



Innovation Value Chain Status of Government Co-operative Supporting Organisations in Tanzania

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Abstract: Managing innovation processes is a crucial facet to organisations. Contemporary global competition has necessitated organisations aiming at becoming and remaining vibrant to invest in innovation as a key competitive tool for their survival and growth. For innovation outputs to be realised, organisations need to establish and maintain effective innovation chains or processes by generating ideas, converting and disseminating them to targeted users. The paper assesses the innovation value chain status of government co-operative supporting organisations (GCSOs) in Tanzania. The study adopted a case study research design whereby five cases were picked. Primary data were collected using focus group discussions (FGDs), key informants' interviews (KIs), documentary review and non-participant observation. Data were analysed using content analysis. The Atlas.ti computer software facilitated the analysis of data from FGDs and KIs. Findings show that the innovation value chains of most of the studied GCSOs were weak. Moreover, the innovation value chains of most organisations were poorly linked towards disseminating innovations to primary co-operative societies (PCSOs). It is concluded that given the weak and poorly linked innovation value chains amongst most of the studied GCSOs, few innovations are likely to be disseminated from such organisations to end-users. Therefore, it is recommended that GCSOs need to strengthen the innovation value chains through genuine allocation and prioritisation of resources. Deliberate efforts such as setting innovation units to enhance innovation activities within GCSOs are also recommended.

Keywords: Innovation Value Chain, Government Co-operative Supporting Organisations, Innovations Dissemination, Primary Co-operative Societies

1. Introduction

Innovation has long been recognised as an important driver for growth and organisational competitiveness (Bes and Kotler, 2011; OECD, 2012). This implies that current organisations' competitive growth and survival depend upon their ability to manage the innovation process. Innovation can improve the quality of services provision and enhance the problem-solving capacity of organisations to deal with societal challenges (Damanpour and Schneider, 2009; Walker *et al.*, 2011). Equally, empirical studies of firms show that innovation leads to new products or services that are higher in quality (Gamal *et al.*, 2011). Despite such necessity, innovation has remained to be a complex concept that is defined and perceived differently (Smith *et al.*, 2008). There has been no consistent definition of innovation and thus numerous definitions do exist (Garcia and Calantone, 2002; Cirera and Maloney, 2017). The World Bank (2006) defines innovation as the process by which individuals or organisations master and implement the design and production of goods and services that are new to them,

irrespective of whether they are new to their competitors, their countries or the world.

Borrowing from this definition, this paper regards innovation as the process by which the co-operative supporting organisations create and offer numerous outputs mainly goods and services that are new to them, including changes in an old or existing way of doing things, irrespective of whether they are new to other organisations or individuals elsewhere that are intentionally directed at improving co-operative performance. Innovation can be classified in different ways whereby a basic distinction is that between technological and non-technological innovation (OECD, 2005). Technological innovation comprises both product innovation (a good or service that is significantly improved) and process innovation (a new or significantly improved production or delivery method). Non-technological innovations include organisational innovation, that is, a new organisational method in business practices, workplace organisation or external relations (WHO, 2018). This paper focused on assessing both forms of innovations.



Effective innovation outputs in organisations can be attained when the innovation activities are organised in an inter-linked process called the value chain. Several definitions and views on the value chain do exist. Taghizadeh *et al.* (2018) define the innovation value chain as the end-to-end approach for generating, transforming and disseminating new knowledge and ideas. It is a product-centric view that relates inputs with products or services outputs (Jentsch, 2015). This paper adopts the definition of Hansen and Birkinshaw (2007) that refers to the innovation value chain as a sequential, three-phase process involving ideas generation, ideas conversion and dissemination of such developed concepts. They suggest that effective innovation outputs occur when the innovation activities are integrated into a chain-like process called innovation value chain (IVC) model or approach. In order for effective innovation outputs to be realised the organization's executives and all other stakeholders, co-operative organisations inclusive should view their organisations' innovation processes as a value chain, engaging in a link-by-link analysis. Innovative and competitive co-operative organisations thus should be able to establish and maintain effective innovation chains (Kaplinsky and Morris, 2009; Borda-Rodriguez *et al.*, 2013). Such innovation linkages are important in enabling the design, conversion, and dissemination of new or improved products and services and hence contributing to co-operatives' growth and survival.

Co-operatives have long been defined fairly differently by different scholars and or organisations (Münker, 1994; Vanhuynegem, 2008; URT, 2013). Nevertheless, the commonly applied and internationally recognised definition of co-operative is the one formulated by the International Co-operative Alliance (ICA), a non-governmental co-operative federation representing co-operatives and the co-operative movement worldwide. The ICA defines a co-operative as "an autonomous association of persons united voluntarily to meet their common economic, social, and cultural needs and aspirations through a jointly-owned and democratically-controlled enterprise based on the values of self-help, self-responsibility, democracy, equality, equity and solidarity (ICA, 1995; ICA, 2017)".

Over decades, co-operatives, for the most part, the primary co-operatives, have been considered as organisations with the potential to foster socio-economic development and pull communities out of poverty (UN, 2011; FAO, 2012; Münkner, 2012). They offer numerous innovative opportunities that include reduced production cost, value additions, collective marketing, and credit, among others. Despite such importance, there have been debates in the developing world over co-operatives' ability to deliver on their objectives (Borda-Rodriguez *et al.*, 2013; Vicari and Borda-Rodriguez, 2014). There has been broad recognition that, in developing countries mainly some African nations, co-operatives were submissive to central planning and interference by governments imposing control over them rather than their socio-economic empowerment (Francesconi, 2009). They were also subjected to many challenges including weak supporting organisations, co-operative operations mismanagement, embezzlement, challenging competitive forces and lack of co-operative education and training (URT,

2006; Chambo, 2009; Msonganzila, 2013). As a result, most co-operatives, especially in the developing world, have for a long time been unable to devise innovative products or services to address various socio-economic challenges they are facing (World Bank, 2012; ICA, 2013). This is mainly due to resource deficiency in terms of skilled personnel, financial, physical and technological facilities. This, in turn, has limited their ability to fully establish and maintain effective innovation value chains (Gamal *et al.*, 2011).

Consequently, most co-operatives particularly the primary co-operative societies (PCSOs) which are the focus of this paper, are unable to independently and fully undertake some of their operations (Msonganzila, 2013) including innovation activities (World Bank, 2012; ICA, 2013). In this paper, primary co-operative societies are defined as the most basic co-operatives. They include Agricultural Marketing Co-operatives (AMCOS), Savings and Credit Co-operative Societies (SACCOS) and Dairy Co-operatives among other primary co-operatives. Given current weak PCSOs innovation capability, most of the needed innovations are anticipated to be originating from government organisations (Tefera, 2008; Franks, 2011; DFID, 2014). Innovation oriented governments play an important role in encouraging, supporting, promoting and disseminating innovations (Sandalow, 2011; Moussa *et al.*, 2018). They set innovation policies and standards and invest in fundamental researches. Equally, they provide an educated workforce and protect intellectual properties (Sandalow, 2011). It is from realisation of these multiple innovation roles that some governments have established organisations to facilitate some of their innovation mandates.

Among such organisations in Tanzania, are the government co-operative supporting organisations (GCSOs)- referred to as government institutions responsible for facilitating co-operatives in terms of innovations creation and dissemination, education and training, promotion, regulation, production, marketing, etc. Several of the GCSOs have been established and mandated by the government with various roles including facilitating innovations dissemination to PCSOs. Moshi Co-operative University (MoCU), Tanzania Co-operatives Development Commission (TCDC), Small Industries Development Organisation (SIDO), Co-operative Audit and Supervision Corporation (COASCO), Tanzania Research Institutes e.g. Tanzania Coffee Research Institute (TaCRI), Vocational Education and Training Authority (VETA) are among those GCSOs. To facilitate their mandates, GCSOs in Tanzania have been provided with some direct government resources in terms of funding, personnel, technological and physical facilities. Despite the government support to GCSOs, empirical literature shows that few innovations are disseminated from GCSOs to PCSOs (URT, 2006; World Bank, 2012; ICA, 2013). This paper hypothesises that inadequacy in innovations disseminated to PCSOs is resulting from weak innovation value chains within GCSOs to enable innovations dissemination.



Weak innovation value chain in terms of inability to adequately generate viable ideas, converting such ideas into useful products or services and transferring them to targeted users is attributed to few innovations dissemination in various organisations (Hansen and Birkinshaw, 2007; Gamal *et al.*, 2011; Ganotakis and Love, 2012; Ishak *et al.*, 2014). This implies that some resources may be available as is the case with GCSOs (Njau *et al.*, 2018), but their optimisation towards innovation activities may be possible when the organisation's innovation value chains are effectively linked. The necessity to establish and maintain an effective innovation value chain is crucial in organisations that believe in innovation as a strategy (Hansen and Birkinshaw, 2007; Roper and Arvanitis, 2009). Such need is even more crucial in public organisations which are mainly service providers unlike their private counterparts which are profit-oriented, may do their best to invest in innovations for some financial gains. Maintenance of effective innovation value chains among public organisations implies ensuring sufficient innovation services provision to the wider community including PCSOs. In Tanzania, nonetheless, while organisations have been encouraged to establish and maintain effective innovation value chains, their status in terms of innovative ideas generated, converted and spread by GCSOs to PCSOs is not known. This paper, therefore, unravels such existing gaps. Specifically, the objectives of the paper are to: (i) establish the initiatives undertaken in each innovation value chain of the studied government co-operative supporting organisations in terms of innovation ideas generation, conversion and dissemination to primary co-operative societies in the ten years under consideration (2007-2017) and (ii) determine the extent at which the innovation value chains of the government co-operative supporting Co-operatives are linked towards innovations dissemination to PCSOs.

2. Theoretical/Conceptual Framework

This paper draws insights from the Innovation Value Chain (IVC) Model (Hansen and Birkinshaw, 2007). The model suggests that effective innovations dissemination occurs when the innovation activities are executed in a chained process right from ideas sourcing, conversion and dissemination. In this study, the model was used to identify the innovation activities undertaken at each innovation value chain of the studied GCSOs and its linkage to PCSOs. The model is considered to be a strategic tool useful in assessing the strengths and weaknesses of the innovation process (Hsieh *et al.*, 2011). Several innovation measurement models or frameworks do exist (Ishak *et al.*, 2014). The frameworks include the diamond model which highlights the key dimensions of the innovativeness process and its institutional factors and thus suitable in measuring innovation when it is at the infancy stage. There is also the innovation funnel model, which is applied when there is an extensive innovation process in the organisation while the innovation value chain (IVC) model focuses on the output of the innovation process. Likewise, the Oslo manual innovation measurement framework is useful when considering country-level international comparisons (Gamal *et al.*, 2011).

In this paper, the IVC model was chosen because it focuses on the assessment of the innovation process outputs. The IVC model comprises three main interlinked phases of innovation i.e. idea generation, conversion, and dissemination. The first of the three phases in the chain involves ideas generation that can happen inside a unit, across units in an organisation or from outside. The second phase is to convert ideas or more specifically select ideas for funding and developing them into products, services or practices and the third involves its dissemination to targeted audiences. The IVC model is guided by some key questions and its subsequent key performance indicators (Hansen and Birkinshaw, 2007) that should be observed in measuring the innovation value chain activities. In this paper, the IVC model questions were applied as a guide (slightly modified to suit GCSOs context) in data collection. The model has been used in assessing innovation value chain activities in various organisations (Ganotakis and Love, 2012; Ishak *et al.*, 2014).

3.0 Methodology

3.1 Study Area

The study covered Dodoma, Kilimanjaro and Dar es Salaam Regions. The three regions were chosen because it is where the studied GCSOs are located and thus not found in other regions. The focus was only on GCSOs though there are other member-based and private organisations supporting PCSOs. The GCSOs were chosen because, unlike their private and member-based counterparts, they have been receiving resources from the government to enable among other activities, the growth, and development of co-operatives.

3.2 Research Design, Data Sources, Data Collection, and Analysis

The study employed a case study design using multiple case studies (MCS). The MCS were chosen because the study aimed at identifying similarities and differences in empirical findings from different cases to enable analytic generalisation (Collis and Hussey, 2014). An analytic generalisation is not generalisation to some defined population that has been sampled, but to a theory of the phenomenon being studied, a theory that may have much wider applicability than the case(s) studied (Yin, 2014). Five cases, chosen based on the study scope (Yin, 2004) generated the required empirical findings. Theoretical replication assumed a meaning that the selected cases were considered to be different, due to varying GCSOs core roles and hence expected to produce differing results. The tools for data collection were key informants (KIs) interview guide, observation guide, and focus group discussion (FGD) guide. Data were collected from KIs comprised of GCSOs executives, former GCSOs executives and former heads of departments or units conversant with innovation aspects. It was also collected from FGD participants involving heads of departments/units and staff, GCSOs documents i.e. innovation policy and strategic plan documents and direct observation of innovation facilities available. Fourteen FGDs sessions, three per each GCSO were conducted except in



TaCRI where two were conducted as data saturation (Faulkner and Trotter, 2017) was attained. Multiple FGDs were conducted in the same organisation aimed at generating more facts and verifying some studied aspects. Each FGD comprised of six to eight participants. Stewart *et al.* (2007) showed that six to twelve is an ideal number as too many participants may be difficult to manage. Likewise, fewer than six tend to reveal less information and the discussion may be dull. The study participants were all heads of technical and academic departments/units and at least two staff members from each department/unit that was conversant with innovation activities. A total of five GCSOs, three quasi co-operative based organisations i.e. TaCRI, VETA, and SIDO and two purely co-operative supporting organisations i.e. TCDC and MoCU formed the unit of analysis for this study. Quasi co-operative based organisations refer to those organisations whose primary role is not to serve co-operatives but deal with them as one among their key actors. The vice-versa is true for co-operative based organisations. The reason for this choice is that the study focused on generating data from all forms of GCSOs based on their core functions. In this paper, a summated five-point Likert scale was used to gauge study participants' responses on GCSOs innovation chain status. In gauging, 1 represented "very poor/weak", 2 "poor/weak", 3 "medium", 4 "good/strong" and 5 represented "very good/strong". Differing ratings from different study groups of the same GCSO were harmonised using validation meetings comprised of participants from all studied groups. The criteria for rating the GCSOs innovation status were established after study instruments pre-testing which were thereafter customised to all studied organisations. The criteria were discussed and agreed upon by study participants prior to its actual application whereby very poor/weak was given to organisations that recorded no innovations in the period under study and poor/weak was given to those recording one to ten innovations. Similarly, medium was given to GCSOs that recorded eleven to twenty innovations, good/strong to those with twenty-one to thirty innovations and very good/strong to those recording thirty-one or more innovations.

As the study focused on assessing GCSOs innovation status using multiple case studies approach, study participants' responses established represented the GCSOs innovation status and not individual participants' status. Thus, each specific GCSO data were assessed separately with no sample size consideration but rather based on data saturation attainment. In this case, an index scale was used to summarise the leanings of the group, since the leaning response was followed with an open-ended question asking why the participants answered i.e. gauge their GCSO, the way they did. The Likert scale was also used to gauge some key aspects regarding study participants' perceptions of the GCSOs innovation chain status. Equally, innovations assessment in this study covered a ten years period (2007-2017). The duration was arbitrarily chosen and considered to enable sufficient identification of the innovative ideas sourced, developed and disseminated to PCSOs. Likewise, confirmation visits were done to some PCSOs to affirm

whether the innovations that were reported to be disseminated by studied GCSOs truly went to them. In this study, data collection, and analysis were not separate processes i.e. were an iterative process. Simultaneous process of inquiry and analysis was undertaken whereby some analyses were done during data collection. This includes study participants' responses harmonisation on the GCSOs rating. Data gathered through field notes and recordings were transcribed prior to its analysis. Content analysis was used to analyse the textual data whereby Atlas.ti computer software-enabled an analysis of data generated from FGDs and KIs. The data analysis involved scouring for meanings, patterns, surprises, contradictions and silences in the textual data guided by research questions and theory. Data were then analysed in three stages including computer-assisted data reduction i.e. screening, coding, condensing and transforming empirical data. The purpose of data reduction was to ensure that data can speak authentically. Secondly, the data display was done involving reduced texts and tables; and thirdly research conclusion was drawn (Taylor *et al.*, 2011). Finally, the case studies sets in the form of qualitative interpretations and descriptions were documented.

4.0 Findings and Discussion

4.1 Innovation Initiatives among Government Co-operative Supporting Organisations

Several innovation initiatives have been taken by MoCU particularly on innovative ideas generation. As a result, several appealing innovation plans featuring at this stage attest to the fact that personnel creates good ideas across the organisation. The ideas include designing a legal clinic where legal advice could be offered to co-operatives using MoCU legal officials at zero or low fees unlike private entities or individuals charging high fees. The other one was the idea to establish the innovation design and experimentation unit specifically for researching, interpreting research findings and disseminating innovations to PCSOs. Others are venturing into new co-operatives including Loliondo cattle marketing co-operative where traders from Kenya and other East African countries could trade cattle, planning to establish beekeeping and motorcycle riders' co-operatives, among other ideas (Table 1). Despite the findings, some creative ideas remained in literal writings as were not converted into useful products or services. One of the KIs from MoCU affirmed that:-

"Many creative ideas in MoCU remain unimplemented since we lack mechanisms to facilitate ideas tracking and implementation" (KI, MoCU, Feb. 2018).

This means that personnel had plenty of creative ideas that could be turned into innovations but lacked mechanisms to track, organise and convert them into physical outputs. As a result, in the second phase of the innovation chain i.e. ideas conversion, not all ideas were converted into innovation outputs. This implies that turning such creative ideas into useful products or services requires a diligent organisation's determination and resource commitment. Such determination and commitment were however reported to be lacking.



Table 1: MoCU's innovation value chain assessment

No.	Ideas generated	Conversion (status)	Dissemination
1	Planning to establish a co-operative legal clinic.	Nil	Nil
2	Founded milk distribution channels for dairy PCSOs.	The channels formed	Yes
3	New co-operative ventures e.g. cattle marketing, bee keeping, etc.	Nil	Nil
4	Planning to establish innovation design and testing unit.	Nil	-
5	Founding "questioning member co-operatives" (QMCs).	The QMCs founded	Yes
6	Founding integrated co-operative model (ICM) combining financial and crop co-operatives.	The ICM model formed	Yes
7	Form regional centres in 15 regions, distance education department and a radio unit to work close to co-operatives.	The centres formed	Yes
8	Facilitating establishing the co-operative entrepreneurship and innovation centre (CEIC).	The CEIC formed & services offered	Yes
9	Forming staff savings and credit co-operative society as a financial provider and learning model for other co-operatives.	The co-operative established	Yes
10	Establishing innovation fund and innovators awards.	Nil	Nil
11	Protecting innovations and forming innovation networks.	Nil	Nil
12	Offering foundational certificate courses and online co-operative management programmes targeting PCSOs staff and members in Tanzania and Uganda.	Foundational and online courses offered	Yes
13	Also formed co-operative stakeholders' forums.		
14	Designing co-operative management software.	Designed -incomplete	No
15	Enabling formation of agro-inputs services access innovation called WEUPE model.	The model designed	Yes
16	Founding small scale research grant for junior researchers.	The grant established	-
17	Designing several tailor made courses for PCSOs staff, board members and members.	Courses designed	Yes
18	Planning to establish staff consumer co-operative society.	Nil	Nil

Note: The dash (-) represent innovations that were primarily aimed for GCSO self-improvement and thus not for dissemination.

As shown in Table 1, among the ideas converted into useful products or services includes enabling milk distribution channels in some dairy co-operative societies in Kilimanjaro Region with the first centre located within MoCU main campus. The other one is facilitating the formation of "questioning member co-operatives" through members empowerment project (MEMCOOP) that enabled the formation of 32 co-operatives famously known as G32 co-operatives. Such co-operatives withdrew their membership from Kilimanjaro Native Co-operative Union (KNCU) and form own intermediary as a result of the empowerment acquired from MEMCOOP. There is also the formation of an integrated co-operative model (ICM) whereby some agricultural marketing co-operatives (AMCOS) and savings and credit co-operatives (SACCOS) work together for service complementarities.

Under such an arrangement, AMCOS have been offering warehousing and crop marketing services to SACCOS members and SACCOS providing credit to finance farming activities and operation of the warehouses. Such kind of integration is considered to be an important innovation transformation that has ensured efficient service complementarities among some co-operatives (Kwapong and Korugyendo, 2010; Kwapong, 2013). Examples of co-operatives engaging in such integration include Kimuli AMCOS and Muungano SACCOS in Mbinga District, Ruvuma Region and Mruwia AMCOS and Mruwia SACCOS in Moshi Rural District in Kilimanjaro Region. Others include designed a co-operative management

software for members to access online services, establishing staff SACCOS, a co-operative entrepreneurship and innovation center (CEIC), a radio unit, regional centres, distance education department and correspondence courses to facilitate training and sharing of co-operative education and training.

The other one is the WEUPE model i.e. *Weka Akiba Upate Pembejeo*, an innovation aimed at mobilising smallholder paddy growers in Igunga District, Tabora Region under SACCOS arrangement to have a special scheme for accessing agro-inputs. The study revealed also that, most innovations converted into useful outputs in MoCU were disseminated to PCSOs (Table 1). It was revealed that some innovations that managed to reach the PCSOs were those with donor element demanding dissemination. They include the formation of the integrated co-operative model (ICM) in Mbinga and Moshi Rural Districts and establishment of "questioning member co-operatives" that enabled the formation of G32 co-operatives in Kilimanjaro Region among others. Some others, however, resulted from MoCU's own initiatives. They include forming staff-based SACCOS that is used as a financial service provider and training model to students and other co-operatives, enabled the formation of milk distribution channels to dairy co-operatives among others. On the other hand, the study identified a number of creative ideas generated at TCDC. They include the establishment of the co-operatives inspection fee charged to PCSOs, where the fund goes directly to the commission unlike in the past where it ended at district and regional level. The fund aimed at enabling more outreach activities to PCSOs thus raised by TCDC from the previous forty thousand to five hundred thousand. The practice has tremendously contributed to increased financial collections from Tanzanian shillings to 188 million in the 2014/2015 financial year to 1.1 billion in the 2017/2018 financial year.

TCDC also established the research and training department to research and feed PCSOs on various co-operative aspects. The department exists but suffers from personnel and financial limitation. Other ideas include being in discussion to link some PCSOs i.e. *Ushirika wa Wauza Zabibu na Masoko Mpunguzi* (UWAZAMAM) and Hombolo AMCOS producing grapes in Dodoma Region with VETA and SIDO to enable them acquire affordable wine processors to add value to their produce, influenced the government through the Prime Minister's directives to bypass middlemen buying the five key/strategic crops-coffee, tea, cashew, cotton and tobacco so that they can be directly marketed by PCSOs through organised systems i.e. warehouse receipt system (WRS) and auctions. The idea, currently in enforcement originated from TCDC.

There is also apportioning of personnel based on their areas of expertise into regulators/auditors and promoters unlike in the past where there were no such categories, enforced the implementation of the WRS after the first-ever WRS Act of 2005, an idea originated from TCDC (formerly the co-operative department). Under the WRS arrangement, TCDC



has ventured beyond traditional crops to include non-traditional crops such as cocoa in Kyela District in Mbeya Region and sesame and green gram in Dodoma Region. Nevertheless, few creative ideas were turned into new products or services in TCDC. Likewise, very few innovations were disseminated to PCSOs (Table 2). This shows that there was observable deficiency between existing creative ideas and those converted into new products and or services and again a sharp decline in those disseminated to PCSOs.

It was also revealed that TCDC was not well known to its clients and stakeholders. One KI at the district level said that:

“Since its set up in 2013, TCDC staff have not come down to members to either introduce themselves or introduce their innovations, if there are any” (KI, TCDC, Feb., 2018).

This implies that apart from some study participants' reservations on innovations flow from TCDC, it is not yet well known to the majority of its actors. The study further revealed that some innovations were designed for self-improvement of the organisation rather than for instant dissemination. Example of such innovations in TCDC includes the establishment of the research and training department, apportioning of personnel into regulators and promoters, among others.

Table 2: TCDC's innovation value chain assessment

No.	Ideas generated	Conversion (status)	Dissemination
1	Established a co-operative auditing fund.	The fund established	Yes
2	Formed the research and training department.	Established	-
3	New co-operative ventures i.e. forming non-traditional crops co-operatives e.g. Cocoa AMCOS in Kyela District, Sesame and Soya AMCOS, agricultural inputs suppliers' co-operative (head office in Dodoma), electricity supply in Ifakara, etc.	Established	Yes
4	In discussion to link grape producing PCSOs in Dodoma region with SIDO or VETA to acquire affordable wine processors.	Nil	Nil
5	Influenced government directives to bypass middlemen operating along the value chain of the five strategic cash crops.	The innovation implemented	Yes
6	Apportioning of staff into regulators/auditors and promoters.	Nil	-
7	Enforced implementation of warehouse receipt system (WRS) in traditional cash-crops & non-traditional crops.	The WRS enforced	Yes
8	Introducing licensing/certification of co-operative trainers.	Nil	-
9	Facilitating grapes producers' joint enterprise.	Nil	Nil
10	Planning to establish VETA youth graduates co-operative to acquire equipments and technologies.	Nil	Nil
11	Established co-operative information tracking computer application.	Yes

Several creative ideas, some of which being successfully converted into innovations were recorded at VETA. They include designing of eggs hatching machines, milling machines, crop processors, solar-powered cars, mortuaries, and excavators. Others include designing a machine for supplying oxygenated air to small scale volcanic blocks miners in Kilimanjaro Region, fish traps and water hyacinth removers/washers (Table 3). VETA also developed various innovative programmes including the *Vsomo*: an innovation in which training is offered using mobile phone application (currently customised to Airtel mobile system with 3,000 learners countrywide), covering several training including

motorcycle repair, mobile phone repair, home-based electrical training, cosmetology, welding, and fabrication. Under this programme, theoretical training is covered through Airtel Android App and then trainees attend compulsory physical sessions in nearby VETA stations. The other innovative programme is the dual apprenticeship training system, “*mpango wa mafunzo ya uwanagenzi pacha*”- a block release training system supported by Hamburg Chamber of Skilled Craft-Germany whereby apprentices/trainees spend weeks of the year alternating between a training centre and their workplaces/industry. It is designed to help people without previous training and or experience to enter the job market as apprentices in the craft of their choice by signing a contract with respective industries. Several organisations including Power Electronics, Toyota Tanzania, Diamond motors, Twiga cement, Tanzania breweries, and many others have participated in the programme. However, no PCSO had benefited from the two training programmes.

Nevertheless, numerous creative ideas including innovations protection and commercialisation plans, organising informal innovators into formal associations or groups, creating innovation partnerships with other organisations and others (Table 3), remain unconverted into practical products or services. Moreover, this study revealed that most innovations were not disseminated to end-users including PCSOs. The VETA innovation policy document (2014) affirms that there has been a low impact of innovation due to the small scope and fragmentation of innovation activities. This is because many innovations were implemented by default and solely on individual initiatives and not based on research findings. Similar concerns were revealed from study participants.

Table 3: VETA innovation value chain assessment

No.	Ideas generated	Conversion (status)	Dissemination
1	Designing milling machines, eggs hatching incubators, sunflower processors, oil filters, spares parts, honey pressers and others.	The technologies designed	Yes
2	Developing fish traps, water hyacinth remover/washer, solar powered vehicle, cooking stoves, mortuaries, excavators, etc.	The technologies designed	No
3	Planning VETA exchange of students and graduates abroad.	Nil	Nil
4	Designing a <i>Vsomo</i> mobile phones application based training and a dual apprenticeship training programme.	The programmes developed	No
5	Commercialising innovations and establish innovation prizes.	Nil	Nil
6	Designing a machine for supplying oxygenated air to small scale volcanic blocks miners.	Machine designed	No
7	Establishing graduates equipments financial services scheme.	Nil	Nil
8	Organising informal innovators into formal association/groups.	Nil	Nil
9	Developing innovation partnerships with other organisations.	Nil	Nil
10	Devising mechanisms for protecting innovations.	Nil	Nil

With reference to the three previous organisations, the study identified the absence of formal structures for organising and managing innovation activities in SIDO. As a result, most innovation activities were undertaken and managed informally. Nevertheless, some creative ideas that include designing of value addition machines e.g. ginger processor, honey pressing and sieving machines, spice milling machines, soap extruders, and others were successfully converted into useful products. Others were hides and skin products design training, milk holding machines for



maintaining optimum temperatures during processing, establishment of credit schemes targeting small and medium enterprises (SMEs) and operating business incubator services in SIDO Vingunguti area in Dar es Salaam where new ideas are nurtured and financially supported in form of credit charged at two percent interest rate.

There are also the technology development centres currently operating in seven regions which supply technologies and equipments e.g. milling machines and others at low charges, establishing the one district one product programme as well as several training programmes (Table 4). Several of the ideas, however, remain unconverted into innovations. They include planning to design a system for funding, rewarding and protecting innovations among others (Table 4). Moreover, the study revealed that, very few innovations were disseminated to PCSOs and that those disseminated went only to small, isolated segments of PCSOs. This implies that innovations disseminated to PCSOs were not evenly distributed and thus reaching only a small number of co-operatives. Besides, there were no any department or unit responsible for innovation researching at SIDO.

Table 4: SIDO innovation value chain assessment

No.	Innovation ideas generated	Conversion (status)	Dissemination
1	Planned to design ginger processing plant with capacity to process 9.1 tons per day at Mwaniba Mwaniba co-operative society-Same District.	The processor with capacity to process 2.7 tones designed	Yes
2	Designed honey pressing and sieving machines, spice milling machines, sugar cane juice extractors, paddy crushers, soap extruders, maize shellers, cashew shelling machines and some machine prototypes.	Various machines designed	No
3	Designing a sustainable system for funding innovations.	Nil	-
4	Designing a system for protecting innovations e.g. copy rights.	Nil	-
5	Designing milk holding machines for maintaining maximum temperature during processing for Nronga dairy co-operative.	Machine designed	Yes (but faulty)
6	Establishing credit schemes for SMEs including PCSOs.	The scheme formed	Yes
7	Operating business incubator services (BIS), technology development centres (TDCs) and premise-renting programme.	Services designed but only in few centres	No
8	Developing innovation collaboration with other organisations.	Nil	Nil
9	Offering entrepreneurship and value addition trainings, ICTs trainings to SMEs, industrial co-operatives and SMEs association trainings, hides and skin products designs, etc.	Trainings offered	Yes
10	Designing business information centres and innovation awards.	Nil	Nil
11	Founded one district one product programme.	Programme designed	No

The study revealed interesting findings from TaCRI. Given the fact that TaCRI is specifically dealing with coffee research, most of its innovations are based on this line of expertise. The organization has several creative ideas of which most of them were successfully turned into innovations i.e. improved coffee varieties (Table 5). It includes ten Arabica hybrids i.e. N 39-1, 2, 3, 4, 5, 6 and 7 and KP 423-1, 2 and 3 with the same and or better beverage qualities than that of traditional varieties that were highly susceptible varieties N 39 and KP 423. It also developed six compact varieties named CVT₁3, CVT₁ 5, CVT₂ 1, CVT₂ 10, CVT₂ 11 and CVT₂ 13 were on top of resistance to coffee berry disease (CBD) and leaf rust disease (LRD) its output is three to four times the traditional varieties and two to three times of new hybrids. Likewise, it developed improved Robusta varieties i.e. Maruku 1, Maruku 2, Bukoba 1 and

Muleba 1 which are resistant to coffee wilt disease (CWD); a scourge that has ravaged most of the Robusta coffee farms in Kagera Region. The varieties are improved in terms of diseases and drought resistance, early maturity, high yields, and better cupping quality. Three other drought-resistant varieties were also developed. Other innovations include tissue culture and coffee borer traps design, soil testing services, developed countrywide soil fertility database, designed hybrid coffee vegetative multiplication practices, among others (Table 5). Most such innovations were disseminated to targeted end-users i.e. coffee farmers, including PCSOs.

Table 5: TaCRI innovation initiatives assessment

No.	Ideas generated	Conversion (status)	Dissemination (Yes/No)
1	Developed ten improved Arabica coffee hybrids and six compact varieties.	The improved varieties developed	Yes
2	Developed four improved Robusta coffee varieties.	The varieties developed	Yes
3	Developed three drought-resistant coffee varieties.	The varieties developed	Yes
4	Outsourced coffee tissue culture technology under a signed memorandum of understanding from Crop Bioscience Solution, a private entity in Arusha region.	The technology implemented	Yes
5	Outsourced coffee borer traps for controlling coffee borers.	Traps designed	Yes
6	Developed technologies for soil testing for estates use and countrywide soil fertility data base.	Technologies developed	Nil
7	Developed vegetative multiplication of hybrid coffee seedlings.	Multiplications done	Yes
8	Planning to develop at least fifteen second generation compact coffee i.e. newly improved hybrid varieties resistant to diseases.	The new varieties (about 5) have been tested.	No
9	Established demonstration plots for farmers and co-operatives.	The plots established	Yes
10	Initiated coffee development fund (CDF) to coffee stakeholders.	The CDF established	Yes

A cross-case analysis revealed remarkable initiatives in most of the studied GCSOs at least at the first stage of the innovation value chain i.e. creative ideas generation. At this stage, numerous creative ideas were identified in such organisations. Few of such ideas were outsourced mainly from donor-based programmes and technology supply agencies. Pittaway *et al.* (2004); Ganotakis and Love (2012); Hsieh *et al.* (2011) and Tidd and Bessant (2015) emphasised that organisations may seek to complement or substitute some innovative ideas from external sources to assemble sufficient and necessary bundle of knowledge for innovation. This implies that both internal and external knowledge sources are crucial inputs in enabling effective innovation value chain outputs. Nevertheless, the second stage of the innovation chain of the studied GCSOs i.e. creative ideas conversion suffered a notable decline in terms of ideas that were turned into new products or services. The declines, however, varied from one GCSO to another depending on the extent to which an organisation has invested resources and prioritise it for innovation activities. It also resulted from lacking coordination and institutionalisation of innovation activities in most GCSOs.

It was established that most innovation activities in place did not emanate from research-based GCSOs efforts but rather from personal staff initiatives. This implies that most of the GCSOs innovation strategies in place were more verbal and textual than practical. Goedhuys *et al.* (2014) indicated that research and development (R andD) is an important innovation input in all innovative and competitive organisations. This implies that as most GCSOs had not



invested in innovation R and D, few creative ideas could have been turned into useful products or services. This is because ideas lacking research backups are likely to either remain unimplemented or result in poor outputs.

Thus, effective creative ideas integration within organisations in terms of genuine innovation R and D undertaking, resource commitment, and utilisation is necessary for them to be successfully turned into innovation outputs (Hsieh *et al.*, 2011; Srholec, 2011; Goedhuys *et al.*, 2014). Bessant and Tidd (2011) show that not all creative ideas become innovations; rather they only become one if they are implemented. This implies that GCSOs failure to convert some creative ideas into innovations was likely to affect the subsequent innovation stage i.e. dissemination. It was found that, in all studied GCSOs, some innovations were developed. Nevertheless, not all developed innovations were aimed for direct dissemination as some e.g. establishment of the research department, re-allocating personnel into regulators and promoters (TCDC), establishing small scale research grants for staff (MoCU), etc were for self-improvement of the GCSOs. In the course of implementing such innovations some long, medium and short term outputs e.g. research products or practices were expected to PCSOs. However, none were recorded by the time this study was conducted. Thus, in most GCSOs except TaCRI, few innovations were disseminated to PCSOs. The findings signify the resultant weak innovation undertakings mainly at the conversion phase that ultimately result in few innovations reaching the PCSOs. Empirical studies affirm that few innovations were disseminated from GCSOs to PCSOs in Tanzania (URT, 2006; ICA, 2013; DFID, 2014). Similarly, studies by Gamal *et al.* (2011); Ganotakis and Love, (2012) and Ishak *et al.* (2014) established that weak innovation value chains contribute to few innovations dissemination in organisations. The findings from this study confirm the Innovation Value Chain model which emphasises that, for effective innovations dissemination to occur, the organisation’s innovation value chains must be effectively linked (Hansen and Birkinshaw, 2007). The model proponents, however, assert that, in the course of innovation undertakings, organisations typically succumb to either of three broad “weakest-link” scenarios which may include poor innovation ideas generation, conversion or dissemination. Idea poor may be obvious but conversion poor means organisations may be unable to pinpoint the best ideas, fund it and turn it into useful products or services while dissemination poor means an organisation may not be able to bring the new products or services to the intended markets or clients (Hansen and Birkinshaw, 2007).

This paper established similar scenarios in most of the studied GCSOs where innovation value chains suffered some weak links in terms of few creative ideas conversion into useful products or services and in its dissemination to PCSOs. To address this, the IVC model proponents urged managers to focus on finding and fixing their weakest links. To the GCSOs, focusing on the weakest links implies committing and directing necessary innovation inputs or resources were currently missing or are insufficient to enable

effective creative ideas generation, conversion, and dissemination to PCSOs. In contrast, however, TaCRI’s innovation chain analysis shows that it was good at sustaining its innovation value chains and hence reasonable innovations i.e. twenty-three improved coffee product varieties and seven other innovations were disseminated to farmers, PCSOs inclusive between the years 2007 and 2017.

3.2 Extent of the GCSOs Innovation Value Chains Linkage on Innovations Dissemination

This study revealed that the innovation value chains of most of the studied GCSOs were not effectively linked to innovations dissemination to PCSOs. Although all GCSOs were rated as “good” and or “very good” in terms of creative ideas generation, most of them scored “poor/weak” and “medium” at turning such ideas into innovations. They were also rated as “poor/weak” in terms of innovations dissemination to PCSOs (Table 6). Despite some notable innovations and their dissemination to PCSOs in some GCSOs, most of them were rated “poor” for the reason that since the study assessment covered a ten years’ period (2007 to 2017), much more could have been done to enable more innovation value chain outputs. This implies that, in the period under study, the innovation value chains i.e. ideas generation, conversion and dissemination of most GCSOs were weak and uncoordinated, making few innovations reaching the PCSOs. Several reasons including resources inadequacy, the unwillingness of the GCSOs to prioritise and or utilise available resources for innovation and lacking or inadequate innovation incentives were attributed to GCSOs failure to enable innovations creation, conversion, and dissemination to PCSOs. Others were the influence of external factors mainly inadequate government’s resources commitment and uncoordinated innovation policy focus.

Table 6: GCSOs innovation value chain linkage on innovations dissemination to PCSOs

GCSOs	Innovation chain	G1	G2	G3	G	Reason(s) for gauging the GCSO (assessment in 10 years period)
MoCU	Ideas generation	Medium	V. Good	Good	Good	Twenty-two innovation ideas recorded.
	Conversion	Poor	Good	Poor	Poor	Eleven ideas converted into useful products or services.
	Dissemination	Poor	Medium	Poor	Poor	Nine innovations were disseminated to PCSOs.
TCDC	Ideas generation	Good	Medium	Poor	Medium	Twelve innovation ideas were recorded.
	Conversion	Poor	Poor	Medium	Poor	Five ideas were converted into useful products or services.
	Dissemination	Poor	Poor	Poor	Poor	Four innovations were disseminated.
VETA	Ideas generation	Good	Medium	Good	Good	Twenty-one innovation ideas recorded.
	Conversion	Medium	Good	Medium	Medium	Fourteen innovation ideas were converted to useful products or services.
	Dissemination	Medium	Poor	Poor	Poor	One product was disseminated to PCSOs.
SIDO	Ideas generation	Good	Good	Good	Good	Twenty-five innovation ideas recorded.
	Conversion	Poor	Medium	Medium	Medium	Twenty ideas converted into useful products or services.
	Dissemination	Medium	Poor	Poor	Poor	Four innovations were disseminated to PCSOs.
TaCRI	Ideas generation	Good	V. Good	=	V. Good	Forty-five innovation ideas generated.
	Conversion	V. Good	Good	=	V. Good	Thirty-five ideas were converted into useful products or services.
	Dissemination	Good	Good	=	Good	Thirty products or services were disseminated to farmers and PCSOs.

Note: G1-G3 represents rating responses of up to three focus groups of the same GCSO while G stands for final responses resulting from validation meetings comprised of study participants from all studied groups i.e. G1 to G3.



Taghizadeh *et al.* (2014) indicated that successful innovation value chains should be effectively linked in the end-to-end approach at generating, transforming and disseminating innovations. Contrary to this contention, the innovation value chains of most GCSOs were poorly linked to innovations dissemination to PCSOs. This was affirmed by the fact that in most of the studied GCSOs, few innovations were disseminated to PCSOs. This implies that, as the innovation value chains were weak, few innovation outputs were likely to reach the PCSOs. Moreover, the study established that most of such innovations were area-specific and unevenly disseminated across PCSOs in the country. This implies that the innovation value chains of most GCSOs were poorly linked and geared towards innovations dissemination to PCSOs.

Empirical studies have shown that, when the innovation process is considered and implemented as a value chain comprising of effectively linked chains, it is possible for sufficient organisations' innovation outputs to be realised (Hansen and Birkinshaw, 2007; Smit, 2015; Yun and Yigitcanlar, 2017). Furthermore, in most GCSOs, innovation undertakings were more of informal processes, undertaken based on personal initiatives rather than a product of teamwork or organisational initiatives. As a result, most innovation activities were neither organised nor coordinated in clear organisational systems. Besides, in most GCSOs there was no department or unit specifically established for managing innovation activities. This implies that such activities were not institutionalised in most GCSOs resulting in a lack of effective mechanisms for coordinating and linking their implementation.

4.0 Conclusion and Recommendations

4.1 Conclusion

The innovation value chain analysis revealed a weak progression from the lower node of ideas generation to dissemination. In most GCSOs, great initiatives were on ideas generation and little efforts on conversion and dissemination. The study confirmed the Innovation Value Chain (IVC) model which accentuates that, for effective innovations dissemination to take place the organisation innovation value chains must be effectively linked. The study affirms that weak innovation value chains in most of the studied GCSOs contributed into few innovations dissemination to PCSOs. Similarly, the innovation value chains of most of the studied GCSOs were not sufficiently linked to innovations dissemination to PCSOs. As such, to most GCSOs, the innovation activities were not institutionalised i.e. not organised and coordinated under clear organisational system, making it a neglected discipline. Nevertheless, coffee stakeholders and donor support commitment was revealed to be instrumental in enabling the innovation value chain of TaCRI which was found to be effectively linked. It is therefore concluded that given the weak and poorly linked innovation value chains amongst most of the studied GCSOs and ensuing lack of innovation activities institutionalisation, few innovations are likely to be disseminated from such organisations to PCSOs.

4.2 Recommendations

This study recommends that for many innovations to be developed and disseminated to PCSOs, the GCSOs should genuinely work to ensure innovation value chains are strengthened. The chains can be strengthened by ensuring sufficient allocation and prioritisation of resources for innovation activities. This should go hand in hand with ensuring institutionalisation of innovation activities including establishing and operating a unit or department responsible for innovation aspects. Such units or departments should be manned with qualified personnel that can conduct innovation researches, interpret research findings and translate the findings into innovation outputs and ultimately disseminating them to PCSOs. To achieve this, the GCSOs should also provide the necessary resources to enable their operations. Moreover, the study recommends that more efforts should be made by co-operative stakeholders to encourage innovation ideas conversion and dissemination to most of the studied GCSOs. This can be done by establishing special innovation programmes or projects that include interdisciplinary teams. This will encourage the nurturing and sharing of innovative practices among staff. The positive performance of such teams is likely to result in more innovation activities in the innovation value chain that will ultimately result in innovations dissemination to PCSOs.

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