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Indigenous Knowledge Management Systems in Technical and Vocational Training and Educational Colleges in Addis Ababa

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Abstract

The purpose of this study was to assess availability of indigenous knowledge management systems in the technical and vocational education and training (TVET) Colleges in Addis Ababa. The study employed a descriptive research design and a mixed methods approach. Data were collected from 323 Trainers of five selected TVET Colleges namely: General Wingate, Entoto, Misrak and Tegbare Id Poly Technic colleges and the Arada Industrial College. Interviews were also conducted with officials of the Addis Ababa TVET Agency and the Federal Ministry of Culture and Sports. Data analysis was done using frequency, percentage, mean, standard deviations and thematic analysis. The findings revealed that, there is a national level policy direction to incorporate IKs into the TVET system. However, the application of IKM in the studied TVET Colleges was found at a moderate level (M=2.8; SD=0.9). This is, among others, due to society's inclination towards modern thoughts of TVET, inadequate government attention, complexity of IK collection and development, diversity of IKs, dearth of professionals in the area, absence of effective collaboration among stakeholders, and inadequate coverage of the intellectual property rights system, language barriers and limited media engagement. Therefore, unless an effective indigenous knowledge management implementation strategy is designed and put in to practice, the TVET system could gradually contribute to extinction of indigenous knowledge.

Key words: Indigenous knowledge, TVET colleges, Knowledge acquisition, knowledge, storage, knowledge sharing, Knowledge application, knowledge creation

1. Introduction

According to Lodhi and Mikulecky (2010), indigenous knowledge (IK) refers to "a complete body of knowledge, know-how and practices maintained and developed by peoples through generations." It is also stated as the cumulative body of strategies, practices, techniques, tools, intellectual resources, explanations, beliefs, and values accumulated over time in a particular locality (Emeagwal, 2014). The importance of IK is reflected in all aspects of life of

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communities such as hunting, fishing, gathering, agriculture and animal husbandry; textiles, food production; water; health; and adaptation to environmental or social change (Lodhi & Mikulecky, 2010, Emeagwal, 2014). Besides, IK is of relevance to self-esteem, sustained indigenous inventiveness, endogenous technological growth, and employment generation.

Thus, a well-designed management of indigenous knowledge is vital to ensure holistic transmission of such knowledge and wisdom to forthcoming generations. Higher education institutions play a great role in documenting and disseminating IK (Buthelezi, Ocholla, & Dlamini, 2024).

Ethiopia is a melting pot of diverse cultures, indigenous knowledge, wisdom and cultural creations (Silverman, 1999). Basketry, weaving, embroidery, pottery, stone and horn carvings, metal-smiths, jewelry making, woodwork and traditional medical practices have long been exercised in Ethiopia since time immemorial. The establishment of technical and vocational education and training institutions is an important strategy to promote entrepreneurship and create employment for the young generations. Practically, the TVET institutions are providing education and training of different sorts to create employable and creative citizens (Keevy, Lloyd, Ephrem & Amarech, 2014).

These days, the Ministry of Education is emphasizing on incorporation of indigenous knowledge into the modern education and training system. This study assumes that the TVET Colleges in Addis Ababa are taking the lead to pilot test feasibility of this intellectual approach and help regional and city administration level TVET colleges implement it with required customizations.

Problem statement

Indigenous knowledge management (IKM) is seen as an alternative and sound way of ensuring sustainable development in many aspects (Mellegård & Boonstra, 2020; Funteh, 2015). Such management requires sequential activities such as recognition and identification, validation, recording and documentation, storage in retrievable repositories, transfer and dissemination (Lodhi & Mikulecky, 2010). The foundation for such consideration of IK is the sound belief that unlike the modern knowledge system that focuses on a reductionist approach, IK follows a holistic approach that contributes to environmental protection and sustainable development (Emeagwal, 2014; Agrawal, 1995).

Different studies show that Ethiopia is rich in IK in medicine, agriculture, environmental protection hand crafts, leadership and administration (Abebe & Amogne, 2024; Afework &, Mellese, 2023; Yeneayehu, Girma, Abebe and Taher, 2017; Yeneayehu, 2018). The Ethiopian technical and vocational education and training (TVET) is given special emphasis by the government as a means of promoting entrepreneurship, self-esteem, sustainable development and employment creation (Keevy et al., 2014).

However, according to different writers, colonial efforts and Western thoughts of education have dominated the Ethiopian education and training system for many years (Yishak, 2013; Janitius et al., 2008). As a result, the education and training institutions are focusing on matters that are totally abstract and far from every day interaction of the society at large. On top of that,

this intellectual approach has forced the urban society to undermine the value of its own IK and consider Western-centric training and education thoughts as the best of its kind (Simret & Berhanu, 2024; Ezeanya-Esiobu, 2019; Slater, 2019; Emeagwal, 2014; Janitius et al., 2008).

These days, the Ministry of education is calling for incorporation of IK into the formal education and training system (Yishak, 2013). However, the researches so far done on the subject emphasized the importance of IK for sustainable development, but missed to address the issue of availability of IKM systems in the TVET Colleges. Therefore, the purpose of this study was to assess availability of IKM systems in selected TVET Colleges in Addis Ababa. To this end, the following research questions were addressed: 1) is there an IKM system in the selected TVET Colleges? And 2) what are the challenges of TVET Colleges in the course of incorporating IK into their system?

2. Review of Related Literature

2.1 Indigenous Knowledge

Indigenous knowledge (IK) is conceptualized as a primitive, archaic and natural way of knowing something; while in reality it is the mechanism that enables members of a certain group rationalize their way of living in a specified locality (Semali, & Kincheloe, 1999). To its owners, IK signify the vigorous techniques through which local people realize themselves vis-à-vis their ecosystem and develop mechanisms to manage it sustainably (Chiwanza, Musingafi, & Mupa, 2013).

The IK systems and scientific approaches have different views about the world. IK systems consider the world as filled with interconnected living and non-living things and believe that every action taken on such things has a reciprocal effect on the other-hence follows the holistic/systems approach, whereas scientific knowledge applies a reductionist/separatist approach (Agrawal, 1995). Parsons, Nalau and Fisher (2017), emphasized that incorporation of indigenous knowledge into modern development endeavors benefits policy makers, science and society.

The emphasis on IK emerged as a result of failed development projects in different localities. The lesson learned from such experiences was that participation of the local people in development processes is vital to identify the main concerns of the community and to address them using locally fit mechanisms. Hence, management of IK is vital to ensure holistic transmission of such knowledge and wisdom to the forthcoming generations. In fact, indigenous knowledge evolves through time, by coping to existing dynamics. Such dynamics are incorporated via cultural entrepreneurship of the artisan communities (Lodhi & Mikulecky, 2010).

2.2 The Notion of Knowledge Management

Knowledge is a justified personal belief about something. Knowledge could be categorized as explicit and tacit. Explicit knowledge is one that is expressed in words, sentences, documents,

organized data, and computer programs and in other tangible forms. On the other hand, tacit knowledge is embedded within the brains of individuals. This tacit knowledge gets explicated when individuals try to solve critical problems and is transformed into an explicit knowledge through a process of trial and error (King, 2009; Cheng & Lee 2016).

Knowledge management (KM) is the course of planning, organizing, coordinating, motivating, and controlling of people, processes and systems in an organization to ensure that the organization's knowledge-related assets are improved and applied effectively (Kaehler, & Grundei, 2019). In fact, KM did not emerge incoherence with modern organizations. Rather, since time immemorial, human beings began to manage knowledge in different areas by writing and documenting the best practices of merchants, artisans, physicians and government administrators. However, it was since the early 1990s that managers of organizations began to consider knowledge as a strategic resource and emphasize on its management in their organizations (Caroline, Mugun, & Loice, 2015). Yu, Abbas, Alvarez-Otero, and Cheriand, (2022), operationalized KM as a process of acquiring, storing, sharing, applying and creating knowledge.

2.2.1 Knowledge Acquisition

Knowledge acquisition is a practice of elucidating, gathering, scrutinizing, demonstrating and authenticating knowledge so that it could be used in the daily routines of organizations or communities. According to John Locke, human beings are born with a blank state of mind-Tabulla Rasa (Duschinsky, 2012). It is after birth that they gain knowledge through practices, experiences, experimentation and rationalization. Hence, knowledge acquisition is equivalent to learning both formally and informally (Kaba, & Ramaiah, 2020). That knowledge could be considered as indigenous so far as it serves a specific community's values and beliefs.

2.2.2 Knowledge Storage

The authenticated local knowledge of a certain community needs to be pilled meticulously so as to make it easily reachable and functional for its owners and other interested parties (Cordeiro, Oliveira, and Sánchez-Segura, 2022). This is conceptualized as the process of organizing, sorting, archiving and preserving knowledge to make it accessible to those who need to use it for effective decision making and problem solving.

2.2.3 Knowledge Sharing

Knowledge either acquired or created by the community should be transferred to its members or to outsiders using different ways: oral traditions, storytelling, music, dance, traditional ceremonies and hands on experiences on crafts making, agriculture and traditional healing practices (Akhavan, Ghojavand, & Abdal, 2012). For instance, weavers share their indigenous knowledge through their practical deeds of weaving and mentoring.

2.2.4 Knowledge Application

All of the prior steps of knowledge management are aimed at making indigenous knowledge workable in practical realities. This step measures to what extent people could use indigenous knowledge in their daily lives; so as to solve problems, make needed changes and transform behaviors (Cheng, & Lee, 2016).

2.2.5 Knowledge Creation

Once knowledge is acquired by communities, the dynamics in the internal and external environments demand it to be modified or totally replaced. Hence, acquisition of knowledge is a precondition for knowledge creation (Kaba, & Ramaiah, 2020). Indigenous knowledge is not static by its nature, rather, it lends itself to evolution, modification and replacement by other indigenously created sorts of knowledge that could best fit the current scenario of the community in question.

2.3 Indigenous Knowledge and its Management in Africa

Emeagwal, (2014), defined the African IK as a knowledge that exists in the continent before European colonization. These days, an African philosophy of knowledge and wisdom, Sankofaism, is being propagated as a mechanism of understanding the diverse knowledge and ways of knowing. The tenet of Sankofaism is that "*there is wisdom in learning from the past both to understand the present and shape the future*." Figuratively, "Sankofa" is expressed as a mythic bird that flies forward while looking backward with an egg (symbolizing the future) in its mouth.

Figure 2.1: The mythic Sankofa bird
Source:https://www.google.com/search?q=image+of+sankofa+bird&sca_esv=0c39ba860b42f065&sca_upv

Further, Sankofaism believes that modern education should not detach generations from the knowledge, wisdom and core values accumulated in communities starting from time immemorial (Ezeanya-Esiobu, 2019). In pre-colonial Africa, Africans had the tradition of educating themselves in both formal and informal ways. The vital aspect of pre-colonial education in Africa was its applicability to social life. Sankofaism calls Africans to go back and identify the IK and wisdom they learned through generations. For more applicability and relevance of that knowledge to practical realities and the international mobility of professionals of different sorts, the African knowledge system needs to hybridize its IK with other scientific knowledge systems workable in its special contexts (Funteh, 2015; Yishak, 2013).

In South Africa, especially in the University of Zululand, there is a practice of documenting and disseminating IK by Universities. There, IK is documented in theses, dissertations, journals, online institutional repositories and compact discs. The IK stored in these varieties of ways is accessed or shared through workshops, seminars and conferences. Likewise, the documented IK is accessed by researchers and other interested parties on the library shelves, institutional digital repositories, IK data bases and IK journals (Buthelezi, Ocholla, & Dlamini, 2024).

2.4 Indigenous Knowledge Systems in Ethiopia

Indigenous knowledge has been applied all over Ethiopia ~~starting~~ from time immemorial (Silverman, 1990). Nonetheless, different scholars stated that the Ethiopian education and training system is generally built on Western parameters. Consequentially, it is producing literate and trained people who are alien to the values, philosophies and reality of the locality they operate in (Yishak, 2013). As a result, the new Ethiopian TVET policy has given emphasis to assimilation of indigenous knowledge into the TVET system.

Likewise, Ethiopia developed its national education qualifications framework (NEQF) in 2008 with the help of foreign and national educational experts. The framework covers general education, TVET and higher education (Keevy et al., 2014). Even though there are positive achievements from this framework, challenges like lack of relevance, quality, access, equality, management and leadership of the education and training efforts remain pressing concerns of the nation. In addition to quality, equity, access, and relevance of educational and training frameworks should ensure international and regional mobility of their graduates. To that end, the NEQF was designed to meet the following objectives:

a. To design education and training standards that fit to the needs of the country
b. To confirm prevalence of fairness through augmented access to education and training in various scenarios and facilitate continuous learning.
c. To set a nationwide parameter of all levels of education and training in Ethiopia
d. To enhance the design of excellent education and training programs and delivery systems that could be sound both domestically and abroad.
e. To ensure correspondence of the requirements by enhancing openness and designing progression lines among them;

f. To synchronize the different education and training sub-sectors by setting uniform parameters and arrangements of requirements.

Among others, the framework's objective "*to make Ethiopian qualifications relevant to the socio-economic needs of the country*" calls for incorporation of indigenous knowledge and skills in to the training and education curriculums and occupational standards of TVET colleges. This requires wise management of IK, so that they could find readily available IK that could be incorporated into the training curriculums of different fields of education and trainings (Guerzoni, 2020).

2.5 The Challenges of Indigenous Knowledge Management

In this fast paced 21st century, the African IKM is subjected to different barriers and challenges (Lwoga, Ngulube & Stilwell, 2011). To begin with, there is poor recognition of IK, especially, by the young generation. This is exacerbated by absence of incorporation of IK into the curriculum of primary and secondary schools. Lack of trust, cooperation, and learning from one another among community members is also a great challenge to IKM. Besides, the folklore and other means of indigenous learning are not well exploited to enable indigenous knowledge sharing. Another barrier for IK sharing is the absence of well-established intellectual property rights protection system (Chiwanza, Musingafi, & Mupa, 2013).

There are also socio-economic factors that prohibit IK sharing among members of a community. That is, the old people do not feel free to learn from the young generation and vice versa. Likewise, the economically well-to-do members of the community have a better chance of applying their IKs in combination with modern knowledge, whereas the poor ones remain stick to their IKs only. Climatic and ecological changes also facilitated extinction of some elements of IK such as plants used for medicinal purposes. Further, globalization, modernization and the formal education systems are decreasing traditional practices that could serve as means and occasions for knowledge sharing (Agrawal, 1995).

Moreover, there are multitudes of challenges in the process of identifying and documenting IKs. Since IKs inhabit in the minds of individuals, IK holders require financial benefit to tell what they know to the documenting bodies. The other challenge is related to language barriers. IKs are unique and specifically held by communities located in a certain area and outside researchers might not be able to understand the language of the IK holding community. Likewise, the collectors of IK contents might not have proper training on how to do it and absence of adequate and up to date tools of documenting IKs (Buthelezi, Ocholla, & Dlamini, 2024).

3 Methods and Tools

This study adopted a descriptive research design with a convergent parallel mixed methods approach. The population for this study was composed of trainers of TVET colleges. According to the current administrative structure of the Addis Ababa City Administration, there are 11 sub-cities. These sub-cities have their own TVET colleges. This study covered public TVET colleges

of the Addis Ketema, Arada, Gullele, Lideta and Yeka sub-cities. Besides, the fields of vocational training included in this study were metal and woodwork, construction, hotel and tourism, and textile, garment and leather. The number of trainers in each selected TVET college was found to be 68 on average. Hence, all these Trainers were included in this study by using the census method. This makes the total size of respondents of the five Colleges to be 68*5=340.

After an in-depth literature review, a validated Knowledge management questionnaire developed by Yua et al., (2022), with five dimensions: knowledge acquisition, knowledge storage, knowledge sharing, knowledge application and knowledge creation, was used with some modifications and adaptations to the nature of IK. Before actual distribution of the questionnaires to the targeted respondents, pilot test was conducted by administering the questionnaire to 10 TVET trainers of colleges that are not included in the study. Then, reliability of the questionnaire was checked using the Cronbach alpha reliability test. The results revealed that all dimensions of IKM met the minimum requirement of 0.07 of scale reliability. Furthermore, the instrument's validity was tested via judicious literature review and expert analysis.

On the other hand, purposive sampling technique was used to select interviewees. Thus, leaders in charge from the Federal Ministry of Culture and Sports (MoCS), and the Addis Ababa TVET Agency (AATVETA) were interviewed.

The tools of descriptive analysis namely: frequency, percentage, mean and standard deviation were used to analyze the quantitative data and the results are presented using Tables and Figures. Consequently, prior to the act of interpreting the qualitative data collected via interviews, the researcher reduced, classified and categorized the data as per thematic areas drawn from the research questions. Then, the qualitative data was analyzed by using narrative analysis and description. Then, findings are presented textually, and interpreted using the side-by-side comparison method.

4 Results and Discussions

Since, descriptive statistics were used to analyze the data, a modified version of the mean standardization rule set by Andrew (2007, p.5) and presented in Table 4.1 is used to interpret the study's findings as high, moderate or low.

Table 4.1: Mean standardization rule for the study

No.	Mean range	Meaning
1	$1 \leq Xi \leq 2.6$	Low level
2	level $2.6 < Xi \leq 3.5$	Moderate level
3	$3.5 < Xi \leq .5.0$	High level

Source: Adapted from Andrew, (2017, p.5).

4.1 Availability of IKMs in the Selected TVET Colleges

The knowledge management system is composed of knowledge acquisition, knowledge storage, knowledge sharing, knowledge application, and knowledge creation. TVET Trainers have a great role in incorporating IK into the TVET training system and embed IK in the theoretical and practical aspects of their trainings. On this regard, TVET Trainers of the selected colleges were asked to reflect their opinions on the practice of IKM in their respective colleges. The Trainers' perception towards application of these elements of the system is presented as follows.

4.1.1 Knowledge Acquisition

Knowledge acquisition (KAC) is the process of gathering and structuring usable information either from knowledgeable individuals, from events or personal experiences. As vital assets and components of the Colleges, TVET Trainers were asked to reflect on how their TVET colleges are acquiring IK.

Table 4.2: Knowledge acquisition

No.	Items on Knowledge acquisition	N	Mean	SD
1	My organization regularly acquires information about indigenous knowledge-based products and processes/services from external stakeholders (e.g., customers and suppliers)	323	2.8	1.0
2	My organization regularly acquires information about indigenous knowledge-based products and processes/services from internal stakeholders (e.g., management and staff)	323	2.9	1.0
3	My organization regularly arranges training sessions for employees to develop their knowledge about indigenous knowledge-based products and processes/services	323	2.7	1.0
4	We have a well-developed information system through which employees can acquire the required information about indigenous knowledge	323	2.8	1.0
5	My organization encourages and supports the employees to acquire knowledge about indigenous knowledge-based products and processes/services	323	2.6	0.8
	Overall mean		**2.8**	**1.0**

Source: Own field survey, (2025).

Five items were designed to measure knowledge acquisition which deals with: the Colleges' practice of regularly acquiring knowledge from external stakeholders (M=2.8; SD=1.0), the Colleges' practice of regularly acquiring knowledge from internal stakeholders (M=2.9; SD=1.0), the Colleges' practice of organizing IK trainings for employees (M=2.7; SD=1.0), the Colleges' have developed information system to acquire IK (M=2.8; SD=1.0) and the Colleges encourage and support employees to acquire IK based products and services (M=2.6; SD=0.8). These results show that there is a moderate level of IK acquisition in the TVET Colleges.

The interviewed official of the TVET Agency stated that, indigenous knowledge acquisition is done by TVET Trainers. These Trainers are supposed to contact enterprises engaged in producing indigenous knowledge based products and services such as weaving, woodwork, sculpture making and pottery. In addition to gathering the knowledge, trainers analyze value chain of the traditional production process and identify the problems related with the indigenous technology. Based on their findings, Trainers engage in improving or modernizing that technology.

4.1.2 Knowledge Storage

As a concept, knowledge storage (KST) deals with the TVET colleges' acts of organizing and preserving the acquired knowledge for future use either by themselves or by other interested parties. The items on knowledge storage deal with whether the TVET Colleges have well-established information system that can help store IK and make it easily retrievable for use. Trainers of the TVET colleges reflected that their Colleges have sufficient information about IK based products and services (M=2.7; SD=1.0), they have an excellent information system to manage IK (M=2.7; SD=1.0), it is easy to retrieve IK about a specific problem from the Colleges' information system (M=2.8; SD=1.1), the Colleges' level of awareness on the impact of modern thoughts of TVET on IK (M=2.8; SD=0.7) and the Colleges' practice of retaining IK from leaving staff members (M=2.7; SD=0.9). Hence, it could be concluded that the TVET Colleges' practice of storing knowledge is at a moderate level.

Table 4.3: Knowledge storage

No.	Items on Knowledge storage	N	Mean	SD
1	My organization has sufficient information about indigenous knowledge-based products and processes/services	323	2.7	1.0
2	We have an excellent information system to manage information regarding indigenous knowledge-based products and processes/ services	323	2.7	1.0
3	It is easy to retrieve indigenous knowledge information about a specific problem from our information system	323	2.8	1.1
4	We have comprehensive information about the impact of implementations of modern thoughts of TVET on indigenous knowledge	323	2.8	0.7
5	Even if any person leaves, my organization's information system retains their best knowledge and experience on indigenous knowledge	323	2.7	0.9
	Overall mean		**2.7**	**0.9**

Source: Own field survey, (2025).

On this regard, the interviewee from the Addis Ababa TVET Agency said that, gathering IK from cultural enterprises and sending it to the TVET agency is one of the duties of TVET

Colleges. Then, such IK is stored within the Agency and made easily retrievable by users for different purposes.

4.1.3 Knowledge Sharing

In order to sustainably benefit from the acquired and stored knowledge, TVET Colleges need to share it with their staff members, other related organizations and individuals. TVET Trainers have to share their experiences, data, information and insights so as to enhance collaborative learning and improve their Colleges' effectiveness. The respondents were asked to reflect their views on six items of knowledge sharing. These were: presence of regular interaction among staff members to share knowledge and discuss on different developments on IK (M=2.9; SD=0.7), existence of a well-organized system of knowledge sharing in the Colleges (M=2.8, SD=0.9), availability of the latest equipment of knowledge sharing (M=2.7; SD=0.9), the Colleges' practice of recognizing and rewarding employees sharing innovative ideas and information to improve the process of preservation of IK (M=2.7; SD=0.8), the Colleges' practice of regularly sharing the latest IK and market trends with their employees through e-mail, training sessions, and workshops (M=2.7; SD=0.9), and Trainers' experience of regularly sharing IK with their customers, suppliers, and other stakeholders (M=2.7; SD=0.7). Thus, it is clear that the status of knowledge sharing in the TVET Colleges is at a moderate level.

Table 4.4: Knowledge sharing

No.	Items on Knowledge sharing	N	Mean	SD
1	People within our organization regularly interact with each other to share knowledge and discuss different developments on indigenous knowledge	323	2.9	0.7
2	We have a well-organized system through which we can share indigenous knowledge and learn from each other	323	2.8	0.9
3	We are provided with the latest equipment and technology to share the indigenous knowledge	323	2.7	0.9
4	My organization recognizes and rewards the employees sharing innovative ideas and information to improve the process for the preservation of the indigenous knowledge	323	2.7	0.8
5	My organization regularly share the latest indigenous knowledge and market trends with its employees through e-mail, training sessions, and workshops	323	2.7	0.9
6	We regularly share information and knowledge related to the indigenous knowledge with our customers, suppliers, and other stakeholders	323	2.7	0.7
	Overall mean		**2.8**	**0.8**

Source: Own field survey, (2025).

Regarding the practice of knowledge sharing, the interviewed official of the Agency stated that the complexity of getting intellectual property right certificates for IK based innovations is

discouraging knowledge sharing among Trainers and to Trainees as well. He explained that, since the possessors of IK have no legal protection, they do not feel free to share the IK they know. Rather, they prefer to keep it confidentially.

4.1.4 Knowledge Application

Knowledge application focuses on how well TVET Colleges are using their IK to make decisions, solve problems and perform different tasks. Trainers were asked to respond to six items measuring knowledge application in their colleges. These items were: the Colleges have guidelines and regulations that require them to consider IK in their operations (M=2.8; SD=0.8), the Colleges comply fully with IK regulations in their operations (M=2.7; SD=1.0), the Colleges ensure the application of the acquired IK to produce IK based products and services (M=2.7; SD=0.8), Trainers use the knowledge obtained from their experiences and mistakes to improve their performance in incorporating IK into their operations (M=3.2; SD=1.7), Trainers use the acquired knowledge to develop IK based business strategies (M=2.9; SD=0.9) and Trainers have strong commitments to implementing IK based strategies (M=3.0; SD=1.1). Hence, there is a moderate level of IK application in the TVET colleges.

Table 4.5: Knowledge application

No.	Items on Knowledge application	N	Mean	SD
1	There are guidelines and regulations that require my organization consider indigenous knowledge in its operations	323	2.8	0.8
2	My organization complies fully with indigenous knowledge regulations in its operations	323	2.7	1.0
3	My organization ensures the application of acquired knowledge to produce indigenous knowledge based products and services	323	2.7	0.8
4	We use the knowledge obtained from our experiences and mistakes to improve our performance in incorporating indigenous knowledge into our operations	323	3.2	1.7
5	We use the acquired knowledge to develop our indigenous knowledge based business strategies	323	2.9	0.9
6	We have strong commitments to implementing indigenous knowledge based strategies	323	3.0	1.1
	Overall mean		**2.9**	**1.0**

Source: Own field survey, (2025).

4.1.5 Knowledge Creation

Knowledge creation is the process of generating new ideas and insights by scrutinizing the existing knowledge or by conducting researches and experiments. Individual and organizational learning demands that knowledge should always be updated by combining the existing knowledge and experience obtained from different sources. In this regard, Trainers were asked to reflect their

perceptions on the Colleges' experience of creating IK based on their explicit and tacit knowledge.

Table 4.6: Knowledge creation

No.	Items on Knowledge creation	N	Mean	SD
1	My organization uses existing information to create indigenous knowledge based products and services	323	2.8	0.9
2	The management encourages debates and discussions on indigenous knowledge	323	2.9	0.7
3	Employees proposing indigenous knowledge based solutions are highly appreciated and rewarded by the management	323	2.7	1.0
4	We use to collaborate with other organizations to create indigenous knowledge based products or processes/services	323	2.8	0.8
5	We regularly evaluate new ideas for further refinement of indigenous knowledge	323	2.8	0.9
	Overall mean		**2.8**	**0.9**

Source: Own field survey, (2025).

Accordingly, the Colleges' use of existing information to create IK based products and services (M=2.8; SD=0.9), the management encourages debates and discussions on IK (M=2.9; SD=0.7), Employees proposing IK based solutions are highly appreciated and rewarded by the management (M=2.7; SD=1.0), the Colleges' use to collaborate with other organizations to create IK based products or processes/services (M=2.8; SD=0.8), and the Colleges regularly evaluate new ideas for further refinement of IK (M=2.8; SD=0.9). This finding shows that there is a moderate level of IK creation in the TVET Colleges.

Interviewees explained that knowledge creation is mostly observed in modifying the traditional technology and making it more efficient and effective. For instance, TVET Trainers have created a machine that could burn pottery products at the end of the process. Traditionally, the end products of pottery making are burned by using dry dung fuels. Burning the dry dung emits smoke that could affect the respiratory health of the workers. However, the new invention uses electric power and burns the products so as to make them hard.

4.2 Challenges of TVET Colleges to Incorporate IKs into their System

Even though national directions are set for TVET Colleges to incorporate IK into their training systems, they are facing obstacles in their course of doing so.

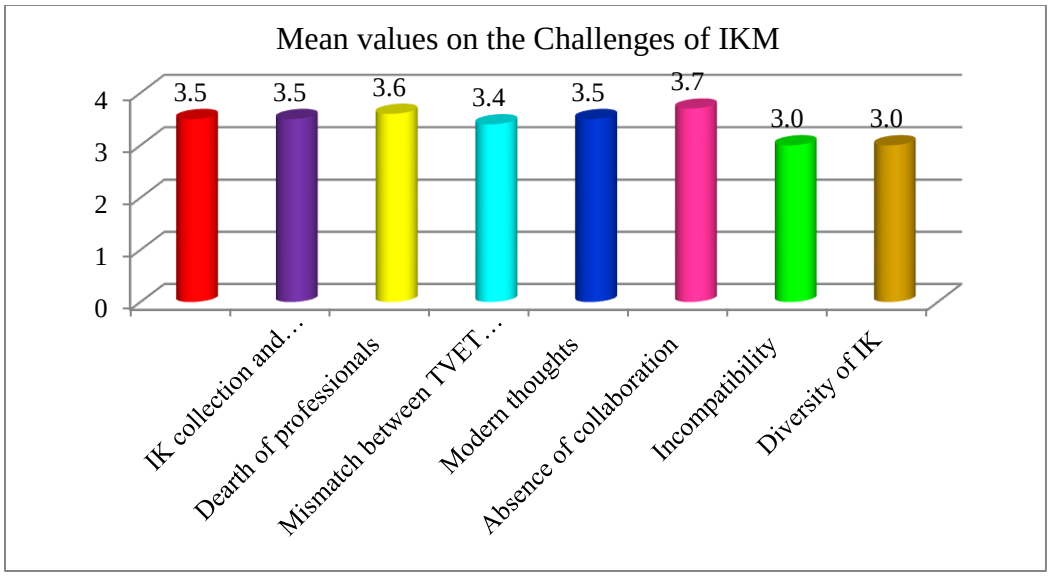

Figure 4.2: Mean values of challenges of incorporating IK into the TVET system
Source: Own field survey, (2025).

As presented in Figure 4.2, trainers reflected that lack of adequate focus of the government (M=3.5; SD=1.0), absence of IK collection and development strategies (M=3.5; SD=1.0), lack of adequate number of professionals in the area (M=3.6, SD=1.0), mismatch between the focus areas of TVET Colleges and the nature of IK (M=3.4; SD=1.0), society's inclination towards modern thoughts (M=3.5; SD=0.9), absence of collaboration among stakeholders (M=3.7; 1.0), the IK's incompatible nature to be stored in the storages that are in place (M=3.0; SD=0.9) and presence of diverse indigenous knowledge on the same product/process or services (M=3.0; SD=0.8) are blocking the Colleges from incorporating IKs into their systems. The aforementioned factors have moderately challenged the TVET Colleges' efforts to incorporate IK into their training systems.

Moreover, respondents were asked to state if there are other challenges that affect incorporation of the IK in the TVET systems. As a result, the following factors were identified.

- Collection and documentation of IK take time, technology and other resources
- Trainers do not have adequate knowledge about IK.
- Currently, students who fail to pass the national school leaving examinations are allowed to join TVET and the Colleges are led by politically appointed Leaders. In this scenario, it is very difficult to get Trainees and Leaders concerned about incorporation of IKs into the TVET system.
- Fast dissemination of Western TVET thoughts due to Globalization and technological developments.
- Lack of integration of IK into the primary and secondary education curriculums.
- Limited media engagement: both private and public media platforms overlooked the promotion and dissemination of IK.
- Perceived relevance of modern knowledge to globalization and modern economies
- Lack of documentation and standardization of IK

- Influence of international trends and donor priorities
- Educational language and policy barriers
- Cultural and social shifts towards modern ideas

According to the interviewee from the MoCS, even though there is a national level policy guideline that demands incorporation of IKs into the TVET system, the work is at its infant stage. One challenge is that, the nation's IKs are not documented. In fact, there are museums that display cultural artifacts. But the problem is that the philosophy and values underlying such artifacts are not clearly known (Schien, 2004). In that case, it is very difficult to have deep and broad understanding of IKs so as to share them to Trainees and other interested parties.

Likewise, the interviewee from the TVET Agency said that TVET Colleges do not have clarity about what IK is. That was why, this year (2024/2025), the Colleges demanded the Agency to give them training on this issue. Accordingly, training was organized by the Agency in which professionals from the Federal TVET Institute provided training to Directors of all TVET Colleges in Addis Ababa. As a result, common understanding is created on the essence and focus areas of IK. That is, IK is mainly concerned with the process of producing a product or providing a service; rather than the product or the service itself. For instance, pottery making is an IK based technology, but the process might vary from nation to nation.

The TVET Agency is mandated to follow up and support the TVET Colleges in discharging their missions. Usually, it prepares the plan on how to work on IK and cascade it to all TVET Colleges. In this case, the Colleges are obliged to identify problems in the IK based technologies and solve them as part of their annual plan. Just like performance of any other planned organizational activity, the TVET Colleges have to report their performance to the Agency. The Agency has also a platform in which it compares and contrasts the IK based innovations and award the best one. For instance, this year, Nifas Silk Poly technic College has modernized the weaving technology and its innovation was ranked number one.

Generally, information obtained from the interviewed officials revealed that, the focus is not on setting a holistic IKM system in the Colleges, but enabling the colleges to support the indigenous enterprises by modernizing their processes and technologies. In other words, they are not required to Train the Trainees on IK. It seems that supporting traditional enterprises is one of the responsibilities of TVET Trainers; not part of the whole TVET system. When the IK technology operators face problems in their production process, they see the TVET Trainers to solve their problems through modern mechanisms.

4.3 Discussions and Conclusions

The main purpose of this study was to assess the level of incorporation of IKM systems into the TVET Colleges and the challenges faced by the Colleges in that course. The findings of this study revealed that the level of IKM in the TVET Colleges is at a moderate level. These findings are related with the findings of Lwoga, Ngulube and Stilwell (2011) who found out that IK sharing is low due to lack of trust among members of the community, absence of legal protection

for intellectual rights and lack of interest to learn from each other. Likewise, the moderate level of knowledge creation could be related to absence of blending of the modern knowledge and IK that could instigate a new insight. Besides, the societies' perception of IK as backward and outdated could result in lack of interest to deeply think over the matter and create new products and service using IK. Findings of this study are consistent with the studies conducted by Simret and Berhanu (2024), Emeagwal, (2014) Quan-Baffour (2008) Janetius, Bekele and Mini (2008) and Yishak (2013), who accentuated that the society lacks interest to promote its IK due to the perception that the Western and scientific knowledge is universal, better and a sign of civilization, while the IK is backward, specific to a certain locality, some part of it is diabolic and a business of witchcrafts (Kaniki & Mphahlele 2002).

Similarly, TVET Trainers are discouraged from using IK to develop new products and services due to lack of intellectual property right certificates for their IK based innovations. Such certification is not allowed by law due to the following reasons (Simret & Berhanu, 2024).

a. The belief that IKs are properties of the public domain
b. IK based innovations do not fulfill the requirements of novelty and authenticity
c. Absence of well documented IK system in the nation

The Government's intention to blend IK and modern thoughts of TVET is stacked from realization due to a number of challenges that emanate from the sides of stakeholders, Trainers and Trainees, the society and the nature of IK by itself. Findings show that, the TVET Colleges have no specific strategies on how to incorporate IKs into their system. Surprisingly, the Leaders and Trainers of the Colleges have no adequate knowledge and interest on incorporating IK into their systems. This is so because leaders are not assigned based on the qualifications and inclination towards setting a blended type of TVET system, rather, just like in the case of other government agencies, they are politically appointed. When we see the case of Trainers, the Trainers themselves are trained by TVET Colleges and Trainers who are immersed in disseminating the modern thoughts and experiences of the outside world (of both the West and the East) disregarding indignity. Such Trainers could give what they have and feed their insights to their Trainees.

The other concern here is the educational background of Trainees. Even though TVET Colleges have long term and short term trainings, their long term Trainees are students who fail to pass the national school leaving examinations. Such students could be pre-occupied with the idea of capturing what they are taught and trained by their TVET Colleges, in order to be employable in the labour market. This scenario compromises the room for creative thinking on blending IK within the TVET system and come up with IK based functional and iconic products and services.

As any framed and systemic knowledge, IK should be formally and informally taught to children. However, the reality of primary and secondary education in Addis Ababa shows that students are not taught about IKs both theoretically and in practice. Hence, when they join the TVET colleges later on, they have no any hint or interest on considering IK as part of their professional skill, knowledge and attitude. On top of that, these days, because of globalization

and information communication technologies, the young generation is overwhelmed by vast instant information on modern TVET ideas. Domestically, both the mainstream media and the social media give very limited attention to the case of IK. What makes this worse is that there are no journalists specifically trained on how to collect and disseminate information on IK. There is also a dearth of professionals in the area of IK management.

Ethiopia is a country blessed with diverse thoughts and philosophies on social, economic and administrative matters. This requires a well-structured and planned approach on how and by who, when to collect, validate, document and disseminate the IKs (Lodhi & Mikulecky, 2010). However, there is an on and off kind of doing these activities in the area. Museums collect and display iconic IK based products. However, their effort towards dissemination of the IKs embedded in these products is almost inexistent.

Due to the aforementioned situations TVET colleges are graduating trainees equipped with TVET philosophies and practices of the outside world. These graduates are alienated from their contextual realities. Or as Quan-Baffour, (2008) stated, "*it is making the Trainees aliens to their localities*". According to Agrawal (1995), IK systems consider the world as filled with interconnected living and non-living things and believed that every action taken on such things will have a reciprocal effect on the other-hence follows the holistic/systems approach. Therefore, blending IK systems into the modern training systems of TVET Colleges could help solve the problems of sustainability of projects.

More importantly, scarcity of resources and reduction in donor funding invite developing countries to look into what they have inside themselves. This could guarantee their economic survival, promotion of their unique knowledge, skills, identities and cultural pride as well. As it is said: diversity is the spice of life!! Just as the world needs genetic diversity of species, it needs diversity of knowledge systems (Labelle, 1997).

Therefore, unless the TVET Colleges follow the direction of the national policy on blending indigenous knowledge into the training and education systems of the nation, the coming generation will became carrier of philosophies of the outside world disregarding their own IK.

4.4 The Way Forward

For developing countries, blending IK into the modern TVET systems is not a matter of choice, but of necessity. Therefore, stakeholders in the area should make a concerted effort towards the following activities:

- **Establish national and regional IK resource centers**: the Ministry of culture and sports should take the lead in establishing a national IK resource center and store the validated IKs of the country. Such centers could serve as databases for research and innovation. Aligning centers should be established in the regional states under supervision of the regional bureaus of culture and tourism. Such centers should have professionals with relevant fields of education and experiences. Regional IK resource centers should engage in the process of recognition and identification, validation, recording, documentation and storage, transfer

and dissemination of the regional IKs. The national IK resource center has to collect the already validated regional IK and store it using compatible modern databases.

- **Involvement of the community and stakeholders**: Government agencies with related mandates (Culture and tourism bureaus, TVET agencies, Bureaus of labour and skills, Education Bureau, Intellectual property office, and TVET colleges) should engage in creating awareness on communities who own IK or are stewards of their IKs on the importance of blending IKs into the TVET system, the benefits they will get from it and the protection of their intellectual property rights. The agencies should reach consensus on these issues, sign a memorandum of understanding, issue certificates of ownership of intellectual property rights to the respective communities, keep their promises and give speedy response whenever such right gets breached by anybody.
- **Provide capacity building trainings:** The IK resource centers should equip themselves with professionals on IK recognition and collection, validation, recording, documentation, storage, dissemination and innovation. In addition to serving as IK data hubs, these centers should provide capacity building trainings on IKM to leaders, professionals, community members and aligned government agencies. They should also serve as centers of practical learning for TVET trainees by showcasing IK based products and services. These centers have to invite individuals who succeed in blending IK with modern thoughts to produce contextualized goods and service to the society. The stories of these individuals could help promote collaborative learning and imaging.
- **Revising the IPR system:** In order to encourage IK sharing and IK creation as well as application, the generic IPR system needs to modify itself in a way that could enable it give legal recognition to those who innovate IK based products and services without fulfillment of the strict criteria. Such recognition might not give full ownership or possession over those innovations, but at least the innovators need to get recognition and benefits of different sorts.
- **Curriculum revision and adaptation:** The current TVET curriculum should be revised with involvement of all stakeholders. Specifically, representatives of communities on IK should have a say in the drafting, validation and ratification as well as evaluation of the TVET curriculums. This will help make the TVET trainings responsive to the context and needs of the community. However, the act of blending IK with modern TVET thoughts should be started in piloted fields of trainings that could be scaled up to the whole program by making some adjustments, if necessary.
- **Media engagement:** Public, private, mainstream and social media need to have platforms where they can show and explain IKs of various communities. This could be done by inviting professionals in both modern science and IK and conduct comparative discussions on their rational bases, costs and benefits, as well as on how they could be blended in an innovative way. In relation to those media platforms, the media should search for sponsors and funding agencies in order to strengthen the IK resource centers.

- **Develop occupational standard (OS) for IK based TVET trainings:** TVET trainings given based on pure IK thoughts need to have unique OSs, that could be designed by individuals with practically witnessed proficiency in practicing that knowledge and skill. Then, the draft OS should be provided for discussions and comments of community representatives, TVET professionals experienced in designing OSs, representatives from Ministry/bureau of culture and tourism, the Ministry/bureau of Labour and skills, and the Ministry/bureau of education.
- **Incorporation of IK into primary and secondary education:** the responsible government agencies should discuss with primary and secondary schools the need and modalities of incorporating IK into their curriculums and practical teachings. Further, they should carefully evaluate the contents of the curriculums, syllabus and teaching materials of the schools. In addition to that, the agencies should support the schools in order to solve problems they may face in their course of teaching IK to their students.

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Conflict of Interest

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