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Full Length Research Paper

State of Community Skill Training Centers in Transforming Indigenous Technology in the Selected Districts of South Western Shoa Zone of Oromia Regional State, Ethiopia

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Abstract

This article aims to examine the tragedies and coping mechanisms of unemployed youth in Dessie city. To conduct the study, mixed research approach was employed so that quantitative data were complemented with qualitative data. Hence, samples of 242 unemployed youth respondents were selected through simple random sampling technique. To collect qualitative data, five in-depth interview participants, five key informants and two FGD sessions were conducted from graduated unemployed youths, youth service centers, and sub city administration workers. Besides, secondary data were congregated from different published and unpublished materials. The finding of the study indicates that unemployed youth in Dessie city were financially unable to create their own jobs; and they were socially deprived and psychologically harmed. Furthermore, the result of the study revealed that unemployed youth are leading their life via asking for family support, waiting for government jobs, migration, engaging in a free service work, and drug use. Consequently, the study suggests that there is a need to extend youth employment opportunities through promoting technical vocational training programs, enhancing the capacity of micro and small enterprise. Overall, economic development and youth centers enhancement are relevant to ease the economic, psychological and social problems of graduated youth.

Introduction

Community development is a planned effort to produce assets for residents of low- to moderate-income communities to increase the capacity of residents to improve their quality of life (Green and Haines, 2009). This planned effort is mainly realized through training which is conducted in community skill training centers. Community skill training centers, as a local education institute outside the

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formal education system reside in villages or urban areas, set up and managed by local people to provide various learning opportunities for communities to improve people's quality of life (Literacy watch committee of Nepal, 1999).

Non-formal vocational training offered in CSTCs inspire through creative and adaptive methods or content. It is about imparting of specialized skills and knowledge, instilling social and political attitudes and behavior patterns for successful economic activities to be engaged either in dependent employment or self-employment (Khare, 2010).

In Ethiopia, Community Skills Training Centers (CSTCs) geared towards setting up a development resource center for the community. To this end, and particularly to initiate indigenous technology transformation in the country through integrated rural community development, CSTCs were established in the 1970s at district level to induce appropriate technology as easily as to bring up the standard of indigenous technology of the rural community, upgrade the backward agricultural practice through giving short-term training for farmers, train community members with technical and vocational skills and establish a development resource center for the community so that the local community used it as an incubation center for indigenous technology transformation and revival (Sandhaas, 2000). Nevertheless, due to less attention and pride of place given to indigenous technology than it deserves as a result of both the beliefs of people in respect of their indigenous knowledge and tradition which define their individuality and a plurality of structural misfit at which the researcher develops curiosity to investigate, the set objectives of CSTCs is in vain (DVV, 2011).Contrary to Ethiopia's neglect of the sector, the Education for all (2000) third goal stresses the need to offer skills training to all youth and adults in order to integrate into the labor market. To achieve this goal, there is a need to develop occupational skills and knowledge to create enabling factors to ensure that these are utilized to generate income (Mayombe, 2017). This requires the need to offer non-formal vocational skills trainings to marginalized community in order to free them from both social and material poverty. And community based skill trainings are a remedial solution for self-reflection, economic exposition and creativity (Freire, in Yalew 2008). This research, indifferent from the previous once, take the initiative to evaluate structural amicability of CSTCs in transforming indigenous technology taking south western shoa zone of Oromia regional state as a case to explore to what extent structural problems in CSTCs inhibits indigenous technology transformation with the following basic research questions:

- What common structural problems existed in CSTCs that inhibits indigenous technology transformation?
- What is the existing competency situation of trainers of CSTCs in delivering skill trainings that base on indigenous technology?
- Are there the necessary human and material resources in CSTCs to facilitate indigenous technology transformation?

Theoretical Framework

Indigenous technology

Technology is the scientific application of knowledge, skills and resources for the purpose of meeting the needs and aspirations of people (Sanni et al., 2012). When this technology is designed and fabricated based on the culture, tradition and the needs of people and adopted for use by the local people it becomes indigenous technology (IT). Thus, IT is a

coordinated system of technologies developed by indigenous people for their use based on available raw materials and tailored to meet local needs and conditions (Aliyu, 2014).

Ethiopia is very rich in different indigenous knowledge systems and technologies. To mention, there seen indigenous technologies in areas of architecture, agriculture, and cottage industry (Wosenu, 2014). However, little attention is given to such indigenous technologies to preserve, transform, increase awareness of its value, commercialize, and prevents it from possible abuse (Tesfahun, 2010).

Need for indigenous technology and its transformation

Indigenous technologies present significant opportunities for local economic transformation and global competitiveness. In the recurrent knowledge economy directed world, developing nations no longer compete basing on their natural resource endowments and location advantages. For a nation to withstand competition in this era of globalization, there is a need to identify its niche areas and build on it by the application of scientific methods (Sanniet et al., 2012).

Dayanatha (2006) identified five major characteristics of indigenous technology: they are generally low capital intensive, environment and ecology friendly, and are sustainable. Thirdly, they are generally location and site specific and have limited adaptability, they also diffuse over small homogenous zones mainly by community interaction and finally, that they generate only small increments in output to help country's exploit economic advantage. Countries like Ethiopia could give due concern for its indigenous technology and its transformation since it plays a decisive role for economic access of marginalized and low-income groups, lesser income disparity and deemed grievances of social inequity, generates Self-employment, help as a way out to off-farm labor market, and fulfills the market appetite of people at the lower economic pyramid (MOE, 2008).

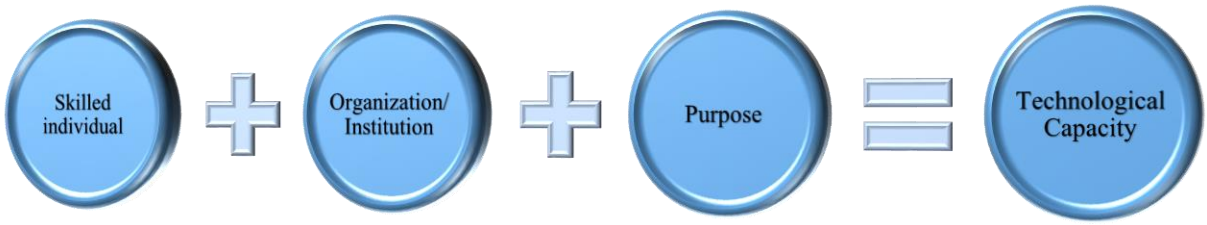

Figure 1: Technological capability process (adopted after Oluwale et. al., 2013)

Unless transformed, there happens a serious threat to indigenous technology through technology obsolesce due to over-reliance of communities on foreign technologies, influence of multilateral industries, development of foreign technologies (e.g., *Condo basket of Kenya and shemma cloth of Ethiopia*), risk of extinction and etc. (Abdulahi et al., in Manabete, 2014).

Significance of the study

It is eminently believed among policy makers and practitioners that through upgrading in the capability of community skill training centers, training delivery, possible results in exalting in the expert capability of participants and therefore leads to cut poverty. And researches like this serve expertise in their respective areas either as academic inputs or else as policy improvement idea. Moreover, findings obtained through scientific procedures benefit practitioners at the grassroots level. Above all, the findings of this study

sprout the existing status of CSTCs used practitioners of the program, particularly trainers, youth and adult-trainees take appropriate measures and actions for improvement.

Research Design and Methodology

This research employed descriptive research design with a nested mixed method approach which triangulates both qualitative and quantitative forms at the same time to investigate structural suitability of community skill training centers in transforming indigenous technology. Descriptive research design is helpful in defining, classifying, or categorizing phenomena of interest (Marczyket et al., 2005).

Description of the Study Area

The study area designated for the purpose of this study is four CSTCs found in South Western Shoa zone of Oromia Regional State. Although the Administrative zone contains twelve districts, the researcher purposely selected Sodo Dachi, Kersa malima, Ilu and Wenchi Destrict. Because these districts incorporate indigenous technology trainings in collaboration with NGOs and governments own initiative.

Sample Size and Sampling Procedure

The sampling techniques employed for this study depends on the subjects from which the samples taken. CSTCs trainees, trainers, program coordinators and experts and TVET heads were the major participants of the study. Thus, purposive sampling was employed to select among the districts in the zone taking their respective CSTCs emphasis on the practical incorporation of indigenous technology trainings. Simple random sampling technique was used to select among trainees and trainers of the program, program coordinators, CSTCs heads, and bureau heads, and also convenience sampling was employed among program coordinators, CSTCs heads, and bureau heads. And out of the total 12 CSTCs existed in the zone, the researcher has taken 4 districts through purposive sampling, and this four selected CSTCs, had a total population of 139 trainees, 102 CSTCs graduates, 31 trainers, 9 SMEs experts working as focal person for indigenous technology accumulation, 4 CSTC coordinators, and 4 TVET heads.

Therefore, because descriptive research design this study employed emphasizes on getting an accurate appraisal of a particular form, such as a mean or a balance, minimize sampling error (precision) and boost confidence (lesser risk level), and acquired the attribute of interest of the entire population, a substantial percentage of the population based on the dimension is held as a sample. To this end, 49% of the trainees, 46% of CSTCs graduates, 77% of trainers, 55% of SMES experts and the whole CSTCs coordinators and TVET bureau heads were invited for the structured interview to get detailed information. Thus, a total of 154 sampled practitioners of CSTCs were participating in this study.

Data Gathering Tools

A self-developed questionnaire consisting of both close and open ended questions was used as the main data gathering tool in the study since it enables to gather data from a large group of people within a short period of time. The study also employed unstructured interview and observation to collect qualitative data for triangulation.

Validity and reliability of instruments

The researchers saw construct and content validity, which was relevant to this specific study. Construct validity which measures the appropriate psychological construct (Blumberg et. al, 2005) is validated by presenting the instruments to the advisors and vocational instructors in order to control whether the inquiries refer to the concepts as conceptualized. Established along the feedback obtained, some reforms were created. Content validity which implies whether the instrument adequately samples the full sphere of

the content that it should cover, thorough check was performed along the instruments by comparing it with the survey objectives (ibid, 2005).

Pilot test was employed in order to test the reliability of the agreement scale item using 13 trainees (male=9, female=4), CSTC coordinator, and SMEs expert from Sodo Dachi CSTC. The internal consistency reliability of the items in the questionnaire was determined in this study using Cronbach's alpha (r) and found to be 0.83 (SPSS version 25), for a training system with indigenous technology items, 0.69 for social acceptance of indigenous technology items, and 0.81 for Management system of indigenous technology items and 0.76 for self-employment on indigenous technology items respectively and found to be reliable.

Data Analysis

As pointed out by Creswell (2009), analysis of data in a mixed method occurs in both quantitative approaches (descriptive and inferential numeric analysis) and qualitative (description and thematic text analysis).The quantitative data obtained through questionnaires were analyzed using simple descriptive statistics like percentages, mean, coefficient of variation, and standard deviation followed by discussion of the important points in line with the study, whereas interview items were scrutinized qualitatively through idea description to support the core concepts of the data gathered quantitatively.

Discussion

Gender wise, the majority (70.13%) of respondents participated in the study were males while the remaining 29.87% were females. Anonymously, 22.01% males against 8.44% female trainees indicate the low schooling of female students in the CSTCs. This is due to either lack of awareness on vocational skills offered in CSTCs, or communities crave for certificates offered through Private colleges and the cultural influence that restricted females to home based unpaid tasks after attendance of a particular stage of secondary schooling. The age categories of respondents also show 70.8% of the sampled population aged below 30 years as compared to 29.2% aged above 31 years. This indicates enrollment of youth population in the sampled CSTCs. Among the trainees 39% of the sampled population aged below 30 years contrary to only 5.8%, which is above 31 years. This infers that the sampled CSTCs are dominated by secondary school leavers and drop outs.

Impacts of CSTCs operational Structures on indigenous technology transformation

In order to have a clear insight on the impacts of CSTCs operational structures on indigenous technology transformation, the researcher dichotomized responses of trainees', trainers and CSTC graduates. The dichotomy is made based on the natural agreement score of respondents as determined from their responses grouped as training system, social acceptance, self-employment and indigenous technologies and management system.

Also, to simplify the analysis of the response, the respondent's answers were collected using Likert's five point scale is shortened to three taking approachable average responses.

The result indicates that trainers, trainees, and CSTCs graduate respondents, (84.3%) disagreed on the fulfillment of structural components in CSTCs to facilitate indigenous technology transformation. Although there is a slight variation in impact prevail among the components of structural operations; training system, social acceptance, self- employment and indigenous technologies, and management system of CSTCs, only 9.3% of the respondents show inclination towards the fulfillment of the aforementioned components. The remaining 6.43% becomes neutral towards

an issue at hand. Thus, malnourishment of the components taken as structural operation deficit of CSTCs that owe an adverse impact towards indigenous technology transformation.

But literature on this line (Dayantha, 2008), stress that indigenous technologies with low productivity entangled with structural problems should be transformed shortly due to their adverse impact to gradually wear out communities' appetite for alike products

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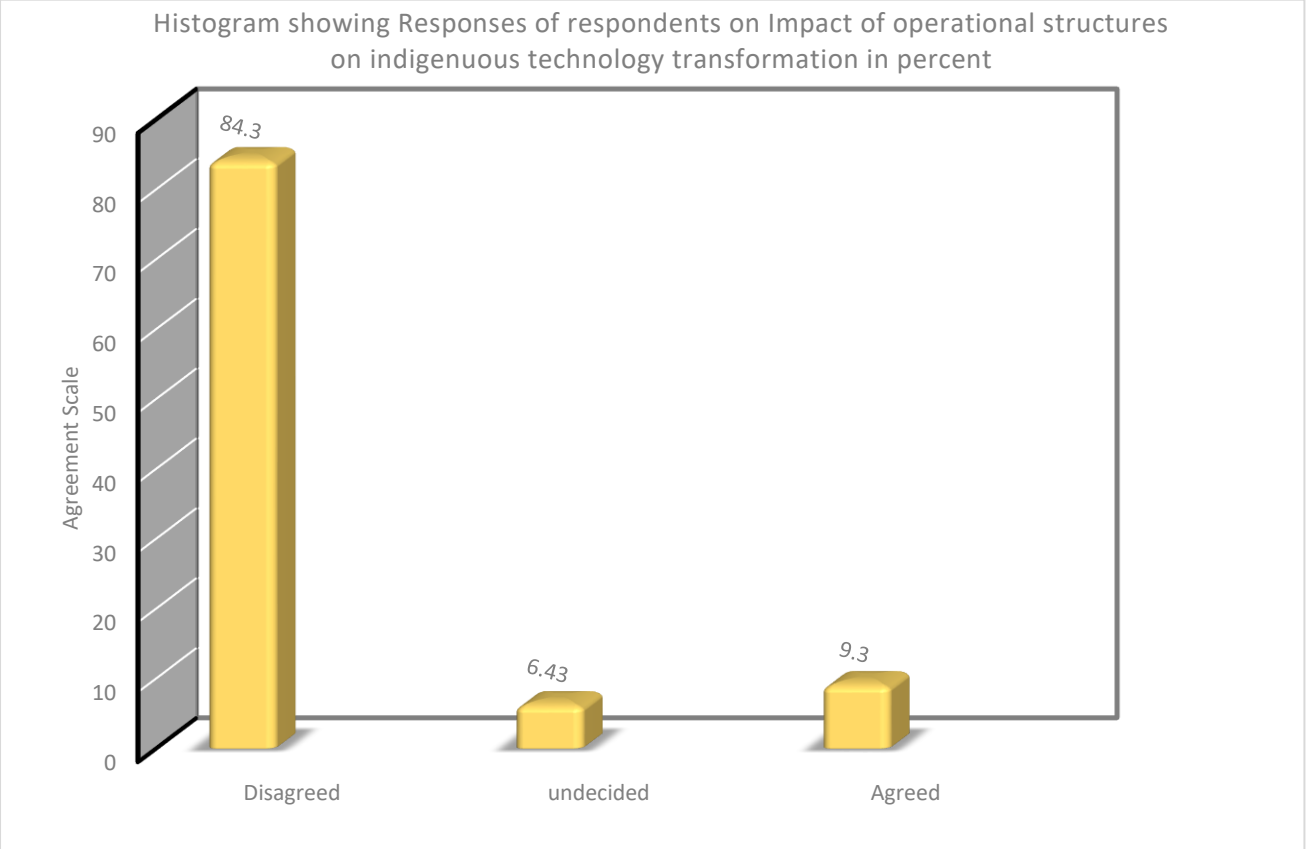

The results indicated in the table below analyzed using (SPSS version 25) also strengthen this response, as the training system with a strong CV (0.78), mean value (68.2) for males and (76.6) for females; social acceptance with a strong CV (0.92), mean value (85.7) for males and (86.6) for females, and management organization with a strong CV (0.74), mean value (74.6) for males and, (70) for females were structural components of CSTCs in which their loose fulfillment deprived of indigenous technology transformation. Whereas, self-employment with moderately negative CV (-0.69), and low mean value of (17.4) for males and (43.3) for females with large mean difference between the two sexes entails that due to ample raw materials, extensive local market and large local community appetite to be serviced on these technologies, self-employment as a structural component positively impact indigenous technology transformation.

Nonetheless, the variation between sexes attributes to less involvement of women on tasks with payable earning. This attributes to a gender stereotype situation that restrict women of the locality to spare their time helping around their homestead as homemakers on non-payable jobs.

Table 1: Analysis of impact variation among structural components affecting indigenous technology transformation in CSTCs based on sex.

Variables	*Sex*	*N*	*M*	*SD*	*MD*	*CV*
Training system on indigenous technology	Male	63	68.2	14.14	8.4	0.78
	Female	30	76.6	4.94		
Social acceptance of indigenous technologies	Male	63	85.7	6.36	0.9	0.92
	Female	30	86.6	2.82		
Management system of indigenous technologies	Male	63	74.6	11.3	4.6	0.74
	Female	30	70	6.36		
Self-employment on indigenous technologies	Male	63	17.4	36.7	25.6	-0.69
	Female	30	43.3	12.02		

(N=respondents are trainees and trainers), mean (M), mean difference (MD), standard deviation (SD), coefficient of variation (CV).

Training System of CSTCs on Indigenous Technology

The reactions of trainers and trainees towards some selected materials collected through Likert's, agreement scale, named after its inventor R. Likert (1932), indicate that 78.5% disagreed on both trainees and trainer's technical skill to use or manipulate indigenous technology machines mainly due to absence of continues skill development programs designed both by the government and the center, the complexity of donated machines by NGO's adding with poor technical skill of trainers to manipulate the machine. Besides the disagreement responses of the respondents also observed along the maintenance of broken machines (81.72%), proper utilization of existing machines and instruments (69.9%), and timely provision of raw materials (86.02%), adequate safety facilities adequate safety facilities during training on ITs, with low standard deviation (1.11) from the mean (4.96) as shown on table 2. This acute shortage of training materials, capable skills and safety facilities to correctly operate the sampled CSTCs restricts the during training (93.55%), availability of reference books and training strategy documents on indigenous technologies (75.27%) and there seen no agreement variation among trainees and trainers on the inadequacy of the overall materials and training system with mean response of (3.4) for availability of technical skill to manipulate IT machines, (3.23) for Satisfactory trainee- machine ratio on IT trainings (3.6) for active use of existing machines for IT work, (3.5) for timely Supply of raw material inputs for IT trainings (3.45) for regular maintenance of IT broken machines and tools, (3.4) for availability of reference books, training policy and strategy documents for Its, (3.7) for equity distribution of training machines and tools in all fields of IT trainings, and (3.6) for availability of

centers to implement the non-formal training approach which is characterized by: 'learning by doing, learning by producing and learning by earning.' (UNESCO, 2011).

Table 2: Responses of trainers and trainees towards some selected materials availability in CSTCs

Variables	Respond-ents	Agree		Disagree		Undecided		Mean	SD
		N	%	N	%	N	%		
Enough technical skill to manipulate IT machines	Trainees	13	18.8	54	78.26	2	2.90	3.03	1.00
	Trainers	2	8.33	19	79.17	3	12.50		
	Total	15	27.17	73	78.49	5	5.38		
Satisfactory trainee-machine ratio on IT trainings	Trainees	2	2.90	59	85.51	8	11.59	3.23	0.72
	Trainers	2	8.33	20	83.33	2	8.33		
	Total	4	11.23	79	84.95	10	10.75		
Existing machines of IT work actively	Trainees	18	26.09	47	68.12	4	5.80	2.88	1.08
	Trainers	5	20.83	18	75.00	1	4.17		
	Total	23	46.92	65	69.89	5	5.38		
Supply of enough raw material inputs on IT trainings at the right time	Trainees	3	4.35	62	89.86	4	5.80	3.23	0.76
	Trainers	2	8.33	18	75.00	4	16.67		
	Total	5	12.68	80	86.02	8	8.60		
Regular maintenance **of IT** broken machines and tools	Trainees	7	10.14	59	85.51	3	4.35	3.24	0.85
	Trainers	5	20.83	17	70.83	2	8.33		
	Total	12	31.0	76	81.72	5	5.38		
Availability of reference books, training policy and strategy documents for ITs	Trainees	9	13.04	51	73.91	9	13.04	3.02	0.92
	Trainers	1	4.17	22	91.67	1	4.17		
	Total	10	17.21	73	78.49	10	10.75		
Equity in distribution of training machines and tools in all fields of IT trainings	Trainees	11	15.94	49	71.01	9	13.04	3.00	0.97
	Trainers	2	8.33	21	87.50	1	4.17		
	Total	13	24.3	70	75.27	10	10.75		
Adequate safety facilities during training on ITs	Trainees	2	2.90	64	92.75	3	4.35	3.20	0.66
	Trainers	1	4.17	23	95.83	0	0.00		
	Total	3	7.07	87	93.55	3	4.35		
Cumulative Total		91	10.8	85.5	81.7	62	7.41	4.96	1.11

The factor analysis result mentioned here under also shows no significant variations among the selected variables indicated by both trainees and trainers in impacting indigenous technology transformation.

Table 3: analysis of selected factors that impact indigenous technology transformation based on trainee and trainers response

Variables	Enough technical skill to manipulate IT machines	Satisfactory trainee-machine ratio on IT trainings	Existing machines of IT work actively	Supply of enough raw material inputs at the right time	Regular maintenance of IT broken machines and tools	Availability of reference books, training policy materials	Equity in distribution of training machines and tools	Adequate safety facilities during training on Its
Factor analysis result	.820	.776	.798	.707	.778	.847	.863	.751

To further strengthen points related to training material supply, interview carried out with district CSTC coordinators, district and zone TVET heads, was summarized as follows:

Deficiency in machines, tools and raw material supply of indigenous technologies attributed to budget scarcity. Machines donated by NGO's are either sophisticated to operate or lacks accessories. To solve this problem, the mechanism designed is to use more apprenticeship practice hours and to link CSTCs with TVET institutions and colleges.

Thus, all in all CSTCs run short of training material inputs and its manipulation to fully make up training and transform technologies innate to the residential area.

In relation to human Resource Utilization of CSTCs on indigenous technologies, the sampled CSTCs equipped with qualified personnel. The respondents indicate (58.3%) certified to level four, (37.5%) certified to level III, and (4.2%) certified with short term preparation. But the answer was not concurring with what is existed practically on the ground due to certified trainers' inefficiency as education policy of the country creates citizens who crave for certification than practical technological capacity to completely control the machines and yet read the occupational standards (OS) in each competency.

In relation to this, ILO (2010) emphasizes the requirement to develop Lifelong learning atmosphere to maintain individuals' skills and competencies at work, due to consistent technology and skill changes with time.

In addition, the educational status of trainers in the existing departments, their persistent experience on the respective technical areas is at an infancy level which directly affects their capacity of utmost manipulation of existing training utilities in the centers.

Table 4: Educational status of trainers offering training on ITs in the Sampled CSTCs *(N=number of trainers).*

Department	N	Service year		Qualification status					
		0 to 4 years	5 to 9 years	Short term	%	Level three (3)	%	Level four (4)	%
Apparel production	5	4	1	1	4.2	3	12.5	1	4.2
Masonry	7	7	-	-	-	2	8.3	5	20.8
Metal works	7	-	-	-	-	1	4.2	6	25
Carpentry	5	2	3	-	-	3	12.5	2	8.3
Total	24	20	4	1	4.2	9	37.5	14	58.3

Social Acceptance of Indigenous technologies

Social Acceptance of Indigenous technologies articulates trainees and trainers outlook towards indigenous technologies as a structural problem that hamper trainee's enrollment, practice and entrepreneurial motivation for indigenous technology transformation. Societal outlook, which descends from external community norms and value system out casts of indigenous technology's acceptance by both trainees and trainers. As indicated by deviation from the normal using standard deviation in Table 2, socio cultural factors such as Carpentry (24.6%), metal works (15.2%), and masonry (12.9%), and Apparel production (7.18%) which deters trainees' enrollment. Institutional factors like CSTCs management and trainer's wither emphasis on indigenous technologies and its transformation either through allocation of budget, training materials and personnel also observed through deviation (12.02%) for carpentry, (10.02%) for metal works, (8.53%) for masonry, and (6.18%) for apparel production. But researches previously done pin point, indigenous technologies and indigenous knowledge systems provide tremendous knowledge and technology resource bases that tend to be sustainable, and concentrate on addressing needs in an appropriate cultural context that aids as an impetus for sustainable development (John, 2017).

Table 5: Responses of trainees' on factors affecting social acceptance of Indigenous technologies during training based on sex and field of study.

Variables	Sex	Apparel Production			Masonry			Metal works			Carpentry		
		N	M	SD	N	M	SD	N	M	SD	N	M	SD
Socio-cultural factors	M	10	14.8	8.53	12	15.7	7.64	18	24	11.09	5	28.5	15.6
	F	7	18.5	7.63	3	10.5	9.75	1	8	13.5	3	14.2	17.8
	T	27	33.3	7.18	15	26.3	12.9	19	32	15.16	8	42.8	24.6
Institutional factors	M	10	11.1	6.43	12	13.3	6.07	18	26.3	11.8	5	12.5	7.86
	F	17	11.7	6.3	3	6.67	7.75	1	5.26	13.9	3	12.5	9.42
	T	27	18.5	6.18	15	20	8.51	19	31.6	10.02	8	25	12.02

The multivariate analysis (MANOVA) of socio-cultural and institutional factors implies that, with ($\alpha =$ 0.05) margin of error, no significant difference exists among sexes of respondents except masonry production, but differences of intercept of responses by the respondents mainly due to differences in perspective to magnify the factors that affect social acceptance of indigenous technologies manifest as shown below

Table 6: Tests of Between Subjects effect

Source	Dependent Variable	Type III Sum of Squares	Df	Mean Square	F	Sig.
Intercept	Apparel production	2.584	1	2.584	22.342	.000
	Masonry production	10.113	1	10.113	74.704	.000
	Metal works production	4.241	1	4.241	43.057	.000
	Carpentry production	4.423	1	4.423	26.109	.000
variables	Apparel production	.115	1	.115	.995	.327
	Masonry production	1.458	1	1.458	10.769	.003
	Metal works production	.025	1	.025	.255	.618
	Carpentry production	.039	1	.039	.233	.633
Sex	Apparel production	.175	2	.088	.758	.478
	Masonry production	.462	2	.231	1.708	.200
	Metal works production	.034	2	.017	.172	.843
	Carpentry production	.254	2	.127	.750	.482

Management System of Indigenous Technology

The agreement scale response data gathered from trainees and trainers on some selected management activities like readiness to facilitate IT training premises in time, incorporation of indigenous technologies in all training competencies, motives to strengthen coordination among stake holders, facilitate regular IT extension services with SMEs, scheduled supervision of the training activities, design project proposals, facilitate sales shops and rent shops and machines for IT to cover budget deficit, and coordinate market needs assessment and IT transformation programs indicate disagreement (70.83%) by trainers, and (82.61%) trainees in selected CSTCs management's timely facilitation of the necessary indigenous technology training materials. The respondents also disagree with the management's inclusion of indigenous technology competencies in all trainings (84.95%), creating coordination among stakeholders (70%), design, projects, facilitate sales shops and rental shops to aid technology transformation (92.5%). This shows that management of CSTCs fails to practice utmost responsibility to capacitate indigenous technology trainings in both material and financial basis.

But literature written on management of Indigenous technologies, World Bank (1998) indicates that because IT is an underutilized resource in the maturation process that connects society's way of knowing, a way of feeling and also a way of doing, needs to be made out on efficient technical managerial base.

Self -Employment and Indigenous Technologies

The agreement response data collected from CSTCs' graduates and trainees show both respondents disagreement on the quality of training given in CSTCs as inefficient for self-employment (82.8%),

opportunities of having a relevant job after graduation (78.4%), access of credit facilities to run own enterprise (91.38%). On the other hand, graduates of CSTCs agree on availability of simple machines and low cost raw materials of ITs to run own business (68.09%), and easy access to the local market for indigenous technology products (89.36%).

This implies that entrepreneurs simply accessed to own a business in the sampled CSTC areas when trained on indigenous technologies.

To beef up these theses scholars asserts that self-employment aids as an instrumental opportunity to exploit indigenous skills, experience and knowledge to commence and maintain new businesses successfully (Mohammed N.T. et al, 2017).

Extent of Indigenous Technologies Transformed in CSTCs

Although in all the four CSTCs indigenous technology transformation deals on a regular basis, few indigenous technologies were accumulated and thus transformed to be utilized by the community. Masonry department transformed 6 (46.2%) of ITs, apparel production 5 (62.5%) of ITs, metal works (1), and carpentry (1) of their indigenous technologies respectively. The inability to transform ITs attributed mainly to CSTCs emphasis on Euro-centric technology than indigenous technology in their training.

Table 7. Status of Indigenous Technology Transformation in the sampled CSTCs

Departments	No of IT accumulated	No of IT transformed	%	No of IT utilized by the community	%
Apparel production (weaving)	8	5	62.5	2	25
Metal works (Blacksmithing)	2	1	50	-	-
Masonry (pottery & fuel saving stove)	13	6	46.2	3	23
Carpentry	1	1	100	1	100
Total	24	13	54.2	6	25

Conclusions

From the findings of the study, it is concluded that training system, social acceptance, and the management system on indigenous technology trainings are among the common structural problems in CSTCs that inhibits indigenous technology transformation, whereas, self -employment opportunity positively enhances indigenous technology transformation.

The trainees and trainer's inability to manipulate the available machines in CSTCs could be ascribed to the absence of continuing practical skill development programs owing to the training system crave for certification than capacitation, unbalanced trainee-machine ratio, and lack of technological capacity.

There are few safety facilities, workshops, and sales shops that favorably accommodate the training activity. The workshops and sales shops made with corrugated iron sheet become uncomfortable during the training session due to intense heat absorption and aeration problem. Sociocultural and institutional factors devalued social acceptance of indigenous technologies, and hinders its transformation.

Though the training offered in CSTCs is inefficient for self-employment, trainees' who acquire relevant skill on indigenous technologies have immense opportunities to be an entrepreneur. The existing trainers in CSTCs are incompetent, particularly on indigenous technologies to deliver quality trainings.

CSTCs play a role in equipping the trainees, raise the levels of indigenous skills, self-empowering and community development, and develop problem-solving abilities, encouraging people, enabling them to be efficient and productive, and enabling them to be economically self-reliant. However, the training centers were not achieving their intended objectives productively because of shortage of tools and machines, ineffective utilization of resources, lack of well-skilled workforce and management, unavailability of library and reference materials, and lack of awareness. Finally, it is concluded in this study that the current low status of indigenous technology transformation attributed to the existing structural problems of the training system, social acceptance, and management system in CSTCs.

Based on the findings and conclusions arrived the following recommendations were forwarded.

1. To make CSTCs center of indigenous technology transformation in order to motivate grass root community economic empowerment, structural problems that impedes the training activities of the center need to be solved through collaborative stakeholders' effort.
2. Because indigenous technologies enhance self-employment by accessing local raw materials and simple tools, the management of CSTCs and concerned stakeholders should pay due attention to its transformation so as to increase productivity.
3. The trainers in CSTCs should be given continuously on job skill development trainings on ITs, transparent skill upgrading, and promotion and transfer system. The safety facilities, affordable workshops and sales shops should be facilitated to make trainers offer quality trainings.
4. Continues awareness raising projects on indigenous technologies is made to narrow the gap of social acceptance of those technologies among trainees and trainers.
5. Management of CSTCs is further refined and improved through managerial trainings.
6. Training system and contents should be shifted from Euro-centric technology to indigenous technology through de-indigenized knowledge in CSTCs so as to manipulate indigenous technologies to grass roots community socioeconomic enhancement.

Conflict of interest

The authors declare that there is no conflict of interest

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