Integrated framework for governance of cooperative: An Interpretive Structural Modeling approach

Abhishek Behl*[1], Abhinav Pal[2], Krishna Kant Roy[3]

[1]Assistant Prof., Symbiosis Centre for Management and Human Resource Development, [2,3,]Assistant Professor, Symbiosis School of Economics, Symbiosis International University, Pune, India
abhishekbehl27@gmail.com[1], abhinav.pal@sse.ac.in[2], kk.roy@sse.ac.in[3]

Abstract

Background: The concerns for cooperatives are related to both economic and governance and regulatory concerns and governance issues holds high importance. The study aims at identifying the key governance enablers for enhancing the efficiency of cooperatives.

Methods Used: The study uses critical review of existing literature to identify the factors that cooperatives take into consideration while choosing a particular human resource for governance. The research also explores the decision of selecting local governance bodies in a cooperative and examines the decisions taken by the personnel. The study uses Interpretive Structural modeling to build a theoretical framework for the variables found out from the literature.

Findings: The framework gives a basic guideline for strategizing the decisions taken by the statutory decision making body. The framework includes both internal and external variables to measure the performance of the cooperatives with special reference to the decisions taken by the decision making authority. The results also classify the variables using MICMAC analysis which would help in understanding their ramifications. The prime challenge identified is trust which drives regulatory concerns, qualities of the leader, commitment of stakeholders and work culture. The performance of the cooperatives is the desired output which is placed at topmost of the hierarchy.

Applications: The study helps to analyze the linkages between the factors and would help them to fight against the challenges in a sequential manner rather than in a haphazard manner thereby enhancing their efficiency and reduce their turnaround time to resolves issues.

Keywords: Governance, Interpretative Structural Modeling, Cooperatives, Enablers, Barriers

1. Introduction

Cooperatives have been promoted by government of developing and under developed countries. Government's push to cooperatives, usually for promoting sectors like agriculture, is basically done with the idea of infusing money and opportunities in a sector lacking financial aid and inflow of revenue. Small Scale farmers across the world have been promoted by cooperatives in various ways. The cooperative movement is spread across all countries, varying in magnitude and target audience yet seeking the same objective. Researchers have argued and discussed the trivial issues of efficiency of any cooperative. Governance has been one of the key challenges faced by the co-operatives which has been identified and discussed in detail by researchers. The discussion has also been directed towards balancing act between demand and supply and controlling the equilibrium by leadership and governance in a cooperative firm [1] .Apart from the imbalance between the investor owned firms and cooperatives, there is coexistence in many sectors in most of the economies. Agriculture is one such sector which has been the highest beneficiary of such a setup across many countries [2].

The farmers are an important link in collective working for an enterprise. In a cooperative supply chain, it is important to focus on every linkage and governance is one such link which binds all the loops of a cooperative enterprise. There is a dearth of studies concerning the challenges faced by the governance aspect of a cooperative and building a link between them. Studies have focused on singular challenges faced by firms, some of which are even related to governance issues but a comprehensive study to weave the factors is lacking. The concerns are serious and studies have indicated challenges like low level of participation in a cooperative, the degree of

effectiveness of the members, the ability and consistency of the workers and role of a leader who could lead by example and lay strong foundation in ensuring probity.

These concerns have garnered interests of various academicians and renowned professionals in the field of governance. Studies have highlighted cases from the industry and solutions towards them but deriving a holistic solution on the issue of governance is yet to be done. The viewpoints mentioned in earlier studies have also been limited in terms of understanding and application of governance with a limited suggestion to the cooperative world as such. This has led to weakening of the literature for understanding the flow of governance from top to bottom.

The present study aims to build a net of issues and understand the challenges faced by any cooperative firm in their governance. The study would enhance the understanding of challenges related to governance and therefore suggest probable measures to control them in the light of co-operatives.

Governance issues are pertaining to every industry and are studied by numerous researchers to understand and implement better governance strategies. The innovation has led companies to preach and practice co-operation and initiate innovation projects which have made them climb the ladder of knowledge quickly. Good governance is also practiced and implemented co-operatives but the frequency and intensity with which the same is practiced differs which has been a major concern for the industry. Governance in Co-operatives deal with controlling relational risk aroused due to multiple factors like dependency of firms and opportunism [3]. Relational risk has been defined and explained as the measure of chances of non-performance of the cooperatives in a satisfactory manner [4]. Thus governance is directly or indirectly related to trust among the workers and the partners of the co-operatives. Studies have also related trust and governance and tied them with reputation of the co-operatives in the market. [3] studied the relationship between the reputation of a co-operative and the role of governance. The results were skewed and a positive correlation was found out between trust amongst employees and reputation of the organization. Studies by [5] also focused on trust as a key factor in understanding the dynamics of the co-operatives. The study indicated that trust is a super ordinate factor and behavioral intention, cognitive and affective as sub factors. Trust is defined as "the willingness to be vulnerable to the action of another party based on the expectations that the others will perform a particular action important to the trustees, irrespective of the ability to monitor or control that other party"[6].A parallel literature also indicates that co-operative governance is led and handled by the mission and vision of the co-operative firm. The objectivity behind developing a mission and vision plays a vital role in steering the process of governance [7]. It is observed that every co-operative is different from others and therefore a well planned and executable mission and vision would enhance their productivity. The actions and output are driven by these basic key elements [8, 9]. The future goals of a cooperative are also equally governed by the actions and leadership of team governing it. The qualities of the leader or team are yet another factor which has been pointed out by studies. The challenge still lies in measuring these qualities. It is therefore an imperative to gauge the degree of importance of the leadership qualities in a set up like this. Although, studies have focused on traits like experience, exposure in similar nature of work, educational background etc., but a concrete list of such attributes is yet to be figured out by any literature.

A variety of competing theories also exist which are used by the co-operatives to run and function the system. Theories like democratic or associative perspective which is a specific jargon for a democratic model; Agency theory which is a compliance based model; Stewardship theory which is a partnership model; resource dependence theory; stakeholder theory and managerial hegemony theory(a rubber stamp model) [10]. The governance although is driven by different theories as mentioned but picking the right model is also important.

All the studies taken into consideration are pertaining to specific region, time bounded and detected barriers at various stages of the co-operatives, however there is no study which made an attempt to capture the linkages between the barriers .The aim of the research paper has been to find out the linkages among all the barriers that have been detected. In order to find the out the linkages among barriers the paper has made use of Interpretative Structural Modeling to build a pertinent model. ISM provides us with a framework which caters us with the priority wise list of barriers, enablers or influencers for a particular project [11, 12].ISM would thus ensure that the co-operatives understand the proper hierarchy and dependence of each factor on other. Table 1 presents a review of literature related to factors related to governance of co-operatives.

Table 1. Factors responsible for sustainable governance

Factors	References
Work Culture	[13, 14]
Commitment	[15,16]
Perceived Risk	[17, 18, 19]
Commitment from Stakeholders	[5, 20, 21]
Lack of organizational resources	[5, 22]
Years of Existence	[23, 24]
Regulatory Concerns	[25, 17, 18]
Implementing Issues	[26, 27]
Qualities of leader	[28, 29, 30]
Objectivity of Organization	[31, 17]
Performance	[32, 33]
Trust	[13, 14]

2. Methodology and Model Development

The present study uses Interpretive Structural Modeling (ISM) to develop a framework for figuring out linkages between every pair of variable. The usage of ISM in this scenario is best suited as they intrinsic relationship between the variables is not defined by the literature. The existing literature does not significantly demarcate the relationships between the variables which makes it important to use a methodology to solve the problem [34].

Interpretive Structural Modeling fuses an orderly application of basic notions of graph theory. The fundamental concept of ISM revolves around development of a framework which is mathematically, conceptually and theoretically sounds and incorporates the inter relationship among the variables. ISM incorporates a higher level of flexibility when compared to existing and conventional quantitative models which attempt to measure the variables on a ratio scale [34].

ISM takes into consideration mathematical, conceptual and analytical aspects. Unlike a conventional questionnaire requiring respondents to merely rate the importance of key issues, Interpretive Structured Modeling (ISM) forces the managers to consider various linkages among key issues [34].

ISM is useful in studying elements that may not be well specified in systems, and also in providing coherence to the complex relationship among elements of the system [35].

ISM involves the following steps:
   a) Take cognizance and shortlist elements/variables pertinent to the issue which is being studied, with help of a literature review, field survey or a similar activity.
   b) Opinions of the experts should be used to establish the contextual relationship among the various elements or variables.
   c) Development of a Structural Self Interaction Matrix (SSIM) for variables, highlighting a one to one relationship among variables that are being studied.
   d) Transformation of Structural Self Interaction Matrix into a Reachability matrix by replacing VAXO with binary numbers.
   e) Transitivity is tested for each of the combination of the variables and requires changes are made to develop a final reachability matrix. Transitivity attempts to check the dependence of A on B and B on C (where A, B, C are set of variables) thereby implying that A is dependent on C.

f)   The levels should be delineated by making use of iterative partitioning of the ultimate or final reachability matrix.

g)   Development of ISM by conversion of reachability of matrix into a diagraph.

h)   Model should be checked for any conceptual errors and required changes should be made if necessary.

i)   With the use of driving power and dependency of each influencer to obtain driver-dependency map for better analysis of inter-linkages among the variables.

2.1 Structural self-interaction matrix

The development of SSIM matrix depicted in Table 2 uses relationship between variable are shaped by the opinions of experts, in line with the objectives of the study. This is suggested by the ISM methodology. For this research, a comprehensive list of barriers identified from literature was presented to participants of 'Cooperative Houses'. The respondents for the survey were executives associated with cooperative houses with an average experience between 6 to 10 years. They were provided with a background of the study. Their prerogative was to determine whether the list of barriers constructed so far adequately captures all factors that influence the governance of cooperatives, or if there was a need to include other factors. The relationship between every pair of variables can be represented in the form of 4 different relationships which are as follows:

V – barrier 'i' needs to be addressed before barrier 'j'
A – barrier 'j' needs to be addressed before barrier 'i'
X – both barriers 'i' and 'j' need to be addressed simultaneously and
O – barriers 'i' and 'j' can be addressed independent of each other

Table 2. Conversion of relationship between variables into Structural Self Interaction Matrix (SSIM)

S. No.	Brief Description of Barrier	2	3	4	5	6	7	8	9	10	11	12
1	Work Culture	A	V	V	X	V	X	V	V	X	V	V
2	Commitment		A	V	V	A	V	A	V	O	A	O
3	Perceived Risk			A	V	V	A	V	A	V	O	A
4	Commitment from Stakeholders				A	V	V	X	V	X	V	V
5	Lack of organizational resources					A	V	V	A	V	A	V
6	Years of Existence						A	V	X	A	X	A
7	Regulatory Concerns							A	V	V	X	V
8	Implementing Issues								A	V	X	A
9	Qualities of leader									A	V	V
10	Objectivity of Organization										A	V
11	Performance											A
12	Trust											

The group was asked to deliberate a reinforcing/ameliorating type of contextual relationships amongst the factors. For instance, the group agreed that 'weak legislation' would be influenced by 'Lack of organizational resources' and 'Trade-offs' but would not impact those factors. These relationships are marked as "A".

2.2 Reachability Matrix

Development of SSIM stems from the conversion of contextual relationships into binary matrices termed as 'Reachability Matrices' as shown in Table 3, by replacing V, A, X and O by a combination of 1s and 0s in accordance with the VAXO rules.

For an entry "V", the corresponding combination of (i,j) is replaced by 1 while it's mirror image of (j,i) is replaced by 0.

For an entry "A", the corresponding combination of (i,j) is replaced by 0 while it's mirror image of (j,i) is replaced by 1.

For an entry "X", the corresponding combination of (i,j) is replaced by 1 while it's mirror image of (j,i) is replaced by 1.

For an entry "O", the corresponding combination of (i,j) is replaced by 0 while it's mirror image of (j,i) is replaced by 0.

Final reachability matrix was then obtained for barriers (Table 4) by incorporating the changes necessary to satisfy transitivity requirements detailed in step 5 of Structural modeling methodology. Driving power is defined as total number of variables, which it impacts including itself (equals the count of 1's in a row) and dependency is total number of variables, which have an impact on it including itself (equals the count of 1's in a column).

Table 3. Initial reachability matrix

S. No.	Brief Description of Barrier	1	2	3	4	5	6	7	8	9	10	11	12
1	Work Culture	1	1	1	1	1	1	1	1	1	1	1	0
2	Commitment	0	1	0	0	0	1	0	1	0	1	1	0
3	Perceived Risk	0	0	1	0	0	1	0	1	0	1	1	0
4	Commitment from Stakeholders	1	1	1	1	1	1	1	1	1	1	1	0
5	Lack of organizational resources	0	0	0	0	1	1	0	1	0	1	1	0
6	Years of Existence	0	0	0	0	0	1	0	1	0	1	1	0
7	Regulatory Concerns	1	1	1	1	1	1	1	1	1	1	1	0
8	Implementing Issues	0	0	0	0	0	1	0	1	0	1	1	0
9	Qualities of leader	1	1	1	1	1	1	1	1	1	1	1	0
10	Objectivity of Organization	0	0	0	0	0	1	0	1	0	1	1	0
11	Performance	0	0	0	0	0	0	0	0	0	0	1	0
12	Trust	1	1	1	1	1	1	1	1	1	1	1	1

Table 4. Final reachability matrix

S. No.	Brief Description of Barrier	1	2	3	4	5	6	7	8	9	10	11	12	Driving Power
1	Work Culture	1	1	1	1	1	1	1	1	1	1	1	0	11
2	Commitment	0	1	0	0	0	1	0	1	0	1	1	0	5
3	Perceived Risk	0	0	1	0	0	1	0	1	0	1	1	0	5
4	Commitment from Stakeholders	1	1	1	1	1	1	1	1	1	1	1	0	11
5	Lack of organizational resources	0	0	0	0	1	1	0	1	0	1	1	0	5
6	Years of Existence	0	0	0	0	0	1	0	1	0	1	1	0	4
7	Regulatory Concerns	1	1	1	1	1	1	1	1	1	1	1	0	11
8	Implementing Issues	0	0	0	0	0	1	0	1	0	1	1	0	4
9	Qualities of leader	1	1	1	1	1	1	1	1	1	1	1	0	11
10	Objectivity of Organization	0	0	0	0	0	1	0	1	0	1	1	0	4
11	Performance	0	0	0	0	0	0	0	0	0	0	1	0	1
12	Trust	1	1	1	1	1	1	1	1	1	1	1	1	12
	Dependency	5	6	6	5	6	11	5	11	5	11	12	1	84

2.3 Level partitions and ISM Modeling

Level partitioning takes place after arriving at the Final Reachability Matrix post the inclusion of transitivity conditions. It constitutes a comparison of the 'reachability' and 'antecedent' sets of variables and delineation of levels by taking into consideration the intersection sets. It leads to a reachability set for a variable by considering the variable itself and other set of variables that causes an impact, whereas antecedent set comprises of the variable and a set of all those variables that have an impact on the primary variable. The hierarchy in ISM is decided by the level of similarity in reachability and intersection sets (Table V) [36].

Table 5. Matrix of Reachability and Intersection Set

Iteration	Barrier	Reachability set	Antecedent set	Interaction set	Level
1	11	11	1,2,3,4,5,6,7,8,9,10,11,12	11	V
2	6	6,8,10	1,2,3,4,5,6,7,8,9,10,12	6,8,10	IV
2	8	6,8,10	1,2,3,4,5,6,7,8,9,10,12	6,8,10	IV
2	10	6,8,10	1,2,3,4,5,6,7,8,9,10,12	6,8,10	IV
3	2	2	1,2,4,7,9,12	2	III
3	3	3	1,3,4,7,9,12	3	III
3	5	5	1,4,5,7,9,12	5	III
4	1	1,4,7,9	1,4,7,9,12	1,4,7,9	II
4	4	1,4,7,9	1,4,7,9,12	1,4,7,9	II
4	7	1,4,7,9	1,4,7,9,12	1,4,7,9	II
4	9	1,4,7,9	1,4,7,9,12	1,4,7,9	II
5	12	1,4,7,9,12	12	12	I

3. Results and Discussion

The results as shown is Figure 1 indicate that the model has five levels of hierarchy. The base level comprises of lack of trust among the internal stakeholders which weakens the base of the success of the cooperative firm. Trust is a function of mutual understanding between two individuals and therefore it impacts both the parties and creates friction between the employees and members of the co-operatives. Governance is therefore an outcome of trustworthy relationships which needs special attention. Trust has a direct impact on "Work Culture", "Commitment of Stakeholders", "Regulatory Concerns" and "Performance of a co-operative". The above mentioned four factors are closely related to each other and are absolutely affected by trust. The work culture of an organization, especially a co-operative is deeply affected by mistrust amongst the employees as the firm is a close knit body. The numbers of people functioning together is small in number which results in development of tussles amongst the members. This also demeans the commitment of stakeholders and affects the regulation of the firm. This not only changes the affinity of individual towards the form but also vice versa. The functioning of the co-operative is disrupted and overall performance of the firm is also affected. Thus, enhancing the overall performance of the organization needs special attention which leads to other cohesive factors.

Figure 1. Theoretical framework for enhancing governance in co-operatives
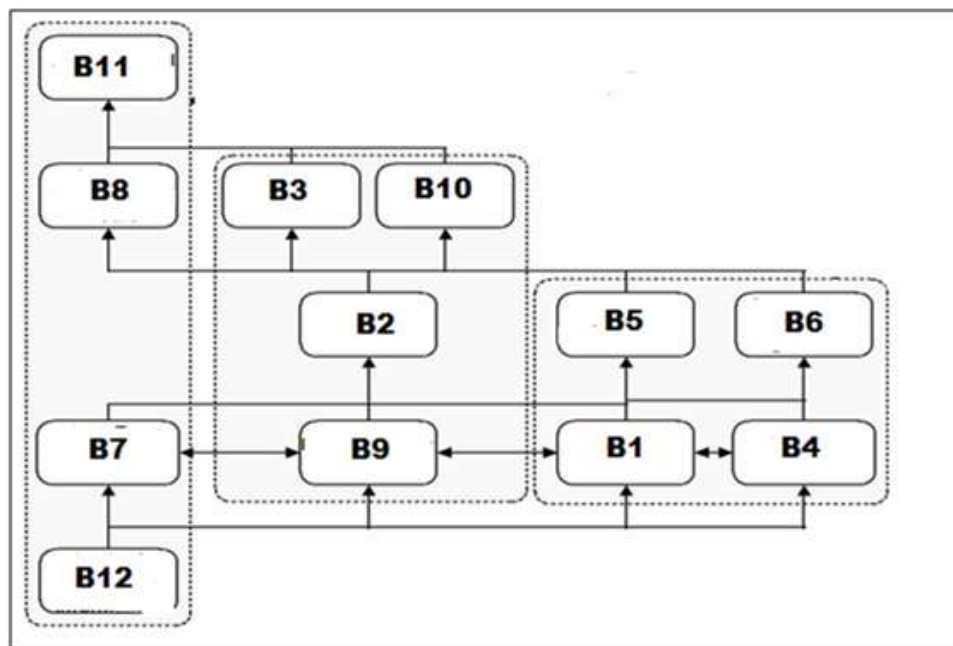

The framework also indicates that performance of the organization affects the commitment of the organization towards achieving the goals. Also, the trickled effect can be observed on the individual performance in a co-operative firm. The results also reveal that work culture also leads to contribution of resources in a co-operative firm. The factors accounted in the research are qualitative in nature and therefore "work Culture" would be an added resource for successful and efficient governance. It is also observed that commitment of stakeholders also affect the existence of a co-operative which would lead to better governance. The challenge still lies in understanding the effect of existence of values and organization along with the same team force towards the governance of the firm. The results also reflect that governance can be achieved and enhanced in an organization which is high in perceived risk. The governance can be tested by the degree of perceived risk taken and analyzed by the co-operative firm. Literature also supports the argument that objectivity of the firm and the mission and vision of the co-operatives also are closely related to performance and governance issues which can also be concluded by the framework. Last but not the least, the results also reflect that "Quality of Leader" plays the most important role in the governance of the co-operative.

It is important to analyze these factors in details and case studies for every co-operative might give a better idea in understanding the role of each of the factors in enhancing the efficiency of the firm.

4.1 Driver-Dependency map

A further insight into the hierarchy generated by ISM, variables can be classified using Cross-Impact Matrix Multiplication Applied to the Classification analysis (MICMAC) analysis into following four categories, viz. autonomous, independent, dependent and linkage. Such a juxtaposition of two plots brings all the barriers of autonomous and dependent types closer to dependency axis and puts independent and linkage variables on the extremes of driving power axis (Figure 2).

Figure 2. MICMAC Analysis of Factors leading to Governance of Co-operatives
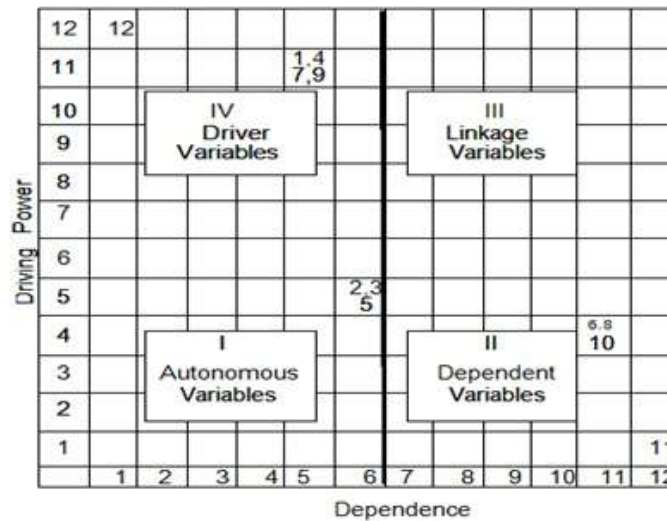
The results reflect that there are three variables which lies on the edge of cluster 1 and 2 and which may behave as autonomous variables. But as the barriers lie on the border of two clusters, they would also inherit some properties of cluster 2 as well. The debate could be resolved by the fact that higher value of "dependence" as indicated by revised rechability matrix signifies that other enablers need to be addressed with utmost priority with respect to the border cases. While, it is also evident that a high value of "driving force" also indicates similar style of being addressed before the other barriers derived for the study.

4. Conclusions

This paper includes compilation of 12 factors related to governance of co-operatives which were derived from literature. The study incorporated ISM technique to build the model for these variables. The model was also followed by MICMAC analysis to distinguish and segregate the variables in the four categories. There is a further classification of these five levels into three categories – policy related barriers, organizational barriers and internal barriers. The development of such a model using ISM would help the policy makes in the public sector and the private sector to curb the barriers by laying emphasis on few barriers which have a many linkages to other barriers.

ISM uses the opinions of experts and tends to be subjected to personal judgments. It is thus required to carefully choose the list of experts while finalizing the model. The concept of plotting drivers and barriers on a common driver-dependency map, to gain strategic insights for implementation can be extended to projects/programs in any field/area.

The model used has taken the intricacies of the research model and has carefully designed the model. This would pave the path to test these barriers with real time data from the fields. It can also be implemented in various co-operatives.

5. References

1. Alwx Stewart. Help one another, use one another: Toward an anthropology of family business$. *Entrepreneurship Theory and Practice*. 2003; 27(4), 383-396.
2. Francesca Gagliardi. Financial development and the growth of cooperative firms. *Small Business Economics*. 2009; 32(4), 439-464.
3. B. Nooteboom, B. Inter-firm Alliances: Analysis and Design. Routledge Publications: London, 1999.
4. Tushar Kanti Das and Bing-Sheng Teng. Trust, control, and risk in strategic alliances: An integrated framework. *Organization studies*. 2001; 22(2), 251-283.
5. Sangeeta Shroff. Role of cooperatives in export promotion of high value crops: A case of pomegranate marketing in Maharashtra. *Indian Journal of Economics and Development*. 2014; 10(3), 211-217.
6. Roger Mayer., James Davis, David Schoorman. An integrative model of organizational trust. *Academy of management review*. 1995; 20(3), 709-734.
7. Jorg Sydow. Understanding the constitution of interorganizational trust. *Trust within and between organizations: Conceptual issues and empirical applications*. 1998; 31-63.
8. J.Child, D. Faulkner, S. Tallman. *Cooperative strategy*. Oxford University Press: USA, 2005.
9. Sukhdev Singh. Punjab panchayati raj Amendment Bill 2012: A step towards smooth rural development. *Indian Journal of Economics and Development*. 2013; 9(1), 89-92.
10. Chris Cornforth. The governance of cooperatives and mutual associations: A paradox perspective. *Annals of Public and Cooperative Economics*. 2004; 75(1), 11-32.
11. John Warfield. Developing subsystem matrices in structural modeling. *Systems, Man and Cybernetics, IEEE Transactions*; 1974; 1, 74-80.
12. David Malone. An introduction to the application of interpretive structural modeling. *Proceedings of the IEEE*. 1975; 63(3), 397-404.
13. Peter Österberg, Jerker Nilsson. Members. Perception of their participation in the governance of cooperatives: the key to trust and commitment in agricultural cooperatives. *Agribusiness*. 2009; 25(2), 181-197.
14. Andrea Harris, Brenda Stefanson, Murray Fulton. New generation cooperatives and cooperative theory. *Journal of cooperatives*. 1996; 11(6), 15-28.
15. Oliver Hart, John Moore. The governance of exchanges: members' cooperatives versus outside ownership. *Oxford review of economic policy.* 1996; 12(4) 53-69.
16. Jeff Huther. An empirical test of the effect of board size on firm efficiency. *Economics Letter.* 1997; 54(3), 259-264.
17. Yannis Papadopoulos. Cooperative forms of governance: Problems of democratic accountability in complex environments. *European Journal of Political Research*. 2003; 42(4), 473-501.
18. John Goddard, Donal McKillop, John Wilson. What drives the performance of cooperative financial institutions? Evidence for US credit unions. *Applied Financial Economics*. 2008; 18(11), 879-893.
19. Franco Fiordelisi, Davide Salvatore Mare. Competition and financial stability in European cooperative banks. *Journal of International Money and Finance*. 2014; 45, 1-16.
20. Peter Smith Ring, Andrew Van de Ven. Structuring cooperative relationships between organizations. *Strategic management journal*. 1992; 13(7), 483-498.
21. Peter Smith Ring, Andrew Van de Ven. Developmental processes of cooperative interorganizational relationships. *Academy of management review*. 1994; 19(1), 90-118.
22. Micheal Cook. The future of US agricultural cooperatives: A neo-institutional approach. *American Journal of Agricultural Economics*. 1995; 77(5), 1153-1159.

23. Silvia Sacchetti. Inclusive and exclusive social preferences: A Deweyan framework to explain governance heterogeneity. *Journal of Business Ethics.* 2015; 126(3), 473-485.

24. Peter Somerville. Community governance and democracy. *Policy & Politics*. 2005; 33(1), 117-144.

25. Yannis Papadopoulos. Problems of democratic accountability in network and multilevel governance. *European law journal*. 2007; 13(4), 469-486.

26. David Kelsey, Frank Milne. Takeovers and cooperatives: governance and stability in non-corporate firms. *Journal of Economics*. 2010; 99(3), 193-209.

27. Fabio Chaddad, Constantine Iliopoulos. Control rights, governance, and the costs of ownership in agricultural cooperatives. *Agribusiness*. 2013; 29(1), 3-22.

28. Peter Leigh Taylor, Douglas Murray, Laura Raynolds. Keeping trade fair: governance challenges in the fair trade coffee initiative. *Sustainable Development*. 2005; 13(3), 199-208.

29. Csaba Forgács. Leadership and importance of social capital in cooperatives during transition: A case study of two cooperatives. *Journal of Rural Cooperation*. 2008; 36(1), 57.

30. Gary Gorton, Frank Schmid. Corporate governance, ownership dispersion and efficiency: Empirical evidence from Austrian cooperative banking. *Journal of Corporate Finance*. 1999; 5(2), 119-140.

31. Ravi Bapna, Anitesh Barua, Deepa Mani, Amit Mehra. Research Commentary-Cooperation, Coordination, and Governance in Multisourcing: An Agenda for Analytical and Empirical Research. *Information Systems Research*. 2010; 21(4), 785-795.

32. Kevin Davis. Credit union governance and survival of the cooperative form. *Journal of financial services research*. 2001; 19(2), 197-210.

33. Sijtsema Bosch, Petra, Theo Postma. Cooperative Innovation Projects: Capabilities and Governance Mechanisms. *Journal of Product Innovation Management*. 2009; 26(1), 58-70.

34. Rameshwar Dubey, Sadia Samar Ali. Identification of flexible manufacturing system dimensions and their interrelationship using total interpretive structural modelling and fuzzy MICMAC analysis. *Global Journal of Flexible Systems Management*. 2014; 15(2), 131-143.

35. Jitesh Thakkar, Arun Kanda, Deshmukh. Evaluation of buyer-supplier relationships using an integrated mathematical approach of interpretive structural modeling (ISM) and graph theoretic matrix: the case study of Indian automotive SMEs. *Journal of Manufacturing Technology Management*. 2007; 19(1), 92-124.

36. Nehajoan Panackal, Archana Singh. Using Interpretive Structural Modeling to Determine the Relation between Youth and Sustainable Rural Development. *IBMRD's Journal of Management & Research*. 2015; 4(1), 58-74.