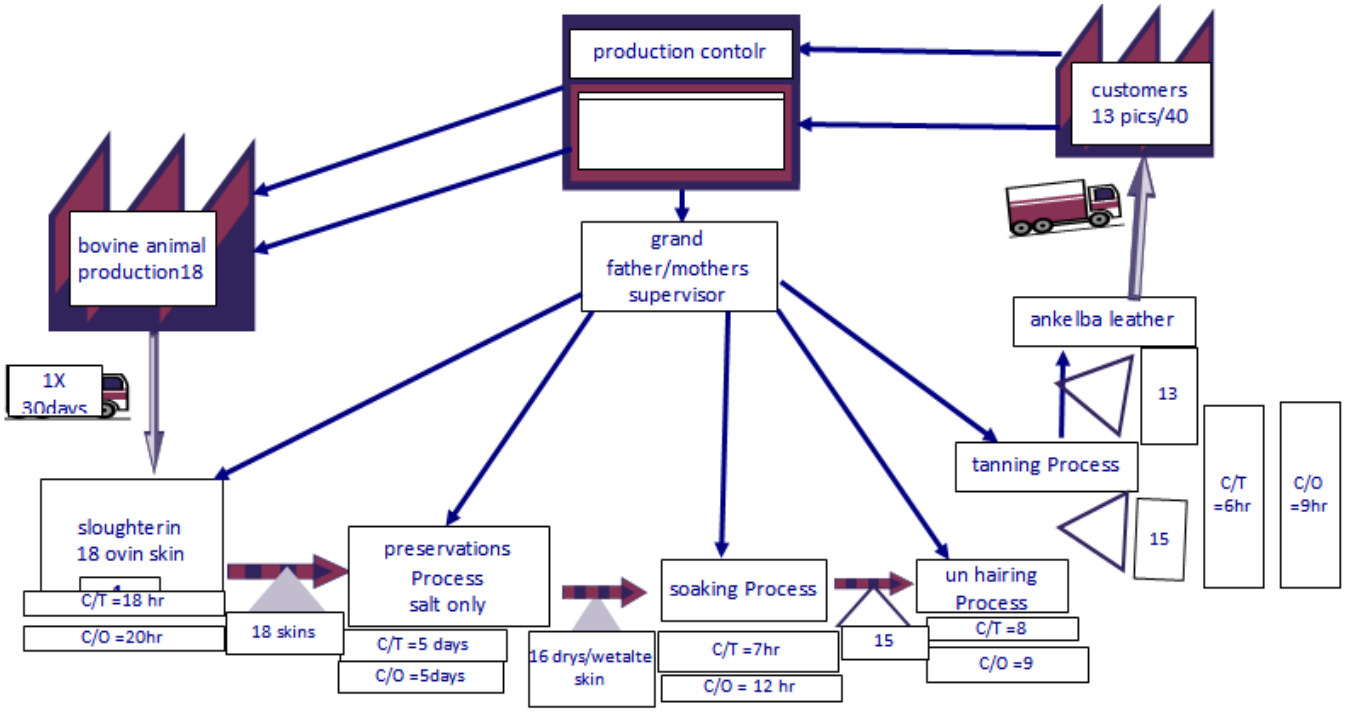


Figure 9: existing value stream mappings of traditional tanners

4.4 Identification of exist value chain of Ethiopian leather

Value chain identification is a complex process that involves both qualitative and quantitative and conflicting criteria.it is also customer to supplier strategy decision with uncertainties. In the literature review part, the gap of the existing value chain models has been compared. From the existing models there is no single method which overcomes uncertainties. As a result, the researcher A Fuzzy-AHP is used to solve multi-criteria decision-making problems. Based on the A Fuzzy-AHP approach the researcher used to identify selected case Ethiopian leather industries in this study. The following flowchart shows procedure research methodology using A Fuzzy-AHP.

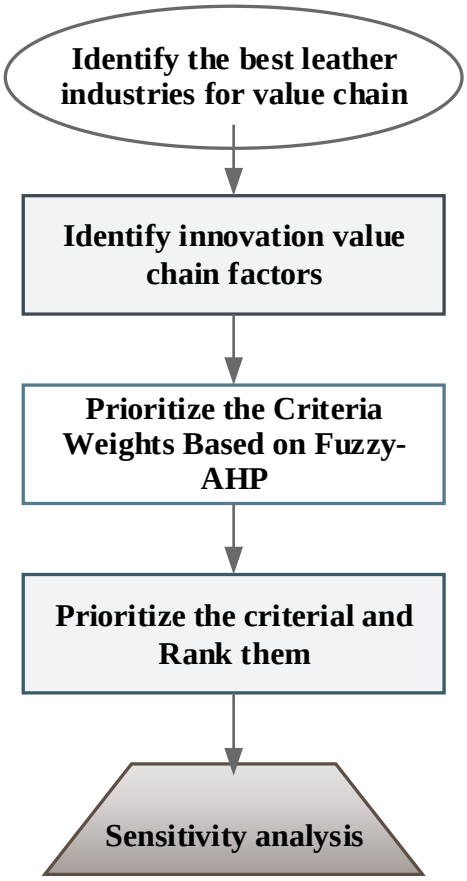


FIGURE 10: A FUZZY-AHP METHOD

From the above figure the value chain factor identification consists five main steps as in the first step, best leather industry for knowledge sourcing, knowledge conversion and knowledge diffusion across the value chain. The second step, identification innovation value chain factors are selected third step weights value chain selection criteria are selected using the A fuzzy-AHP processes. Finally, the alternative ranking results are calculated and the best industries for value chain determined.

Best selected case industries

In Ethiopia there are above 26 leather industries experts from LIDI, the Addis Ababa abattoirs enterprise and the Ethiopian leather industries associations (ELIA) have been interviewed. Raw hide and skin collector during holyday and same in worker selected tannery also interviewed to strengthen reliability of the research. The basic information collected through interviews covers Ethiopian leather industries, exist problems and challenge at each stage of value chain of leather industries, remedy actions, best origin areas for cattle hide characteristics and traditional leather

manufacturing**.** Based on this information the researcher was selected LIDI, Sheba leather industries, Ethiopian leather industries association and RAAYAA region.

Identification of innovation value chain criteria for Ethiopian leather industries

Three experts who works as value chain (marketing) from Ethiopian leather industries development institutes, from Ethiopian leather industries association and from Sheba leather industry were selected for interviews. All the important criteria which could affect the value chain across leather industries have been discussed with the experts. Other factors affecting the value chain studies were also reviewed. Based on the coame (2014), the expert point of view the researcher sets as determinate factors for identification of the value chain.

a. Sectorial facilities for knowledge acquiring

The facilities location in different laboratory section, trainings and educational opportunities for the staffs of industries and interaction with supplier and customers across the value chain.

b. Geographical convenience

The nearness of the value chain actors makes on their site work to be performed easily. Moreover, having great relations ships across the value chain can enhance the creation of ideas, conversion of ideas and diffusion of ideas among them. Close geographical convinced helps foe effective and fruitful communication across the value chain.

c. Potential researchers

Ethiopian leather industries need researchers to take new ideas to market and discus with customers or any partners to the right decision to change idea, to compute in global market and earn profits.

d. Availability of the resources

Raw hide and skins are the in-put resource of Ethiopian leather industries. Additional raw hide and skin that exist in different region may use in the future. For example, the input resources for Ethiopian leather have high potential resources but it has not been fully used yet.

Pair-Wise Comparison for Selecting Study Area using AHP method.

Factors used for comparison.

- Traditional knowledge
- Market potential
- Geographical proximity

- Researchers potential
- Resource potential
- Knowledge management

Alternative study Area

- Raya
- Dire Dawa city
- Addis Ababa
- Mekelle

Based on the above criteria pair wise comparison of selecting study area is as follows through taking personal judgments that discussed on the traditional one.

	A.A	RA	WUK	D.D
A. A	1	7	3	5
RA	1/7	1	3	7
WU	1/3	1/5	1	5
DD	1/5	1	1/5	1

Then we can sump of each column for the reciprocal matrix above.

	A.A	RA	WU	D.D
A.A	1	7	3	5
RA	1/7	1	3	7
WU	1/3	1/5	1	5
D.D	1/5	1	1/5	1
	38/21	**46/5**	**51/5**	**18**

Then we divide each element of the matrix with the sum of its column, we have normalized relative weight. The sum of each column is 1.

	A.A	RA	WU	DD
A. A	21/38	35/46	15/51	5/18
RA	3/38	5/46	15/51	7/18
WU	7/38	1/46	5/51	5/18
DD	21/190	5/46	1/5 1	1/18
	1	**1**	**1**	**1**

The normalized principal Eigen vector can be obtained by averaging across the rows as follows:

	A.A		RA		WU		DD		
A. A	21/38	+	35/46	+	15/51	+	5/18	=	**0.88**
RA	3/38	+	5/46	+	15/51	+	7/18		**0.87**
WU	7/38	+	1/46	+	5/51	+	5/18		**0.58**
DD21/	190	+	5/46	+	1/5 1	+	1/18		**0.29**

From above normalized principal Eigen vector, shows that, the sum of all elements in priority vector is 1. The priority vector shows relative weights among the variables or things that we compare. In this case, AA(Addis Ababa) **88%**, RA(RAYA)Is**87 %,**WU(Wukiro) is **58**% and DD(Diredawa) is **29**|%.

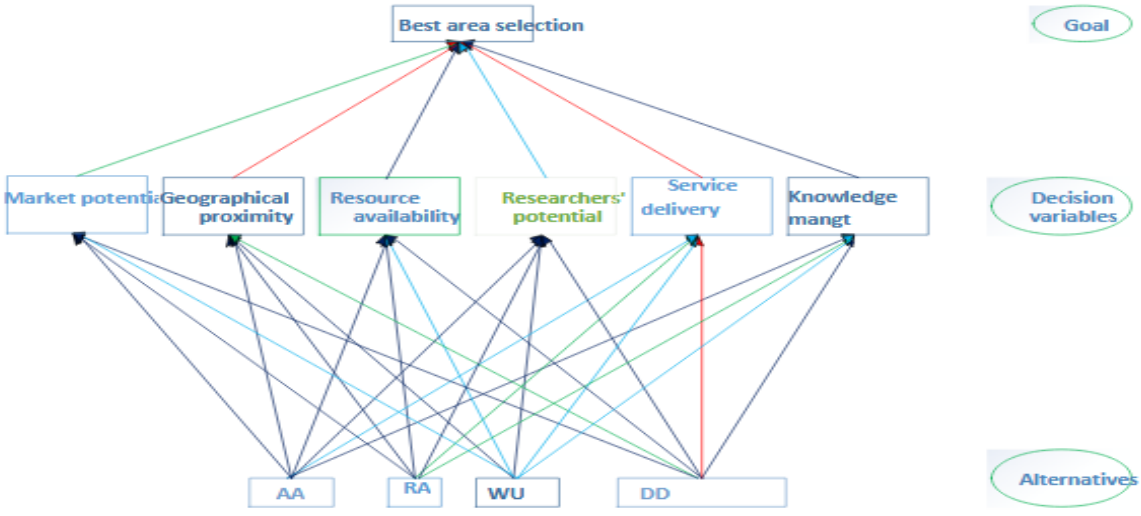


Figure 11 Analytic hierarchy process (AHP) used for selecting study area

Existingvalue chain stream mapping of Ethiopian leather industries

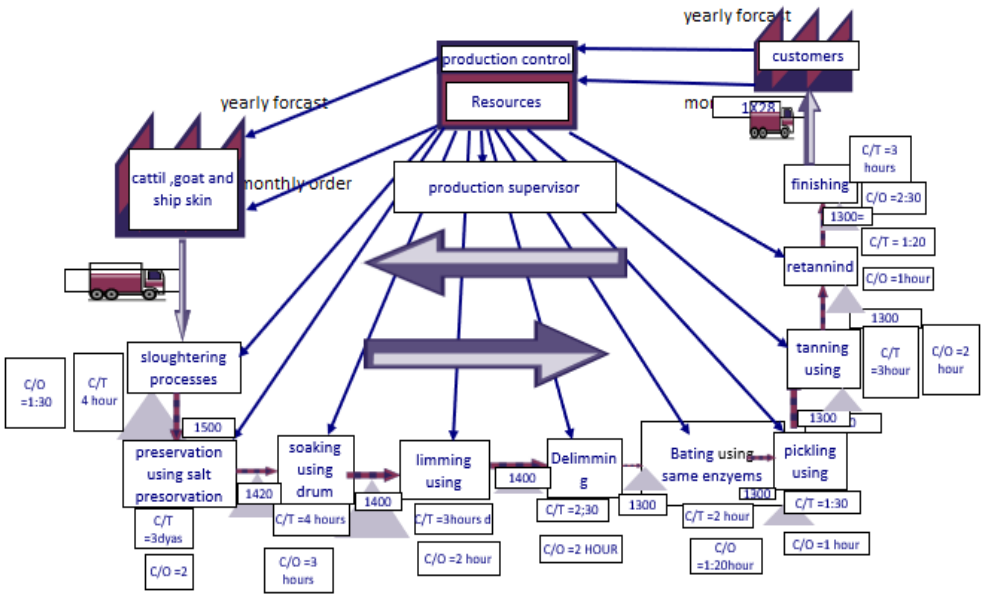


Figure 12: existing value stream mappings of Ethiopian leather industries

Sources: Author's Perspective Mapping

4.5 Justifications of The Existing Value Chain of Ethiopian leather industries Cattle hide ship and goat production

Problem's existing in value chain of Ethiopian leather industries

- High additional processing time
- More number of workers
- High cycle time
- Low skill human power
- Low quality leather products

In Ethiopia the most input material for leather industries are the cattle hide and ovine skins only that collects from farm land. Due to this problem the livestock of Ethiopian leather industries are from three animals. At farm land level there is no awareness about the advantages of hide and skin in both pre-slaughter, during slaughter and post slaughter. There are different intuitions and

industries ministries in Ethiopian but they didn't take a measurement for handling of animals in production and also, they didn't give pre action to prevent hide and skin quality.

Slaughtering technique

The slaughtering process at farmers' level affect raw hide and skin due to lack of skill and technology(facility) investment.

Because of lack of knowledge about slaughtering process the major defects can happened in raw hide and skin.

Sources: author's visited at Addis Ababa abattoirs enterprise, 2018

From the above authors observation of abattoirs enterprise there was slaughtering technique or knowledge gap and old facility systems were used during the process.

The defects created due to lack of knowledge in slaughtering stage cannot covered or remove through mechanical, technical, and processing parameters. the major problems in Ethiopian at this stage are lack awareness and skills about slaughtering technique.

Preservations processes

After bovine and ovine animals are slaughtered the next processes is preservation. the most common preservation method in Ethiopia is salt preservation method that can dries the moisture content of hide and skin.

Figures : sheep and goat skin salt preservation method

But because of lack of knowledge and value-added product about scientific preservation method that affect during preservation process for example red heat defects that can rise due to moisture, heat and hemophilic microorganisms.

Soaking processes

The wet or dry salted hide and skin is used as in put for soaking process. the main objectives of soaking process are to remove salts, blood and dirties. But in soaking process there are over and under soaking process that affect the qualities of semi- finished leather. This source of defects is lack of awareness, skills and training of the employees.

The followings are the summaries of the techniques and processes of Ethiopian tanneries

Liming

To remove hair, wool and epidermis at the same time to loosen up collagen fibers texture and saponification partial natural grease. Due to lack of knowledge about doweling and using of hazard chemicals affect for both workers health and environmental pollutions

Deliming

To remove mechanically deposited and chemically bound lime or capillaries by conversion in to readily soluble. In this process the lime chemical it has its own difficult to environmental pollution but in Ethiopian leather industries there is lack of explicit knowledge and awareness about hazardous chemicals deposited chemicals in to environment that affect living things.

Bating

The main objectives of this process in the existing value chain of Ethiopian leather industries (tanning process) are to loosen and peptize collagen fiber, texture and epidermis.

PicklingIn this process critical knowledge is a very vital because strong acids are used in order to make the semi-finished leather stable. If the employees are matured in their both explicit and tacit knowledge this process can easily manage

Tanning

This process is the converting of the pickled leather in to wet blue leathers using chromium three that is difficult and hazard chemical for environmental pollution.

Breaks:	**minutes per shift**				**30**
Planned Downtime:	**minutes per shift**				**120**
Staff/Operator Cycle Time:	**minutes per unit**				**50**
Available Time:	**minutes per day**				**600.0**
Tact Time:	**minutes per unit**				**120.0**
Required Number of Staff/Operators:					**0.4**

Process Name:	innovation value chain stream mapping for traditional tanning processes of Ryan people
Date:	4/5/2018
Prepared by:	BE. N
Notes:	innovation value chain stream mapping for traditional tanning processes of Ryan people

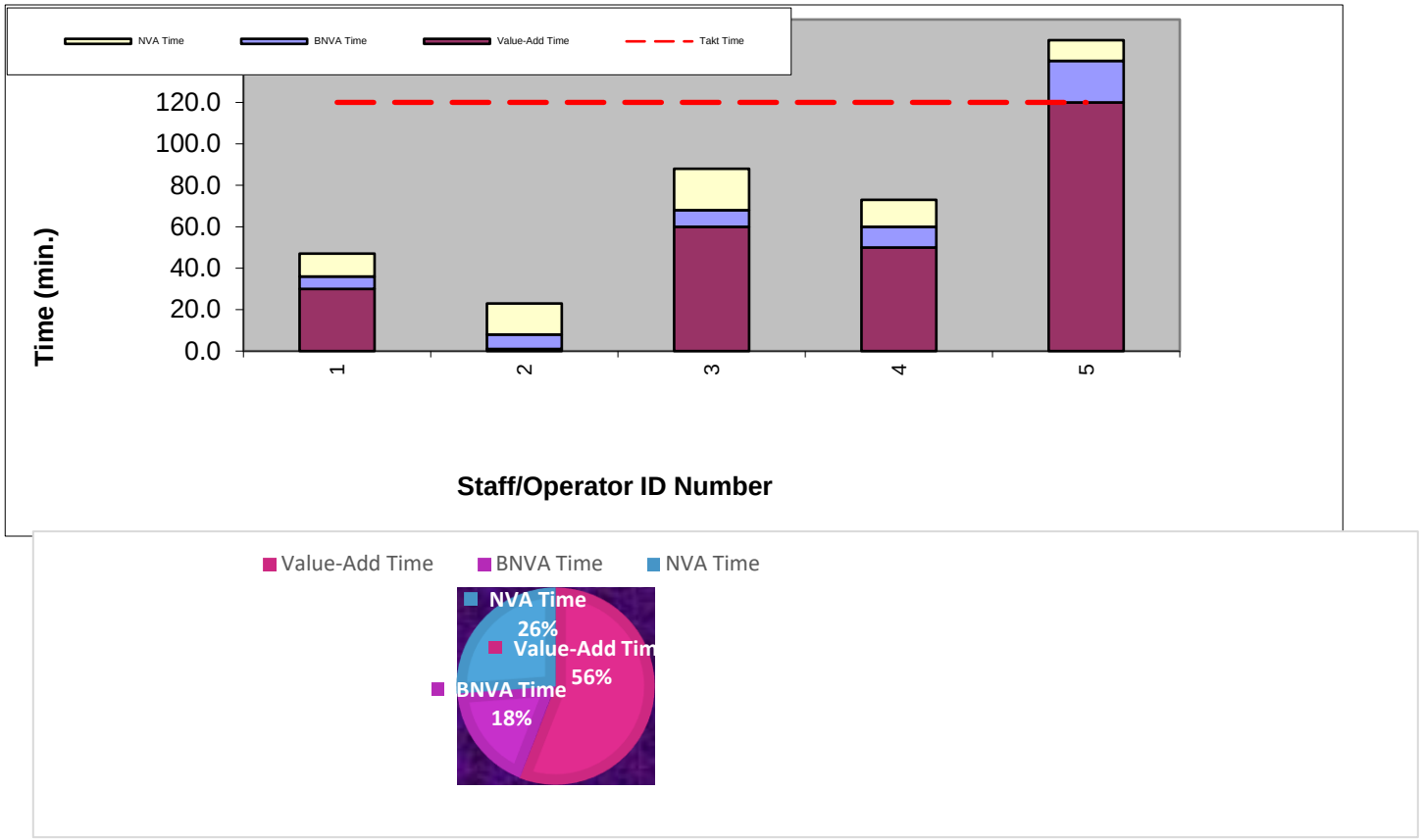
Enter Takt Time:	120

Task Number	**Staff/Operator ID**	**Task Description**	**Value-Add Time**	**BNVA Time**	**NVA Time**	**Total Time**

1	1	Task 1	15	10.0	50.0	75.0
2	1	Task 2	1.0	7.0	15.0	23.0
3	1	Task 3	30.0	8.0	20.0	58.0
4	2	Task 4	50.0	5.0	13.0	68.0
5	2	Task 5	60.0	20.0	5.0	85.0

Staff/Operator ID List	**Value-Add Time**	**BNVA Time**	**NVA Time**	**Takt Time**
1	30.0	6.0	11.0	120
2	1.0	7.0	15.0	120
3	60.0	8.0	20.0	120
4	50.0	10.0	13.0	120
5	120.0	20.0	10.0	120

Total Times:	156.0	50.0	73.0	279.0	<-- Cycle Time

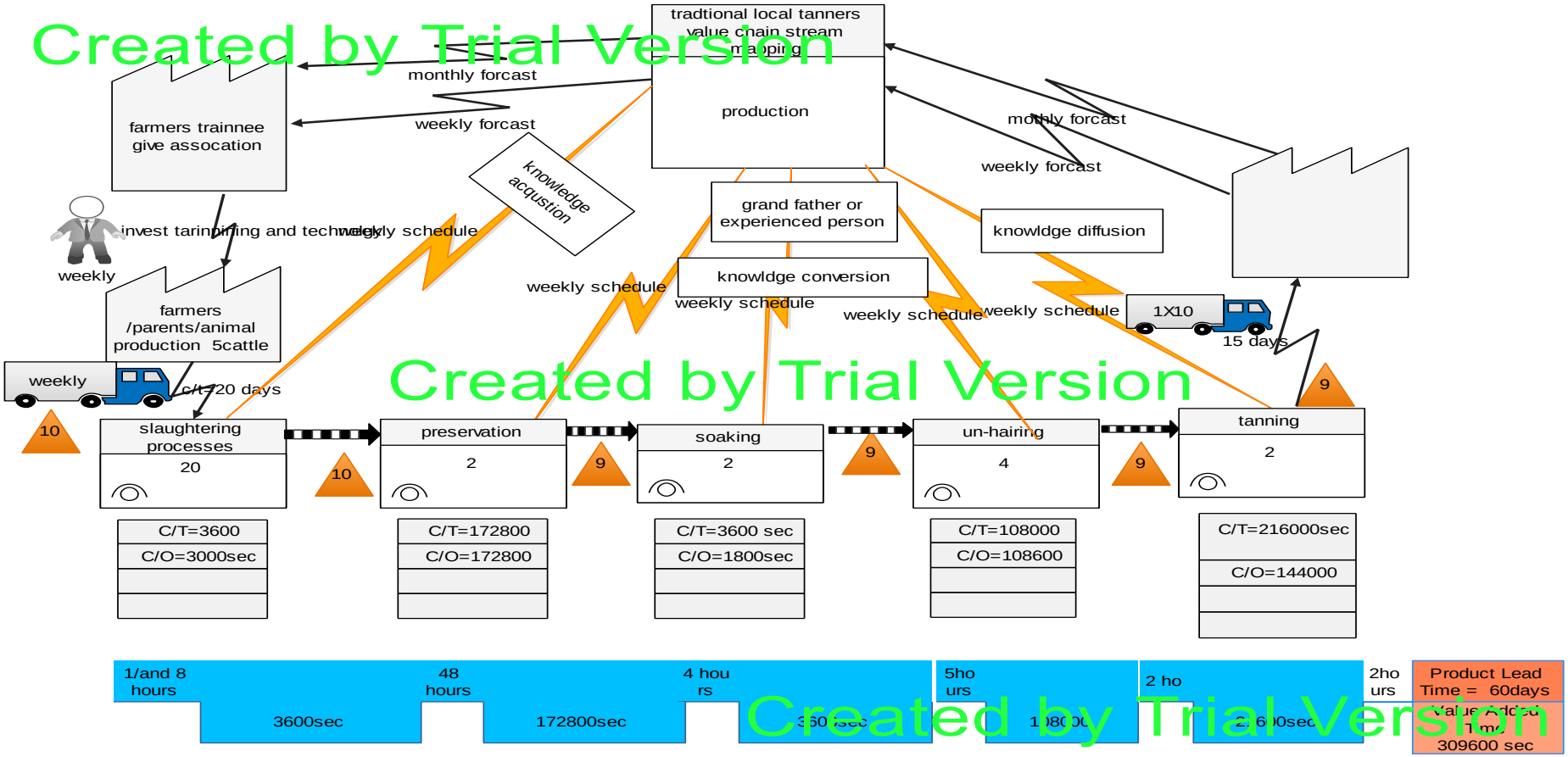


Figures: VSM results using taket times from traditional tannings of Rayan peoples.

From the above taket time result the IVC stream mapping have three activities

Value added time =56% Non-value-added time 26% and BNVA (business non-value added) =18% which shows value added time have been great value which represents 56% to make competitive and profitable in marketing system.

Value Chain Traditional Tanners Stream Mappings of**RAYAN peoples**



Sources: Author 2018

Figure 13 Innovation Value Chain of Traditional Tanners

4.6 Justifications of Value Added and Non-Value Added in Innovation Value Chain of Local Tanners of the Rayan People

Recommend to focusing on Knowledge Acquiring

Value added activities

Propose to Establishments of Farmer Trainee Give Associations

This is important for both local tanners and Ethiopian leather industries to prevent **pre-slaughter**, during slaughter and **post- slaughter** defects.

Reducing Pre-Slaughter Defects

These defects are happened during the bovine (large)and ovine (small) growth animals in Ethiopia. Bovine animals are such as caws, oxen, camel and buffalo but in Ethiopia leather industries they only use cattle (ox and caw hide) and ship and goat skin due to lack of awareness, skill human power and technology investments.

Ovine animals are small animals such as goat, sheep, crocodile etc but in Ethiopian leather industries goat and sheep skins are the main raw material that use as in put for producing leather out puts. There for the pre-slaughter defects are affect the quality of raw hide and skin in Ethiopia. Because of natural disease, sickness, lack of awareness of farmers about the advantages of hides and skin during growth systems of animals.

Recommend to Reduce Defects Creating During Slaughtering Techniques

Major defects are happened during slaughter techniques in Ethiopia because of lack of skill and lack of new Technology use by abattoir during slaughtering process. The abettors especially in the farmers their attention is to get their meat only due to lack of knowledge about the advantages of hide and skin for leather processing and leather products. And they didn't know about Ethiopian leather industries and how they produce traditional high quality out puts. There for if the defects are happened during slaughtering process it is difficult to cover during the leather processing because the defects are major defects.

Lack of using new technology for slaughtering techniques are also another source of defects, losing of time and energy during slaughtering processes.

Recommend to minimize Post Slaughtering Techniques

After the bovine and ovine animals are slaughtered the next step will be raw hide and skin is preceded through different procedures, chemicals, parameters and mechanical actions in both

traditional and industrial levels to get the estimated output. the raw hide is processing traditionally starting preservations, soaking, liming, deliming and tanning it has a processes gap when compare to the leather industrial processes in knowledge of process, chemicals, parameters and mechanical actions they use to produce traditional semi-finished leather.

There for the establishment of farmer trainee give association is critical role in Ethiopian for knowledge acquiring farmers and abettors through training and technology investments for both local tanners and Ethiopian leather to produce expected and competitive leather products output.

Knowledge Conversion

Preservation Techniques

As mentioned in the literature part of knowledge conversion of traditional tanners they Start from the slaughter stage they use different mechanisms and parameters to produce the semi-finished leather (Ankelba). Based on the absorbed or experience of their knowledge of the slaughter techniques they produce different types semi-finished leather products.

The important point of the innovation processes in preservation is value added at weak link point of the preservation that affect the quality of raw hide and defects during preservation processes. The most defects in preservation stage is red heat defect that comes from hemophilic bacteria due to moisture during preservation stage. there for the four import points are relevant to tackle this problem as the local people gets knowledge through experience and oral practices, training and technology investment at the innovation stage by using SECI (socialization. externalization, internalization and combinations). For this reason, in preservation technique they can convert though socialization to minimize the defects by using additional boric acids with salts when methods interact with modern preservation.

Soaking Processes

Soaking is the removal of salts, blood and dirties from wet salted hide(skin) and dry hide(skin). but traditionally there is no awareness about controlling of parameters and mechanical actions during soaking simply they use river water and washing it. The fore it is important to use the explicit or documented knowledge from leather industries to gain internalization from the documented or articulated knowledge and producing the estimated output. From the acquired knowledge they must use biome to measure soaking solution to check up the over and under soaking and saltness of the solution.

Un -Haring

this process is the removal of hair from the hide and skin manually. It has great effect in health of doweled workers such skin cancer and affect environmental pollutions. To solve this problem communicating and discussion with partners, families and relatives is important creation relation important

The researcher uses SECI model as reference and prepared the following model for conversion the acquired knowledge in local tanners as mentioned below.

Recommend for Knowledge Diffusion stage

Tanning

Knowledge diffusion in innovation value chain of local tanners are focusing on their communication skills, material, making networking structures and parameters and chemicals they use during the tanning processes. The researcher mainly focuses on replacing of toxic chemicals by enzymatic technology in both traditional and leather industries level in tanning process to reduce the environmental pollution and to producing high quality leather out puts.

Generally, the above mentioned three processes of innovation value chain are important to handle problems of raw hide and skin, traditionally tanned leather defects.

Non-value-added activities

More number of peoples used at soaking stage

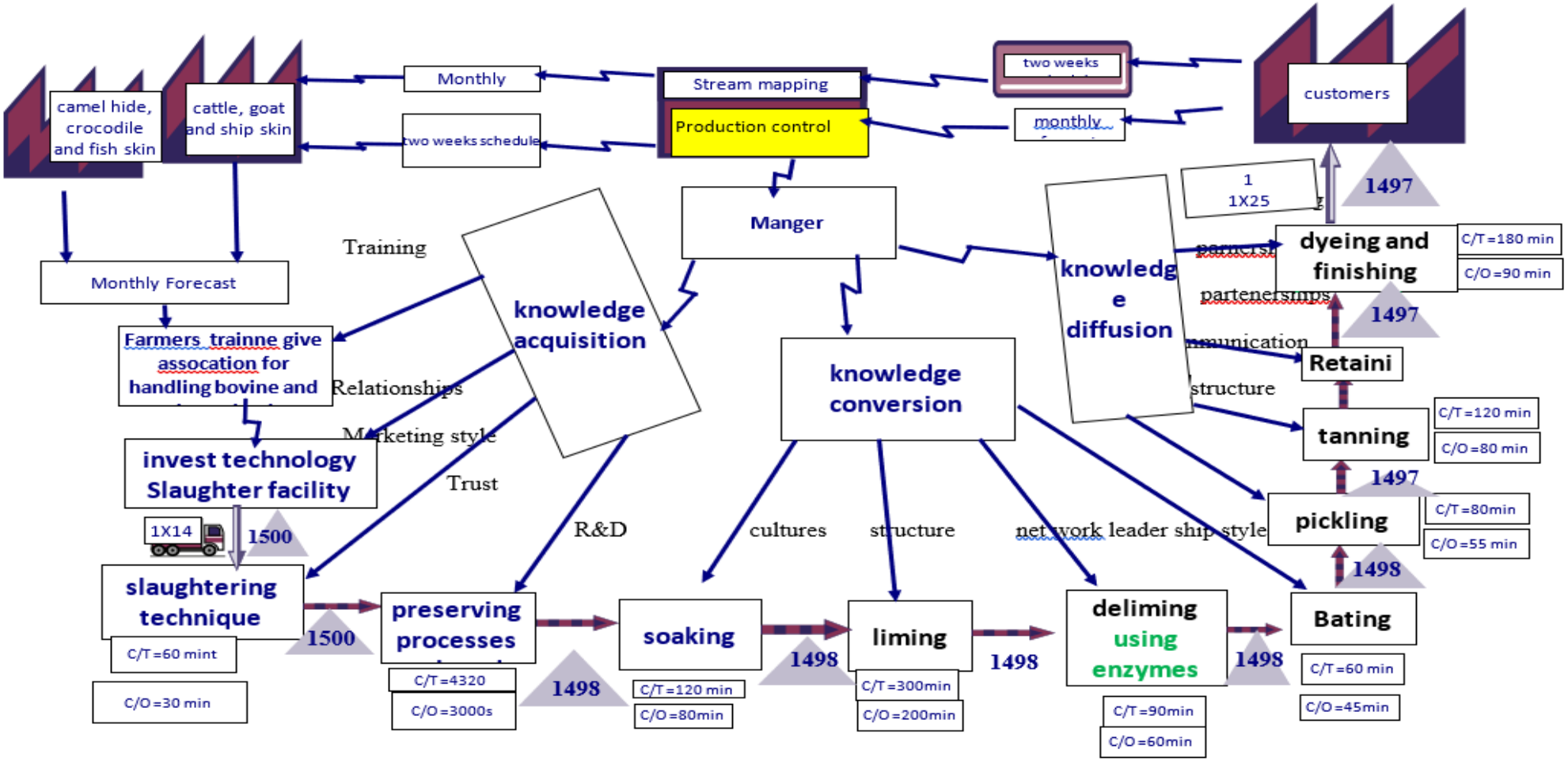
Traditional soaking processes by RAYAN people are an effective and usearound 3 peoples for soaking of the raw hide and skin.

The Rayan peoples also waste their times in preservation stage because they use both drying and salting methods

Unnecessary communication among them

They take more time during breaking time that affects their production rate. During their break time they take around 1:30 hours that affects quality of the leather out put

Innovation value chain stream mapping for Ethiopian leather industries



Source: Author's VSM, 2018

FOR FIGURE 14: INNOVATION VALUE CHAIN ETHIOPIAN LEATHER INDUSTRIES

4.7 Justifications of value added and non-value activities in The Innovation Value Chain Streams Mapping of Ethiopian Leather Industries

Knowledge acquisition
Value added activities

Using enzymes in deliming processes

Enzymes are eco-friend if we are using as substation chemicals in different sections of leather processing. Tanneries are using toxic chemicals to tanning the raw hide and skin in to leather. And the output leathers have low quality. But scientifically based on the researcher observation if enzymes are using instead of toxic chemical the tanning process becomes eco-friend and the products becomes high quality and competitive in marketing

Explore and recommend additional input resources such as Camel, buffalo and crocodile and fish skin suppliers

In Ethiopian leather industries the most common raw material used as in puts are cattie hide and skin. But naturally the country has different types of raw material to increase its material resources and production and to increase its competitiveness in world marketing system. The researcher proposes the same of the possible raw material that can use as additional raw material for Ethiopian leather industries. The camel and buffalo hide and crocodile and fish skin are very important resources in Ethiopia there for these raw can use as in put livestock for Ethiopian leather industries.

Recommend to Establishments of farmers training give association (FTGA)

This association gives critical role for both traditional and industrial level leather manufacturers by awareness and training through different methods to handle the defect affect the hide and skin during animal growth. The association is mainly use to prevent defects in pre-slaughter and during slaughter of bovine animal hide and ovine animal skins.

FTGA has a great role mainly in livestock quality and quantities that can use as in put for both local and industrial leather industries.

There for knowledge acquiring in this **level training** can be use as chain or methods to develop the framers' skill to handle their animals from different sources of defects.

Technology investment (face to face discussion)

Technology investment in leather industries is critical role to produce the expected product at specific product, specific quality, and specific price and at specific time. Investing technologies in different sections of leather industries especially in tanning to reduce workers' health condition

from hazardous chemicals and to prevent environmental pollutions, in dyeing finishing process especially in Ethiopian leather industries there is no sufficient technology investment in dyeing section due to that problem there is losing of material, time and energy. This problem is one of the service delivery and customer un satisfaction problems

There for the innovation value chain for the weakest points of Ethiopian leather industries by face to face discussion or investing of technologies are very important to solve the above-mentioned problems.

Training

At farm land there is no modern knowledge how they slaughter the bovine and ovine animals they simply use traditionally slaughtering techniques.

There for training and creating awareness for farmers in Ethiopian is a preventive action for major defects those creating during slaughtering processes. The training can be done via experience sharing by inviting peoples from developed countries through partner ships.

Therefore, training for knowledge acquisition is a critical factor in Ethiopian leather industries

Knowledge conversion in Ethiopian leather industries

Organizational cultures

The acquired knowledge must convert via cultures in soaking, liming and deliming processes of leather industries.in Ethiopia leather there are two types of knowledge explicit and tacit knowledge but in Ethiopian leather mostly they use explicit or articulated knowledge deuton lack of awareness in tacit knowledge.

There for tacit knowledge has a great contribution for Ethiopian leather industries if the culture of the organization is well established.

Organizational structure

Organizational structure is one of the important factors for knowledge conversion among the employees.

Well-structured organization have well knowledge sharing. There for in framed organizational structure there are different types creativities, innovations and researches in soaking, liming and deliming processes**.**

Manager skill

Actions in tanning processes, it needs skill full human power because the first raw and skin passes via different chemicals, parameters and mechanical actions. There for managerial skill is important in knowledge management and conversions through explicit and tacit knowledge. There is knowledge conversion in soaking. liming, deliming and bating in both explicit and tacit knowledge.

Marketing (supplier and customer) relation ships

As described in the above innovation value chain mapping there are value added products and substitution chemicals in the weakest point of exist value chain of Ethiopian leather industries mainly in deliming and bathing Enzymes have critical role to produce high quality out products and environment protections. Investigating and introduce different types of enzymes in different Ethiopian leather industries used for producing better quality of leather out puts and to Solve the tannery environmental impact and create eco-friend system with environment. As a result, marketing relationships is important among supplier, researcher and customers in order to minimize the cost of enzymes.

Knowledge diffusion in innovation value chain mapping of Ethiopian

Creating network structures

Creating network structure with local tanners, foreign countries, academics and research institutes are important to diffuse and applies knowledge in pickling techniques, tanning, retaining and dyeing and finishing process. In order to diffuse the acquired knowledge, they must control the technical parameters, process parameters and mechanical action of leather industries processes.

Trusting

Trusting is an important factor for knowledge diffusion in innovation value chain mappings of Ethiopian leather industries.

Trusting between supplier and customer is critical role epically in dyeing and finishing process of Ethiopian leather industries in order to solve trail and retrial of sample dyeing that losing materials, time and energy in the process.

Chapter five

5. Result and Discussions

This chapter presented the empirical collected from survey, the data analyzed with excel and SPSS data processing results. The findings of data are analyzed and discussed. This part of the research gave responds to question≠2 and partially for question ≠3.

5.1 Primary data collection method and analysis

Selections of Evaluation Factors Based on Perspectives of Innovation Value Chain (IVC) and knowledge management

The researcher identified the evaluation factors based on the literature gaps. The evaluation factors of innovation value chain for Ethiopian leather industries are pointed out by the researcher based on the different exist constraints of Ethiopian leather industries.

Perspective	Code	Description
Value chain evaluation factors **VCF= value chain factor**	VCF1	In put resources capacity
	VCF2	Technology transferring
	VCF3	Value added products
	VCF4	Partnership
	VCF5	Experience
	VCF6	Defects of raw hide and skin is high
Management evaluation factors **KMF indicates=knower management factor**	KMF1	Strategy
	KMF2	Relationships
	KMF3	Training
	KMF4	Resource handling
	KMF5	Communication
Knowledge acquisition evaluation factors **Knowledge conversion factors**	EXF1	Strategy
	EXF2	Competitors forward novel ideas
	EXF3	Partnership
	EXF4	Supplier innovative ideas
	EXF5	Trust

	ENF1	Organizational structure
	ENF2	Consultant
	ENF3	Organizational culture
	ENF4	R&D activities
Knowledge conversion /Absorption Factors	AF1	Employee educational level and capacity
	AF2	Employee training
	AF3	Experience of staffs
	AF4	Cross-functional communication among staffs
	AF5	Employee motivation to improve their skill
	AF6	Attitudes of employees and relationship
Knowledge diffusion factors	DF1	Policy frame work
	DF2	Social network
	DF3	Collaborations
	DF4	Nodes of the net work
	DF5	Prior- knowledge
	DF6	Diversity of backgrounds and knowledge

Source: researcher‘s questionnaire cod 2018

Survey Results

Sample Size Technique (Non-Probability Sampling Technique)

Selection of fitting sample size was based oncochransformula

$n = \frac{t2\ x\ s2}{d2}$ Or Correctionformula M= $\frac{n}{1+n/N}$

The returned questionnaires from the respondent of selected LIDI and case companies are listed below.

TABLE 6: SURVEY RESULTS FROM RESPONDED SAMPLE SIZE

Team	Population size	Respondents size	Percentage
Management group of LIDI	25	24	92
Leather groups of LIDI	38	35	73.9

Footwear group of LIDI	20	17	71.4
Leather garment & goods group of LIDI	15	13	73.3
Bahirdar tannery mangment staffs	10	3	60
Sheba leather industries supervisors	20	13	70
Sheba shoes production factories (Researchers or designers)	13	7	53.8

The main reason why the rest questionnaires were not returned was that some teams o consultants were away for consultancy service outside the institutes all around the country. Interviewing and communicating them was difficult due to poor internet (connection) service, personal work, Dueto their customer orders. Based on LIDI vision for the time beings it has twinning project with Indian central leather research institutes(CLRI) in order to transfer knowledge and technology respectively.

The LIDI teams in the research and educational trainee groups were almost MSC experts which the researcher interviewed them. Are almost interviewed by MSC experts. For these respondents' common types of questionnaires were distributed based on evaluation factors and priority areas in which the LIDI experts intervened.

Furthermore, they were busy with customer orders and routine tasks. In addition to this even they were not ready for filling the questionnaires due to unknown reason. This collected from different selected case company was analyzed and present as following

Questioner survey result

One of the targets of the questionnaire was to determine the importance of innovation value chain and knowledge management for leather industries and giving answers partially for research questions.

Part I*value chain evaluation factors perspective questionaries' and results*

The questionnaire result which focuses in value chain by the respondent result is mentioned in the following SPSS result graph.

Evaluation factors related to value chains Ethiopian leather industries

TABLE: 7 QUESTIONNAIRE RESULT

	Experience	Relationship ships	Strategy	Value added	Technology	Lives Stock
completely agree	19.6%	28.6%	25.9%	24.1%	22.3%	8.9%
Agree	17.9%	22.3%	24.1%	17.0%	24.1%	8.0%
Neutral	6.3%	2.7%	6.3%	6.3%	5.4%	3.6%
Disagree	25.0%	8.9%	17.0%	20.5%	17.0%	42.9%
completely disagree	31.3%	37.5%	26.8%	32.1%	31.3%	36.6%

From the above table and value chain evaluation factors the respondent for experience result indicates 37.5% are almost agreed ,6.3% neutral and 56.3% are almost disagree. From the graph the respondent perspective 98% are almost agree 90% agree ,58%neutral ,55%disagree and 30% completely disagree value chain evaluation factors. Therefore, the based on the result the researcher conclude that relationship with supplier, competitors' customer, partner has a great role in the knowledge management.

Part II*knowledge management evaluation factors perspective result*

The questionnaire result which focuses in knowledge management by the respondent result is mentioned in the following table **Knowledge management evaluation factors perspective**

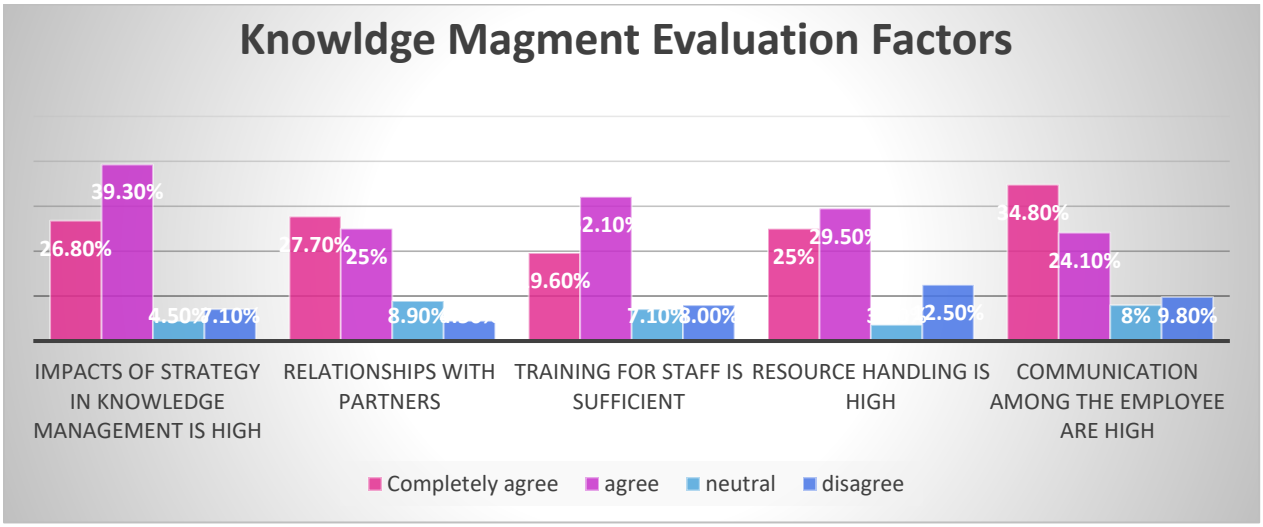


FIGURE 15: KNOWLEDGE MANAGEMENT EVALUATION FACTORS

Part III *The* questionnaire result which focuses on knowledge acquisition by the respondent result is mentioned in the following table.

TABLE 8 **:KNOWLEDGE A QUESTION EVALUATION FACTORS**

	completely agree	Agree	Neutral	disagree	Completely disagree
Customers innovative ideas forward	35	54	10	7	6
	31.3%	48.2%	8.9%	6.3%	5.4%
Competitors innovative ideas	24	36	14	16	21
	21.6%	32.4%	12.6%	14.4%	18.9%
good idea from supplier	26	40	18	6	22
	23.2%	35.7%	16.1%	5.4%	19.6%
Consultant of organization	26	38	12	11	25
	23.2%	33.9%	10.7%	9.8%	22.3%
partner ships	22	52	9	7	22
	19.6%	46.4%	8.0%	6.3%	19.6%
organizational structure	29	29	15	10	29
	25.9%	25.9%	13.4%	8.9%	25.9%
Trust	31	33	20	9	19
	27.7%	29.5%	17.9%	8.0%	17.0%
Culture	24	40	12	13	23
	21.4%	35.7%	10.7%	11.6%	20.5%
R&D	42	39	15	7	9
	37.5%	34.8%	13.4%	6.3%	8.0%

From the above table the frequency and percentage results of the respondent was based on the Likert scale type of questionnaires. The respondent hade their own views for knowledge acquisition factors in their organization. Therefore, based on the respondent result 88.4% almost agreed with the customers have good ideas and the rest 6.3%disagree and 5.4%cmltley dis agree with the customers have good ideas for innovation in their organization.

Therefore, the research concluded that the costumer ideas were important to forward novel ideas across value chain.

The second factor from the table competitors experience (idea) that has a results of66.6% almost agree and the rest respondent 14.4% and 18.9% respondent are not greed with the competitors' experience.

Therefore, as shown on the above table all respondents result show that knowledge acquisition can be performed through controlling customer feeling/ideas, competitors experience, suppliers forward idea, partnership, consults, structure and cultures of the organization by creating great linkages among the factors crosses the value chain.

There for

Part IV *knowledge conversion/absorption evaluation factor perspective result using spss*

the questionnaire result which focuses on knowledge conversion/absorption

by the respondent result is mentioned in the following table

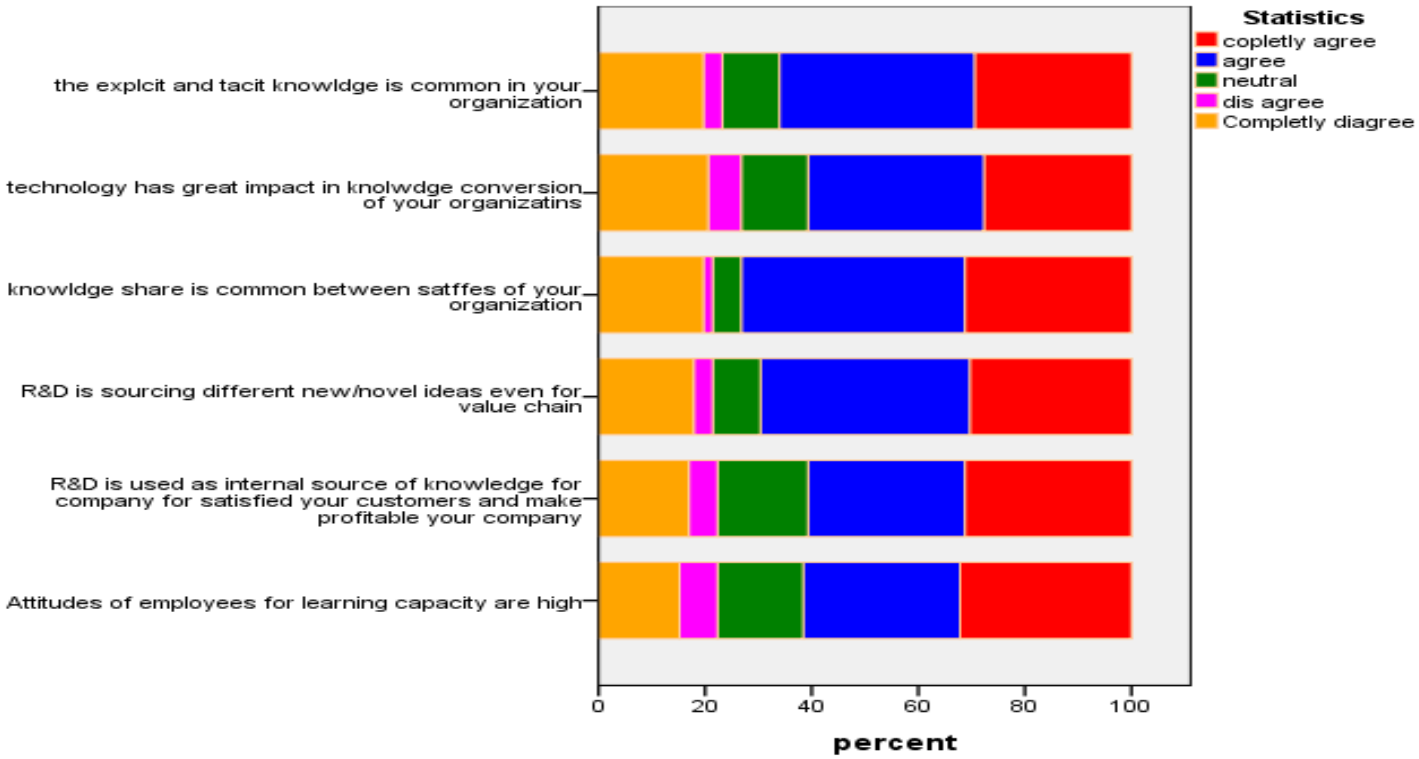
Knowledge conversion /absorption evaluation factors

TABLE 9 : KNOWLEDGE CONVERSION FACTORS

	Attitudes of employees for learning capacity are high	R&D is used as internal source of knowledge for company for satisfied your customers and make profitable your company	R&D is sourcing different new/novel ideas even for value chain	knowldge share is common between satffes of your organization	technology has great impact in knolwdge conversion of your organizatins	the explcit and tacit knowldge is common in your organization
copletly agree	32.1%	31.3%	30.4%	31.3%	27.7%	29.5%
agree	29.5%	29.5%	39.3%	42.0%	33.0%	36.6%
neutral	16.1%	17.0%	8.9%	5.4%	12.5%	10.7%
dis agree	7.1%	5.4%	3.6%	1.8%	6.3%	3.6%
Completly diagree	15.2%	17.0%	17.9%	19.6%	20.5%	19.6%

As shown from following graph employee attitude 77.7% are moderately agree and 7.1%,15.2% are not agreed with idea. Based on the result the researcher concludes that if the critical factors employee attitude, management staff, technology types for knowledge conversion critical role across innovation value chain of Ethiopian leather industries.

In the literature part different researchers developed different value chain models which focused in material flow across the value chain that value chain. But this study needs to discuss in new innovation value chain (knowledge acquiring, knowledge conversion and diffusions) and knowledge management the results shows that there is no knowledge management strategy, value chain innovation practice. from the respondent result **68%** of respondent disagree with the innovation and knowledge management rather than focusing on material flow management, production rate/quantities.



In this study discussed in literature review section they have a strong relation/linkage among the m in order to know design new value chain we have to identifies using different measurement what and to inorder to improve the knowledge creation, knowledge conversion and knowledge diffusion across the value chains of any organizations.

Part Vknowledge diffusion perspectives results

The questionnaire result which focuses on knowledge diffusion by the respondent result is mentioned in the following graph.

Knowledge diffusion evaluation factors

The researcher presents the data in terms graphical and statistical way which is developed by using SPSS software.

From the following graph 43.8% the respondent results for DF1 (organizations roll out new idea collaboration network) moderate agree,56.3 almost disagree

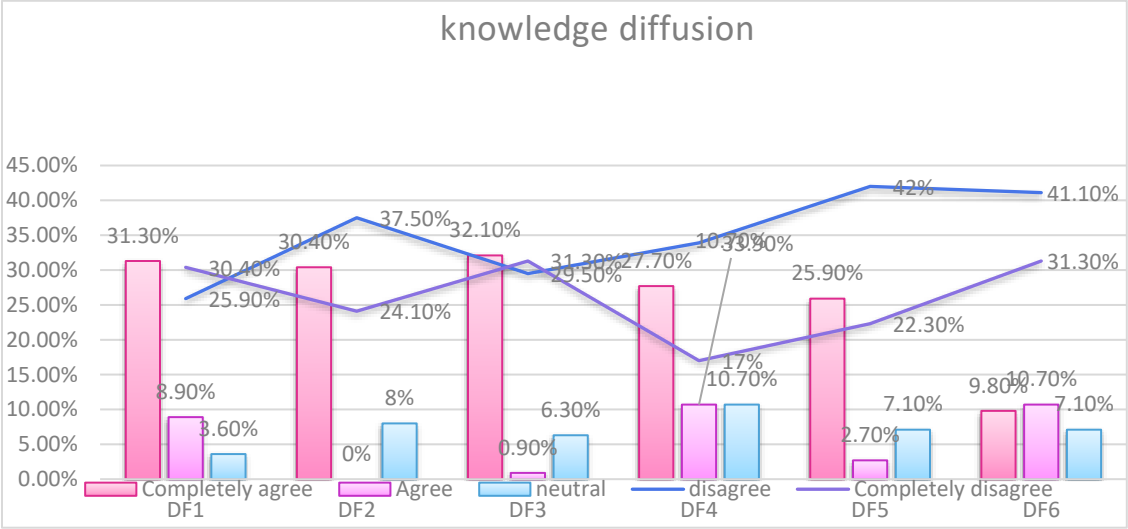


FIGURE 16 KNOWLEDGE DIFFUSION FACTORS

Respondent profiles

The respondents of the questionnaires are general managers, directors, researchers, technologist, higher technicians, production managers and supervisions. Most of them have qualifications of medium level (in factors) tohigher diploma, BSC and MSC(mostly in LIDI) degrees with experience average of six years and above .they participate in national conference, in policy making, leadership skill, consultants services, education and training seminars, research activities and production and qualities(supervision) issues. Andalso, almost of were benefited from the partners ship with Indian in the twine project for their researchactivities and to growth on their training and education system.

Empirical data: Reliability Testing

Prior to testing the research questions, the survey measures used examined for the reliability and validity. According to molla (2016) The inter-item reliability consistency (alpha) was used to measure its reliability. By page and Meyer (2000) validity is also determined by how well certain construct the explain the variance of response.

The internal consistency method works is better in field studies because it requires on administration and it is more general form of reliability forecasting.

Based on the authors changiz&azadeh(2011),Syum(2010) the internal of a set of measurement items refers to the degree to which items in the set are homogeneous. And they suggest that the internal consistency can be estimated using a reliability coefficient such as Granaches alpha.

As a result, the reliability of each types of questionnaire was calculated by using Cronbach's alpha for the questionnaire based on perspective is described below.

Reliability and validity testing for knowledge management and value chain evaluation factors

I. Reliability and validity results of value chain evaluation perspectives

Case Processing Summary

		N	%
Cases	Valid	112	97.4
	excluded[a]	3	2.6
	Total	115	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	N of Items
.839	12

Reliability and validity results knowledge management evaluation perspectives

Case Processing Summary

		N	%
Cases	Valid	112	97.4
	Excluded[a]	3	2.6
	Total	115	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	N of Items
.748	6

II. Reliability and validity result for knowledge acquisition evaluation factors

Case Processing Summary

		N	%
Cases	Valid	111	99.1
	excluded [a]	1	.9
	Total	112	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	N of Items
.722	9

IV. Reliability and validity result for knowledge conversion evaluation factors

Case Processing Summary

		N	%
Cases	Valid	112	100.0
	Excluded[a]	0	.0
	Total	112	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	N of Items
.802	6

V. Reliability and validity result for knowledge diffusion evaluation factors

Case Processing Summary

		N	%
Cases	Valid	112	100.0
	Excluded[a]	0	.0
	Total	112	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	N of Items
.723	12

Innovation value chain factors	Reliability statistics	
	Cronbach's	No, of items
Value chain factors	.839	6
Knowledge acquisition factors	**0.722**	**9**
Knowledge conversion factors	**.802**	**6**
Knowledge diffusion factors	**0.723**	**7**
Knowledge management evaluation factors	**0.748**	**5**

TABLE 10: SUMMARIES OF RELIABILITY AND VALIDITY OF EVALUATION FACTORS

5.2 Regression Analysis

Multivariate analysis

In correlation analysis result shows only, their strength of relations whether strong or weak. However, the researcher needed to show the quantities how much is the effect of one variable affects over the other variable. Therefore, the researcher used regression analysis to know the effect of one variable over the other.

In this research paper the main objectives of the correlation analysis is to tested the statistical significance of the association and their directional relationships among the value chain evaluation factors, general knowledge management, evaluation knowledge acquisitions factors and their measurement variables, knowledge conversion and their measurements and knowledge diffusion and evaluation factors. Further the correlation analysis is important to know the effect the independent variable over dependent variable.

Based on correlation analysis of the research paper it needs addition analysis regression analysis shows that the effect of innovative ideas structures, cultures R&D with independent variable (external and internal factors) (customers, competitors, partnerships and suppliers, structure and culture of the organization.

Value chain evaluation factors perspectives

To analyze the SPSS loading data using regression methodthe researcher needed to categorized the data as dependent and independent variables as follows

Dependent variables: CV1 (Experience sharing)

Independent variables:(CV2, CV3, CV4, CV5 and CV6)

Therefore, eachdependent variable can be calculated as follows

CVF1=α+β1CVF2+ β2CVF3+ β3CVF4 + β1CVF5+ β1CV6+€…… (1)

Where = α is constant and β is coefficients values of each variables.

Eqn.		R^2
Eqn. 1	CVF1=1.12+0.225CVF2+ 0.144CVF3+ 0.069CVF4 + 0.199CVF5-190CV6	**0.319**
Eqn2	**CVF1=0.54+0.278**CVF2+ 0.378CVF3+ 0.183CVF4 +0.24CVF5-0.036CV6	**0.405**
Eqn3	**CVF3=0.365+0.109**CVF2+ 0.264CVF3+ .198CVF4 +0.262CVF5+.144CV6	**.513**
Eqn4	**0.079+0.052**CVF2+ 0.127CVF3+ 0.197CVF4 +0. 449CVF5+.CV6+.149CV6	**.530**
Eqn5	**0.313+0.147**CVF2+ 0.016CVF3+ 0.255CVF4 +0. 441CVF5+.CV6+.058CV6	**0.531**
Eqn6	**1.488 -0.155**CVF2- 0.027CVF3+ 0.155CVF4 +0. 161CVF5+.CV6+.064CV6	**.131**

Interpretation of the value chain evaluation factors

The finding from the multiple regression model confirms that the results of the cross tabulations for the type and directions of the relationship of most of the independent variables with dependent variables. The good regression results of equation one is select see the above table which is mentioned **R^2 is 0.531 (53.1%)with statistically significant (p<0.05).**

there for the researcher decided that the optimal equation was

CV1=**0.313+0.147**CVF2+ 0.016CVF3+ 0.255CVF4 +0. 441CVF5+.CV6+.058CV6+€……

The above selected equations show that

VCF1(Technology investing) the leather industries will increase if

VCF2(experience sharing) the industries by increase by 0.147

VCF3(partnership) the industries improve by0.016

VCF4(strategy design) the leather industries increase by0.255

VCF5(value added) leather industries improve by 0.441

VCF6(livestock) the leather industries increase by 0.058

Knowledge Management Evaluation Factors

The dependent variable=KMF1

Independent variable =KMF2, KMF3, KMF4and KMF5

As result the dependent variable can be calculated as follows

KMF1=α+β1KM2+ β2KMF3+ β3KMF4 + β1KMF5+ β1KMF6+€……2

Where α represent constant value and β coefficient value of variable.

Eqn.		R^2
Eqn. 1	KMF1= 2.12+.0.174KMF2+ 0.043KMF3+ 108KMF4-.0507 KMF5+.0.142 KMF6	0.111
Eqn2	**KMF1=1.202+0.174KMF2**+ .390KMF3+ .186KMF4-0.012KMF5-0.144KMF6	**.271**
Eqn3	**KMF1=0.308+0.024KMF2**+ 0.213KMF3+0.469 KMF4+0.216KMF5+0.123KMF6	**.543**
Eqn4	KMF1= -0.130+0.602KMF2+ 0.107KMF3+0.492KMF4 +.234KMF5+.078KMF6	**.542**
Eqn5	**KMF1=1.066+.051KM**F2+.011KMF3+ 0.189KMF4 +.361KMF5+.160KMF6	**.314**

Eqn6	**1.652+.142KM**F2+.144KMVF3+ .225KMF4 +.135KMF5+.181KMF6	**.203**

The finding from the multiple regression models confirms that the results cross tabulations and relationships of the independent variables with dependent variables.

From the above table result an optimal equation

KMF1=0.308+0.024KMF2+ 0.213KMF3+0.469 KMF4+0.216KMF5+0.123KMF6

Has good regression results selected. Which has R^2 54.3% with significance (P<0.05).

This selected equation result shows that

KMF1(strategy)of the industries will increase by one scale if:

KMF2(Strategy guidelines) of the leather industry increase by 0.024

KMF3(relationships) of the industries increase by 0.213

KMF4(training and education level) of the company will increase by 0.469

KMF5(resource handling skill) of the company will increase by 0.216

KMF6(Retention) of the leather industries will increase by 0.123

Knowledge acquisition evaluation factors

The knowledge acquisition evaluations were explained in correlation analysis parts with percentage graphical presentation.in this section the researcher needs to understand the strong relations among variables.

Dependent variables = EXF1

Independent variables =EXF2, EXF3, EXF4, EXF5, ENF1, ENF2, ENF3 and ENF4

Therefore, the dependent variable can be calculated as follows

EXF1=α+β1EXF2+ β2EXF3+ β3EXF4 + β5EXF5+ β6ENF6+ β7EN1F7+ β8EN2F8+ β9ENF9+ β10ENF10+€…….

Eqn.		R^2
Eqn. 1	EXF1=3.224+ 0.042EXF2- 0.040EXF3+ 0.100EXF4-0.079EXF5-0.061ENF1+0.038ENF2+.112ENF3+.087ENF4	**.044**
Eqn2	**EXF2=2.088**+ 0.069EXF1- 0.186EXF3+ 0.124EXF4-0.090EXF5+0.0187ENF1+0.054ENF2+-0.162ENF3-.024ENF4	**0.119**
Eqn3	**EXF3=1.513**-0.048EXF1+0.134EXF2+ 0.298EXF4+0.163EXF5-0.038ENF1+0.189ENF2+0.057ENF3-0.163ENF4	**.348**
Eqn4	**EXF4= -0.356 +0.095**EXF1+0.071EXF2+ 0.238EXF3+0.471EXF5-0.299ENF1-0.021ENF2+0.014ENF3-0.002ENF4	**.527**
Eqn5	**EXF5= 0.558-0.069**EXF1-0.048EXF2+ 0.121EXF3+0.438EXF4+0.138ENF2+0.177ENF3+0.413ENF3+0.102ENF4	**.508**
Eqn6	**ENF1= 0.273-0.075**EXF1-0.139EXF2+ 0.139EXF3+0.256EXF4+0.191EXF5+0.084ENF2+0.415ENF3-0.065ENF4	**.442**
Eqn7	**ENF2= 0.609+0.052EXF1+0.045EXF2+ 0.216EXF3-030EXF4+0.273EXF5+0.093ENF1+0.051ENF3+.114ENF4**	**0.250**
Eqn8	**ENF3= 0.899+0.150**EXF1-0.132EXF2+ 0.065EXF3+020EXF4+0.007EXF5+0.454ENF1+0.050ENF2+0.070ENF4	**.298**
Eqn9	**ENF4= 3.227+0.109**EXF1-0.018EXF2-0.172EXF3-0.003EXF4+0.145EXF5-.067ENF1+0.105ENF2+0.066ENF3	**0.069**

As shown in the above table the coefficient of independent variables is positive and negative. Which shows the correlation coefficient represent that those variables have the negative relations?Which means that as the independent variable increase the dependent variable decrease they have opposite relationships? However, when we see the other variables with the real situation they must have positive relationships. The error is not on the SPSS application software while in the other way those variables were reversal items. The error is not on the input data into the SPSS application software while in the other way those variables were reversal items. based on Trochim

The finding from the multiple regression model confirms that the results of the tabulations for the type and directions of the relationship of most the independent variables with dependent variables. The researcher selected good regression equation result which R^2 values 52.7% and significance values of ($p<0.05$).

Lastly the equation is selected

EXF4=-0.356+0.095EXF1+0.071EXF2+0.238EXF3+0.471EXF5-0.299ENF1 0.021ENF2+0.014ENF3-0.002ENF4

EXF4(Consultant service) in the leather industries increase will improve

EXF1(customerbehavior or ideas) the will increase by 0.095

EXF2(competitor novel ideas) the company will increase by 0.07

EXF3(supplier behavior) the industries will increase by 0.238

EXF5 (partnership creation) the industries increase by 0.071

ENF1(Structure impact) the organization reduces the impact by 0.299

ENF2(employees participations, communication) the company increase by0.021

ENF3(Culture positive impacts) the industries increase by 0.014

ENF4(R&D with ideas of employees)the industry decrease by0.002

Knowledge conversion evaluation factors

The dependent variables = AF1

Independent variable =AF2, AF3, AF4, AF5 and AF6

AF1 = α+β1AF2+ β2AF3+ β3AF4 + β5AF5+ β6AF6

in this study the individual perspective there are 9 selective independent variables in order to get the optimal equation. Theresearcheruse software tool for regression analysis of the feeder data. The result listed below.

Eqn.		R^2
Eqn. 1	EXF1=1.277+ 0.425F2+ .209F3+-.067F4 +0.0301F5+0.050F6	**.302**
Eqn2	**EXF1=.542+.370F2**+.063 F3+ .313F4 -0.066F5-0.151AF6	**0.410**
Eqn3	**EXF1=.637+.180**F2+ .062F3+ .374F4 +. 191VF5+0.028F6	**.411**
Eqn4	**EXF1=0.488+.055**F2+.296F3 +.356F4+.182F5+.112F6	**.462**
Eqn5	**EXF1=.704 +0.0304A**F2- .078F3+ .224F4 +.226F5+.353F6	**.360**
Eqn6	**ENF1=.873 +0.051A**F2+.178F3+ .033F4 +.140F5+.357F6	**.332**

From the above finding knowledge conversion evaluation perspective there are six selective independent variables in order to get the optimal equation. the researcher feeds the data on SPSS software linear regression and randomly vary the independent variables to get the optimal coefficient values of the independent variables which have effect on dependent variables.

the finding if the results of the cross tabulations for the type and directions for the type and directions most of the independent variables with dependent variables should be confirmed by multiple regression model. An optimal equation that has good regression result one is selected. which has **R^2** 0.462 **or 46.2% and the optimal equation is mentioned below as follows.**

AF1=.704 +0.0304AF2- .078F3+ .224F4 +.226F5+.353F6

the selected equation can have interpreted as follows

AF1(Attitudes ofemployees) the leather industries will be increase if

AF2(expert idea sharing) the leather industries will increase by 0.030

AF3(R& D as internal challenge) the industries reduce the challenge by.078

AF4 (knowledge sharing capacity) the industries will increase by .224

AF5 (Socialization) the industry improves by .226

AF6 (Explicit and tacit knowledge advantageous) the company will increase by .353

Knowledge diffusion evaluation factories

Dependent variables =DF1

Independent variable=DF2, DF3, DF4, DF5 and DF6

DF1 = α+β1DF2+ β2DF3+ β3DF4 + β5DF5+ β6DF6

In this individual respondent perspective there are six selective independent in order to get optimal equation variables. The study feed the data on SPSS regression and categorized the variable as independent and dependent variable. Furthermore, select the optimal equations as we can in the following table.

Eqn.		R^2
Eqn. 1	DF1=1.12+ 0.030F2+ .359F3+ .001F4 -0.021F5+0.41AF6	**.152**
Eqn2	**DF1=1.317+0.021AF2**+ .327F3+ .270F4 +0.006F5-0.049AF6	**0.3119**
Eqn3	**DF1=0.023+D.242**F2+ .349F3+ .168F4 +. 264VF5+O.O18F6	**.424**
Eqn4	**DF1=0.472+.216** F3+ .143F4 +.397F5+0.015F6	**.392**
Eqn5	**DF1=1-0.013**F2+ F3+ F4 +F5+F6	**.348**

Eqn6	**DF1=3.167 +0.094A**F2- .046F3+ .017F4 +.017F5+.093F6	**.035**

The solution or finding from SPSS software confirms that the results of the cross tabulations and relationship of the independent variables with dependent variables. The good regression results of the above table can be selected 42.4% with statistically significance(P<0.05).

The optimal equation is explained as follows

DF1=0.023+.242F2+ .349F3+ .168F4 +. 264VF5+0.018F6

The selection equation can be interpreted

DF1(network capacity) of the Ethiopian leather will increase if.DF2(establishing of social network) will increase by .243

DF3(policy frame work) the industries will increase by .349

DF4(partnership) the industries can increase by.168

DF5(sufficient communication) can increase by.264

DF6 (trust with partners, supplier and customers) improve by 0.018

TABLE 11: SUMMARIES OF REGRESSION VALUE OF ALL FACTORS.

	A	β1	β2	Sig	Standard errors	T	F	VIF	R
EXF4	1.472	.306	.322	0.005	.106	2.898		1.963	59.4%
EXF5	.696	.457	.430	0.000	.090	1.575	14.7	1.595	59.4
ENF1	.852	.459	.492	.000	.093	4.943		1.465	55.2%
ENF2	.557	.459	.492	0.000	0.093	4.934		1.465	49.2
ENF3	.243	.418	.390	0.000	.085	4.943	10.461	1.162	67%

AF1	1.277	0.388	0.083	0.382	4.660	0.000	9.154	1.629	
AF2	1.277	.425	.431	0.000	.096	4.446	9.154	1.429	54.9%
AF3									64.1
AF4	.637	.374	.093	.000	4.037	4.037	14.797	1.612	64.1
AF6	.704	.353	.347	0.000	0.090	3.906	11.920	1.309	60%
DF1	2.660	.453	.515	.000	0.081	5.623		1.179	50.2%
DF2	.023	.349	.088	.001	.332	3.979	15.623	1.278	65.1%
DF3	1.423	.359	.357	0.002	.113	3.171	3.974	1.644	39.5%
DF5	.472	.397	.401	0.000	4.677	4.697	13.658	1.270	62.6%
KMF3	1.202	.390	.365	0.002	1.260	7.880	3.102	2.008	52.1%
KMF4	1.066	.361	.355	0.002	.116	3.123	9.721	1.997	56.1%
KMF5	0.-130	.234	.237	0.002	.075	3.123	25.041	1.336	73.6%

	A	**β1**	**β2**	**Sig**	**Standard error**	**t**	**F**	**VIF**	**R**
VCF1	1.132	.255	.185	0.005	0.090	2.845	9.936	1.562	56.5
VCF2	.365	.264	.286	.001	0.077	3.426	22.343	1.513	71.6%
VCF3	.545	.378	.349	0.001	.110	3.426	14.435	1.849	63.5%
VCF5	0.079	.449	.445	0.000	.088	5.113	23.914	1.709	72.8%

Summaries of all regression output includes ANOVA out puts

The analysis from the above knowledge acquisition, knowledge conversion, knowledge diffusion and value chain evaluation factors show high in Ethiopian leather industries. Furthermore the value chain factors (input resources) and raw material defects have negative value which indicates more focus need in Ethiopian leather industries. Furthermore, environmental and social perspective has negative beta value which means this perspective needs more focus or major problem in the performance measurement in the company. in addition, internal process perspective is the least visible beta value in the practiced criteria. This indicates that internal process is the most problematic area among all the measuring perspectives.

6.3 Factor Analysis

In this research paper the factor analysis is done in order to obtain factors with greatest factor loading.

For example, if the variable used for analysis are X1, X2…Xn the common factors are F1, F2…FM and the unique factors are U1, U2…Un, the variables may have expressed as linear functions of the factors

X1=allF1+a12F2+a13F3…. +a1mFm+a1U1

X2=a21 F1+a22F2+……a2mFm+a2U2

Xn =an1F1+an2F2+an3F3+……anmFm+anUN

But, in this research paper SPSS software was using as a tool for factor analysis, the factor analysis uses (has) five types of menus to analyzing the data as listed below. Therefore, this study uses factors analysis to measure and to reduce value chain evaluation factors, knowledge management factors, knowledge acquiring factors, knowledge conversion factors and knowledge diffusion factors across the value chains of Ethiopian leather industries. The researcher measured the KMO (Kaiser-Meyer-Olkin Measure) of sampling adequacy for testing the fitness of the data.

KMO-Bartlett test

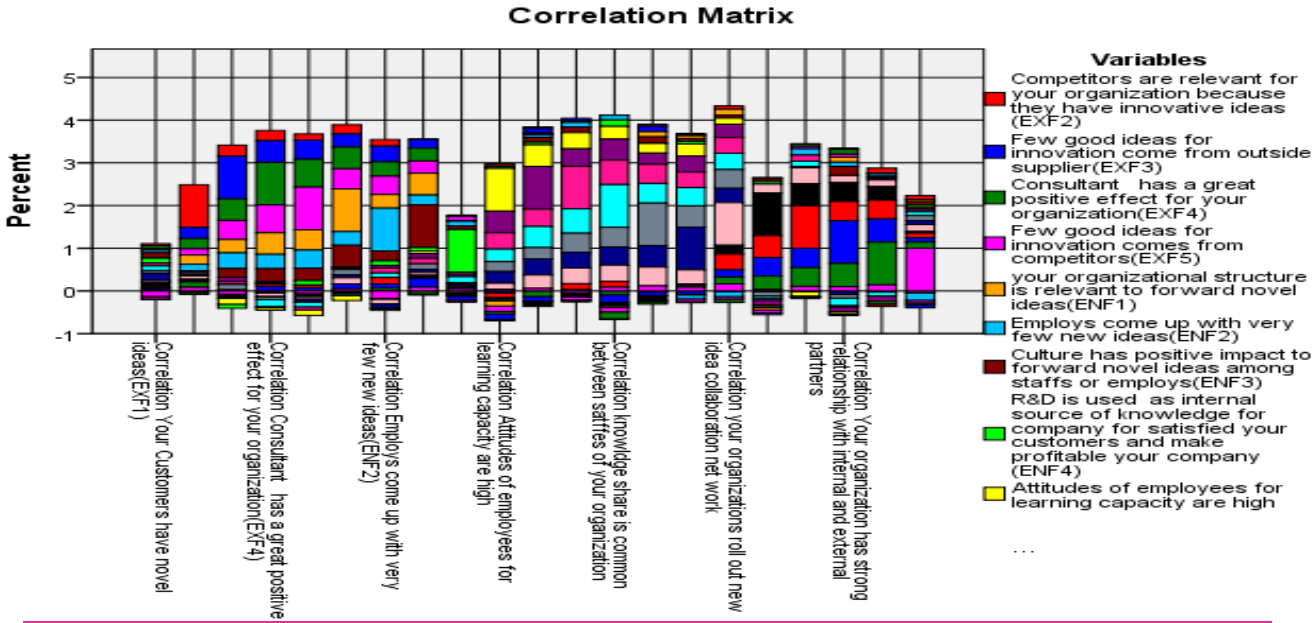
Table 12: KMO-Barrett test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy	**0.743**
Approx. Chi-Square	1446.447
Bartlett's Test of Sphericitydf	528
Sig.	.000

Based on kasir(1974) The conventional value of the KMO-Bartlett'stestrecommended value was 0.5 as minimum value(barely accepted), values between 0.6-0.8 acceptable and value above 0.9 superb. Looking at the following table the value of KMO was 0.743 which is acceptable and significance level was $p<0.05$.there for rejected the null hypothesis and carry on for next steps of factor analysis.

Correlation Matrix from Factor Analysis

A correlation matrix is simple a rectangular array of numbers which gives the correlation coefficients between a single variable and every other variable in the investigation. The correlation coefficient between a variable and itself is always 1, hence the principal diagonal of the correlation matrix contains. The correlation coefficients above and below the principal diagonal are the same. The determinant of the correlation matrix is shown at the foot of the graph below.



There for the searcher used this matrix to compare one variable other variable and to the determinant coefficient.

Extraction Method: Principal Component Analysis

Table 13: Principal Component Analysis

As shown from the above table factor extraction was done to determine the factors using

Total Variance Explained						
Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	4.817	14.596	14.596	4.817	14.596	14.596
2	3.476	10.533	25.129	3.476	10.533	25.129
3	3.142	9.521	34.650	3.142	9.521	34.650
4	2.495	7.559	42.210	2.495	7.559	42.210
5	1.726	5.229	47.439	1.726	5.229	47.439
6	1.713	5.191	52.630	1.713	5.191	52.630
7	1.385	4.197	56.827	1.385	4.197	56.827
8	1.300	3.940	60.767	1.300	3.940	60.767
9	1.231	3.730	64.498	1.231	3.730	64.498
10	1.083	3.281	67.779	1.083	3.281	67.779
11	1.028	3.114	70.893	1.028	3.114	70.893

Eigenvalue greater than 1.Therefore the researcher take this analysis to reject factors Eigen value less than 1 because they account for less than variation explained by a single variable.And rotated matrix was used to write the factor equations .Totally 33 variables that were used in the model were restricted to 11acont70.89total variance which is the sum of above values (14.596+10.533+9.521+7.559+5.229+5.191+4.197+3.840+3.730+3.281+3.114=70.893)total variance.

In order to find total variance principal component analysis was used.

Graph Eigen Values-Component Numbers

FIGURE 17: EIGEN VALUE OR SCREE PLOT GRAPH

The scree plot is a graph of the eigenvalues against all the factors. The graph is useful for determining how many factors to retain. The interest point is where the scree plot curve starts flatten. can be seen that the curve begins to flatten between factors 11and 4. Note also that factor 12onwards have an eigenvalue of less than 1, therefor the eleven factors have been retained.

Therefore, the researcher used the scree plot to select the number of evaluation factors to use based in the size of eigenvalues. The pattern from the above plot was step curve, bend and the straight line. The scree plot shows that the first seven factors account for most of the total and eigenvalues in data.as shown in the above scree plot the seven factors all have an eigenvalue greater one. The other evaluation factors which accounts very small proportion of the variability was not essentials.

.

TABLE 14: ROTATED **COMPONENT MATRIX**

Evaluation Factors of Rotated Component Matrix[a]											
	Component										
	1	2	3	4	5	6	7	8	9	10	11
EXF1											.829
EXF2											
EXF3			.703								
EXF4			.800								
EXF5			.800								
ENF1			.653								
ENF2			.607								
ENF3									.766		
ENF4							-.726				
AF1								.834			
AF2		.518						.618			
AF3		.701									
AF4		.776									
AF5		.768									
AF6		.684									
DF1		.668									
DF2				.731							
DF3				.803							
DF4				.767							
DF5				.726							
DF6										.800	
KMF1											
KMF2						.841					
KMF3					.615						
KMF4					.710						
KMF5					.765						
KMF6					.597						
VCF1	.671										
VCF2	.724										
VCF3	.778										
VCF4	.764										
VCF5	.806										
VCF6							.745				

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization. With rotation converged in 17 iteration

In this study CVFi, KMFi,AFi,KCi,KDFi indicates all evaluation factors

The five items areselected for preceding next processes0.671VCF1+0.724VCF2+.778VCF3+.746VCF5+.806VCF5

the researcher used component matrix to transform the original component matrix and to make interpretation as simple as possible by getting an easy pattern structure. The items have been repressed at the value of 0.6 and those above this were retained.

As shown from the above table rotted factors made grouping the factors with highest factor loading.at the end of the table the extraction of the factors have been done through component analysis and the factors were rotated by Varimax with kasir normalization

There for, The researcher found the loading factor as equation form in order make easy understanding how one factors can effect on the other.

PC1=0.671VCF1+0.724VCF2+.778VCF4+.806VCF5 from the factor loading perspective VCF6 not significance or rejected.

Interpretation

Factor one has the ability to manage in put resources capacity, technology, partner ships and experience sharing. This factor labeled as value chain evaluation factors.

Principal component two

PC2= .518AF2+ .701AF3 +.764AF4 +. 768AF5 + .684AF6 from this perceptive l AF1 is rejected .

Therefore, factor two cad be develop the knowledge absorptionthrough managing and interactionsof AF2 (Employee training), AF3(Experience sharing of staffs),AF4 (Cross-functional communication among staffs),AF5(Employee motivation to improve their skill) and AF6(accept the Attitudes of employees and relationship) .

Principal component three

PC3= .703EXF3+ .800EXF4 + .800 EXF5+ .653ENF1+ .507 ENF2

This principal made up of rival's effort to knowledge acquiring by sourcing of both external knowledge acquiring that is EXF3(creating strong partnership), EXF4 (by searching supplier innovative ideas), EXF5 (by trust buildings) and internal source of knowledge just like ENF1 (strong organizational culture) and ENF2 (by using expert consultants) all brings the rate of leather industry growth.

Principal component four

PC4=.668DF1+ .731.803DF2 +.803DF3 + .764DF4+.726 DF5

Principal four have mad up abilities of knowledge diffusion across the value chain .This factor is named as knowledge diffusion factor . This shows the knowledge can diffuse across the value

chain through DF1(strong policy frame),DF2(social network),DF3(collaboration),DF4(by creating nodes in network) and DF5(using prior knowledge).

Principalcomponentfive

PC5= .615KMF3+.710KMF4+.765KMF5 +.597 KM6

Principal component five made up of; KM3 (employee training,) KM4 (resource handling),KM5 (Proper communication withinside and outside organization, among employees) have a great role in economic growth of the industries.

This factor is named as Knowledge management evaluation factor.

NOTE **the above component principal analysis were computing using ANOVA statistics result based on the Rand p value in the previous regression analysis summery part.**

6.4 Summaries and Interlinking Of Factor Analysis and Regression Weight By Using Maximum Factor Loading As Dependent Variable for Each Evaluation Factors

TABLE 15:SUMMARIES OF WEIGHT REGRESSION

Regression weight for Value chain evaluation factors

Variable	Construct	β Estimate	S.E	t-Value	p-Value
VCF1	Value chain factors	0.139	0.081	1.714	.083
VCF2	Value chain factors	0.015	0.80	.184	.854
VCF3	Value chain factors	.265	.091	2.913	.004
VCF4	Value chain factors	.452	.084	5.367	.000

VCF5 used as dependent variables

Regression weight for knowledge management

Variable	Construct		S.E	t-Value	p-Value
KMF3	Knowledge management	0.179	.116	1.547	0.125
KMF4	Knowledge management	0.352	.113	3.121	.002
KMF6	Knowledge management	.156	0.88	1.1774	.0.079
KMF5 Used as dependent variable					

Regression weight for knowledge absorption

Variable	Construct	β Estimate	S.E	t-Value	p-Value
AF2	Knowledge acquiring	.273	.082	3.321	.001
AF3	Knowledge acquiring	.346	.086	4.001	.001
AF5	Knowledge acquiring	.181	.085	2.127	.036
AF6	Knowledge acquiring	.109	.086	1.272	.206
AF4 Used as dependent variable					

AF2 and AF3 are significance at p<0.05

Regression weight Knowledge creation (acquiring)

Variable	Construct	β Estimate	S.E	t-Value	p-Value
KC1	Knowledge conversion	.459	.492	4.943	0.000
KC2	Knowledge conversion	.457	.4302		0.002
KC3	Knowledge conversion	.418	.308		0.003
KC4	Knowledge conversion	.306	.302	2.988	0.001

AF 5 Used as dependent variable

Regression weight of knowledge diffusion

Variable	Construct	β Estimate	S.E	t-Value	p-Value
DF1	Knowledge Diffusion	.243	.075	3.234	.002
DF2	Knowledge Diffusion	.349	.087	3.993	.00
DF4	Knowledge Diffusion	.168	.103	1.624	.107
DF5	Knowledge Diffusion	.235	.097	2.421	.017
DF3 Used as dependent variable					

Summery

From the above summery the thing was how can the researcher used inter linked both factor analysis and regression coefficient for model development. Furthermore, factor analysis was important for this study to extract the important factor (factor loading) and regression coefficient that used as in put for confirmative factor analysis.

Chapter Six

6.0 Over Views of Innovation Value Chain Factors Relationship of Ethiopian Leather Industries

This part of the paper is intended to answer research question ≠3. As innovation value chain measurements discussed in chapter four and five, it is needed to use innovation value chain evaluation factors. This chapter introduces also the concepts of innovation value chain and knowledge management in leather industries. It shows how knowledge is managed in the value chain of leather industries to minimize the challenges of Ethiopian leather industries and show the new innovation value chain model develop by using structural equation modeling methods. A new innovation value chain model is proposed to reduce the challenges of Ethiopian leather industries and make competitive in global market.

The researcher pointed out a common theme in the newer value chain models has been a determined attempt the value chain and knowledge management evaluation factors more closely to material follows across the exits value chain and long-term vision. One of the most comprehensive models has received wide publicity and has recently been adopted by many organizations worldwide is porter value chain model. This is because of its simple and easy to control the chain since the chain focuses in a material fellow rather than knowledge management.

However, the limitations of the exits value chain models are mentioned by many researchers as discussed in the literature part lack of emphasis on employees (knowledge creation, knowledge conversion and knowledge diffusion) and suppliers are not addressed, role of community and contributions of other stakeholders are not assessed. In this study there is no argue that porter value chain model and other models are not fundamentally incompatible as management tool. But the researcher finds out that gap and setting up the smart action plan to value chains problems of Ethiopian leather industries.

By considering all of those limitations the study analyzed their relationships its important of innovation value chain evaluation factors (value chain evaluation factors, knowledge management factors, knowledge acquiring factors, knowledge conversion factors and knowledge diffusion factors across the value chain).

There for this study proposed an overviews of innovation value chain structural model by using loading factors from factors analysis used as in put for AMOS to propose the structural model which shows knowledge management cross the value chains of Ethiopian leather industries.

The structural model in a SEM context is the full model, specifying both the constructs with their indicators and the causal relationships between the constructs. Figure 18 Shows the results of the innovation value chain structural model. As shown in the following figure the structural model for Ethiopian leather industries have latent and observed variable to construct the model. The industry structure has a strong positive relationship with barriers to entry, with a standardized path coefficient of 0.95. The more favorable the industry structure, the more intense barriers to entry. The favorable industry structure leads to intense competition as many firms enter the industry, which ultimately leads to firms imposing barriers to entry.

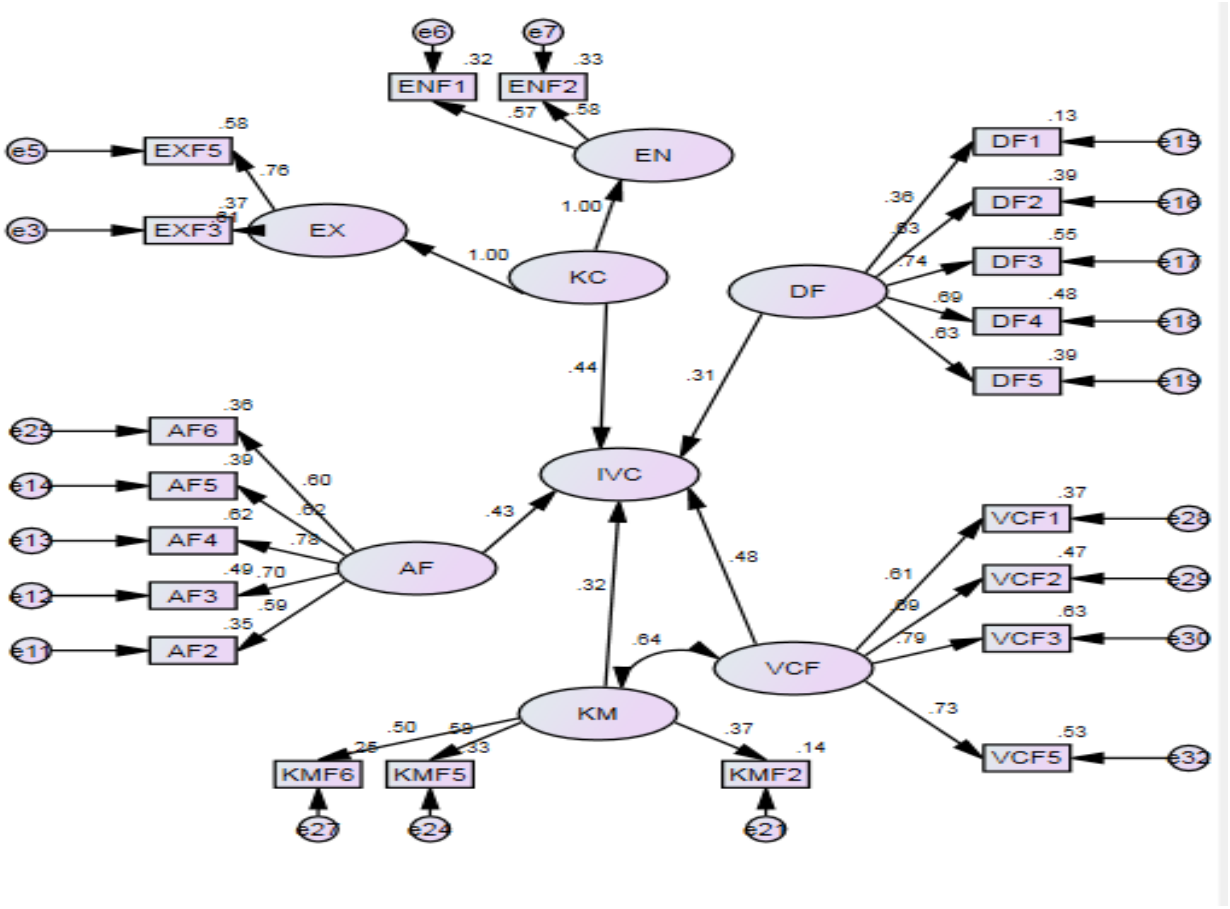


FIGURE 18:OVER ALL STRUCTURAL MODEL FOR INNOVATION VALUE CHAIN

Authors computation using Amos soft ware

CMIN/DF=1.6; p-value=0.00; CFI=0.895; RMSEA=0.079

Model fit indices for all innovation value chain structural model

Proposed over views of innovation value chain (IVC) structural models

The structural model for five constructs of innovation value chain model was empirically tested to show the main relationships among the constructs and relationships among the variables. To fit the model the modification indices were used to achieve the structural model.

The over views of innovation value chain can also measure KM (knowledge management evaluation factors and VC (value chain evaluation factors) to achieve the overall proposed structural model.

From the above general innovation value chain model, the researcher used CFA to achieve the exact evaluation factor relationship and the final new innovation value chain models,

Based on the above general value chain structural model, all null hypotheses are statistical significance relationships and between the evaluation factors and innovation value chain was also accepted.

Innovation value chain evaluation factors relationships SEM (structural equation modeling)

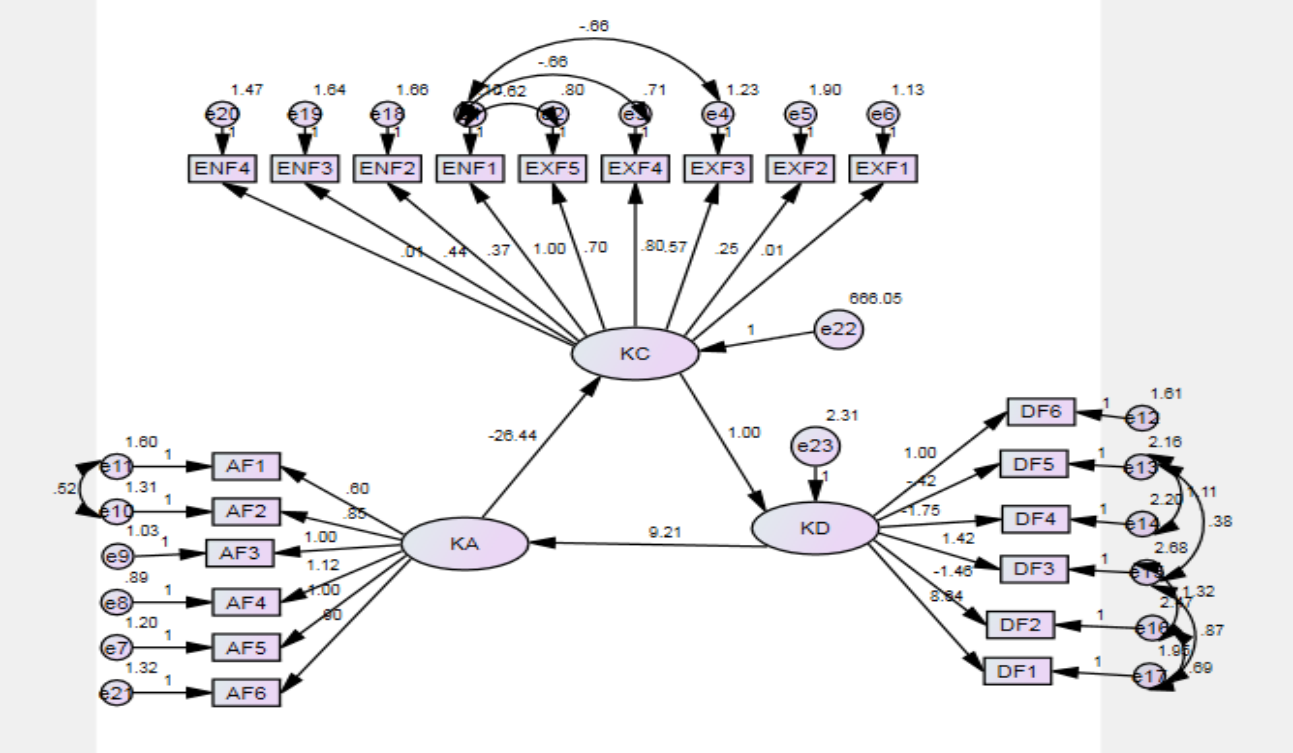


FIGURE 19: SELECTED EVALUATION VALUE CHAIN FACTORS RELATION SHIP

Innovation value chain evaluation factors relationships modeling

From fit summery table the core points are: CMIN/DF=1.26; p-value=0.008; CFI=0.906; RMSEA=0.049 which shows exact fitness of the confirmative factor analysis of

The above SEM (structural equation model) shows the relationships of the main new innovation value chain evaluation relationship model to get the final innovation value chain structural model for Ethiopian leather industries.

As mentioned in the literature part or chapter two parties of this study the innovation value chain is the flow of new ideas, conversion of new ideas and diffusion of new ideas across the weak link points of an organization. There for, from the above innovation value chain evaluation factor relationships structural equation modeling;

KA →stands knowledge absorption that can evaluate by different measure as show in the above model.

KC→ stands for knowledge Acquiring that has different measurements to fit the model.

KD→ stands for knowledge diffusion those critical factors to estimate the model fitness

The valuation factors relationship can be compute using the following full set of equations.

For knowledge Absorption (KA) AF6 was rejected

AF5=.90KA+e7

AF1=.60KA+e11

AF2=.85KA+e10

AF3=1.12KA+e9 fit in confirmative factor analysis. See in the regression weight to check up the significance value.

The others were ejected because they were not confirming in confirmative factor analysis.

For knowledge acquiring (creation)

ENF2=.44KC+e18

ENF1=.37KC+e17

EXF5 =.70KC+e2

EXF4=.80KC+e3

EXF=.57KC+e4 for this there was e22 which has 666.05 an observed factor

For knowledge Diffusion (KD)

DF2=8.84KD +e16

DF4=1.41KD+e14

DF3= -1.43KD+e15

DF5= -1,75KD +e13

The all value shows how the evaluation factors confirm in the confirmative factor analysis.

See Model fit summery is in APPENDEX-4

6.2 Proposed Innovation Value Chain Structural Model for Ethiopian Leather Industries

As mentioned above analyzing and modeling of the structural model for Ethiopian leather industries by measuring or evaluation different factors of innovation value chain such as value chain evaluation factors, knowledge management factors, knowledge acquiring factors, knowledge absorption and knowledge diffusing factors across the value chain was discussed. Furthermore, the innovation value chain evaluations factors relationships and their structural equation modeling also analyzed. This study proposed innovation value chain structural model for Ethiopian leather industries. Furthermore, opposing of knowledge acquiring, knowledge absorption and knowledge diffusion across the proposed structural model for value chain of Ethiopian leather industries can bring strengthen and competitive in global market.

In the proposed innovation value chain model, knowledge management well protected by acquiring, conversion and diffusions of knowledge across value chain starting from husbandry to finishing leather products. Knowledge management across the value chain of Ethiopian leather helps to deliver high quality raw hid and skin with in recommended time at the knowledge acquiring (KA), knowledge conversion (KC) and knowledge diffusion (KD) across value chains of Ethiopian leather industries. As explained in literature part innovation value chain supports by knowledge management by investing knowledge acquiring, knowledge conversion and knowledge diffusion across the value chain. In addition to an investing new idea by acquiring knowledge through external important factors, suppliers' competitors and customers and through internal factors (R&D activities, structure, cultures and trust among employees to produce new product and new service in existing value chain model.

There for, as shown below the innovation value chain structural model for three constructs of the structural model of innovation value chain was practically tested to show the key relationships among the constructs and relationship among the evaluation factors. Finally, the modification indices were used to improve the fitness of the structural model.

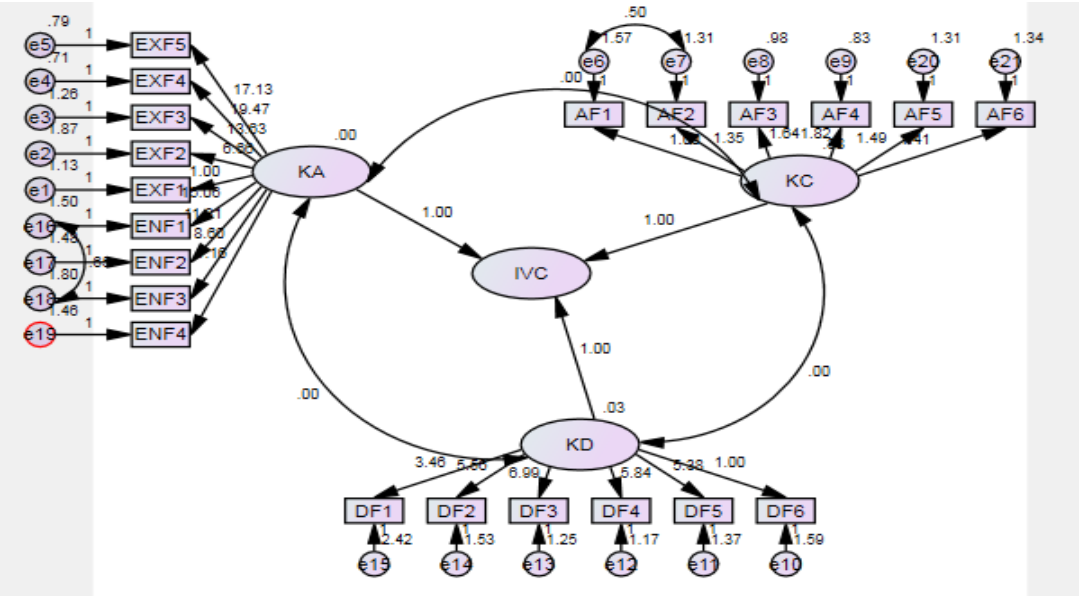


FIGURE 20: PROPOSED INNOVATION VALUE CHAIN STRUCTURAL MODEL

CMIN/DF= 1.25; p-value=0.011; CFI=0.913; RMSEA=0.048

Proposed Innovation value chain structural model

Source: Author computation using AMOS software the CMIN/DF value is 1.25, the values of incremental fit index (CFI) 0.913, and the badness of fit (RMSEA) is 0.048, which is acceptable value. Based on the structural model all null hypothesis of statistical significance relationships between innovation value chain and evaluation factors were not also rejected and the null hypothesis also accepted. Generally, the model fit summaries are pointed out in**appendix-4**

6.3 Proposed Model Discussion

The overall proposed structural innovation value chain model for Ethiopian leather is shown in figure-20 the notation of knowledge acquiring (KA), knowledge conversion (KC) and knowledge diffusion means knowledge acquiring in the value chain, knowledge

conversion in the value chain and knowledge diffusion in the value chain respectively. In addition to this, the proposed structural innovation value chain model confirms the input by confirmative factor analysis using Amos software which is significance at P-value is 0.011, incremental fit index(CFI) is 0.913 and the badness of fit (RMSEA) is 0.048 which shows confirm the factors to propose the modeling In the proposed model the innovation value chain factors(KA, KC, KD) were inter related to each other in order to achieve the target of the knowledge management across the value chain of Ethiopian leather industries. The model shows latent and observed variables to get main objectives of this research which indicates knowledge management across the value chain. The combination of these types of knowledge acquiring, knowledge conversion and diffusion have strong relation to propose structural model as show in the above figures with model fit indices. There for the above structural model is focusing on hypothesized model which the results are displaying in table form which shows the relationships between observed and none -observed variables appendex-4

In this research the innovation value chain model is develop by considering knowledge management across the value chain of Ethiopian leather industries. For future study the researcher planned to use real data from respective value chain experts and stock holders of leather industries value chain.

Chapter Seven

7. Conclusion and Recommendation

In this part of the study the conclusion, recommendation and future research directions of the whole research is justifying in detail. It has three main parts. The first part discuses about the conclusion of the research, the second part discuses about the recommendations and finally the third part discuss future directions of the research.

7.1 Conclusion

World competitiveness of country is an ever-growing concern for governments, peoples and academic scholars. In order to become competitive, the Ethiopian government was identifying the priority industries(sectors) based on the different stage of GTP (growth transfer plan) to give attention for economic growth of the countries. Currently Ethiopian leather industries are one of the priority sectors. However, the years Ethiopian leather industries could not come out from its problems. It is mainly due to lack of knowledge on how to handling ovine and bovine animals during growth of animals, lack of skills in slaughtering processes, lack of investment of new technology across the value chain, poor preservation method lack of capacity utilization and less service delivery across the value chain. In general, the problems of the leather industries lack of innovation in the value chain and no knowledge management across the value chain. To solve the above problems and increase the competitiveness of Ethiopian leather industries, this study proposed that innovation value chain model that helps for knowledge acquiring, knowledge conversion and knowledge diffusion across the value chain.

In order to achieve the above objective, the thesis conducted and widespread literature review with regard to value chain (VC), innovation value chain and knowledge management (KM) across the value chain and existing value chain of Ethiopian leather industries. Furthermore, the researcher collected primary and secondary data from local/traditional tanners, abattoirs, from different departments of Ethiopian leather industries related institutes and associations. Based on the data collected and observation made, first industrial value chain and knowledge management was identified at leather industries development institutes, leather industries ,leather industries

association and local slaughter and tanners. Using Fuzzy-AHP multi-criteria decision tool. Finally, the new model has proposed which shows innovation in the value chain of Ethiopian leather industries.

The finding of the research focusing on the problems of the value chains of Ethiopian leather industries and local (traditional) leather tanners. The problems of the defects in finished leather products are the causes of pre-slaughter and post slaughter processors that affect the whole value chains of Ethiopian leather industries. For this reason, innovation value chain stream mapping is proposed for both RAYAN local tanners and Ethiopian leather industries in chapter threes of this study.

Furthermore, the research tried to develop a model which is unique kind for Ethiopian leather industries. The prosed model shows the innovation in the value chain. The new proposed model minimizes the defects of raw hide and skins, to improve capacity utilization, to minimize delay in service delivery, and invest new resources for Ethiopian leather industries by making innovation (knowledge management) across the whole value chains. And from the discussion of the prosed model it helps to improve the competitiveness in global marketing system and to achieve its goals in different stages of growth transformation plan.

Finally, the findings of study were the three-evaluation factor KA (Knowledge acquiring, knowledge conversion and knowledge diffusion conform that model and great role in proposed model.

To fill the gap of the reviewed literatures, the researcher explores more proximity literature on value chain, innovation and knowledge management; identifies theoretical gaps in the merger of the three theories; and recommends future areas of research.

7.2 Recommendations

Based on the finding of the research problems the following points are forward to Ethiopian leather industries.

- ✓ The Ethiopian leather industries need to consider adoption innovation in its value chain to enable them compute in global market.
- ✓ The leather industries are better to give Sirius attention for knowledge management policy across the leather industries value chain.
- ✓ The Ethiopian leather industries need to use traditional knowledge as in put for value chain.
- ✓ The Ethiopian leather industries are better to implement innovation across it's the value chain.
- ✓ The leather industries should give attention for knowledge creation, knowledge conversion (adoption) and knowledge diffusion across the value chain.
- ✓ The industries should adopt the proposed model for better firm size and market structure in global competitiveness.

7.3 Future research directions

This study forwarded a proposed innovation value chain model for Ethiopian leather industries. The proposed model is important to strengthen the existing weak links of value chain of the Ethiopian leather industries. By considering the contributions of this research for Ethiopian leather industries further investigation areas are pointed out as follow.

Detailed innovation value chain development processes for each links of value chain of selected case studies i.e. Ethiopian leather industries development institutes, leather industries and traditional tanneries.

1. In this study general value stream mapping for both traditional and industrial levels are given in chapter three but this is not enough, detail analysis needed to strengthen the value chain to reduce the waste and to improve the profit. This will be one of the future works of the research.
2. Validity andcomputability checked up of the proposed model with real situation to other industries will be one partof future works of this study.
3. Develop innovation value chain model using knowledge managementtool without statistical results
4. To test the applicably of the model the researcher will test for other industries such as textile, metal, Food processing and other manufacturing industries.

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APPENDIX

Annex1: survey questionnaire

ADDIS ABABA UNIVERSITY

INSTITUTE OF TECHNOLOGY
SCHOOL OF MECHANICAL AND INDUSTRIAL ENGINEERING
(IndustrialEngineering Stream)

Dear participants:

I am conducting a thesispaper entitled “innovation value chain for Ethiopian leather industries”. The purpose of the questionnaire is to assist the existing challenges of the value chain and knowledge management of Ethiopian leather industries and to make competitive based on value chain and knowledge management. My advisor is Dr.Shewit W/Gabriel and My Co-advisor is Mr.Shimelis(PHD) candidate from Addis Ababa Institute of Technology.

There for I would like to request to participate in this research paper because I believe that your experience in Ethiopian industries is consider as indirect contribution for this research.

Name of the College/Institute/University: _____

Position (Job): _____

Experience: _____

Academic Level: _____

BerihunNegashAdvisor;Dr.Shewit(Phd)

Tel:+251-922-93-05-77 **Tel:**

Email: negashber2005@gmail.com

Co-Advisor:Mr.ShimelisT(PhD candidate)

Tel:

N.B: In order to understand the question and give eagerly answers describe the following items are important.

Value chain factors: The factor affection across the value chains Ethiopian leather industries.

Innovation value chain: innovation in the value chain of Ethiopian leather industries

Knowledge management: knowledge management policy across the value chain of Ethiopian

Part one: Concepts all about value chains of Ethiopian leather industries

Please rate on the scale 1 to 5 with the following questions which are related to awareness of value chain in leather industries and handling systems. Pleas tick 'X' mark in the corresponding cell and focusing the following scores.

(score of 1 = strongly disagree; 2=disagree; 3= neutral; 4=Agree; 5= strongly agree)

Q		1	2	3	4	5
1	Managers have concept and knowledge on how the value chain of the industries are evaluate and improved.					
2	Your company believes competitiveness can be achieved through value chain evaluation factors					
3	Availability of Trainings about value added products across the value chain and improvements is sufficient in industries.					
4	There are sufficient evaluation factors used across value chain of your industries.					
5	Your company uses knowledge acquiring, knowledge conversion and knowledge diffusion evaluation factors to measure the innovation value chain.					

6	Your industry has got high defects of raw hide and skin and used as in put for your leather processing							

The following questions are focusing on Likert type scale questions for knowledge management concepts across the value chain**.**

- put only a thick mark [√] inside the box below the number of your preference.
- among the five options, choose the best that fits to your preference.

The keys are: 1 = completely disagree, 2 = I disagree, 3 = Neutral, 4 = I agree, 5 = I Completely agree

Appendix- 2

		1	2	3	4	5	activities	Phase
1	Your organization has a knowledge management policy or strategy for acquiring and sharing knowledge.						External factors	Knowledge acquisition

2	If your organization used customer interaction system to promote knowledge sharing what will your feeling?							
3	Your Organization uses partnerships or strategic alliances to acquire Knowledge!							
4	You feel that your Organization has policies/programs intended to improve worker retention!						Internal factors	
5	Your Organization encourages systematic neighbor training and interdisciplinary training groups in order to get holistic overview of a given task!							
6	Workers immediately accept as part of their job, activities designed to acquire and share knowledge!							
7	How do you measure the effectiveness of knowledge acquisition practices from customers' perspectives in your Organization?						Factors for knowledge absorption	Knowledge absorption

8	Do you agree that all employees are responsible for acquisition and sharing of KM in order to ensure continuous development of the Organization?							
9	How you measure the external factors of knowledge absorption in your organ ionization?							
10	different external sources of knowledge are using to absorb in your organization							
11	Your organization has measurement the internal factors for knowledge absorption?							

APPENDIX2: INTERVIEW

Greetings from Addis Ababa university institutes of technology departments of industrial engineering!

Dear participants

I am conducting a this is paper entitled “innovation value chain for Ethiopian leather industries”. The purpose of the questionnaire is to assist the existing challenges of the value chain and knowledge management of Ethiopian leather industries and to make competitive based on value chain and knowledge management. My advisor is Dr.Shewit W/Gabriel and My Co-advisor is Mr.Shimelis(PHD) candidate from Addis Ababa Institute of Technology.

There for I would like to request to participate in this research paper because I believe that your experience in Ethiopian industries is consider as indirect contribution for this research.

Name of the College/Institute/University: _____

Position (Job): _____

Experience: _____

Academic Level: _____

1) Please give some examples on introducing or improved of new raw material, service in your industry?
2) How can you briefly explain the overall current value chain processes in the Ethiopian leather industries?
3) What are the major exist problems that found at each stages of Ethiopian leather?industries value chain.
4) What are the root causes of the above exist problemsofEthiopian leather value chain?
5) What do you think to give remedies action to the exist problems?
6) Please pointed out the evaluation factors measurement parameters for the above listed problem areas?
7) Which organizations are major entities involved in the Ethiopian leather industries value chain?
8) How employers are participating for their knowledge sharing across the value chain?

Table 16 summaries of literature

Authors &years	**Research area**	**Objectives**	**Problems**	**methods /approach**	**Finding and conclusion**
Hana,2013,Kanaga 2015,Eliryyes, 2011 birkinshaw,2011,Attarnez had, 2013 Hjalager, 2010 Andersson, 2016 DETECTON, 2013 JeremyJ.Wakeford2017	Definition of innovations Important of innovation Factors affect innovation	To understand the general concept of innovation To defeat computation and win new customers. Producing of new product Competitive strategy To enhance environmental regulation New idea To understand the different factors affecting innovation activities.	Lack of competitive advantage of organization	Quantitative and qualitative approach Literature review and books	The general concept, definition, important and factors affecting innovation activities. Innovate and support an innovative culture Innovation is very vital for computing advantages advantage
Stark, 2016 OECD 2014 Rajeev P., 2016 Rajeev P., 2016 Mike, 2000 Mbwana Suleiman Ndaro, 2016 INDUSTRIES, 2016, Suhasini K1, 2015	Explore Value chain in global Regional & Local perspectives	To develop frame works and understand global value chain To produce and identify the weak points of	Turnover and small domestic markets Less competitive advantages	Qualitative approach Using literature review and books	Improve on some of areas relate the processes along the idea generation, conversion and diffusion phase

Hansen and Birkinshaw, 2006,abdulhad 2017 Yutaka, 2015, Hseih, 2011, (SHAK,I.S.,ALIAS,R.A ABU HASSA.N, BASARUDDIN,S. & URADIZ., 2014	Innovation value chain in different manufacturing industries	To explore different activities innovation value chain, sourcing, generating, applying of ideas To use as tool for organization	Terms and concepts and methodologies for IVC are not clearly presented. This includes (product, processes, market and organizational innovation) . Lack of profit and competiveness		Idea generation, conversion and diffusion phase Better understanding of the input and output of innovation value chain
Dalkir,2005, Cândido2, 2013,King, 2009,Jamaluddin,2011 Easa, 2012,	Knowledge management Factors affecting Knowledge management organization ,component of knowledge management	To analyze the state of the organization and identify the future research agenda.	There is gap regards the lack of a comprehensive taxonomy of knowledge management that may support the processes of knowledge creation ,acquisition ,storage ,transfer, sharing and Applications. Environmental, socio-economic factors	Systematic review with adoptable replicable methods.	Understanding all the possible advantages of KM adoption for a given organization to chive efficiency, effectiveness and scalability goals

Hana, 2013, Hazel Hall, 2013, Alie 2015, Shih, 2010, Brix, 2017, Shmuel Ellis, 2016, Ilkhamova*, 2017,AkramNaseem, 2011, Nonaka, 2011	Knowledge creation Knowledge creation in leather industries	To create knowledge among peoples, processes and technology and to bring competitive advantages of organizations To understanding the SECI model in organization approach	Limited awareness about knowledge creativity and seen as academic approach only.	Different types literature and books Quantitative approach	Knowledge creation has significant influence on the accumulation of Subsequent organizational and human capital
Andrei, 2013 Luethge, 2008 Silva, 2013	Knowledge conversion	To increase social economic development To understand how knowledge is diffusing in organization	Environment influence the knowledge conversion	Empirical approach	Development of the holonic capacity of the organization
Enst Linus, 2002 Vingilis*, 2003 Mariacristina Piva*, 2016 Corinne Autant-Bernard, 2010, Jilchaa, 2017	Knowledge diffusion	To increase social economic development To understand how knowledge is diffusing in organization	Lack of communication, sharing, and diffusing knowledge	Qualitative approach	Knowledge generation, diffusion and utilization are provided.
Jilchaa, 2017	Knowledge diffusion	To develop a conceptual model of Workplace safety and Health Knowledge diffusion and create awareness to society.	Workplace safety hazards, high costs, loss of productivity, and organizational competitiveness advantage	Literature review interview and personal experience	Solves retiring industry-university linkage, weak top management Commitments and weak awareness scenario of the employees of any

APPENDEX 4: Coding's of the prepared questionnaires

Selections of Evaluation Factors Based on Perspectives of Innovation Value Chain (IVC) systems.

The researcher identified the evaluation factors based on the literature gaps. The evaluation factors of innovation value chain for Ethiopian leather industries are pointed out by the researcher based on the different exist constraints of Ethiopian leather industries.

Perspective	Code	Description
Value chain evaluation factors	VCF1	In put resources capacity
VCF= value chain factor	VCF2	Technology transferring
	VCF3	Value added products
	VCF4	Partnership
	VCF5	Experience
	VCF6	Defects of raw hide and skin is high
Management evaluation factors	KMF1	Strategy
KMF indicates=knower management factor	KMF2	Relationships
	KMF3	Training
	KMF4	Resource handling
	KMF5	Communication
Knowledge acquisition evaluation factors	EXF1	Strategy
Knowledge conversion factors	EXF2	Competitors forward novel ideas
	EXF3	Partnership
	EXF4	Supplier innovative ideas
	EXF5	Trust
	ENF1	Organizational structure
	ENF2	Consultant
	ENF3	Organizational culture
	ENF4	R&D activities
Knowledge conversion /Absorption Factors	AF1	Employee educational level and capacity
	AF2	Employee training
	AF3	Experience of staffs
	AF4	Cross-functional communication among staffs
	AF5	Employee motivation to improve their skill
	AF6	Attitudes of employees and relationship
Knowledge diffusion factors	DF1	Policy frame work
	DF2	Social network

	DF3	Collaborations
	DF4	Nodes of the net work
	DF5	Prior- knowledge
	DF6	Diversity of backgrounds and knowledge

APPENDEX -4

Model Fit Summary for all CFA.

CMIN

Model	NPAR	CMIN	DF	P	CMIN/DF
Default model	52	225.301	179	.011	1.259
Saturated model	231	.000	0		
Independence model	21	740.354	210	.000	3.525

RMR, GFI

Model	RMR	GFI	AGFI	PGFI
Default model	.190	.847	.897	.656
Saturated model	.000	1.000		
Independence model	.419	.551	.506	.501

Baseline Comparisons

Model	NFI Delta1	RFI rho1	IFI Delta2	TLI rho2	CFI
Default model	.696	.643	.918	.898	.913
Saturated model	1.000		1.000		1.000
Independence model	.000	.000	.000	.000	.000

Parsimony-Adjusted Measures

Model	PRATIO	PNFI	PCFI
Default model	.852	.593	.778
Saturated model	.000	.000	.000
Independence model	1.000	.000	.000

NCP

Model	NCP	LO 90	HI 90
Default model	46.301	11.998	88.758
Saturated model	.000	.000	.000
Independence model	530.354	451.187	617.103

FMIN

Model	FMIN	F0	LO 90	HI 90
Default model	2.030	.417	.108	.800
Saturated model	.000	.000	.000	.000
Independence model	6.670	4.778	4.065	5.559

RMSEA

Model	RMSEA	LO 90	HI 90	PCLOSE
Default model	.048	.025	.067	.544
Independence model	.151	.139	.163	.000

AIC

Model	AIC	BCC	BIC	CAIC
Default model	329.301	355.009	470.663	522.663
Saturated model	462.000	576.202	1089.973	1320.973
Independence model	782.354	792.736	839.443	860.443

ECVI

Model	ECVI	LO 90	HI 90	MECVI
Default model	2.967	2.658	3.349	3.198
Saturated model	4.162	4.162	4.162	5.191
Independence model	7.048	6.335	7.830	7.142

HOELTER

Model	HOELTER .05	HOELTER .01
Default model	105	112
Independence model	37	40

Appendix 5: Photo Taken During Actual Research Visiting of Selected Case Companies

Visiting Ethiopian tanneries and leather industries