CO-OPERATIVES AND ICT INTEGRATION IN TANZANIA: OPPORTUNITIES AND CHALLENGES

Gideon Enock Ntunga[35]

Abstract

This paper focuses on ICT integration in the Co-operative sector in Africa and Tanzania in particular. Through a review of the existing literature, the paper reviews the ICT landscape in Tanzania and discusses the nexus between ICT and Co-operative societies with a view of raising awareness of the crucial role of ICT in co-operative development. Similarly, challenges and opportunities associated with ICT in co-operatives are highlighted as well as the objective to inform strategies for effective adoption. The findings suggest that most of the underscored challenges, with an exception of infrastructure-related challenges, are internal to Co-operative societies. In that regard, this paper recommends that ICT projects in co-operatives must be emphasised and designed in a manner that observes systematic procedures for establishing such projects. The paper concludes that integrating ICT in co-operatives outweighs any justification for the otherwise decision.

1. Introduction and Background of ICT in Tanzania

Information and Communication Technologies (ICT) is a general term that refers to a variety of technologies used for gathering, storing and retrieving, processing, analysing and transmitting information in various forms (Ugwuanyi, 2017). It is central to nearly all human endeavours and it is a powerful mechanism for promoting social and economic growth. In recent years, advancement in technology has made it relatively less expensive, easier to use and within the reach of ordinary citizens.

In Tanzania, ICT is recognized as a major factor in the struggle for economic development and poverty reduction. Several strategies have been in place to ensure ICT technologies are widely accessed and used to support various social and economic activities in the country. However, a significant milestone in the development of ICT was marked by the development of the National ICT policy in 2003. In this policy, various previous separate policies within the ICT sector such as National Telecommunications Policy, National Information and Broadcasting Policy, National Postal Policy, and the National Information Communication Policy were integrated into one comprehensive policy.

This policy targeted to make Tanzania a hub of ICT infrastructure and ICT solutions in the Eastern and Southern African regions (URT, 2016). Its coverage included ICT leadership, ICT infrastructure, ICT industry, Human Capital, Legal and Regulatory Framework, Productive Sectors, Service Sectors, Public Service, Local Content, and Universal Access. However, its implementation focused more on ICT Infrastructure and Legal and Regulatory framework than other areas (Wangwe, 2010).

On ICT infrastructure, major improvements have taken place. Deployment of the National ICT Broadband Backbone (NICTBB) is one of the significant examples. The project started in 2009 and it involved rolling out 7500 kilometres of fibre cable for a network that connects with international submarine cables (SEACOM and EASSy) for providing land connectivity within Tanzania and the neighbouring countries (Esselaar and Adam, 2013). By the year 2015, Tanzania had already achieved high-capacity broadband connection through EASSy, with a capacity of 4.72Tbps, SEACOM with a capacity of 1.28 Tbps, and coverage of 7,560 Km long NICTBB Optic Fibre Cable with the capacity of 4.8Tbps (URT,2016).

[35] Tumaini University Dar es Salaam College

Currently, all regional headquarters in the country are connected to the National ICT Broadband Backbone and the connectivity has been extended to the neighbouring landlocked countries such as, Uganda, Rwanda, Burundi, Zambia, and Malawi.

Consequently, the costs of accessing the internet have significantly dropped. However, the number of internet users has not proportionally grown. For example, between 2005 and 2015, the number of internet subscribers increased from 3.56 million to 17.26 million, respectively (URT, 2016). To-date, the majority of the citizens, especially in rural areas, still cannot access broadband services. On the other hand, the telecommunication industry recorded a remarkable growth with a tele density increase of 1.22 subscribers for every 100 people in 2002 to 79 subscribers for every 100 people in 2015. Similarly, the subscriber base rose from 2.96 million in 2005 to 39.8 million in December 2015. However, this growth was experienced more in the mobile phone industry than in the fixed telephone. The fixed phone industry declined significantly (URT, 2016). The growth of the mobile phone industry contributed to innovations that introduced financial components to it. The ability of mobile money services applications such as M-Pesa, TigoPesa, Airtel Money and HalloPesa to transact various payments and bills through mobile platforms have attracted many people to use the service. Similarly, the use of social media applications such as Facebook, Twitter, Instagram, WhatsApp, LinkedIn, YouTube, and Blogs is attributed to the growth of the Mobile phone industry.

The other important landmark is the Analogue Switch-Off (ASO). Before June 2015, which was the worldwide deadline for phasing out analogy technology to digital as per the ITU agreement, Tanzania had already shifted to digital technology and it became the first country in the Africa Sub-Saharan Countries to achieve full migration (Esselaar and Adam, 2013). With regard to the legal and regulatory framework, the Government established the Tanzania Communication Regulatory Authority (TCRA). This was established through TCRA Act No. 12 of 2003 that mandated it to regulate the communications sector in which telecommunication, broadcasting, and postal services -sub-sectors are included. With the liberalisation of the economy in the country, the communication sector was also liberalised. The liberalisation of the sector compelled to the introduction of the Converged Licensing Framework (CLF) in 2005 and by the end of 2015; 18 network facility operators, 14 network service operators, 80 application service operators, 91 radio content service operators and 26 television content service operators had been licensed under CLF.

Other legal and regulatory frameworks include the Electronic and Postal Communications Act No. 3 of 2010 the Universal Communications Service Access Act. No. 11 of 2006, the Cybercrime Act No. 14 of 2015 the Electronic Transactions Act No. 13 of 2015. These legal frameworks are aimed at moderating the sector for wider but responsible access and use of information. Generally, the NICTP of 2003 achieved a lot of significant milestones in the development of ICT in the country. However, these achievements brought challenges as well as opportunities in the ICT industry that required a new policy framework. The 2003 NICTP was reviewed and a new NICTP was formulated in 2016 with a vision which states that; *"Tanzania with economically, socially and culturally enriched people in ICT enabled knowledge society" (URT, 2016).*

Unlike the previous 2003 NICT policy which focused much on creating ICT infrastructure with a view of making Tanzania an ICT hub, the 2016 NICTP focused on enhancing the use of ICT in the economic, social, and cultural activities of the people. Like the vision, the mission statement is emphasising the exploitation of the ICT benefits to every citizen and business. It states that.*"To transform Tanzania into an ICT-enabled knowledge-based economy through development, deployment and sustainable exploitation of ICT to benefit every citizen and business" (URT, 2016).*

With 2003 NICTP, all regional headquarters in the country got connected to the National ICT Broadband Backbone. But, the 2016 NICTP does not only consider taking the National ICT Broadband to the district's headquarters and rural areas but also creating mechanisms that will influence citizens to make use of the facility in their daily social-economic activities. The policy is, therefore, timely because ICT is currently considered as the main driver of the economy throughout the world. Integration of ICT in the productive sectors is one of the specific objectives in the 2016 NICTP. Incorporating ICT in the productive sector received attention in the previous policy but still, there are challenges to be addressed and one of them is to slow the uptake of ICT in the productive sector and particularly agriculture. It implies that the infrastructures available are underutilised. Comparatively, Tanzania is behind Kenya and Rwanda in terms of automation of the productive sector despite being a hub for Internet connectivity. This situation calls for interventions from various stakeholders in the productive sector.

This paper is an attempt for intervention. It addresses ICT integration in the productive sector, with a particular focus on ICT in co-operatives. The objective is to raise awareness by identifying the opportunities associated with ICT adoption in co-operatives in Tanzania and highlight the challenges of the same with a view of strategizing their solution.

2. Nexus between ICT and Cooperative

Co-operativesare economic platforms that have served communities in the world for many years. They are defined as autonomous associations of persons united voluntarily to meet their common economic, social, and cultural needs and aspirations through a jointly-owned and democratically-controlled enterprise (Ugwuanyi, 2017). These are business entities owned by people, run and controlled by them for economic gains among other things. They focus on improving market access and opportunities, increasing bargaining power, getting lower prices by purchasing in bulk, improving product or service quality, and securing credit from financial institutions (Dogarawa, 2005). Thus, they are considered as important mechanisms for improving the living conditions of people especially in rural areas as they promote economies of scope and scale and, thereby, empower members economically and guarantee social protection.

However, to achieve the economic, social, and other benefits of co-operatives have to be well planned and organised such that they are viable, efficient, competitive, self-reliant and project-oriented (Dogarawa, 2005). This requires consideration of many things and one of them is the appropriate management of data and information. As they pursue having effective and well-functioning cooperatives, they need to consider how information and data are managed for the competitive advantage of the cooperatives. Access to and appropriate use of information in an organisation improve decision making, enhance efficiency, and provide a competitive edge to the organisation which knows more than the opposition (Kaye, 1995). Currently, data and subsequently information are the driving forces of business in the world. For example, the decision concerning which product should be produced for a particular market is entirely dependent on a set of data and information available. If such data is not readily available, the decision will likely be an uninformed decision. Data and Information are well accessed, stored, processed, communicated, and retrieved using Information and Communication Technology (ICT) tools and facilities. It is quite obvious that when Information and communication technology (ICT) is effectively integrated and used by organisations, it can support business operations and expansion in many ways.

Unfortunately, the ICT situation of co-operativesin Africa and Tanzania in particular is not well established. A study done by The Alliance Africa in 2018 reported that ICT uptake and use in co-operatives is relatively low compared to other economic sectors. The study covered Rwanda, Kenya, Tanzania, Zimbabwe, D.R Congo, Niger, Nigeria, and South Africa and involved all levels of co-operatives organisations from the primary co-operatives to the highest level which is the representative umbrella body for all co-operatives. For example, findings of this study showed that the record-keeping at the primary, secondary, and regional levels of co-operatives is predominantly manual which implies that computer usage in co-operativesis below average. With regard to the use of account application, the findings indicated that primary, secondary and regional co-operativeshad 18.40%, 20.30%, and 33.33%, respectively. Similarly, the use of information management systems recorded 11.40% for primary, 21.70 for secondary, and 11.11% for regional cooperatives. The usage of other ICT applications and channels such as emails, websites, and mobile phones for various reasons varies between regions but are generally below the average as indicated in Table 1.

Table 1: ICT Utilisation at Primary Co-operatives in Africa with exception of North Africa

		Central Africa		East Africa		West Africa		South Africa	
	Elements of ICT	D.R. Congo	Rwanda	Kenya	Tanzania	Niger	Nigeria	South Africa	Zimbabwe
Primay	e-mail activation	0.88	6.14	15.79	11.40	0.88	6.14	6.14	0.88
	Website Activation	1.45	1.45	20.29	7.25	0.00	1.45	0.00	0.00
	smart/android	3.30	4.48	20.75	15.09	11.79	21.46	6.13	16.98
	Data Col: Phone	4.35	5.80	8.70	8.70	26.09	5.80	10.14	21.74
	Data Col: SMS	2.90	1.45	10.14	10.14	0.00	5.80	0.00	23.19
	Data Col: email	0.00	1.45	10.14	2.90	0.00	4.35	11.59	0.00
	Data Share-out via Phone	1.75	8.77	13.16	8.77	6.14	7.02	10.53	14.04
	Data Share-out via SMS	1.75	12.28	0.00	7.89	2.63	7.89	8.77	13.16
	Data Share-out via e-mail	0.88	11.40	0.00	5.26	0.88	0.00	7.89	0.88
	Country Total	3.40	10.49	19.51	15.26	9.54	11.81	12.07	17.91
	Regional Total	13.90		34.77		21.35		29.98	

Source: The Alliance Africa, (2018)

Although the findings indicate that the uptake is generally low, there are however some initiatives in place. For example, Msanjila (2013) acknowledges that: *"Most of the Microfinance institutions in Tanzania have established websites, which enable them to interact easily with their clients; they have also increased the internal use of the internet within organisations while others have adopted different accounting packages to help them in management of business transaction"*

In other words, there is somehow a transition to ICT-based operations at all levels of co-operatives. As noted by Msanjila (2013) SACCOS have slightly made significant achievements. This is partly due to to enforcement of TCDC, which has stipulated that ICT and particularly management information system is one of the criteria for a Co-operative society to be registered and get a licence. However, the pace is slow when compared with other economic sectors.

Generally, information and knowledge are tools for business competition in this era. Therefore, lagging in ICT and the related innovations and technologies is not healthy, thus, causes must be well addressed and the opportunities harnessed. In an endeavour to raise awareness as an intervention strategy, this paper highlights the challenges and opportunities of co-operativesin the adoption of ICT.

3. Challenges for ICT Adoption in Tanzania

As earlier noted, the pace for ICT adoption in co-operativesin Tanzania, like in other African Countries, is slow. Most large co-operatives, especially in rural areas, are still operating manually or semi-manually in accounting systems. This is labour-intensive and has plenty of occasions for errors that may create opportunities for abuse. As much as computerization and automation of co-operativesactivities are needed, it requires well-planned, organised, and concerted efforts of various stakeholders. However, there are several challenges that need to be identified and addressed. Among the challenges include:

3.1 Limited Stakeholders Involvement

This is one of the major reasons for slowing ICT adoption in co-operatives. The stakeholders are elected leaders, employees, regular members, and clients. These must be involved at all levels of ICT projects. In other words, there must be broad stakeholder's agreement on what are the priority information problems of the co-operatives that need to be addressed and whether some form of ICT solutions can solve or reduce the problems. Without such agreement, the ICT project is likely to fail or have slow adoption.

3.2 Limited Awareness on the Potential Benefits of ICT in Co-operatives

Education is a key component in co-operative sectors in all aspects including ICT adoption. Dogarawa (2005) asserts that education is important to the co-operative sector. Unless all those responsible for co-operatives (directors, officers, members, and staff) are well informed and knowledgeable, co-operativesare likely not to achieve the desired objectives and goals. In essence, education is a prerequisite for decisions which stakeholders take concerning ICT activities in co-operatives. That means stakeholders in their various capacities have to be informed and knowledgeable on the potential benefits of adopting ICT in the cooperative. This is what Ajzen and Fishbein (1980) in the theory of Reasoned Action define as the perceived usefulness of technology and state it categorically as a factor influencing technology adoption.

3.4 Misconception of ICT Cost

According to Gobin *et al* (2017), the perception that ICT is costly is threatening future ICT investment in SMEs business. The Alliance Africa (2018) findings in primary co-operativesin Africa show that 35.1% agree that cost and or lack of financial resources is a challenge for the adoption of ICT in cooperatives. The outcry is mostly on the costs of purchasing software and internet connectivity. However, the major discrepancy on this aspect is that, there is very limited ability for undertaking cost-benefit analysis that would make clear the difference between the installation and running costs against benefits. Likewise, underutilization of the available ICT facilities may discourage further investment because of the failure of the benefit to outweigh the investment costs. It means, potentials of ICTs are difficult to be realised because facilities are underutilised.

3.4. Limited Opportunities for Capacity Building

Capacity building is extremely important for all relevant stakeholders in the chain of ICT usage in the co-operatives. MacDougall and Squires (1997) asserted that there are various competencies that must be developed if ICT is to be effectively adopted. The relevant staff may have the basic knowledge of computers, but they may lack knowledge on the particular application. It is important to note that ICT is swiftly evolving technology and 'therefore' it requires updating and upgrading all the time. But on the same note, co-operative members and customers also require training on how to interact with the information systems available for them to use. When this is not or partially done, the basic users may perceive ICT as complex and unfriendly. This may lead them not to use the facilities and, therefore, interprete them as not relevant.

3.5 Poor Internet Penetration

Even though there are major developments of internet penetration in Tanzania as noted in the background, connectivity in rural areas is still a challenge. According to Pazi (2019), users in rural areas of Tanzania find it difficult to access broadband internet due to signal strength which deteriorates when users access the internet far away from the wireless tower. However, there is an alternative whereby users in rural areas can access broadband internet through mobile phones services. A study by Alliance Africa (2018) found out that South Africa and Tanzania are leading in the use of mobile phones for some of the co-operative activities with 16% and 15%, respectively. But the question remains on affordability as the purchasing power of many people in the rural areas is low to purchase a smartphone and subsequently mobile internet bandwidth.

3.6 Limited Knowledge on the Selection of Appropriate ICT Facilities

The acquisition of hardware and software is becoming complex as technology advances and vendors increase. Management, organisation, and technological factors need to be taken into consideration when selecting hardware and software for the organisation. Most co-operativesin rural areas find it difficult because they lack the required expertise for undertaking the same. The Alliance Africa (2018) findings indicate that 23.7% of the respondents in primary co-operativesmentioned lack of ICT knowledge, technology expertise, and implementation techniques as a stumbling block towards the adoption of ICT.

4. ICT Opportunities for Co-operatives in Tanzania

Information and Communication Technology (ICT) has several opportunities for co-operativeslike in other types of organisations. However, these opportunities can be realised if the challenges highlighted above are well addressed. The generic opportunities ICT offers to co-operativesand other organisations alike include speed, reliability, and the possibility to analyse a large amount of data. Other opportunities include the following;

4.1 Computerisation of Accounting and Administrative Records of Co-operatives

The management of co-operatives' accounts is one of the major challenges in co-operativesin Tanzania as it is largely done manually. According to FAO (2003), when activities such as preparation of payroll, invoicing, bookkeeping, accountancy, and purchases and sales are computerised, they reduce paperwork and offer the possibilities of keeping updated accounting records in real-time. Other benefits of using computerised and administrative records include easy access of data, accuracy, scalability, and reliability of data and information (Coleman, 2016).

4.2 Controlling Inventory

Co-operatives, like other organisations, have to manage inventory. This includes the procurement of raw materials, maintaining the storage of goods, and controlling goods for sales. According to Alliance Africa (2018), a large portion of the record-keeping activities in primary co-operatives in Africa, including Tanzania, are done manually using physically larger books which are tedious, inaccurate, and time-consuming. With computerised inventory, stock inventory records can be easily updated. Ultimately, better control of stock implies financial saving.

4.3 Administration of Member Participation and Shares

Membership data and information are easily managed and processed if a co-operative installs an information management system. FAO (2003) points out that, with the information management system it is easy for co-operatives to track each member's transactions and balance and calculate his patronage refund and dividend on share can be quickly done. It also helps in producing detailed members' reports

in a relatively short time compared to the manual system. Moreover, it can provide more personalised services as each member may have an individual account.

4.4 Widening Communication Alternatives for Information Sharing

Information and Communication Technologies offer a broad spectrum of communication channels. These range from emails, websites, newsgroups, chatrooms, video conferencing, mobile phone and their associated platforms, and many others. These communication channels offer co-operatives with opportunities for multiple alternatives for communicating with members, clients, and other stakeholders. They support a quick feedback reporting mechanism and are, therefore, useful for improving and adjusting things reported to have gone wrong before getting worse. Zijp (1994) argues that ICT must be calibrated to transfer knowledge as information packages to Agric-oriented co-operatives. At this point, ICT will be able to meet farmers' information needs.

4.5 Processing Data for Policy Decision

Efficient data processing for management and policy decisions requires co-operativesto have a computerised information system. For example, using the available data to make future projections of the Co-operative does not only require computerised systems but also competent personnel to undertake such analysis.

4.6 Capacity Building in Co-operatives Business Management

The use of ICT tools and facilities can enhance co-operative training delivery and may as well provide opportunities for people, who are unable to physically attend, access the training remotely. Various computer applications dedicated for training such as PowerPoint and others can be applied for capacity building training.

5. Conclusion and Recommendations

Given the current situation of ICT adoption in co-operativesas discussed in this paper, it is noted that most of the challenges affecting ICT adoption are internal to the co-operatives rather than external.

In that regard, this paper recommends that any attempt of co-operatives to adopt ICT should be systematically designed and observe the required procedures for the establishment of such a project. It is imperative for the co-operatives to know all the stakeholders involved, prioritise their information needs, keep the stakeholders involved, design the project proposal, and understand the key factors that might affect the project. It is also necessary to clearly define the goals, identify the main requirements of the system, prepare a training plan for staff and other stakeholders involved and have a budget and a plan for a continuous participatory evaluation of the project. On top of that, there should be internal policies within co-operativesto guide ICT adoption. This paper concludes that ICT in co-operativescannot be avoided in any way if they want to remain competitive. Cost-benefit analysis between the choice to have or not have ICT will always prove that having ICT outweighs the decision of not having ICT. It is possible and can be done according to the level of technology and resources available, but stakeholders have to pull together.

References

Ajzen, I and Fishbein, M. (1980) Understanding attitude and predicting social behaviour. Englewood Cliff, NJ: Prentice-Hall

Coleman and Co (2016). Advantages to using computerised accounting systems, Blog Article. Retrieved on 29th August 2021 from https://Coleman.com

Dogarawa, A.B (2005). The role of co-operativessocieties in economic development, SSRN electronic Journal. Zaria, Nigeria. Retrieved on 29th August, 2021 from https://mpra.ub.Uni-muenchen.de/2316/MPRA, Paper No. 23161

Esslaar, S and Adam, L (2013). What is happening in ICT in Tanzania: A supply and demand side analysis of the ICT sector, Evidence for ICT policy Action, Policy paper: Cape Town, Research ICT Africa.

Food and Agriculture Organisation (2003) Computerising agricultural cooperatives: A practical guide.

Goblin-Rahim Bux, C; Zarine, S; Nuzhah, G; Khan, M and Heenaye, M (2017) Investigating technology awareness and usage in Mauritian SMEs in the handicraft sector, International Journal of Computer Applications (0975-8887), Vol 174, No 7 of September, 2017.

The Alliance Africa (2018). Review of the existing Information and Communication Technologies (ICT) in co-operativesin Africa for the purpose of establishing flexibility, user friendly integrated management information system. Retrieved 23rdNAugust, 2021, from https://icaafrica.coop.

MacDogall, A., and Squires, D (1997). A framework for reviewing professional programmes in information technology, Journal of Information Technology, 115-126.

Msanjila, Simon (2013) Impact of ICT utilisation on efficiency and financial sustainability of Microfinance Institutions in Tanzania. Interdisciplinary Studies on Information Technology and Business, Vol 1, Issue 1, March 2013

Pazi, S.M (2019) Assessments of broadband access technologies in Tanzania rural area, International Journal of Internet of Things, Vol 8 (1) pp 1-9.

Ugwuanyi, L (2017). Assessment of the effects of Information and Communication technologies on the economic activities of co-operativesin South Eastern Nigeria, International Journal of Community and Co-operativeStudies, Vol 5, No 2 pp 14-23.

United Republic of Tanzania (2003) National Information and Communication Policy, Ministry of Communication and Transport, Dar es Salaam.

United Republic of Tanzania (2016). National Information and Communication Policy, Ministry Works, Transport and Communication