

Co-operatology and the science of cooperatives societies: A synthetic review of cooperative evolution

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ABSTRACT

Revision velocity of evolution of co-operative principles is not parallel to social, technological and economical change thus fails to suffice academic research in multisector economies. The purpose of this paper is to provide an overview of the review literatures on co-operative as a subject of study using scientific procedures. The study aimed to contribute on proposed a cooperative research framework and a continuous comprehensive study and implementation of 'co-operatology'. A study of co-operatives by focusing on market structural and formation with an early involvement of human being as members of these co-operatives.

1. Introduction

World economic growth has been driven by changes of different economic system, policies, varied business environment and technology (Surya et al., 2021). However, the economic system has several business entity types among them is Co-operative, sole proprietors, partnership, corporates and joint ventures (Patmore et al., 2021). The cooperatives generate about \$2.2 trillion in turnover with accommodation of 10% of the world's employed population (ICA, 2022). Although the distinction of co-operative from other economic system is on ownership structure (Bernadi, 2007; Novkovic, 2008), most adopters of Cooperative business model have been experiencing internal and external challenges (Wilson et al., 2013) which hinders its performance.

Considering changes in globalisation and its effect on cooperative model, current economic system is shifted and driven by investment and shareholding parastatals. This situation forced cooperative model to accept dilution of coop ownership principle whereby the voting right is partly given to investors who are other business entities (Ghuri et al., 2021; Puusa et al., 2016). Cooperatives model is also questionable on transformation speed. This type of model fails to cope with technological innovation on digital services that requires the review of intra and inter organisation process, new structure, leadership and networking. As compared to other firms, 60% of industrial firms transformed to digital servitisation and lead to development of new business models (Galvan and Boconcelli, 2022).

Despite increasing of data volume and processing, associated with new technology solutions known as artificial intelligence (AI) in

economic and analytical systems, cooperative statistics are not well established to meet the current digital demands (Birchall, 2011). However, with minute efforts, literatures informed that ICA developed a World Cooperative Monitor (WCM), a project focused on biased collection of statistics from World's top 300 cooperatives, and only eight cooperatives are included from Africa (Global Co-operative Statistics, 2022). The model suits well if there are mechanism installed by ICA to have a global cooperative data centre.

Birchall (2011) argued the same on the missing statistics of taxonomy and classification of cooperatives from ICA principles. Moreover, each country has its own coop classification that cannot be aggregated with other countries to operationalize cooperative model at a global level. The own classification is a background to cultural factors hence failure to establish joint venture at international level. Meschi (1997) argued cultural differences has led to mutually incompatible apex organization. Further, endurance of International Alliance is a paramount importance of compatibility between partners. This is the severe effects on performance of cooperative business model rally with globalizations and international markets by missing structure or prototype to accommodate transformation changes that support globalisation and economic systems.

Thus cooperatives are falling short on bargaining problem (Thomson, 1994) parallel to the globalization trends. Bargaining theory developed by Nash (1950) assumed if cooperatives leaders/associations decide to set aside differences of alternatives for their preferences and select specific alternative to agree upon it, they get achievement on that particular set of alternatives (Puusa et al., 2016). On other hand, if not

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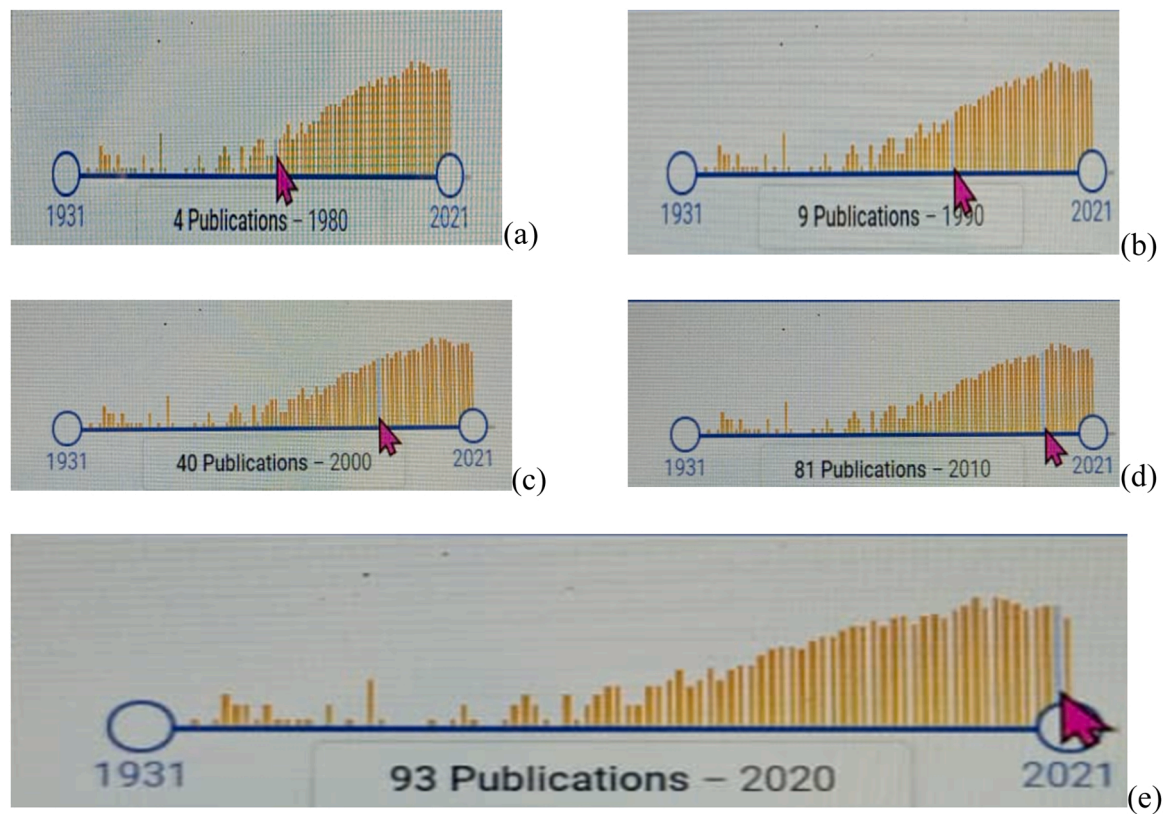


Fig. 1. : Semantic scholar statistical results for searched words 'co-operative principles'.

agreed, they will reach a point of no solution (Sawa, 2021). However, with decision to bargain for trading with other firms, cooperatives were found to suffer from transaction costs that lead to a governance challenge. Valentinov (2015) demonstrated this transaction cost as caused by a vague defined property rights and cost of transferring these property rights into more accuracy in details.

On its genesis, historical development of the cooperative model (ICA principles) from the derivation of the Rochdale cooperative principles, had left out other conceivable and vital principles including principle of employee participation and environmental concern. In business performance the ICA principles were not suited for other types of cooperatives includes workers. For example, Mondragon cooperatives had ten principles and American farmers reduce ICA principles to four (Birchall, 2011). The model tied itself on people-centred approach to benefits the poor rather than capital-centred approach operated in other business entities. The question is what happens when these 'poor people' become middle class, will the model undergo a natural death, or cooperatives members quit by opting a capital-centred approach? It, is of this view that cooperative model lacks standardized framework which is flexible for any socio-economic adjustments caused by a change on demands and supply.

Regarding the people prosperity blueprint approach, the cooperative model was not included to derive the means to achieve future sustainable development goals. Nevertheless, it is the form of business organisations that is doing best in the financial inclusion and better if considered in rural electrification (target 7.1) (Schwettmann, 2014). This is an indicator that, there is a weak knowledge of understanding contributions of co-operatives in economic dimensions for specific SDG targets. Without cooperation among co-operators, adoptable structured organization is of importance and should be mobilized by cooperative movement to accommodate changes that have weakened cooperatives model. Schwettmann (2014) consider environment, size, innovation, flexibility and management as key challenges facing co-operative model to encounter SDG targets.

Apart from demutualization and poor sustainable plan, there are other global challenges directly threatened cooperative model, among them are inflation, market shares, financial capital, economic evolution of non-cooperatives and change of lifestyle versus cooperative principles (Sacchetti & Tortia, 2016). This calls for a new thinking of changes, innovation and sustainability plan as a rescue mechanism against these threats. In view of the required changes, Suglobov et al. (2022) suggested unification of co-operative education and trainings of youth in Prague as a notable practices for successful 'co-operative science' in trying to answer the need for change of the cooperative education as a contributor of sustainable development. On avoidance of the adoption challenges in co-operative education, nature, members' cooperative interactions, size of the cooperative movement and management skills should be considered over the cooperative principles and values.

Suglobov et al. (2022), argued cooperatives is a way of thinking socially, economically and promotes learning democracy from members of cooperatives to citizens of individual countries. Mostly important thinking of new cooperative education that support innovations to new initiatives of the economic systems is also required (Suglobov et al., 2022, Birchall, 2011). With observed newer cooperatives, different goals were experienced, with adoption of complex and multi-stakeholder structures. Setting a cooperative education framework could reduce diversification of formation of hybrid cooperatives.

The reviews of cooperative business model following evolution of cooperatives (Surya et al., 2021; Patmore et al., 2021; Waring et al., 2021; Sacchetti & Tortia, 2016) provides insight evidence of intervention on structured framework for contemporary setting. Sufficient evidences have been in place for inadequate influences of cooperative model on economic system like other business models. There is an urgent need for review and re-evaluate cooperative model sustainability, practicability and policy issue mechanism to qualify on today's business environment from local to regional wise (Camargo Benavides & Ehrenhard, 2021). The views of this paper proposed that, constant studying of how cooperatives functioning with changing business

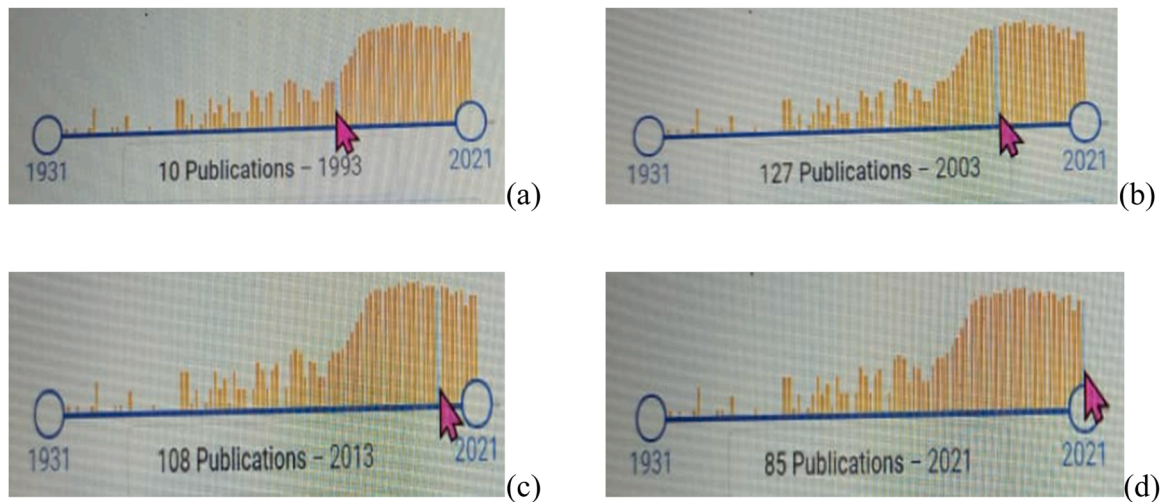


Fig. 2. : The statistical results for searched words 'evolution of co-operative'.

environment are better off to suit in economic system. The study has to follow scientific steps that focus on progression demand for changing of cooperative principles with the changing business environment which results to evolution of cooperatives. It is therefore in this paper, the whole process termed as 'co-operatology'. This paper will begin by reviews of discussions on origin of co-operative business model, metamorphosis of co-operative, evolution of co-operative principles, future of cooperative societies, and the emerging interest in evolution of cooperative.

2. Materials and methods

A review was conducted to assess progressive changing of co-operatives as a model of business in economic system following an influence from changing business environment. The essence of this review was to develop a reliable knowledge build-up from various sources addressing co-operatives (Camargo Benavides & Ehrenhard, 2021). A systematic literature review (SLR) approach was adopted in this review using (Tranfield et al., 2003) clarified steps; planning, conducting, reporting and disseminating the review. Traditionally, the SLR approach has a tendency of eliminating bias in literatures, through identification and collation of articles to ensure the best possible evidence is provided (Talonen, 2016). This approach also is characterized by systematic evaluation of existing literatures and synthesis of the study's findings (Wirtz & Daiser, 2018; Eloranta & Turunen, 2015).

2.1. Statistical trends of publication on co-operative principles

In grounding the attention of the nature of this study Semantic scholar statistical tool was employed to collect publication trends from 1931 to 2021 (see Fig. 1). First publication on co-operative principles were extracted. Results shows that publications on co-operative principles have risen in the last decades from the year 1980 s as indicated in search engines results of 2040 published articles on "cooperative principles" by December 2021.

2.2. Statistical trends on evolution of co-operative

From the year 1993, our statistical results indicate there were 10 publications on cooperative evolution (see Fig. 2) but these publications on this focus have increased more than ten times and reached 127 per year 2005. This means researchers assessed effects of improvising Rochdale principles of 1860's to 1995 ICA principles towards economic development agenda and therefore are subjected to these changes. However, these publications diminished to 85 in 2021, which is the 6th

year of 2030 Agenda for Sustainable Development (UN, 2015).

In this study, the analysis of literature started by examine relevant literatures on cooperative thoughts, used theories, its nature of origin, modelling process and its usefulness in business environments. The searched research context was developed into thematic areas derived the structure of this paper. Considering the subject of co-operatives have been integrated and dispersed in the various fields of management, economics, accounting and sociology among others. The literature analysis was conducted through the following steps. First by search the title using the databases Semantic scholar and Google scholar engines (Xu et al., 2020). The search term used were 'Theory of Co-operatives' or 'Co-operative business model' or 'Evolution of co-operatives principles' or 'Metamorphosis of Co-operatives'. The SLR methodology enabled contribution of this study on knowledge of 'The study of co-operatives'. The paper identifies the potential gaps for future research on 'studying procedure' of co-operatives here established as 'Co-operatology'. Co-operatives is dispersed in various fields. Based on facts there are thousands of co-operatives published papers (see Fig. 1 & 2), yet there is no criteria for select a review paper. Our sample paper for analysis were scrutinized and allow identification of 41 published literatures caters in theory of co-operatives; co-operative business model; evolution of co-operatives principles and metamorphosis of Co-operatives which is the focus of this study.

3. Evolution of co-operative principles

Co-operative principles have historically been developed based on the need for economic growth as well as the perception of the members. As Croteau (1951) examines Principle number one - voluntary and open membership, he finds that cooperative members no longer accept this principle. In some instances, members opt for a closed membership where members are accepted with certain racial traits, that segment the population, or have a professional activity that causes evolution on first principle (Whyman, 2012). The barriers to a diversion from open to closed membership came from formulated and reviewed institutional and legal frameworks. As a result, co-operatives in the United States moved from Rochdale principles to limited liability companies (LLCs) as a new generation co-operative from 1913 to 1951, which allowed more flexibility in state laws governing cooperatives from tax-exempt to taxable (Shakow, 2004). Depaoli et al. (2020) argue that the need for innovation in co-operative principles is inevitable with the advent of the internet as a means to get proficient and use virtual business in the digital world. In view of these demands for change, Waring et al. (2022) analysis showed that Rochdale co-operative principles have undergone intentional changes to accommodate the changing business

Table 1
Evolution of Co-operative principles.

1860 Rochdale pioneer	1937 I.C.A (7)	1966 I.C.A (6)	1995 I.C.A (7)
That the principle of 'one member one vote' should obtain in government and the equality of the sexes in membership	Open membership	Open, voluntary membership	Voluntary and Open Membership
That only the purest provisions procurable should be supplied to members	Democratic control (one person, one vote)	Democratic governance	Democratic Member Control
That full weight and measure should be given	Distribution of surplus in proportion to trade	Limited return on equity	Member Economic Participation
That capital should be of their own providing and bear a fixed rate of interest	Political and religious neutrality		Autonomy and Independence
That profits should be divided pro rate upon the amount of purchases made by each member			
That management should be in the hands of officers and committee elected periodically	Payment of limited interest on capital	Surplus belongs to members	Education, Training and Information
That frequent statements and balance sheets should be presented to members			
That a definite percentage of profits should be allotted to education	Promotion of education	Education of members and public in cooperative principles	Co-operation among Co-operatives
That market prices should be charged and no credit given nor asked	Cash trading (no credit extended)	Cooperation between cooperatives	Concern for the Community

environment in the 1930 s, 1966, and 1995 by various institutions. The aim was to apply these principles to other co-operative forms like producers, financial, workers, and industrial cooperatives as well as to provide a global identity.

Among the causes of evolution to these co-operative principles, according to (Novkovic, 2022), is the increasing number of members in co-operatives, which results in all members not voting to elect their governing bodies. Consequently, the democratic principle of member control has been violated due to the high proportion of members. There is no mention of a component of 'marketing their cooperative advantage' in the education and training principle. According to Battilani and Zamagni (2012) the concern for community principle was viewed positively in theory, but difficult to put into practice. On the basis of co-operative evolution, Novkovic (2022) argued that a progression of research into effective and efficient co-operative practices would allow co-operatives to remain competitive for a long period of time despite the changing business environment.

In a similar manner Webb and Cheney (2014) argue that cooperative principles, applications, and advantages are undergoing a transformation, while communication remains a process. With this phenomenon, there is a constant study of how co-operatives can be more successful with changing business environments, which is grounded in co-operative philosophy. As a result, co-operatology is defined here as a

scientific study of cooperative societies that is a result of the changing business environment's demand for a progression in cooperative principles. Table 1 shows evolution of co-operative principles drawn Waring et al. (2022); Mazzarol et al. (2018) and Birchall (2011) from which varies iterations. The 1995 ICA co-operatives principles remain the latest.

3.1. Theoretical evolution of co-operatives

Understanding the theory behind co-operative evolution is important in understanding the priorities of various schools of thought in co-operatives. Analysis of literature suggests that these schools of thought set various priorities to enable members to reach their goals. These schools include Co-operatives in North America, Co-operative commonwealth, California school and Competitive Yardstick School (Kaleshu, 2018). Co-operatives in North America were organized to manage product supplies to markets. Through a strong and vibrant organization, co-operatives influenced price and other trade agreements. Other focus was on providing quality services, fair treatment, and reducing members' exploitative opportunism. (Kaleshu, 2018). In the co-operative commonwealth school of thought, networks were formed with other trade-based organizations. These networks used federations to create economic boundaries and social order. Most successful networks formed were with farmers and labour cooperatives (Fairbairn, 1994). In light of the market challenge facing producers, co-operatives have been found useful by California school of thought to improve a balance in producer treatment and marketing coordination. In response to the imbalance among producers, California schools focused on long-term membership contracts and professional management. These approaches helped improve the well-functioning of associations. With regard to Competitive Yardstick School, emphasis was placed on local control to meet producers' needs in a local community (Myers et al., 2010).

3.2. Origin of the Co-operative Business Model/Model of peasants

According to Mazzarol et al. (2018) study, the authors point out that a business model is a logical tool used by an enterprise to determine its value to shareholders, managers and customers. The co-operative business model was originally developed in Rochdale, England during the late 18th and early 19th centuries as a way for low-income earners to earn a living. Today, it continues to be used as an effective way for governments and businesses to help their employees become more successful in their careers (Ganapati, 2014). A famous name is a model of peasants/marginalized group that contributes income earned by individuals at household level and group of people. The model has uniquely dual purposes: serving economic problems like poverty alleviation and social problems like poverty eradication.

A co-operative is 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 that provides services or produces goods to the members.

According to Birchall (2011) the co-operative model is one of the economic systems that aims to improve economic growth through a joint enterprise. In defining cooperative as a model of business, he argues that consumer cooperatives are better suited for consumers than producer and worker cooperatives. Therefore, he suggested placing consumer cooperatives as members own businesses (MOB) approach in the category of 'private sector' as it privileges economic rather than social economy or social enterprise. The MOB approach constitutes both tradition cooperatives and investor-oriented.

In a study by Chaddad and Cook (2004), the authors propose five new co-operative models on the basis of ownership and rights to control cooperative organization. The first model is proportional investment cooperatives with clearly defined proportional on capital invested; this

Table 2
The different between cooperative business model and others.

Traditional Cooperative Business Model	Cooperative and Mutual Enterprise model (CME)			
	Member Own Business	Consumer Own Business	Investor Own Firm (IOF)	State Own Enterprises (SOE)
Purpose: Not for profit but undertake Economic and Social activities for wellbeing improvement	Provide financial, insurance and health services	Profit oriented	Service oriented	
Origin: Rochdale Society of Equitable Pioneers in 1844	Workers and professional's late 19th and early 20th centuries	Poorly understood marginalised within the economics and management literature	Created by government	
Common Principles				
1. Voluntary and Open Membership	1. Absence of shares		1. Corporate governance	
2. Democratic and Member Control	2. Free membership		2. Remuneration	
3. Member Economic Participation	3. Member solidarity		3. External reporting	
4. Autonomy and Independence	4. Democratic governance		4. Anti-corruption	
5. Education, Training and Information	5. Independence			
6. Co-operation among Co-operatives	6. Limited profit sharing			
7. Concern for community				

is similar to traditional cooperatives. The second model is member-investor co-operatives, which gives benefits to investors. The third model is new generation co-operatives that include both traditional co-operative businesses as well as new business development projects (Puusa et al., 2016). The first three co-operative models' ownership rights are restricted to member-patrons with inclusion of traditional co-operatives, while others models are investor oriented firms, investor share co-operatives and co-operatives with capital entities: here ownership rights are not restricted to member-patrons (Ghuri et al., 2021) (Table 2).

Scholarly research on the changes in cooperatives organization structure brought by the changes in agricultural industrialization has found that hybrid cooperatives are an effective way to respond to the challenges of sustainable development. Schwettmann (2014) explored how traditional cooperative models can play a significant role in contributing to sustainable development goals and admitted that co-operative model faces key challenges, such as environment, size, innovation and flexibility.

3.3. The metamorphosis of co-operative: historical and present

Cook (2018) discusses cooperative development as a complicated allegory with different stages of life cycle. Co-ops' life cycles depend on how they were established and planned operations, management and power of market forces. Elsewhere, their maturity and evolution under changing business environments with new competitors entering the market may result in changes in life cycle (Novkovic, 2021). From mid-19th century onwards, co-ops have been categorized into six basic stages of development—metamorphosis, which is worthy to coop members with regard to their economic status. At each stage, individual

transactions operate prior to establishing coops even at first stage of development.

The metamorphosis of cooperatives begins with the voluntary membership stage, which focuses on economic justification; second is membership formation with a set of organizational design; third is governance and structuring to ensure proper growth; fourth is planning and finance where analysis matters to increase recognition and introspection; fifth is business take off; and sixth is sustainability, monitoring, and evaluations. Moreover, the longevity or liquidation of the co-operatives at stage six depends on several decision criteria—either to choose to sustain the status quo position, spawn new ventures within or without the cooperative structure, exit from operations altogether or reinvent or reimagine their business model in order to remain relevant and competitive in an increasingly dynamic marketplace (Cook, 2018). Evidences from across the world have shown that coops pass through phases (Patmore et al., 2021). In Britain, the co-operative movement faced a series of commercial, structural and corporate governance crises between 1950 and 2010, including plummeting market share, continued internecine rivalries and increasing marginalization (Wilson et al., 2013). Wilson et al. (2013) call for re-engineering of this model because of its turnaround nature.

In Australia, the life span of business co-operatives has been found to vary for several reasons. These include poor management during the period 1980–1989, four for 1990–1999, seven for 2000–2009, and two since in 2010 (Patmore et al., 2021). The life span was such that business cooperatives have an average of 27.81 years, worker/producer co-operatives have 9.04 years, consumer co-operatives have 22.8 years, and financial co-operatives have 23.21 years but some identified co-operatives have distinction up to 114 years (Yacob et al., 2017). Other causes of metamorphosis include changing government legislation or switching costs (such as membership fees) which can discourage members from remaining loyal or increase dissatisfaction among members (Yacob et al., 2017). In Ethiopia, the transformation of co-operative institutions has been influenced by different types of governments and their political ideology over a period of 60 years, as well as ideological differences within members (Tefera et al., 2017).

In Tanzania, Mruma (2014) found that legislation imposed by the government was the main cause of varied life spans among co-operatives. Among actions taken by the government were formation of many unfeasible co-operatives after independence (1961), dissolution of national co-operative bank (1970), abolition of all co-operatives (1976), and takeover of co-operative services by state-owned trading companies. Later, 1982 the Government revive formation of co-operatives followed by several periodic efforts of amendment of co-operative societies Act in 1991; 2003 and 2013 and co-operative policy developed in 2002. These efforts contributed to evolution of co-operatives in Tanzania.

3.4. Tensions that influence change in co-operative business model

Economic pressures, including increasing accumulation of resources and investment and wealth flows, directly affect cooperative business models (Bretos & Marcuello, 2017). This economic pressure influence reformation and innovations to meet neoliberal globalization in capital markets, financial markets, exports and imports of goods. The economic pressure of neoliberal globalization has influenced the reformation and innovation processes of co-operatives in capital markets, financial markets, exports and imports of goods. This effect has led to pressures on co-operatives to continue mobilizing resources from members and reinvesting profits rather than distributing them to members. Democratic sovereignty is being affected by cooperative organization structure thus causing demand for change by international firms.

Using IMF as an example, Bretos and Marcuello (2017) points out that IMF policies lead to economic, financial and social liberalizations. These liberalizations weaken local firms' political power and neither deviate from the structured policies at local and international levels. The

Table 3
Cases of co-operatives converted to profit-oriented firm due to various tension.

Origin	Source	Conversion	Reason for change
CALAVO Avocado Marketing Cooperatives	Stanford & Hogeland (2004)	Corporation-a profit firm	-Challenges of global marketing -Member-produced avocado were insufficient to meet market volume
Dakota Growers-New generation cooperative	Gray et al. (2014)	Corporation- a profit firm but coop members incentives for equity liquidity, after conversion, had not materialised	Voted for demutualization due to the need for equity liquidity, equity access, corporate acquisition, and cost of equity
South Dakota Soybean Processors	Stofferahn (2010)	Limited liability corporation (C-corporation)	Hegemonic discourse of neoclassical economics- it organizes common sense and hinders oppositional discourses

capital mobility of international companies, and private firms have penetrated at local areas, which narrow down the market competition between co-operatives. Bretos and Marcuello (2017) describe capital mobility as a source of unemployment challenge to the recipient countries, resulting to individualism and lessen social cohesion. The effects of these tensions have affected many cooperatives that have undergone demutualization. Among others that have undergone demutualization are Gold Kist agricultural co-operative association made conversion between 1984 and 1986 and later 2004; Land O'Lakes co-operative providing marketing of dairy products converted in 1987; Rockingham Poultry Marketing Cooperative converted also in 1987. Table 3 provides a summary of selected cases that have influenced with the change in economic systems.

Considering demutualization is indeterminant action, this cannot hinder the assumption of all cooperatives can be demutualized to corporations and members share disappear from multinational and corporation companies (Gray et al., 2014). Therefore, the framework (Fig. 1) for co-operative sustainability is suggested based on the reviewed studies. Future studies may focus on constrained capital sourced from Co-operative principles and practices (Schrader, 1989). Instead of members of co-operatives opting restructuring co-operatives, the framework may be employed to its best for co-operative society to serve best its members.

3.5. The future of cooperative societies

The future of cooperatives lies on accurate strategic planning for short term and long term with inclusion of implementation process (Nicolau and Simens, 2008), and mostly depends on collective fund established by all Cooperative organizations (El-aal, 2019). Many Governments are planning to increase funding for cooperative development including working capital, but the future for membership is indeterminant as so far indicators show there is a trend decrease of registration of members and share capital in the cooperative's societies (Borah, 2017). Prediction has been made such that cooperatives business model is and will be useful to prevent conflict, reduce violence, and can act as a bridge between development and sustainable peace between members, cooperatives and other related stakeholders (Ettang & Okem, 2016). However, literature show that with unforeseen circumstances, the future of cooperatives is likely going to suffer from internal obstacles which include management incompetence, hubris and radical self-management (Széll, 2018). According to Széll, 2018 the external obstacles include dominant capitalist forces, cooperative teachings that completely marginalized from learning economics and business

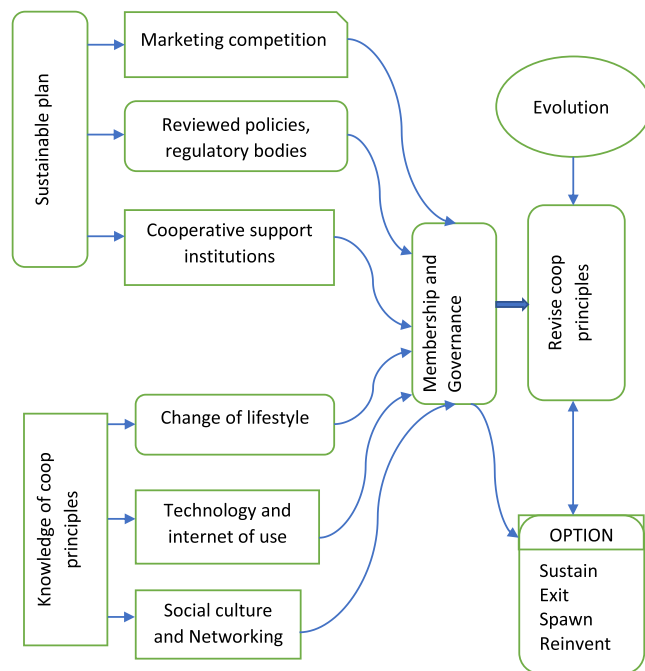


Fig. 3. : A conceptual framework for evolution of cooperatives.

administration.

4. Synthesis framework for evolution of co-operatives and co-operatology

Literatures find that membership and governance are the engine of the coop that for adhering with sustainable development there should be a well organised co-operative sustainable plan. However, this is not enough for market competitiveness, therefore coops plan must complies with the effect made by market competition, reviewed policies, regulatory bodies, and cooperative support institutions. Thus, periodic coop institutional adjustment for innovation to change is inevitable. Fig. 4 is the pictorial relationship of the cooperative evolution modelled to

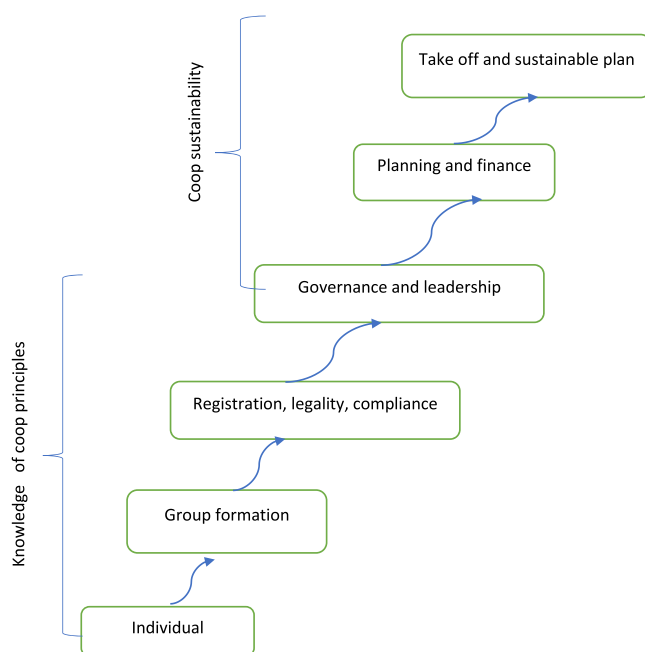


Fig. 4. Stages of Co-operatology.

capture the context of co-operatology from planning process to innovation.

Therefore, co-operatology begins with knowledge of sustainable planning and cooperative principles. Later new research findings on changes of social culture, networking, technology, and internet of things linked with the need for change in cooperative principles as happened in 1860, 1937, 1966, and 1995 (See Table 1) are the knowledge and skills for innovation that will ensure business competitiveness and sustainability of coops. Therefore, to contribute in a cognitive domain of cooperative governance, management and innovation scholars should adopt, modify and or criticize co-operatology model Fig. 3.

Therefore, co-operatology is synthesized to begin with co-operative principles with two phases, motivation and formation. Individual motivation as a member of cooperative is based on psychology, social, cultural, attitudes and perceptions. Then co-operative/group formation is based on registration guided by legal compliance, regulatory framework and policies. However co-operative governance, structure and leadership phase is intersected by awareness of cooperative principles and sustainability of coops. Sustainability of coops in co-operatology should continue and the focus in this part are management, finance, production and innovative services (Camargo Benavides & Ehrenhard, 2021). The final stage is a co-operative take off and sustainability strategies that will defines future of co-operatives. A takeoff means co-operatives are now fully operational and its survival is only in danger if there is poor management or demutualized. Fig. 4.

4.1. Conclusion

The concerns for the studies reviewed is weakness and irrelevance on some co-operative principles in current life. Further the effects brought by inevitable changes in policies, regulatory bodies, co-operative support institutions and social cultural attitudes also affects cooperative principles. The review of evolution and metamorphosis of co-operatives are fundamentally important to ground co-operatology, a subject that requires a further research to ascertain the co-operative learning process for improving economy (Tranfield et al., 2003). Further, a continuing advance research for human attitudes with other socio culture attributes to provides scientific improvement on cooperatives business model in relationship with membership sustainability in cooperatives. Future research should also focus on interdisciplinary subjects that suffice co-operatology which are psychology, sociology, market, legal and governance system.

Author statement

Contribution to co-operatives development has to remain as a scientific research.

Data availability

Data will be made available on request.

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