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PROPOSE KNOWLEDGE CREATION CONFIRMATIVE FACTOR ANALYSIS MODEL FOR ETHIOPIAN LOCAL TANNERS

Selected Case Study: Raya Region (Ethiopia)

BerihunNegash[1](Msc), Getu Girma[2](Msc)

Dire Dawa University, Dire Dawa Institute of Technology, Diredawa, Ethiopia, 2019.

Abstract

This study examined knowledge creation in Ethiopian local (traditional) tanners. It furthermore addressed the multifaceted challenges and barriers for knowledge creation (socialization, Externalization, combination and internalization) across the traditional knowledge of Ethiopian local tanners. Ethiopia has a large livestock of hide and skin in Africa but there is weak knowledge creation in local tanners to create new products .The researcher used both primary and secondary data and analyzed using SPSS software.Furthermore,this study used SPSS software for checking the reliability of collected data for each evaluation factors of socialization, externalization, combination and internalization factors. The SPSS file used as input confirmative factor analysis using LISREL international software. The LISREL software shows all observed variables have good conformation with latent variables based on goodness of fit statistics. The major findings were the selected latent factors , socialization, externalization, combination and internalization are confirmed with their observable variables to propose knowledge creation confirmative factor analysis model which recommend for RAYAN local Tanners. Finally, it can also use for other traditional tanners with same adjustment.

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Key words: traditional knowledge management, knowledge creation, local tanners

Introduction

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.

Knowledge management

The origins of the knowledge management field differentiating between tacit and explicit knowledge and describing the SECI/be model (Annika Heikkilä a, 2004). The Annika (2004) suggested that the SECI/ ba model supports new service development and innovations in the networkfrom both the research methodological and case companies´ points of view.

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.

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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).

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 Jin1, Bowen Zhong2 .*, Xiaohong Wang3 and Hua Jiang, 2017).

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)

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 (Kim Dieter & Enst 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 (Vingilis*, 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 Chen&Diana Hicksb, 2011). Therefore, they conclude that the work has practical implications on resour

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.

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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

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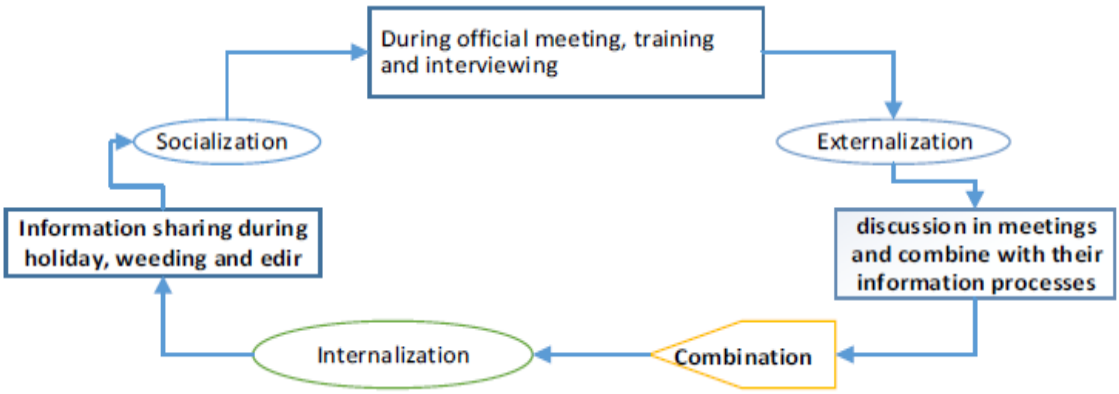

source: Author observation from RAYA region Ethiopia

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.

Source: the author's visited figures 2019 sources: Netsanet **Jotedissertation, 2014**

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.

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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

N.Bthe 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.

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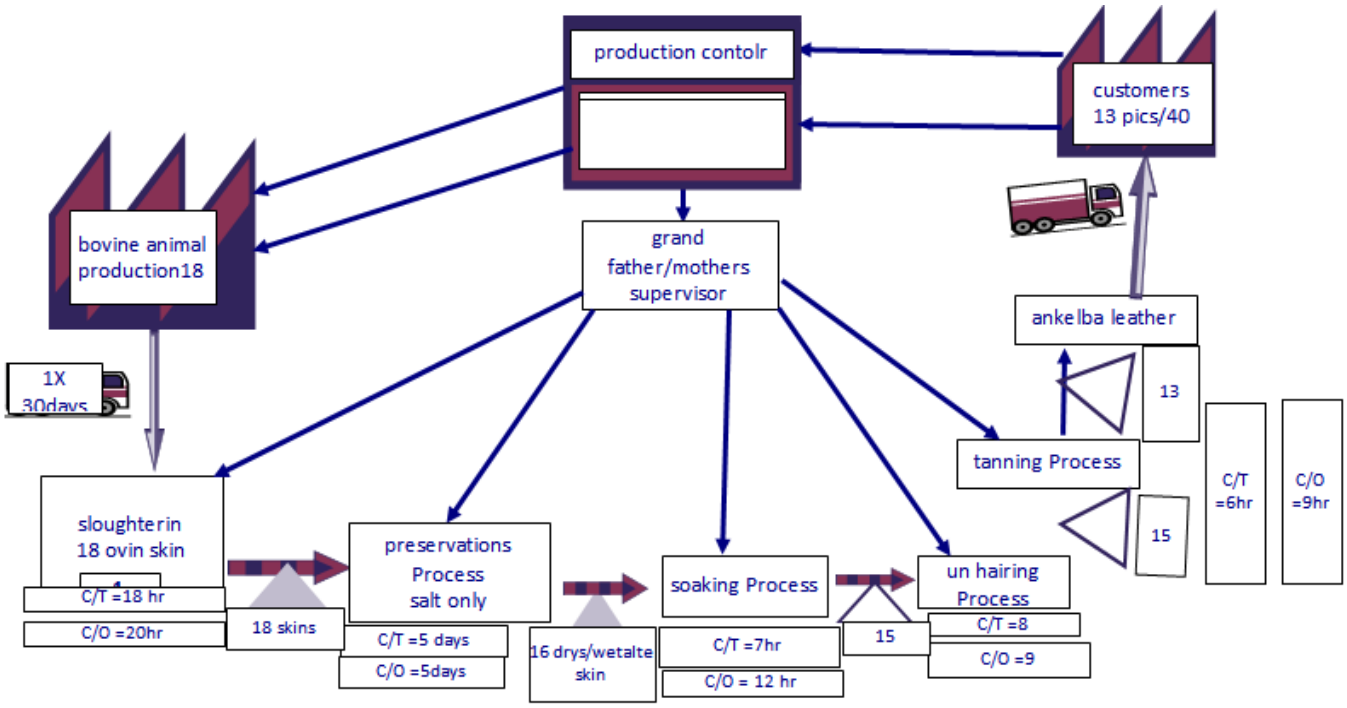
Existing value chain stream mappings of traditional tanners of RAYAN peoples



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 is no new technology investment for local tanners.
- Lack of effective socio-economic activities
- Lack of idea sharing among 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 structure model for local tanners.

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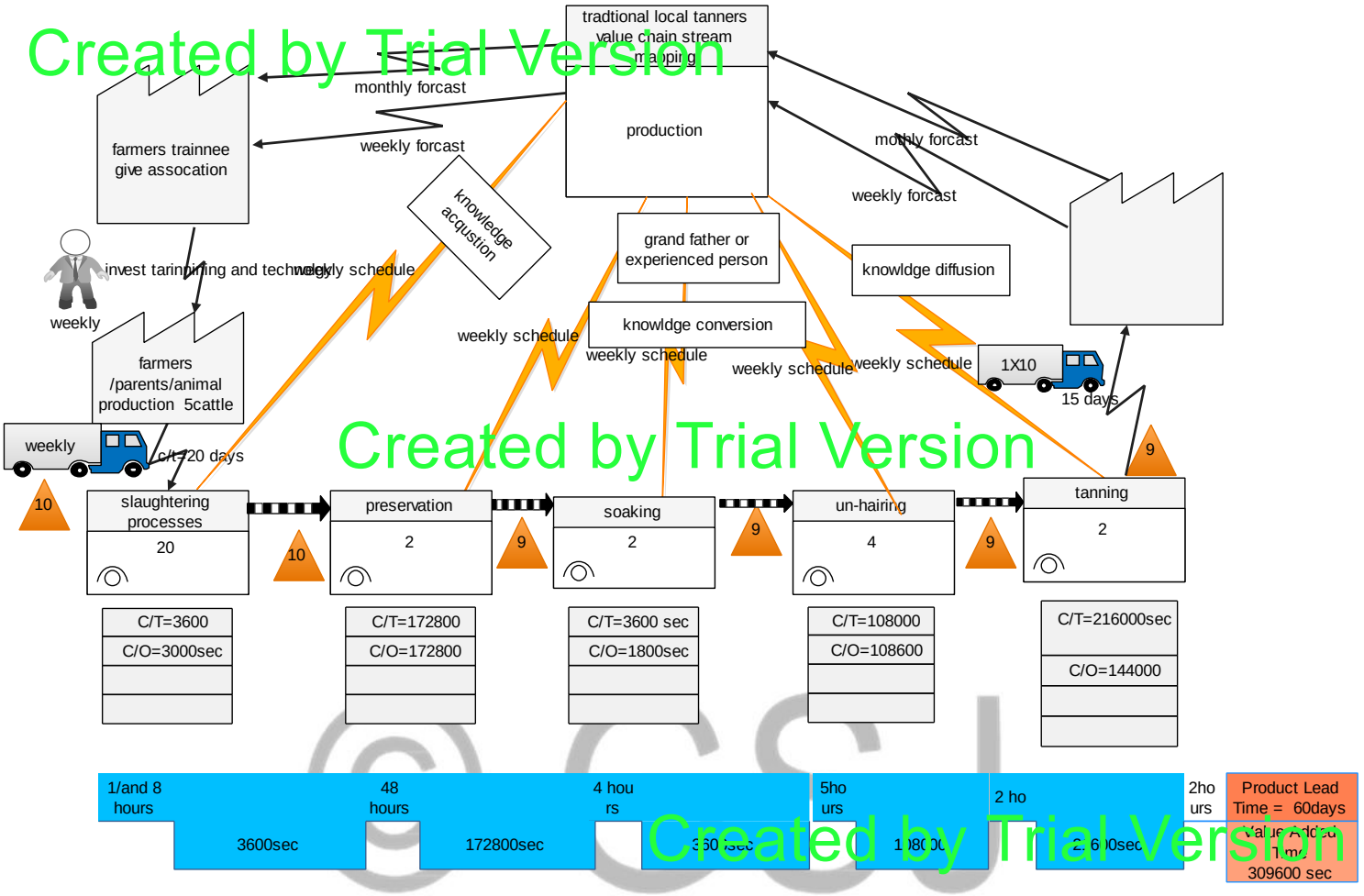

From the above figure the author use value stream mapping to camper the existing and proposed stream mapping different tools. Therefore, based on the author point of view it is important to identify value added, non-value added and business non-value-added activities across the traditional knowledge of local tanners. The authors use takt time to analyzed the activities as follows.

Proposed new traditional knowledge management stream mapping for Rayan local tanners

From the above figure the author use value stream mapping to camper the existing and proposed stream mapping different tools. Therefore, based on the author point of view it is important to identify value added, non-value added and business non-value-added activities across the traditional knowledge of local tanners. The authors use takt time to analyzed the activities as follows.

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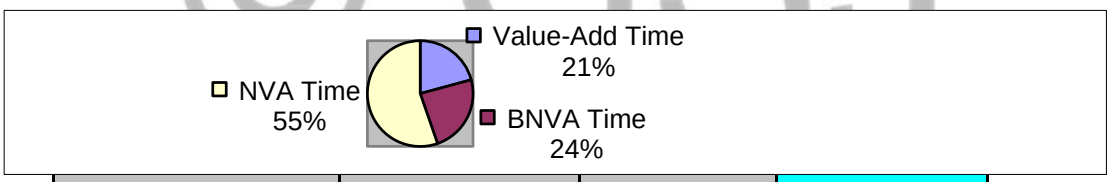
Daily Customer Demand:	**units per day**	**22**
Scheduled Work:	**hours per shift**	**8**
Shifts per Day:		**2**
Lunch:	**minutes per shift**	**30**
Breaks:	**minutes per shift**	**30**
Planned Downtime:	**minutes per shift**	**30**
Staff/Operator Cycle Time:	**minutes per unit**	**226**
Available Time:	**minutes per day**	**780.0**
Takt Time:	**minutes per unit**	**35.5**
Required Number of Staff/Operators:		**6.4**

Process Name:	Tradtional knowledge managemnet for RAYAN local tanners
Date:	4/5/2018
Prepared By:	Berihun N.
Notes:	

Enter Takt Time:	35.5



Total Times:	47.0	54.0	125.0	226.0	<-- Cycle Time

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

Value added time =65% Non-value added time 14% and BNVA(business non-value added) =21% which shows value added time have been great value which represents 56% and cycle time is 226 to make competitive and profitable in marketing system.

Factor Analysis Using Lsirel Software

Factors for socialization

Holiday, weeding, and edir

Externalization

Official meeting, training and interviewing

Combination

Discussion in meeting and combine with their information processes

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Internalization

Generate knowledge from elder peoples

Observe how to tanning hide and skin traditionally for different purpose

Checking up reliability of the data using Spss software

Traditional knowledge management factors factors	Reliability statistics	
	Cronbach's	No, of items
Socialization factors	.785	8
Externalization factors	**0.852**	**7**
Combination factors	**.772**	**9**
Internalization factors	**0.875**	**6**
All evaluation factors	**0.893**	

Analysis Using Lisrel Software from Spss Soft Ware File

```
Raw Data from file 'C:\Users\Ber\Desktop\BERIII SPSSS.psf'
Latent Variables  socialazion extewnalatio cmbnation internalazti
Relationships
WEEDING = socialazion
EDIR = socialazion
OFF.M = extewnalatio
TRAIN = extewnalatio
INTERVIE = extewnalatio
MANUAL = cmbnation
OBSORVAT = cmbnation
ASKING = cmbnation
TANNINGO = internalazti
DISCUSSI = internalazti
TRMB = internalazti
Path Diagram
End of Problem
```

```
                                DATE:  7/29/2019
                                TIME:  1:58

                          LISREL 8.80 (STUDENT EDITION)

                                     BY

                          Karl G. J"reskog & Dag S"rbom


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The following lines were read from file C:\Users\Ber\Desktop\beriii spsss.SPJ:

Raw Data from file 'C:\Users\Ber\Desktop\BERIII SPSSS.psf'
Latent Variables  socialazion extewnalatio cmbnation internalazti
Relationships
WEEDING = socialazion
EDIR = socialazion
OFF.M = extewnalatio
TRAIN = extewnalatio
INTERVIE = extewnalatio
MANUAL = cmbnation
OBSORVAT = cmbnation
ASKING = cmbnation
TANNINGO = internalazti
DISCUSSI = internalazti
TRMB = internalazti
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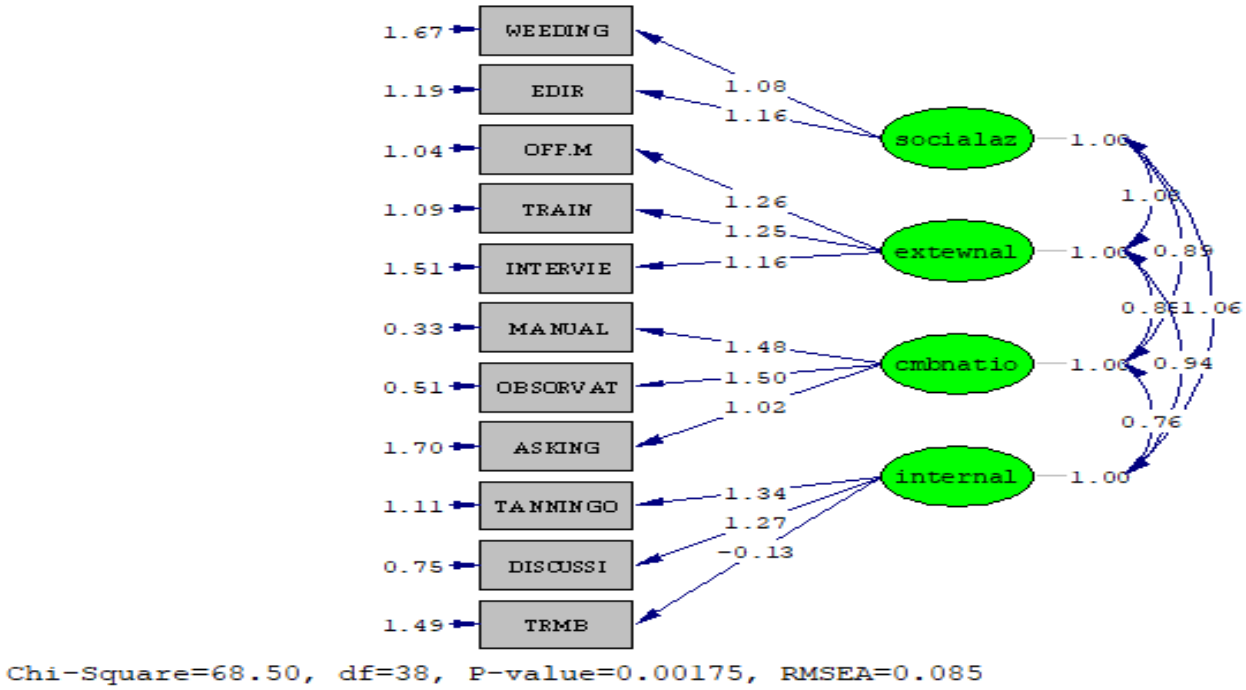

From the above structural model, the researcher used different coding systems for evaluation factors of traditional knowledge in traditional local tanning the proposed confirmative factor analysis model (path model) are as follows

Perspective	code	Description
Socialization	Weeding	Cultural celebration in Raya peoples is unique
	EDER	Social culture which is important to discuss about economical and skills sharing among them
Externalization	OFF.M	Farmers focusing of knowledge management traditionally in existing their tanning process
	Training	How Taking training to improve their handling raw hide and skin in preslaughter and post slaughter
	Interviewing	Face to face discussion with their elder RAYAN peoples to generate knowledge.
Combination	MANUAL	Guidelines to work their traditional tanning
	OBSORVATION	Absorb their working environment with naked eye
	Asking	Asking different question by selecting elders each of them to create knowledge

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Internalization	Tannage	The processes of converting raw hide and skin in to leather traditionally
	Discussion	Communicating among them
	TRMB	Traditional knowledge management briefly

```
                  Root Mean Square Residual (RMR) = 0.18
                        Standardized RMR = 0.068
                  Goodness of Fit Index (GFI) = 0.90
              Adjusted Goodness of Fit Index (AGFI) = 0.82
             Parsimony Goodness of Fit Index (PGFI) = 0.52

        The Modification Indices Suggest to Add the
 Path to   from      Decrease in Chi-Square    New Estimate
ASKING    socialaz          23.5                 1.24
ASKING    extewnal          25.2                 1.52
ASKING    internal          22.1                 1.14

The Modification Indices Suggest to Add an Error Covariance
 Between    and     Decrease in Chi-Square    New Estimate
OBSORVAT  TRAIN              9.8                 0.30
OBSORVAT  MANUAL            25.9                 1.20
ASKING    INTERVIE           9.4                 0.50

                        Time used:     0.078 Seconds
```

```
                    Goodness of Fit Statistics

                    Degrees of Freedom = 38
          Minimum Fit Function Chi-Square = 73.90 (P = 0.00043)
Normal Theory Weighted Least Squares Chi-Square = 68.50 (P = 0.0018)
          Estimated Non-centrality Parameter (NCP) = 30.50
       90 Percent Confidence Interval for NCP = (11.18 ; 57.65)

                  Minimum Fit Function Value = 0.67
        Population Discrepancy Function Value (F0) = 0.28
       90 Percent Confidence Interval for F0 = (0.10 ; 0.52)
     Root Mean Square Error of Approximation (RMSEA) = 0.085
    90 Percent Confidence Interval for RMSEA = (0.052 ; 0.12)
       P-Value for Test of Close Fit (RMSEA < 0.05) = 0.043

          Expected Cross-Validation Index (ECVI) = 1.13
    90 Percent Confidence Interval for ECVI = (0.96 ; 1.38)
               ECVI for Saturated Model = 1.20
          ECVI for Independence Model = 14.70

Chi-Square for Independence Model with 55 Degrees of Freedom = 1594.56
                    Independence AIC = 1616.56
                        Model AIC = 124.50
                      Saturated AIC = 132.00
                    Independence CAIC = 1657.36
                        Model CAIC = 228.37
                      Saturated CAIC = 376.83

                    Normed Fit Index (NFI) = 0.95
                  Non-Normed Fit Index (NNFI) = 0.97
           Parsimony Normed Fit Index (PNFI) = 0.66
              Comparative Fit Index (CFI) = 0.98
              Incremental Fit Index (IFI) = 0.98
               Relative Fit Index (RFI) = 0.93

                    Critical N (CN) = 92.04
```

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Source: Author computing using Lisrel software p- value or significance value is accurate since its value <0.5 that is 0.00175 which indicates acceptable value lisrel path analysis .all values from the above are acceptable in path analysis .based on the path structural model all null hypothesis of significance relation ships between latent and observable variables were not also rejected and the null hypothesis also accepted.

Proposed model discussion

As shown in the above confirmative factor analysis model socialization, externalization, combination and internalizations are latent variable which shows good relationships and confirmed with absorbable variables i.e

Socialization = weeding and Eider are critical measurements of socialization for knowledge creation in local tanners of RAYA region in Ethiopia.

Externalization = farmers or husbandry focusing of knowledge management, training and interviewing or asking of RAYAN elder peoples hade critical role in knowledge creation of RAYAN local tanners.

Combination = Reading of their manuals, observation (looking their activity and working principles) and asking the elder peoples are important to create knowledge in local tanners of RYAN peoples in Ethiopia.

Internalization = the traditional tanning process, discussion adult, young and elder people's hade critical knowledge acquiring among them and internalization.

In general, the problem of Ethiopian traditional tanners was lack of traditional knowledge management and lack of knowledge creation across their traditional tanning processes.
To solve the above problems and increase the competitiveness of Ethiopian traditional tanners of hide and skin ,this study proposed knowledge creation confirmative factor analysis model
That helps to strengthen their socialization, externalization, combination and internalization of their knowledge to create or acquiring knowledge in their traditional tanning processes.

Finally, the finding of study were the four latent variables (socialization, externalization, combination and internalization are conformed with their evaluation factors to create or acquire knowledge (knowledge creative confirmative factor analysis model) across Ethiopian traditional hide and skin local tanning process and great role in proposed model.

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Future research work

By considering the contribution the research for Ethiopian traditional tanner's further investigation areas are mentioned below. Case studies i.e RAYAN local tanners(alamata, maichew, mehoni and chinkomyo these were specific name of selected case areas in RAYA region in Ethiopia).

1. Develop knowledge management model (knowledge acquiring, knowledge conversion and knowledge diffusion model) for traditional local tanners and industrial tanners.
2. In this research general value stream mapping for both existing and estimating traditional tanning processes levels are given in this study but this is not enough detail analysis needs for both traditional tanners and industrial tanning value stream mapping to increase knowledge management and to improve the profit .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.
3. Validity and computability checked up of the proposed model with real situation to other industries will be one part of future works of this study.
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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