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Designing Indigenous Knowledge Management Model for Gadaa System: Rule-based Knowledge Representation Approach

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ABSTRACT

This paper analyzes the current status of indigenous knowledge (IK) in Gadaa System in Oromo as general and Guji Oromo Community in specific, and the way how IK has been transferred among Guji Oromo Community for the long period of time, and indicating the way forward on capturing, converting, sharing and preserving the IK in Gadaa System for the next generation with the help of Technology. To design the indigenous knowledge management model in Gadaa System, this Study adopted two models. The first one is Socialization, Externalization, Combination and Internalization (SECI) Knowledge management Model which developed by Nonaka and Takeuchi, the second one is Boisot Knowledge Categories Model. These models, SECI and Boisots', indicate the spiral arrangement of four sub section revolving from exchanging tacit IK to codifying the tacit knowledge by using several mechanisms and showing the possibilities of how the explicit (codified knowledge) can be combined with the support of different technological methods, to understand codified knowledge and the common scientific relationship between tacit and explicit knowledge in sharing of the given IK. The primary data were collected through mixed approach (qualitative and quantitative) with face-to-face interview, group discussions with 10 domain experts (Abbootii Gadaa, Baatu, Jaarsa biyya, Hayyuu) and, through questionnaires on the basis of purposeful sampling strategies in West Guji Zone in 2020. The study result indicated that the Community, particularly the young generation do not understand and utilize this knowledge because of no yet any technology is there, which facilitates managing and transferring of this important indigenous knowledge in Gadaa System to the next generation. Therefore, based on the finding, the proposed Indigenous knowledge management model in Oromo Gadaa System using rule-based knowledge representation technique specifically for Guji Oromo are designed as stepping stone for the transformation and preservation of IK.

Keywords: Gadaa System, Indigenous Knowledge, Knowledge Management, Knowledge Representation.

1. Introduction

Knowledge Management (KM) is defined as how the organization efficiently employed and improved its knowledge-related assets and enhancement in terms of knowledge formatting, organizing, motivating, and controlling of experts, processes, and systems in the organization. KM principles and approaches are used to manage and utilize the knowledge assets of individual experts, indigenous peoples and organization.

All knowledge in the form of printed documents (patents and manuals) and Knowledge reserved in electronic repositories or database are included in Knowledge assets of experts, experiences, and knowledge of employees of the organization. This knowledge is held by means of teams who are positioned at storing and managing documented knowledge assets electronically and expertise (Hambisa, et. al., 2016).

To improve management, accessibility, and preservation of the knowledge assets of individual persons or organizations in the different formatted KM have different processes of which is involves knowledge acquisition, knowledge creation, Knowledge representation, knowledge refinement, knowledge storage, knowledge transfer, knowledge distribution (share), and employment.

The objectives of KM are to enhance and improve the knowledge assets for better knowledge practices (know-how), improve organizational and individual knowledge person, working manners, better decisions and improving the performance (Patrick, 2002). KM approach is the soul of the organization to utilize the knowledge and increasing the competitiveness in the related working areas. The KM also has a greater measurable value to increase the utilization of the IK the Community have and has been used in the different areas to solve the problem they have.

Indigenous Knowledge is a broad body of knowledge experience and practices sustained and advanced by people through generations, specifically in rural areas (Hambisa, et. al., 2016). IK refers to the knowledge and unique know-how to a given society or culture, which incorporates the cultural traditions, values, beliefs, and worldviews of local people (Giorgia, 2017)

IK has been mostly practiced by rural communities in developing countries as a tool for local-level decision-making in day-to-day activities of economy like in agriculture, healthcare, education, natural resource management (Hambisa, et. al., 2016)

The Oromo communities in Ethiopia, like the other peoples and nationalities of Ethiopia, have many tangible and intangible heritages which have been created over centuries in the interactions of the people with natural and social environments and which stand as the manifestations of the identity of the people. What makes the region even more special is that these cultural and natural resources are managed within an ancient traditional governance system, called the Gadaa System, which is rich in democratic principles and with its roots spread throughout the Oromia Region (UNESCO, 2016). In Ethiopia, there are different IKs that need KM approaches to leverage their usability by the society and Oromo Gadaa System is among those knowledge assets which have been practiced by the Oromo Community for long years and it is important to manage, utilize and preserve this IKs assets for the next generation (Abdurahman, 2019).

As explained by (Debela , 2017), the Gadaa System is a system with a long history by which the people of Oromo have been governing themselves in a democratic way and ensured several values and principles in the living ways of the people.

It is an indigenous mechanism of the Oromo People that regulated the political system, economic development, social activities, cultural obligations, moral responsibility, and peace and security of the society. It is a well-established and holistic approach that allows ownership of every activity, enhances shared responsibility, and promotes a sense of belongingness to lead the whole life of the Oromo People. It is based on people-centered democratic principles through separation of power, check and balance, and other mechanisms to promote good governance at its best.

The IK found in the Oromo Gadaa System organized and ordered society around political, economic, social, cultural, and religious institutions (Asafa, 2012). It was the constitution of the Oromo society through which the society administered, defended their territory, maintained and developed their economy. Even though the tradition was reduced to social aspect following the incorporation of the society into the Ethiopian state, the system influenced every aspect of Oromo society, from politics to religion until recently.

The Gadaa System has been an egalitarian socio, economic, political, religious and cultural system which had been practiced by the Oromo for a long time in Northeast Africa in general and in Ethiopia in particular. It had been guiding and regulating the life of the Oromo Community in relation to other peoples and their environment (Samuel , 2015). This IK of Oromo Gadaa System is mainly

experienced by rural communities of Oromo people as a basis for local-level decision-making in day-to-day activities of society like in social, political, economic, cultural and religious.

Indigenous knowledge is therefore energetic for the survival of the historical and cultural heritage of a particular group as its backbone of social, economic, scientific and technological identity" (Marcellus and Charles , 2019).

1.1. Motivation

Today, KM is taking as an applicable competitive approach for achievement of the knowledge goal in a knowledge-based organization and away many organizations have used to implement and apply KM for their different activities (Rony and Florinda , 2017) . As stated by (Hambisa, et. al., 2016) to manage IK more efficiently and in a computing way, some indigenous knowledge Systems (IKS) have underlined the KM approach, with its theories, principles, and practices. KM consists of a systematic and organizational process to enable users to capture, organize, maintain, apply, distribute, publish and recreate both explicit and tacit knowledge to promote organizational performance and value creation (Kruger, 2007).

Gadaa System is one of the Oromo Community's socio-political philosophies which include various IK for different activities of the users. IK in Oromo Gadaa System has been used by the community in the different socio-political activities, however this IK isn't fully utilized, shared and preserved because there is no computing solution that facilitates and enhances it. It has been observed that the IK in Oromo Gadaa System is not fully implemented and the Oromo community didn't completely share and used this knowledge. Also, the knowledge in the Oromo Gadaa System isn't preserved because of the limitation of KM study and support.

Especially young generation of the community do not have detailed knowledge about each IK found in the Oromo Gadaa System, but this IK is significantly important to lead the day to day activities of the community in the socio-political demands. In this study, the researcher is motivated to design an IKM for the Gadaa System that used to capture, represent and share this IK to enhance utilization, share and preservation of it. To facilitate the accessing, sharing and preservation of the IK in the Oromo Gadaa System every IK should be accordingly captured and represented according to the determined activities and sequence of the proposed model. Generally, the researcher is motivated to solve the observed problems of IK in Guji Oromo Gadaa System and increase the usage lave and preservation of this knowledge.

1.2. Statement of the Problem

Now a day IK Oromo Gadaa System is serving the Oromo community in socio-political activities and this knowledge has been playing great role in day to day activities of the Oromo society, however, there are different gaps in how the IK access, share and preserve tasks are carried out in the community (Rony and Florinda , 2017). This is due to the lack of computing technology that capture, represent, share and preserve the IK knowledge of the community. To use this IK, the community first knows and understand the basic principle of the system and apply it to the necessary socio-political activities, but there is no KM approach that facilitate the utilization and preservation of knowledge (Hambisa, et. al., 2016).

This IK cannot be fully accessible and utilized by the whole Oromo society in all area in which Oromo people live and want to use this IK (Gemeda and Fatih , 2019),as there is no technology that supports the sharing of this knowledge assets from generation to generation. The accessibility, practice and preservation of IK in the Oromo Gadaa system are at a reducing rate, and the community can't fully use this local knowledge for their various issues (Desalegn et,al., 2007). In the Gadaa System there are different IKs which have its own principle, rule and regulation and it has been transferring from generation to generation in the oral "Dhaggaa fi Dhageettii", which means "Seen and Heard" communication system which is not enough to address all the Oromo Community. Most of the Gadaa System knowledge found with the system experts (present Gadaa and elder leaders)and they have been teaching, sharing and leading the community specially the new generation by verbalized which limits the generation from knowing and using the knowledge in the system (UNESCO, 2016).

The management, preservation and sharing of IK that is currently followed in the different Oromo Community for socio-political activities are conducted in the traditional way that is difficult to use the full capacity and advantage of knowledge. The Oromo Community share (learn) this IK from the elders and system leaders in the traditional way (oral teaching and learning processes) which is not supported by KM approach, and the utilization of this IK is countdown time to time (Asafa, 2012), and (Hambisa, et. al., 2016).

The management of IK is extremely poor. Besides, it's not supported by KM approach, especially in cases of IK sharing and preservation (Tewodros and Workshet , 2014). Based on a deep review of literature, especially in the context of the Oromo Gadaa System, there is a crystal-clear lack of research studies focused on managing IK using knowledge management approaches. Also, exploration and

application of KM approach for designing IK Management model are still not fully exploited to support the Oromo Gadaa System for managing and enhance usability of the IK.

A systematic analysis of different previously done researches and observation, IK management in Oromo Gadaa System is still lagging, especially in IK capturing and sharing. The importance of the IK obliges for a need in managing the IK for effective leverage of the IK, and continued innovation and supported with computing. Here is the gap where the researcher is motivated to propose and introduce appropriate solution by designing a model for IK Management in Oromo as general and Guji Oromo Gadaa System in particular that facilitates the full management, preservation and usage of this IK. Because of the KM approach is not applied in IK of Gadaa System, different problem is occurred, like lack of Indigenous knowledge sharing, knowledge utilization, knowledge preserving and lack of Indigenous Knowledge management (IKM) approach, which are the most challenging for the users of this IK.

Therefore, this proposed IKM model can possibly be a new bridge to sharing and preserving indigenous knowledge in Gadaa System among Oromo Community in general and Guji Oromo in Particular in an easy way. In the study, efforts have been made to answer the following technical questions toward solving the aforementioned Problems.

- ✓ What is the current status of indigenous Knowledge in Guji Oromo Gadaa System?
- ✓ How to design a most suitable Indigenous Knowledge Management Model for Gadaa System?

1.3. Review of Related Works

Table 1 presents a summary of the selected related research works with critical review remarks so as to justify the research ability gapes in the domain.

Table 1: Summary of the Related Research Works with Critical Remarks

No	Author Name	Title of Research	Major Contributions	Critical Remarks in Reference to this Study

1	Hambisa Mitiku, Worku Jimma and Chala Diriba **(**2016**)**	KM Approach and a Framework for Sharing and Acquisition of Indigenous Knowledge of Traditional Healthcare Practices	Identified factors affecting utilization of IK and Design KM Framework in the traditional healthcare.	Relevant for this study especially how to use KM to manage IK, to identify factors and develop computing solution to the specified problems. However, the researcher didn't explain how to acquire and share IK scientifically.
2	Tewodros General & Workshet Lamenew (2014)	IK Management Framework for Coffee Production in Ethiopia	Design KM Framework for Sharing &Acquisition IK	Relevant for this study especially how to use KM to manage IK and how to develop computing solution to overcome.
3	Christopher k,PaulinaAf. (2016)	Knowledge Management in Indigenous Medicine	Identified ways of to preserve & disseminate information on indigenous medicine.	Relevance to study, since researcher used KM approach to manage IK, however the contribution of researcher is not clearly explained.
4	Abebe Shiferaw & Hans Hurni in 2013	Role of IK in Land Management for Carbon Sequestration and Ecological Services in Southern Ethiopia	The study contributed to reflects the significance and wealth of IK to manage ecosystem in the described research area	This study is relevant for the study since it a new paradigm that concerned about IK system to managing ecosystem problems and reflecting the importance of the IK, but the study didn't contribute any computing solution to acquire and she this local knowledge.
5	SaeedLodhi & Peter M. (2014)	Management of IK for Developing Countries	A major contribution is to develop an IK system framework to preserve and utilize the IK in the developing country	Relevance for the study, because the study introduces suitable computing solution to manage and use IK in the developing country, however, the contribution is not specified.
6	Prof. Dr. E.S. Mundhe (2016)	Analytical Study of KM	The study is to explore the KM factors affecting implementation & recommends computing solution to overcome it.	The relevance of this study is measurable since different analysis is conducted to identify and suggest the appropriate solution. But the researcher didn't put effort to develop a framework that overcome the problem.

From the above-related works, it is found that knowledge management approach and framework is widely used by different researchers to manage the given IK in the various areas; however, in every review research work, the contribution towards managing the IK is not sufficient. In the study, which has the objective of developing KM framework to create, capture, represent and share the given IK,

the researcher used high-level activities or components; however, it shows that the model is not clear and all the necessary components are not included. In this study, the domain knowledge is IK in Gadaa System that is definitely different from knowledge.

KM Approach, Framework for Sharing and Acquisition of IK of Traditional Healthcare Practices and IK Management Framework for Coffee Production in Ethiopia research study are deeply reviewed to understand the concept and find the gaps of the study. From this review, the researcher has understood that the two studies developed a framework to manage and share the IK in the specified knowledge domain; however, the developed framework has different gaps. The observed gap is components of the framework, KBS is not used, and the domain knowledge in each area is not extracted and represented in a computing way. Because of those gaps, the developed knowledge management framework is not sufficient to manage the IK in the Oromo Gadaa System, and by filling all the gaps, the researcher developed the KM model for this area.

In this study, the researcher addresses the observed gaps by inserting different activities of knowledge capturing, representing, and sharing in the proposed solution and arranges the activities in the correct sequence to design the proposed IKM model that enhances the utilization and preservation of IK in the Oromo Gadaa System. Therefore, this research study is worth doing.

2. Methodology

2.1. Research Design and Approach

This study, by nature is a type of exploratory in combination with constructive research along with a mixed approach (both Qualitative and Quantitative Research Methods). The study starts from the investigation of the Current Status of Indigenous Knowledge of Gadaa System in Guji Oromo Community, the barriers that affect this IK and identifying the gap within previously done research work in the domain special reference to IK in Gadaa System the case of Guji Oromo Community.

2.2. Sampling Method, Size and Data Collection Technique

This Study employed Purposive sampling method. To obtain the required knowledge, both secondary and primary sources of information were used. The primary source of information was gathered from 10 domain experts that include Jaarsa, Abbooti Gadaa, Jaarsa baatu, Jaarsa biyya, Hayyuu and other

elders that know in detail about the Gadaa System(As these Domain experts in the field of Gadaa System are Considered to be as Living Library for Oromo Community) by using interview and group discussion methods. The reason why the researcher selected the resource person or Domain experts purposefully was due to their rich experience and knowledge of the Gadaa and possibility to collect in-depth information related with Gadaa System from them. Those 10 Domain Experts were selected from West Guji Zone of Oromia Regional State. Similarly, secondary sources of knowledge are collected using document analysis, i.e., information is gathered from various documents that exist at different level.

2.3. Knowledge Representation Methods

Knowledge is obtained from domain experts (elders). The acquired knowledge then is represented using rule-based knowledge representation technique. Most knowledges in Gadaa System are in forms of fact. To be represent this knowledge in computing technology and preserving it to next generation, the fact should be translated in to Rule. Therefore, it is chosen because of the rule-based knowledge representation technique clearly demonstrates the domain knowledge that uses the fact and rules to deduct the rules available in the rule set. In a rule-based knowledge representation technique, the knowledge is represented as rules. There are set of rules that are defined theoretical as a tacit knowledge and that defined sets of rules is used in Gadaa System as governing rule. As a result, rule-based representation method is more appropriate to represent and demonstrate the domain knowledge in the Gadaa System (Tewodros and Workshet , 2014). Both fact and rule in Gadaa System are stored in Knowledge Base and can be retrieved whenever possible by end-users.

3. Result and Discussion

3.1. Designing a proposed IKM Model

Design IK Capturing Model: -Knowledge capturing is a conscious effort to identify, select, capture and collect relevant knowledge that supports the every activity of the organization and community (Martin Nakata et, al., 2014). The knowledge capture or collection process is explained by different

researchers in the various ways, and it shows that there are no common activities to capture knowledge rather than it depends on the domain knowledge to capture. In this study, in addition to general process of the knowledge capturing, the researcher has inserted list of activities that have a significant role in collection of IK from Gadaa System. According (Tewodros and Workshet , 2014), the collection of IK revolves around the following steps: grouping IK into categories, select target culture, collect IK, validate record and store on the computer and publish it. In the study, the researcher has identified six activities which are much related to capture; however, all these activities are not necessary for this area because of the knowledge domain, knowledge source and types of knowledge are somewhat different.

There are many IKs in the Gadaa System, which the Oromo Communities have been used in the political, social, economic and religious domains which serving the community as a social-political institution and is used as a mechanism of socialization, conflict resolution, judicial administration, religious expression, social harmony (Hambisa, et. al., 2016).

To identify all the existing knowledge, the researcher has collected different data from different sources, and depending on the collected data, the following IK in the Guji Oromo Gadaa System are currently functional. All political, social and economic affairs of Oromo and institutions like Moggaasa (Naturalization), Guddifachaa (Adoption), Araara (conflict resolution), Gumaa (compensation), Seera Fuudhaa fi Heeruma (Marriage law), Waaqeffannaa (Oromo religion), Dhibaayyuu, and the like were makeup of Guji Oromo Gadaa System. In the Guji Oromo Gadaa System, each listed IK has its own rule and regulation to the serve the Community.

Oromo Gadaa System is multifaceted, and it has different multi-dimensional knowledge; however, in this study, the researcher has identified the indigenous knowledge that is currently in use by the Community. As explained to capture the following identified indigenous and other from the different sources, the researcher has used all the activities of knowledge capturing model. To capture IK, the researcher has adopted the knowledge capturing model depending on the other knowledge capturing models. However, the listed activities are not enough to capture all the IK of Oromo Gadaa System because the system is complex and it needs detailed activities to extract all the necessary knowledge. After different knowledge capturing models were analyzed, the researcher has inserted some new IK capturing activities to capture all the significant knowledge in the Oromo Gadaa System, and all the

listed activities are also sequentially arranged in which they facilitate the knowledge capturing processes.

The knowledge capture is the process of retrieving explicit or tacit knowledge that resides within the Oromo Community, experts, Gadaa leaders, books and different published journals. The identified IK capture activities that applicable to capture the relevant knowledge are source of knowledge, knowledge engineering, knowledge and source identification, knowledge elicitation and knowledge conversion. By using these activities, the researcher has adopted the IK capturing models that are one component of the proposed IKM model. The identified activities, sequence, and the adapted knowledge capturing model are illustrated in figure 1 below. All the selected knowledge capturing activities are in sequential order in which the knowledge engineer follows to capture all the necessary IK that the Community has truly been using it.

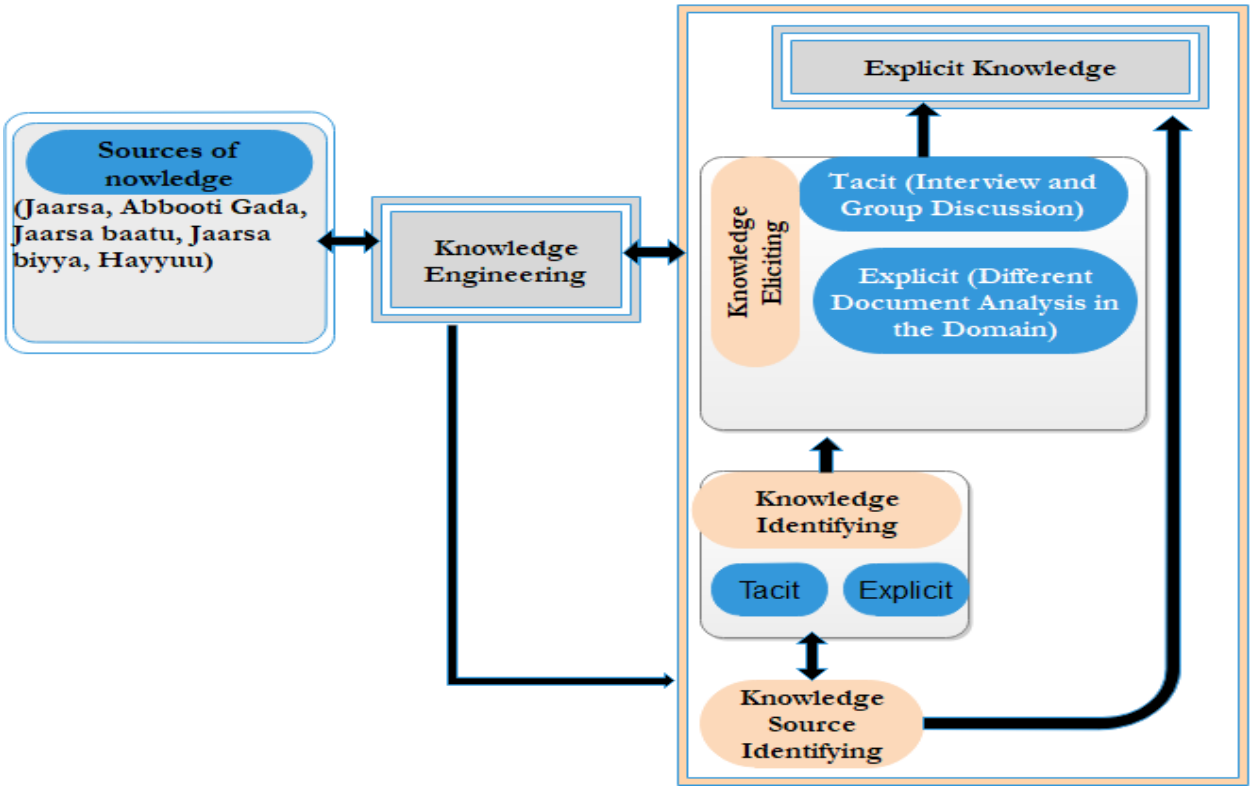

Figure 1: Knowledge Capturing Model

Design IK Representing Model: -The elicited Knowledge must be formalized in digital form for processing by a computing system. A knowledge base is a representation of all knowledge that is

stored by an agent. To design knowledge representation component of the model, the researcher has specified four basic activities which are significantly important to model knowledge representation.

This model is developed depending on the knowledge management model which has only one knowledge representation component and which does not include other activities. Knowledge representation component includes other subcomponents such as knowledge modeling, knowledge codification, and knowledge evaluation, knowledge filtering and storing the represented knowledge for further sharing. The developed IK representation mode is illustrated in figure 2 below.

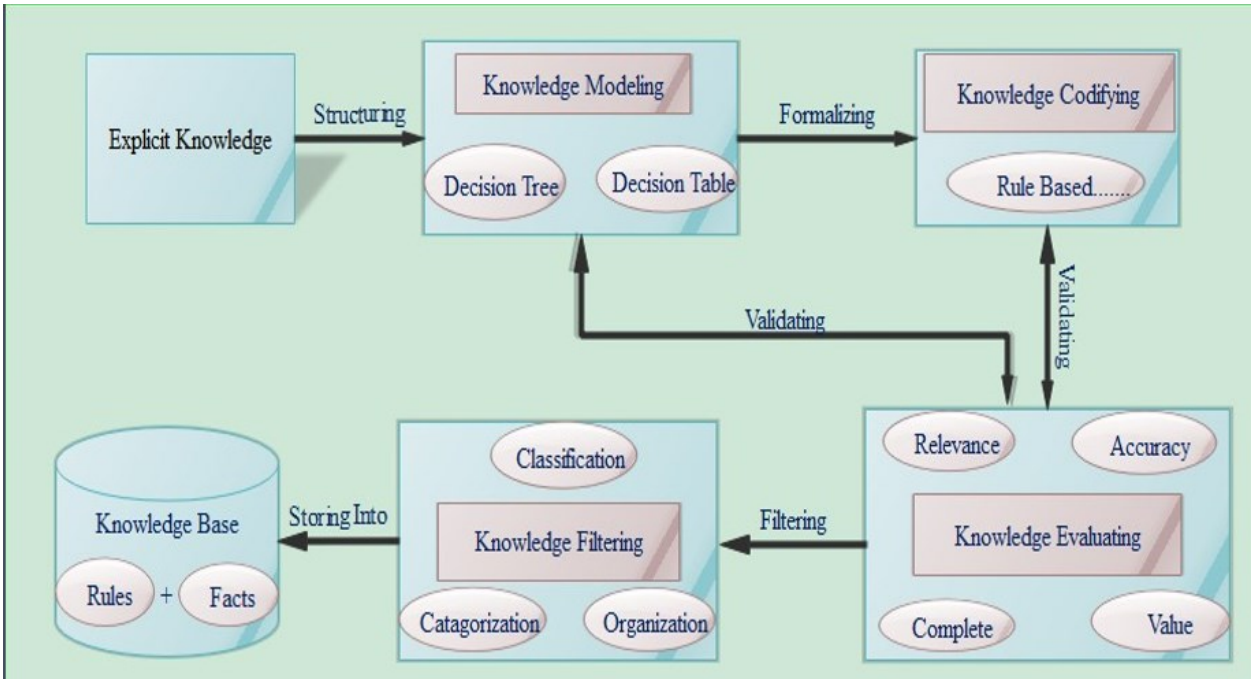

Figure 2: IK Representation Model

Design IK Sharing Model: -Knowledge sharing phase in KM model includes transferring and distribution of knowledge among the users. IK Sharing is considered as an essential process of KM, since the main goal and objectives of the KM research and practice is to foster the flow of knowledge among individuals (Rodrigo and Manoel , 2017).

Knowledge sharing is the process of exploiting existing knowledge. To enhance the reusability of knowledge, knowledge sharing process identifies existing knowledge for transferring and applying knowledge to solve specific tasks better, faster and cheaper than they would. In this study, Knowledge sharing phase is expanded to include explanation, knowledge access and knowledge editor activities

and user interface that creates the interaction between the knowledge base and the user to use the stored knowledge (figure 3).

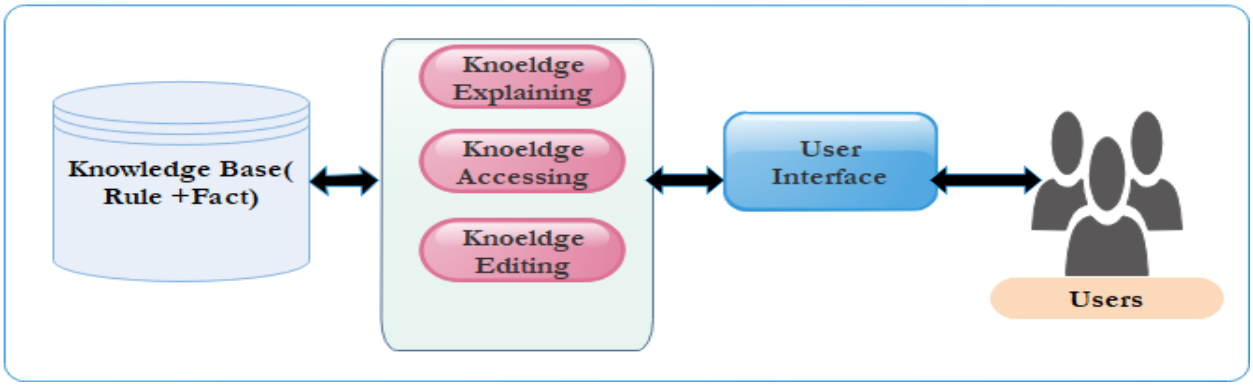

Figure 3: IK Sharing model

3.2. Design IKM Model

According to (Patrick, 2002) in the 1990s, there was a strong leaning to research on Knowledge Management model to better understand knowledge management phenomenon. After each component has been designed, the next step is integrating each together to design the proposed model. In this study, the researcher has designed three separate models, which are the main components to design the proposed model for enhancing IK utilization in the Guji Oromo Gadaa System. The integrated model adopted from the knowledge management models which only consider the basic components like knowledge capture, knowledge representation and knowledge sharing without the clear listed necessary activities (Marcellus and Charles , 2019). However, in this study, the proposed IK model has included all the significant activities within the sequence of each activity. To integrate and develop the simple, clear model, the integration of components generally considered in a high-level way, and it includes knowledge capturing, knowledge representation, knowledge sharing ; under each component of the model, there are different list of activities which are sequentially ordered (Figure 4).As explained earlier developing knowledge capturing, representing, sharing components and integrating all the three components together to design the proposed KM model are specific objective of the study. So that here all the model components were designed and integrated within the correct sequences. In this part, the researcher tried to put the main activates rather than including all the activities of each component to keep the clarity of the model.

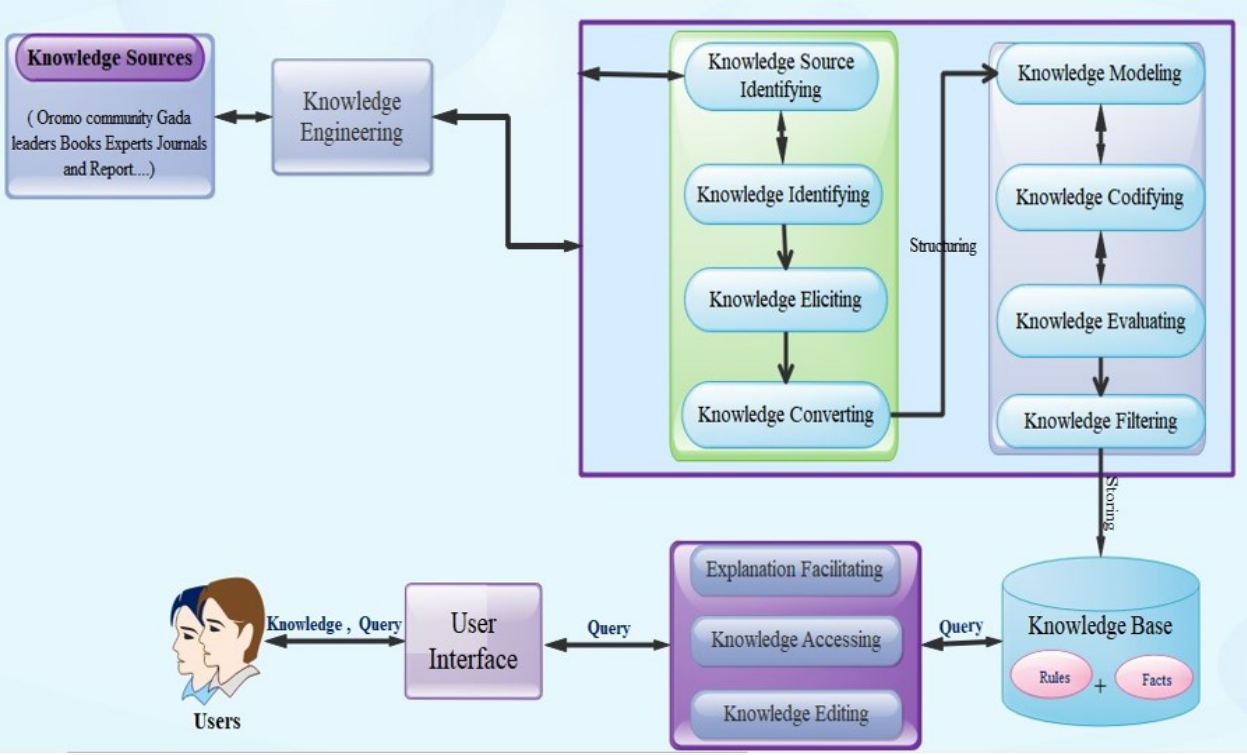

Figure 4: Proposed IKM Model for Gadaa System

3.3. Users Evaluation and Acceptance of the Proposed Model

Components Level Evaluation: -To evaluate the components of the proposed model at the component level, the following evaluation simplicity, usability, technology-independent and the important criteria were used. To assess the proposed IK capturing, IK representation and IK sharing components, 10 key respondents who have basic knowledge participated. The evolution data was collected from the selected respondents by using questionnaire. The component-level evaluation includes IK capturing model, IK representation model and IK sharing models. The prepared questionnaire considers the entire model and the respondent gave their response depending on the question, and they also reflect their comments about the model. The values for all attributes are fixed as: Excellent = 5, Very good = 4, Good = 3, Fair = 2 and Low = 1. This allows identified respondent to put their values for each criteria of evaluation. The following table 2 illustrates the outcomes achieved after evaluation by respondents.

Table 2: Component Level Evaluation Result

No	Criteria for evaluation	Low	Fair	Good	Very Good	Excellent
1.	Techno dependent of the components	0	1(10%)	2(20%)	6(60%)	1(10%)
2.	Importance of the components	0(0)	2(20%)	0	3(30%)	5(50%)
3.	Easiness of the components	2(20%)	0	1(10%)	5(50%)	2(20%)
4.	Usability of the components	0(0%)	1(10%)	0	7(70%)	2(20%)

As shown in the above Table 2, the technology-dependent of component-level evaluation for the proposed Work scored 60% which is Very Good, Importance of the component is 50 % which is Excellent, the ease of use or simplicity and Usability of the component is 50% and 70 % respectively which is very good. Generally, the collected evaluation data from the respondents showed that the developed IK capturing, representing and sharing components are simple, technology-independent, usable and important. To show a component level evaluation result in a clear way, the following figure 2 was developed. As expressed in the Table 2 each evaluation criterion has five different values under each five attributes which are visualized in the Figure 5 below.

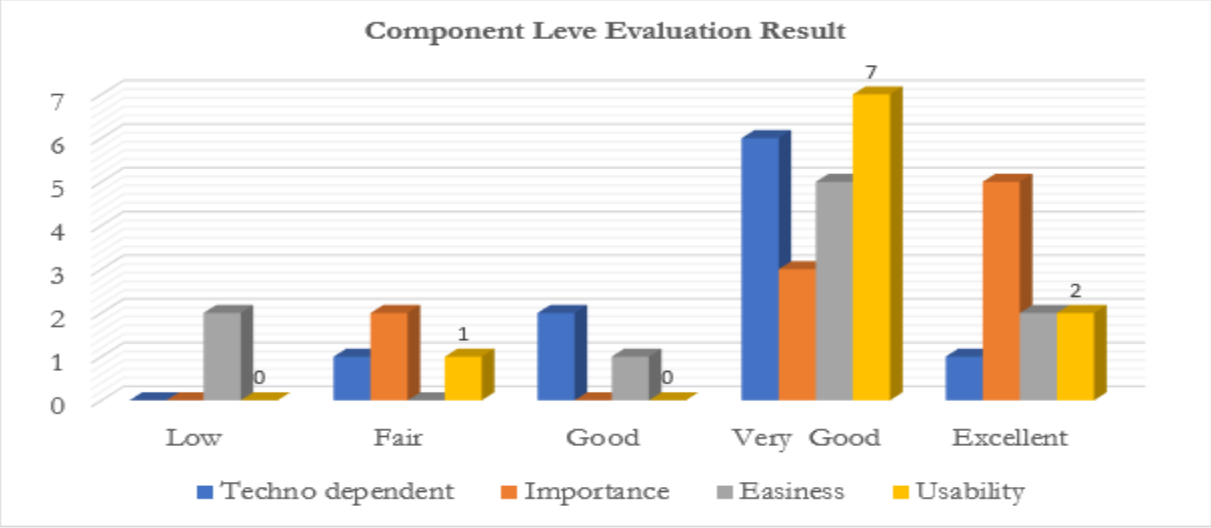

Figure 5: Components Level Evaluation of Proposed Model

Model Level Evaluation: -To evaluate the integrated proposed model simplicity, usability, technology-independent and the importance model evaluation criteria were used. To evaluate the

integrated model, 10 respondents were participated and the evolution data were collected from them, and the following evolution result was analyzed. The values for all attributes are fixed as: Excellent = 5, Very good = 4, Good = 3, Fair = 2 and Low = 1. This allows identified respondent to put their values for each criterion of evaluation. The following table 3 illustrates the outcomes achieved after evaluation by respondents.

Table 3: Model Level Evaluation Result

No	Criteria for evaluation	Low	Fair	Good	Very Good	Excellent
1.	Techno dependent of the components	0	1(10%)	1(10%)	8(80%)	0
2.	Importance of the components	0	0	2(20%)	2(20%)	6(60%)
3.	Easiness of the components	1(10%)	2(20%)	0	5(50%)	2(20%)
4.	Usability of the components	0	1(10%)	2(20%)	7(70%)	0

As shown in the above Table 3, technology independent of the Model of 80 % which is Very Good, the importance of the model is scored 60% which is excellent, the simplicity of the model is scored 50% which is very good, and the usability of the proposed Model scored 70 which are Very Good. Generally, the result of the collected evaluation data from the respondents showed that the developed knowledge capturing, representing and sharing an integrated model is satisfy the respondents. The entire respondent agreed on the proposed IKM model and the evolution result scored excellently. To show a model level evaluation result in a clear way the following Figure 6 was developed. As expressed in the Table 3 each evaluation criterion has five different values under each five attributes which are visualized in the figure 6 below.

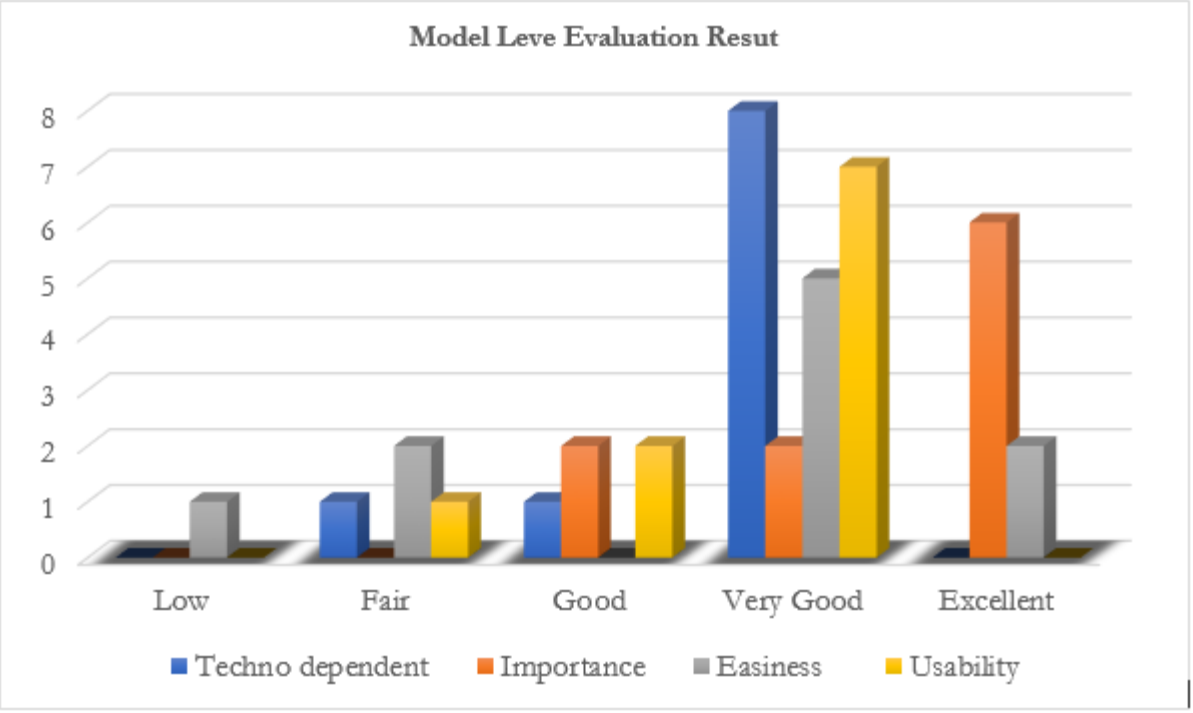

Figure 6: Model-level Evaluation of Proposed IKM

4. Conclusion and Recommendation

Conclusion: The IK found in the Oromo Gadaa System are organized and ordered the society around political, economic, social, cultural, and religious institutions. It is an indigenous mechanism of the Oromo Community that regulated political system, economic improvement, social activities, cultural responsibilities, ethical responsibility, and peace and security of the society and a nicely-mounted and holistic technique that lets infamous possession of each activity, enhances shared duty, and promotes a feel of belongingness to guide the whole existence of Oromo Peoples. The Oromo Community uses this knowledge in the different socio-political activities.

The community has been using this IK in the socio-political activities; however, there are no computing ways that support and facilitate the IK capture, represent and share to utilize, storage, share, and preserve it. The Oromo Community, especially the young generation do not understand and utilize this knowledge because there is no any technology that facilitates managing and transferring this knowledge to the next generation.

The IK assets in the Oromo Gadaa System is still underutilized resources in the socio-political problem-solving process of Oromo Community Ethiopia. Therefore, it is very essential to support this IK in the computing way (knowledge management approaches).

Due to the importance of this IK in solving various socio-political problems of the community, and there is no any computing mechanism to manage, facilitate, and simplify the utilization of IK in the Oromo Gadaa System.

Hence, in this study, an effort has been made to develop the IKM model that can enhance the utilization and preservation of the knowledge in the Oromo Gadaa System and the developed model has three basic components that are called knowledge capturing, knowledge representation and knowledge sharing components.

To managing and utilize the knowledge assets of the system, first, all the available IK in the Oromo Gadaa System should be captured by the knowledge capturing activities, the captured knowledge should be codified by using the knowledge representation activities and after formalized, it should be stored in the knowledge base, and finally the stored knowledge will be accessed by the community using the knowledge sharing activities.

The IKM model is the final contribution of the study, which has great roles to IK capture, represent and share to enhance the accessibility, sharing, and preservation of it that has been used by the Oromo Community in solving different socio-political problems. The proposed IKM model facilitates transferring of knowledge from generation to generation easily. It also solves the problem of teaching this knowledge in a computing way rather than in oral communication. In general, this study gives a tremendous and promising result in enhancing the utilization of the IK in the Oromo Gadaa System.

Finally, the researcher recommends that integrating inference engine component and developing the prototype by considering all different types of IK in the Gadaa System to enhance the utilization of IK can be other folds of new knowledge research.

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