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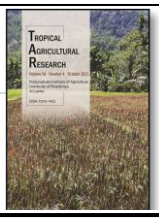

RESEARCH

Influence of Collective Action on the Efficacy of Tea Smallholding Development Societies in Sri Lanka

K.G.J.P. Mahindapala[1,2]*, M.W.A.P. Jayatilaka[1], L.N.A.C. Jayawardana[3] and M. Wijerathna[4]

[1]*Postgraduate Institute of Agriculture, University of Peradeniya*
[2]*Tea Research Institute of Sri Lanka*
[3]*Dept. of Agriculture Extension, Faculty of Agriculture, University of Peradeniya*
[4]*Faculty of Agriculture, University of Ruhuna*

ARTICLE INFO

Article history:
Received: 22 July 2022
Revised version received: 06 July 2023
Accepted: 01 August 2023
Available online: 01 October 2023

Keywords:
Collective action
Efficacy
Multipurpose activity
Tea Smallholders
Farmer organisation

Citation:
Mahindapala, K.G.J.P., Jayatilaka, M.W.A.P., Jayawardana, L.N.A.C. and Wijerathna, M. (2023). Influence of collective action on the efficacy of tea smallholding development societies in Sri Lanka Tropical Agricultural Research, 34(4): 343-362.

DOI:
https://doi.org/10.4038/tar.v34i4.8674

Mahindapala, K.G.J.P.
https://orcid.org/0000-0002-5466-4123

ABSTRACT

Farmers Organizations (FO) have evolved to address the major constraints faced by smallholder farmers. They need to address the diverse concerns of members. Tea Smallholding Development Societies (TSDS) were established through a legislative act and are expected to serve tea smallholders on resource and market-related issues. However, currently, the tea smallholding sub-sector seems stagnant as indicated by some of the key indicators that question the interventions made by TSDS to uplift the lives of tea growers. This study sought to explore the efficacy of TSDS and investigate its relationship with CA status. Data were collected from 120 TSDSs in major tea-growing areas using structured questionnaires. Results revealed that only 25% of TSDS offer multipurpose services at varying rates. The majority of TSDS acts only as an intermediary agency linking tea smallholders with government agencies for various forms of assistance. Market-oriented activities were minimal. Policy dialogue was found to be often lacking within organizations, which can block opportunities to develop a collective consciousness among the membership. Overall observations can be classified into four clusters based on the level of multitasking service provision. A significant correlation was e revealed between the efficacy of TSDSs and the status of collective action. The above correlation was stronger when collective action took place voluntarily than when a third party intervened, raising the question of dependency. The results, supported by the literature, revealed that collective action and efficacy function as interdependent variables. Thus, these two factors have the potential to behave in a vicious circle.

*Corresponding author- prasanjithjm@googlemail.com

INTRODUCTION

Farmer Organisations (FO) are a type of community-based organisations which have evolved to combat the major constraints faced by the smallholder farmers such as low capital, inadequate resources, lack of access to markets, low bargaining power, inadequate knowledge of agriculture technologies, and poor infrastructure facilities (Barham and Chitemi, 2009). These organizations represent farmers in a given geographical area and mainly deal with the agriculture enterprise-related needs of the members (Esham, 2012). Because of this voluntary nature, FOs can also be understood as a structural arrangement for the accumulation of social capital (Ostrom, 2000) and execute collective actions for their common benefit.

FOs can be divided into two types in terms of operations they handle, namely resource-oriented and market-oriented (Chamala and Shingi, 1997). The first type deals mainly with inputs and other resource needs of its members and the second group is specific to a particular commodity and more concerned with value addition and selling their products in competitive markets. Many FOs have emerged as the first type (Barham and Chitemi, 2009). However, their existence is greatly challenged in the present neoliberal economic context (Datta, 2004). This situation can be understood in the light of modernization theory, where market integration is a key element emphasized in the development process (Rostow, 1960; Wolf, 2003). Finally, as a result, some FOs have undergone drastic transformations aimed at commercialization. Indian farmer companies are good examples of that. (Spileman and Bernard, 2009; Trebbin, & Hassler, 2012).

Analysing these developments in the sector, Penrose-Buckley (2007), has used three key features to define the FOs: (i) they mostly engage in rural business, (ii) comprise producers who have ownership and control over their business, and (iii) the memberships collective acts in market-related matters. Furthermore, critically looking at the changing environment, Rondot and Collian (2007), proposed a multipurpose service approach to FOs to meet the broader needs of members (Table 1). This multipurpose approach covers social and economic-related activities and represents the two main functional areas described by Chamala and Shingi (1997).

Through this approach, an array of needs of the individuals could be addressed. Hence, it could attract and retain individuals to the FO and thus promote collective activism and cooperate behaviour. In that sense, it could work as a sustainable model.

Sustaining collective action is one of the main challenges faced by traditional FOs. Indian Farmer Producer Organisations (FPO) have faced the same situation (Borshtoem, 2013; Datta, 2004). Some of the FPOs have been transformed into Farmer Producer Companies and adopted the multipurpose approach. Under a multipurpose approach, members were offered a range of services and began to process their primary products. Japanese Agriculture Cooperative is the largest farmer network in Japan and gained its success by addressing a range of needs of members such as financing, insurance, marketing, processing, value addition, purchasing of inputs, welfare, and technology transfer. It is a typical example of an integrated service model (Rajarathna, 2007; Esham, 2012; Kazuhito,2013). These are two classical examples of successful application of multifunctional models in the Asian context.
Collective action is an essential element for the effectiveness of a voluntary organization. There is plenty of evidence from FOs that obtain optimal levels of members' contributions and can make steady progress (Manikutty, 2002; KHRC, 2008; Rajarathna, 2007; Trebbin, 2012; Ojha and Raju 2018;). Collective action can be defined as a group of people acting together to achieve a common task (Gillson, 2004). However, in a group setting, although all the members benefit from certain actions, a smaller number of individuals are willing to contribute to achieving the outcome, instead of sharing the cost among all the individuals of the group referred to as the collective action problem (Olson,1965). This collective action problem can affect the outcome of an entity in numerous ways.

Table 1: Key components in multi-purpose service approach

Kind of Service	Description
Organising activity	Building capacities, Empowerment, Catalysing collective actions
Production support	Supply of Inputs and Resources
Marketing service	Processing, Value addition, transporting of products, Wearhouse facility, delivery of market information.
Financial services	Loans and subsidies, promote savings, banking facilities
Technology services	Extension, Education, Training, Research activities
Welfare	Health, Livelihood support, Child education.
Management of resources	Irrigation water, Forest, Soil and Land, Fisheries
Policy advocacy	Provides inputs for policy formulation, act as a pressure group.

(Rondot and Collion, 2007)

Tea, being the main foreign exchange earning crop in Sri Lanka, provides great strength to the national economy and livelihoods of people in the tea industry while generating numerous benefits to society (Central Bank, 2018; Ministry of Plantation Industries, 2017). Smallholders are the key contributors to the tea industry as they produce over 70% of the total production (Tea Smallholding Development Authority, 2018). Tea Small Holding Development Societies (TSDSs) were established by Parliamentary Act No. 36 of 1991. Accordingly, about 1,340 TSDSs belonging to tea-growing rural areas in eight major tea-growing districts were registered with Tea Smallholding Development Authority (TSHDA) (Obeysekara, 2009). According to the constitution of TSDS adopted in 2010, they are managed by an executive committee, comprising eleven members, appointed through the members' vote. According to the said act, TSDSs were expected to provide or facilitate members in services such as extension, inputs, marketing, welfare, and credit. Meanwhile, statistics and evidence show that the smallholding sub-sector is facing a crisis in achieving the potential yield and reasonable income over the cost (Ministry of Plantation Industries, 2010-2018; TSHDA, 2010-2018; Central Bank, 2015-2019; ILO2018). The technology utilization level and execution of development activities were found to be not at a satisfactory level (Mahindapala *et al*. 2019a; Mahindapala *et al,* Mahindapala *et al* 2019b; Mahindapala *et al*. 2019c; Mahindapala *et al* 2020a; TSHDA, 2010-2018). Further, a study done in the Matara district, revealed that the majority of TSDS members were of the opinion that no significant improvement in their living standards due to the introduction of the TSDSs (Bandula et al. (2016). The aforementioned evidence indicates that there is a shortfall in achieving the expected objectives by the TSDSs. Does this imply that the organisations initiated to address the major issues of the tea smallholders have failed? If so, has it happened due to the lack of collective action? Further investigation in this area, particularly the extent to which these TSDSs implement multipurpose activities (efficacy of TSDSs) and how the members contributed to such activities (level of collective actions) are important to understand the dynamics of these FOs. The objective of this study was to investigate the relationship between the efficacy of the TSDSs and the status of the collective actions. The specific objectives of this study were to: (i). Evaluate the multifunctional capacity of TSDSs in major tea-growing regions of Sri Lanka, (ii). Evaluate the status of collective action in TSDSs and (iii). Investigate the relationship between collective action status and the capacity of TSDSs.

METHODOLOGY

According to the multifunctional approach of Rondot and Collian (2007), which is suggested to address the broader need of members (Table1), eleven essential functions (Anexture1) applicable to TSDSs were identified through preliminary studies (Mahindapala et al.2020; Mahindapala et.al 2021) and a research design was developed to assess the efficacy of TSDSs based on the level of engagement in these functions.

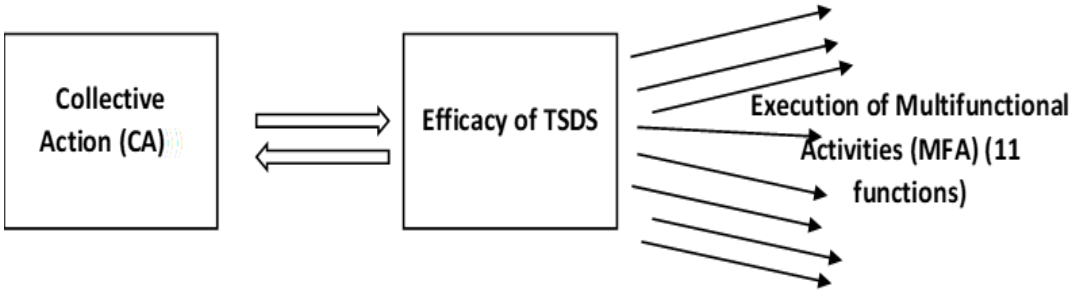

Figure 1: Conceptual framework of the study. (Source: Adapted from Rondot & Collian, 2007; Gillson, 2004).

According to the conceptual framework (Figure1) major hypothesis of this study were:

H_0; There is no relationship between collective actions and the efficacy of TSDSs

H_1; There is a relationship between collective actions and the efficacy of TSDSs

Validation of the component of multi-functions

A preliminary study was carried out to validate the eleven functions selected, for the particular context with the participation of 85 professionals, including 67 field extension officers and managers and 18 university academics and all variables (eleven multi-functions) received considerable ratings (Mahindapala et al, 2021). The other objective of this study was to estimate relative important factors in relation to those eleven functions and their sub-levels (Annexure 1). These estimates on relative important factors obtained in the said survey have been used to calculate the overall efficacy index in the present study.

Sampling Technique:

The unit of analysis of this study was TSDSs and among the registered TSDSs (about 1340), 1200 TSDS were found to be last as per the statistics available in TSHDA as of 2017. From that sampling frame, 120 sampling units (from seven major tea smallholders districts of Sri Lanka) were selected by adopting a stratified random sampling technique. The basis of the stratification was the basic operating level of the TSDS. (As per the TSHDA records, these TSDSs had been grouped into several categories based on the functionality of the TSDSs and hence, the sample was drawn in a stratified manner to ensure the variability in the sample). Further, an equal number of sampling units were drawn from each stratum and they were selected randomly within the strata.

Research strategy

A cross-sectional survey was carried out using structured interviews with two questionnaire schedules- one to collect the data on multi-functional activities (MFA) and the other to collect variables related to CA.

The questionnaire related to MFA contained a set of closed-ended pre-coded questions intended to assess the involvement of the TSDSs on the MFA stated in Annexure 1. (Some of them have sub-levels and are also given in Annexure 1). Each of the functions was assessed by giving 0-10 scores based on the level of engagement in the activities. The research participants were the President, Secretary, Treasurer, and a committee member of TSDS. Data (behavioral type data) were collected through face-to-face interviews that were conducted by the TSDSs in 2019. Certain information regarding the

Table 2: Measurement indicators used to estimate the collective action status

No.	Name of variables	No.	Name of variables
1	No. of Committee members attending to the meetings (PCM)	7	% Dormant members (DM)
2	No. of Committee members involved in organizing the different activities (PCMOA)	8	% Members supply the crop to TSDS (MCS)
3	% of Members paid the membership fee	9	% Members registered for welfare scheme (MRW)
4	% of Members participated for several general meetings held in 2019 (PMGM)	10	% Members participate for field activities (ie. *Shramadana* programs) (MPF)
5	% of Members participated for election of executive committee (PMV)	11	% Members contribute for society fund (MCF)
6	% of Members coming for training programs (PMTP)		

activities by referring to the records. In some cases, the study depended heavily on the recalling ability of respondents, and a 'more than one interviewee' approach was adopted to collect data. On the other hand, data and variables were behavioral in type (not perceptional), thus the technique adopted was compatible. Such types of practice have been adopted in other studies (Bryman, 1999; Pahl, 1990).

The collective action interventions were measured by using certain proxies identified through the focus group discussions. These proxies (indicated in Table 2) were included in another questionnaire and data were collected in the same manner concerning the period of 2018 and 2019. The questionnaires were submitted to four expert personnel on the related subjects to check the validity (Content and construct validity), and they were pilot tested before being used. Data were triangulated by interviewing the respective Tea Inspector of the region and two-three ordinary members of the respective society and reviewing the records.

Estimation of overall efficacy of TSDS

Using the relative importance factors related to each function, which have been estimated in a previous study (Anexture1) and the score values obtained in the present study overall efficacy index (EI) is calculated as follows:

$EI = (X_1.S_1) + (X_2.S_2) + \ldots\ldots\ldots\ldots\ldots (X_{11}.S_{11})$

Where $X_1 \ldots\ldots X_{11}$ = Relative importance factors in relation to different functions (Anexture1)

$S_1 \ldots\ldots\ldots S_{11}$ =Scores levels for related to different functions.

Statistical analysis

Data analysis were performed using descriptive statistics and inferential statics. Cluster analysis, Factor analysis and Spearmen correlation test were the major inferential technique employed. TSDSs were classified using cluster analysis based on the performance of multifunctional activities (activities listed in Appendix 1). Using factor analysis, collective action proxies were grouped to estimate composite collective action. The relationship between the efficacy index and collective action was examined by the Spearmen correlation test.

RESULTS AND DISCUSSION

Multifunctional capacity of TSDSs

Level of involvement of TSDSs in MFA

As mentioned in the methodology, this study investigates the level of involvement of the TSDSs in eleven functional areas and summarized results are given in the Table 3 and Annexure 2.

Identifying the needs/problems of the members is an essential basic requirement to be fulfilled by the FO. Such identification generates useful information about the area

of focus of the organization from time to time. It is also essential for planning purposes. It may be a short-term requirement (related to green prices), medium-term requirement (training requirement), or long-term requirement (change in disadvantage policy). The study assessed various interventions to identify the needs of members implemented by one hundred and twenty TSDSs. As shown in Table 3, 51% of the TSDSs were in the poor (score 4–3) and very poor (score <3) categories, while 41% of the TSDSs were identified as satisfactory and high (score >6) in this activity. TSDSs identify long-term needs through general meetings and in most cases (54%) such meetings are held only once a year. Those TSDSs rated as 'Satisfactory' in this aspect have a good mechanism (through designated contact persons/ field staff/ dedicated office desk) to take up grievances and urgent requirements related to short-term needs.

The technology transfer approach practiced by TSDSs is to link members to TSHDA extension services. None of the TSDSs are directly involved in extension activities as opposed to observations in FOs in other countries (Rajaratnam, 2007). The score obtained for engagement in advisory and training (technology transfer) activities was less than 4 in a large majority (87%) of the TSDSs studied (Table 3). Thus, even the linkage activities were seen to be handled poorly in the majority of the TSDSs. In most cases, the role of TSDSs in farmer training is passive and mainly initiated by TSHDA. Identifying field problems and monitoring farmers is an essential part of extension, however, more than 90% of TSDSs perform that service poorly (Table 3). Some TSDSs employ field assistants to collect green leaves and provide some support at the ground level, but even such TSDSs do not intend to use them as para-extension workers.

It is very important to have welfare programs for FOs because these programs help to support rural farmers who may encounter various difficulties in their lives. On the other hand, it also helps to retain the members of the tea society (Assante et al. (2011). Figure 2 shows that 48% of TSDSs implemented at least one type of welfare scheme (such as death donation, educational assistance, medical assistance, livelihood assistance and recreational activities) and of which 20% of them implemented more than one scheme. The death donation scheme was a widely implemented scheme. However, Annexure 2 shows that only 6% of TSDS provided a package of welfare services at satisfactory or moderately satisfactory levels.

The timely supply of agriculture inputs (like fertilizers, agrochemicals and planting material) and physical resources (such as machinery) would make it easy to utilize them in an optimum manner and more likely to ensure good production (Rajarathna, 2007; Esham 2012). Hence, the level of engagement in input and resource supply was also examined (Anexure2). About 13% of TSDSs showed a moderate or satisfactory level of input provision while only 2.5% of TSDSs were observed to be dealing with a moderately satisfactory level in delivering the physical resources (63% and 84% of TSDS were not involved at all in the supplying of inputs and resources respectively).

Literature highly emphasizes the importance of the market orientation of the FOs. (Chamala, & Shingi, 1997; Esham, 2012; Kassam et al., 2011; Trebbin & Hassler, 2012). Therefore, market-related activities of TSDSs were examined and found (table 3) that about 16% and 3% of TSDSs satisfactorily and moderately engaged in the collection of their members' produce respectively and selling to the processing centres by gaining bargaining power in the market. However, the rest of the market-related activities particularly processing, branding, product diversification and selling were not found in TSDS except in one case. Only one of the TSDSs was observed to have taken steps to process its own produce into black tea.

Various types of financial aid schemes were handled by the TSDSs, of which about 22% of TSDSs provided credit schemes (figure 3) for the members. Nevertheless, only 4% of TSDSs have at least moderately satisfactorily functioning microcredit schemes (Annexure 2). Among the sample studied, the collective

production approach as commonly used by FOs in Africa was not observed (Salifu et al. 2012). Nevertheless, Some TSDSs (47%) have carried out common field activities (*Shramadhana*) such as road repairs, road concreting works, collecting centre repairing works, and office building construction work. Many of these activities are financially supported by external agencies (about 70%) and it is imperative that TSDS undertakes part of the labor contribution.

Table 3: Percentage distribution of TSDS according to their level of engagement of multi-functional activities

Name of the Multi-function		Scores and respective Category (n=120)				
		>7 Very satisfactory	7-6 Satisfactory	5 Moderate	4-3 Poor	2-0 Very poor
Need Identification		9 (7.5%)	32 (26.6%)	18 (15%)	59 (49.2%)	2 (1.7%)
Extension	Technology transfer	0 (0%)	1 (0.8%)	14 (11.7%)	53 (44.2%)	52 (43.3%)
	Problem diagnosing	0 (0%)	4 (3.3%)	1 (0.8%)	78 (65%)	37 (30.9%)
	Monitoring and motivation	0 (0%)	1 (0.8%)	9 (7.5%)	60 (50%)	50 (41.7%)
Market Oriented activities	Dealing primary produce (Collection and selling of green leaf)	11 (9.2%)	8 (6.7%)	4 (3.3%)	3 (2.5%)	94 (78.3%)
	Overall Marketing	0 (0%)	1 (0.8%)	0 (0%)	6 (5%)	113 (94.2%)

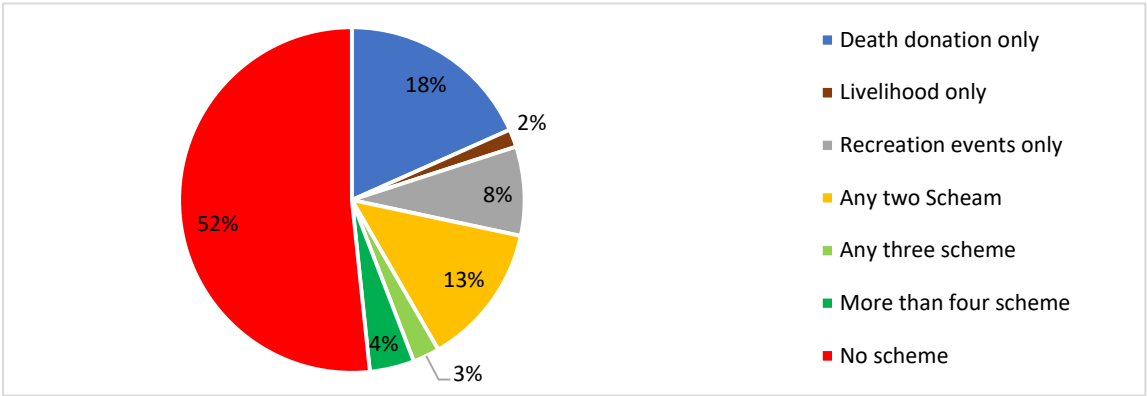

Figure 2: Various type of welfare schemes available in TSDSs

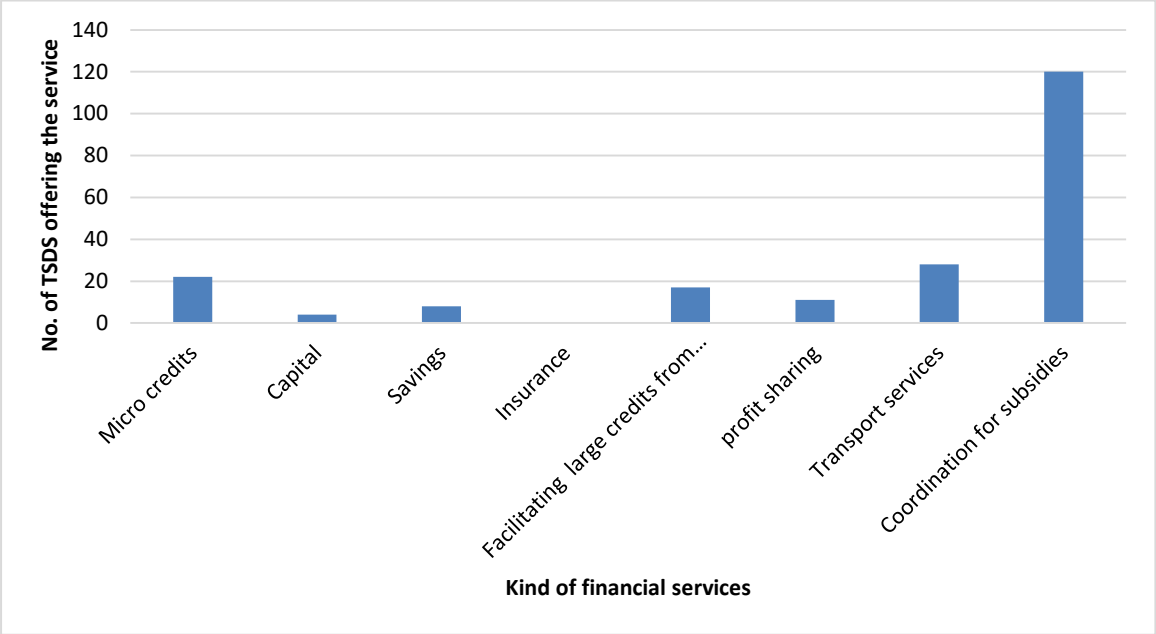

Figure 3: Various type of financial support mechanisms available in TSDSs

The involvement of TSDSs in affairs that can have a wide-scale impact was also explored. Under this, environmental and natural resource management, policy formulation and response against the adverse decision taken by the authorities were also examined. However, this study did not observe appreciable interventions made by TSDS with respect to the above cases (Annexure 2). In general, policy-related discussions leading to policy formulation have not liberally taken place in the General Assemblies. There were many policy issues affecting members to discuss. However, from 2018-2019, only 48% of the TSDSs discussed at least one policy-related matter and put it forward to appropriate authorities. They do not seem to play the role of a pressure group, as Japanese agricultural cooperatives do (Esham, 2012; Kazuhito, 2013). Therefore, general meetings often appeare to be less result-oriented.

How TSDSs execute routine works and administrative activities were examined, based on the criteria stated in the institutional constitution adopted in 2013. Number of committee meetings, general meetings, accounting, auditing and recordkeeping were considered. This is important as effectiveness in these activities can greatly affect the other functions (particularly decision making and implementing other functions discussed above). About 40% of the TSDSs either satisfactorily or moderately perform these functions (Annexure 2)

TSDS need to engage in other for-profit activities to generate additional income for the TSDS, which can be used to strengthen the TSDSs as well as to enhance the status of the members. About 10 (8.3%) TSDSs perform these activities, of which one TSDS does it at a moderate level.

The variability among TSDSs in performing different tasks was discussed. An attempt to group them based on their functional variability may help identify the common features existing among them.

Clustering the TSDS based on the performance of the MFA

Cluster analysis was performed using 120 observations based on the score values obtained for different functions. In this analysis observations have been separated

into 9 different clusters (at 4.66 distance level) of which one cluster comprises of most poorly performing observations (89) which has the least centroid values for all the functions considered. According to centroids, the clusters 3, 4, 5, 6,7, and 8 were the relatively most performing clusters (comprised of 15, 1, 2,1,5 and 4 observations respectively) which have relatively high centroid values for marketing (> 2.5). This is due to engaging in leaf dealing. Cluster 4, 5, 6, 7 and 8 deviate from cluster 3 because of relatively high centroid values for welfare and financial services (>4). The cluster 4 differs from the 5, 6, 7 and 8 clusters due to the relatively highest centroid values for all most all the variables (functions) except the for-profit function and have highest distance value from cluster1 (17.19). Cluster 5, 6, 7 and 8 have variability with each other due to differences in engaging in some functions such as welfare, marketing, supply of resources, Joint field activities, need identifications, for-profit activity. Although Cluster 2 and cluster 9 did not perform welfare, marketing and input dealing the same as cluster 1 but relatively have good centroid values on need identification and administrative work. Based on the distance between cluster centroid, overall variability in performance can be arranged in an order as follows:

Cluster4.> Cluster6> Cluster5> Cluster7> Cluster8> Cluster3> Cluster2 Cluster9> Cluster>1

However, the observations can be classified into 4 categories, at the distance level of 7.62, (Cluster1+Cluster2+Cluster9=C1', Cluster 3+Cluster7 + Cluster 8 +C2'; Cluster5+ Cluster6+=C3'; Cluster4) based on the level of MFA implementation, without allowing for minor variations (without going into a deep classification).

These clusters are formed on the based on multitasking capacity and therefore the factors affecting multitasking capacity should also be reflected in these clusters. The effect of collective action is investigated in the current study and the variability of collective action should also be reflected among these clusters. Not only variability in CA but also variability in other influencing factors should also be visible between these clusters. Most importantly responses to external interventions will also be varied among these clusters.

Overall Efficacy Index (EI)

The eleven functions that have been considered so far, may not be equally important. Hence, a relatively important factor was estimated as mentioned in the methodology for each of the functions, based on the findings of a previous study (Mahindapala et al 2020). Taking into consideration relative importance, the overall efficacy index (EI) was calculated for each TSDS using the surveyed data in the present study and values were summarized in Figure 4.

The results of the clustering and EI index are compatible. About 93% of the observations that comes under cluster 1 have less than 20 EI value while 96% of the observations are grouped into clusters 3, 4, 5, 6,7, and 8 a respective value of more than 25. The EI value ranges from 6.63 to 56.46. Therefore, there must be a reason for that kind of variability which should be investigated. One of the reasons attempts to uncover in this piece of study is the level of collective action. Nevertheless, it is also worth noting that the efficacy of TSDSs was limited to some degree may be due to common cause(s) affecting all TSDSs.

Collective action status of TSDSs

The collective actions were measured using certain proxies (Table 2) and the analysed data are given in annexure 4, 5 and Figures 5 and 6.

The executive committee is the main action coordination body of the TSDS as per the constitution. More than 50 % of the participation level for the committee meeting was reported by only about 20 % TSDS (Annexure 4). In many cases, the role of the committee members is confined to participating in the decision making and they are not involved in operational or event management activities. Also, results show

that less than 20% of tea societies have executive committees where more than half of the executive committee members contribute to such activities. (In most TSDS, less than 50% of committee members contribute to operational activities) (Annexure 4). The percentage of the members who committed to pay the membership subscription and the percentage of non-interacting members were examined and illustrated in Annexure 5. Only 20 TSDS (16.7%) were observed with more than 80% of members subscriptions-paying and 53 tea societies (44%) with subscription-paying members of less than 20% were observed. Although such type of payment is mandatory as per the constitution, it was found that management did not take appropriate action for fear of the risk of leaving the members. Furthermore, in a majority of the Tea Societies (57%), more than 40% of members are silent and have no interaction with the societies. They seem to prefer to use TSDS only in an advantageous situation. This implies that members expect some benefit from the TSDSs. This is the case in TSDSs. Members tend to opt out of TSDSs that cannot generate economic benefits. In reviewing these results, it is arguable that people are motivated for collective action in a voluntary organisation not totally due to common concerns. In some theoretical approaches, people's altruistic behaviour and their consensus are identified as the roots of collective action (Ostram, 2000; Willor, 2009). Under these circumstances, such theoretical approaches may be challenged, or they can work differently. However, further investigation of relevant variables is needed to draw a definitive conclusion.

It is important to discuss the collective action results based on the cluster level that has been developed in this study. Figure 6 depicts the collective actions of members in activities such as leaf dealing, welfare work, joint field work and money sharing for TSDS work. Clusters 1 and 9, which observed poor multifunctional performance, had the lowest levels of collective action, while the relatively highest multifunctional performance reporting clusters (C4, C5, C6) had reasonably high levels of collective action. Furthermore, clusters 7, 8 and 3 have relatively higher multifunctional performance compared to clusters 1, 2 and 9, and comparatively a relatively high level of collective action can be observed, at least in some actions.

Figure 6 also represent the collective action levels related to the member's participation in general meeting, election of office bears and training events. There also some indications can be identified for a comparatively high level of collective action, in clusters where the multifunctional activities were high.

Finally, by reviewing these graphs (Fig.5 and 6) evidence for a linkage between collective actions and multifunctional efficacy could be realized. However, to soundly establish a relationship, an appropriate test should be performed. Moreover, the results indicate some different opinions as well. In these two graphs, despite, no multifunctional activities can be detected in certain clustered observations (Cluster 2 and 9) some form of collective action is in progress, such as participation in general meetings, and participation in the election of office bearers etc. Also, the opposite, situation (lowlevel of collective actions but some level of multifunctional performance) was observed (Figure 6, Cluster3) occasionally. Two reasons can be possible for this kind of situation. What is important is not the collective actions in one or two areas but in the composite level of collective actions. Another possible reason is that collective action would not be the only factor that influences the efficacy of TSDS. Looking at collective action and the overall performance of FOs in different contexts, many Indian farmer producer companies demonstrate collective action in various dimensions. As a result, overall performance has improved and thus creates financial gains for members. (Trebbin & Hassler, 2012; Ojha & Raju, 2018). Similarly, Rajarathna (2007) also showed that collective action related to multidisciplinary activities had produced successful results in Japanese Agriculture Cooperatives. On the other hand, empirical evidence has shown that collective action can generate effective outcomes even in one critical area for FO, such as irrigation management (Uphoof Norm & Wijerathna, 2000). On the other hand, this

study found that there is a low level of policy-related discussions in general meetings which may be an indication of the fruitfulness of such events. The nature of general meetings may not create a dynamic to have collective consciousness among the members.

To estimate the composite value for collective actions these eleven variables (proxies of collective actions) were subjected to a Factor analysis (FA). According to the initial results, the KMO value is 0.883(>0.5) and Bartlett's test is significant (P<0.0001). Therefore, the data set is appropriate to go ahead with FA. Following the varimax rotations, by examining eigenvalue (>1) the eleven factors were extracted into two components (representing 64% of the total variance) (Table 4).

One of the objectives of factor analysis is to uncover latent factors (Anderson, 1984). Therefore, there must be a fundamental reason for this separation. TSDS is a state-centric FO and therefore some of its activities may be influenced by government officials. Variables extracted to component 1 appear to be less sensitive to such influence, whereas variables extracted to component 2 are more sensitive to such external influence. General meetings and occasions for the election of office bearers are moderated by the Tea Inspector of the region. Also, most of the *Shramadana* activities are monitored by donor agencies who supply the funds. Therefore, voluntary actions are evolved in combination with legitimacy. That could be the reason for this factor differentiation. Finally, this analysis allows us to consider the respective variables under each component in a composite manner.

Relationship between CA and efficacy of TSDS

Some signs of the above relationship were seen in the previous analysis. However, to ascertain such a relationship precisely, a series of Spearman correlation tests were conducted between the efficiency index and the various CA proxies. Results are given in Table 5.

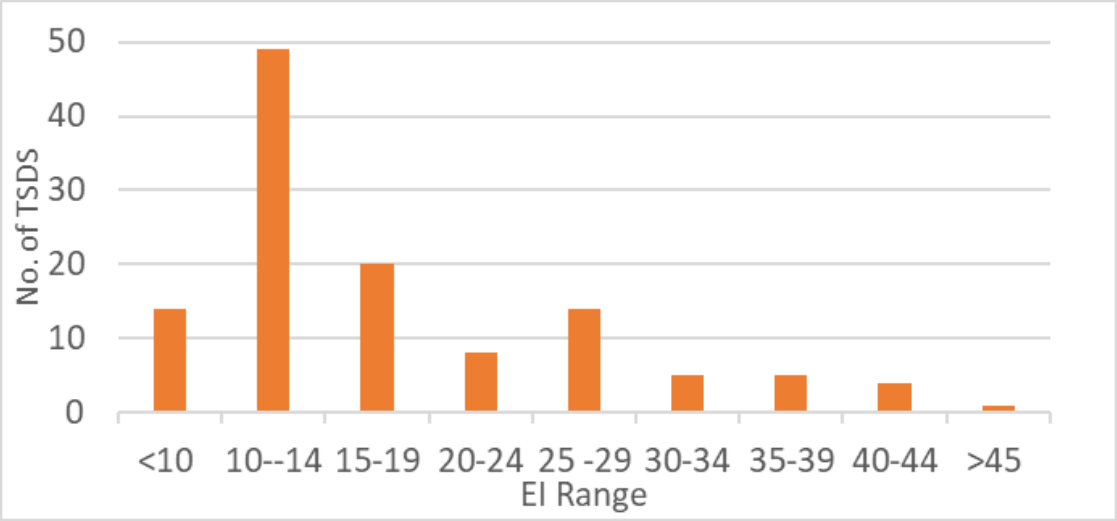

Figure 4: **Overall EI values**

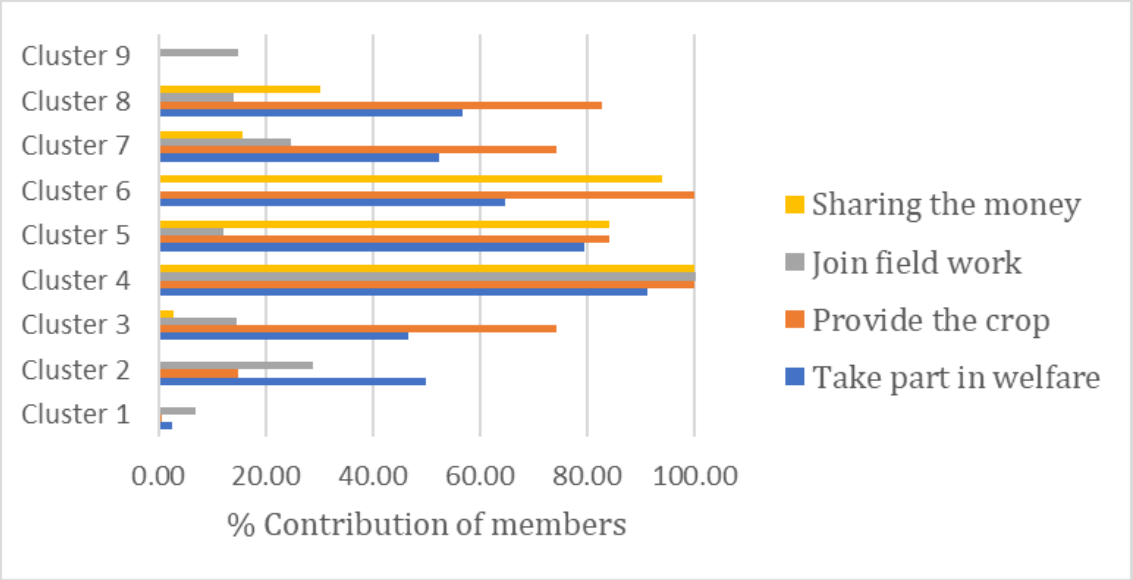

Figure 5: Collective action level by different clusters.

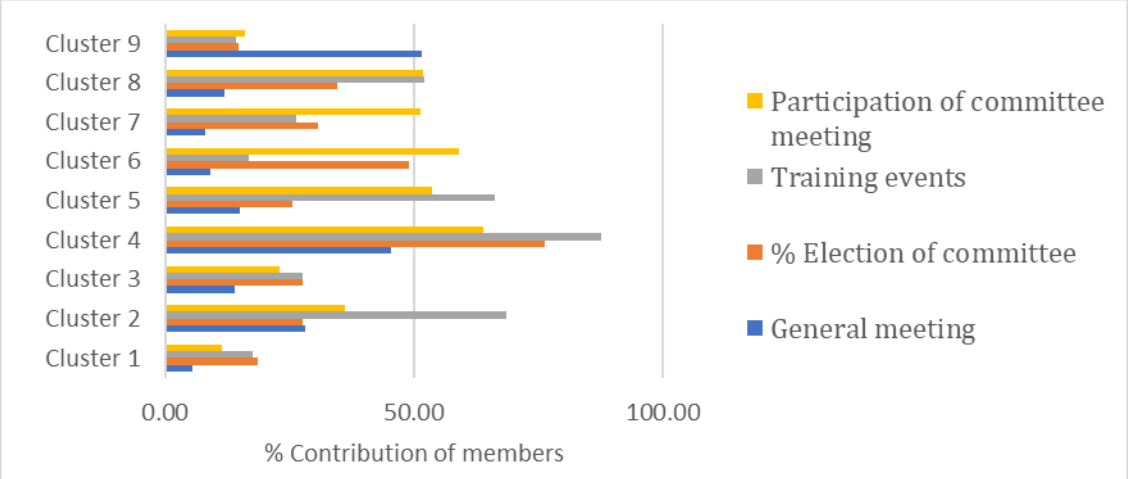

Figure 6: Collective action level by different clusters

Table 4: Variable extraction in factor analysis.

Name of the variable	Component 1	Component 2
No. of Committee members participation	0.756	
No. of committee members involved in organizing works	0.877	
% of members paid the subscription	0.796	
% of members non interacting with TSDS	-0.785	
% Members provide the tea green leaf to TSDS	0.896	
% Members contribute for welfare program	0.734	
% Members sharing the money	0.634	
% of members turn out for training events	0.332	
% of members participating in general meeting		0.858
% Members participation for election of office bearers		0.819
% of members participating in joint field work		0.452

Table 5: Correlation coefficients

Y variable	X variables	*Corelation Coefficient
Efficacy Index	No. of Committee members participation	0.791
	No. of committee members involved in organizing works	0.818
	% of members paid the subscription	0.771
	% of members non interacting with TSDS	- 0.798
	% Members provide the tea green leaf to TSDS	0.727
	% Members contribute for welfare program	0.687
	% Members sharing their own money for TSDS works	0.396
	% of members turn out for training events	0.512
	Cumulative % of members participating in general meeting	0.581
	% Members participation for election of office bearers	0.402
	Cumulative % of members participating in joint field work	0.489

*Test is significant at*P<0.01

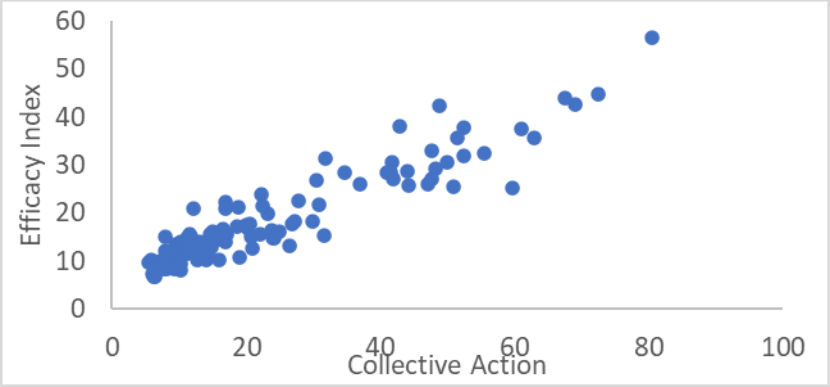

Figure 8: Scatter plot shows the correlation between efficacy and composite CA of Component 1 (Correlation Coefficient 0.894, P<0.01)

When examining the correlation coefficients, certain correlations are strong and certain are not found to be that strong. The General Assembly is the main structural setting through which collective action is taken on decision-making, policy-making, identification of needs and making appropriate choices. It is noteworthy that two such significant cases (general meeting and election) have relatively low correlation coefficients (0.58, 0.4). It means that such actions have less impact on the efficacy of TSDSs.

As mentioned earlier, effective policy-level discussions do not take place in the General Assembly. As mentioned earlier, effective policy-level discussions do not take place in the General Assembly. This means that there is a dearth of opportunities for members to be exposed to productive in-depth discussions on the issues that affect them and to identify the root causes of these issues and find appropriate solutions to them. Such participatory activities will expand cooperation in society.

Interdependence is a fundamental concept of organic solidarity described by Durkheim (1997) in his thesis on the division of labour. Such discussions promote interdependence among members, which is a requirement of voluntary organisation. Moreover, these discussions enhance the common understanding of members, which is an integral part of the relationship among the individuals in a society (Ostrom, 2000). Therefore, the absence of such activities can lead to a decline in the collective consciousness. On the other hand, according to Marx's (1858/1993) theory of Historical Materialism, the development of class consciousness among the oppressed classes is essential for revolution and educated

proletarian leadership must take initiatives to develop class consciousness among the working class. In the same way, the development of collective consciousness through the entire membership is essential for the emergence of a higher level of collective action. However, it seems that the leadership has not been able to maintain useful mechanisms. Furthermore, according to EI values, only one TSDS is operating at an optimal level (EI>50). Other TSDSs that perform MFA have EI values ranging from 25 – 45. Therefore, it can be argued that the poor collective actions of the membership for the general meeting are one of the reasons for the low efficacy. However, what is more important is not the single action but the integrated actions that can create a collective consciousness. Based on the results of factor analysis, a composite level of collective action was estimated for two components and the Spearman correlation test was conducted scatter plots are shown in Figure 8.

Simmilarly correlation test for Composit collective action for component 2 was also become significant (Correlation Coefficient 0.506, P<0.01).

While the variables representing Component 1 appear to have a strong correlation with the efficacy index, (0.894) the variables representing Component 2 has a moderate level of correlation (0.506). Regarding the variables of Component 2 as explained earlier, the contribution of the members throughout the sample was weak and that may be the reason for this situation and it could also be one of the reasons for limiting the efficacy of TSDS at a certain level (EI<60). On the other hand, the moderate level of correlation would have indicated the contribution of other factors to the efficacy of TSDS – meaning that collective action may not be the only contributory factor that affects the efficacy of TSDS. Several studies have shown that leadership, attitude, contextual issues, structural matters etc. also influence the efficacy of a FO. (Geragama et al., 1999; Senanayake, 2002; Rajarathna, 2007; Esham, and Usami 2007; Esham and Kobayashi, 2013) Therefore, the influence of such factors with respect to the performance of TSDS should also be investigated.

The findings of this study clearly showed that efficacy of TSDS can significantly improve through the collective actions. Even though, that some literature says that to get the contribution of members, FO should be attractive (Kachule and Dorward, 2005; Asante et al., 2011). On the other hand, some theories on organisation showed that employees more attract towards the flourishing organisations. The Core concept of the Reinforcement theory is that individual behaviour can be modified by external factors (Komaki, 1996). According to the Expectancy Theory, if the organisational goals and perks are aligned with the members expectation, members are attractive towards the such organisations (Vroom, 1964). The fundamental fact of these theories supports the claim that 'FO must have earned certain status to get the members attraction,'. Moreover, this study observed that, non-interacting members are higher in poorly performing TSDS. Therefore, it can be argued that CA and efficacy are two inter depending factors to the certain extent in TSDSs. Sometimes it can possible to go in a vicious cycle showed in Figure 9.

About 12% of TSDS have an EI value of less than 10 (Table 4). In reviewing the data, this TSDS had the lowest score values for eleven tasks and their collective actions were also very low. The behaviour of such TSDSs can be explained using the framework shown in Figure 9. After a certain period, if there is no intervention from the outside (ie. the Government), such TSDS will completely collapse. In 2009, out of 1340 TSDS, nearly 150 had disappeared by 2017, a testimony to the consequences of the situation explained in Figure 9. Salifu et al. (2012) observed the collapse of FOs in Ghana due to poor collective performance for various reasons. Asante (2011) reported that the lack of attractiveness of FOs also leads to the out-migration of its members in Ghana. It has been observed that the poor performance of FOs established in Sri Lanka under the Agrarian Service Act is due to the poor cooperation of members (Esham 2012).

CONCLUSION

The majority of TSDS have poorly adopted the multi-purpose services approach and largely act as an intermediary entity linking farmers with government agencies for extension service and subsidy. Four major clusters can be identified based on the level of delivering the multifunctional activities. The majority of TSDSs are found to be non-market oriented. A significant correlation exists between the efficacy of TSDSs and collective action status. Correlation is stronger in purely voluntary collective actions than those mediated by a third party. Results indicate the importance and effectiveness of voluntary actions without external intervention (independence). Collective action functions as a moderator variable for the Efficacy of TSDSs. Both Collective Action and Efficacy of TSDS act as interdependent variables in some contexts. Thus, these two factors have the potential to behave in a vicious circle. Opportunities having greater potential to induce collective consciousness among the membership are often mishandled by many TSDSs.

This study indicates that the efficacy of TSDSs can be improved through collective action. The study recommends activities that influence collective action should be identified and promoted. Furthermore, leaders must ensure that TSDS is maintained in good condition to attract and retain members.

Suggestions for future work

There can be a several other factors affecting the efficacy of TSDSs in addition to the collective action (ie. Factors related to society leaders). Those factors need to be identified and their level of contribution should be examined in practical contexts. Furthermore, factors affecting collective action should also be identified.

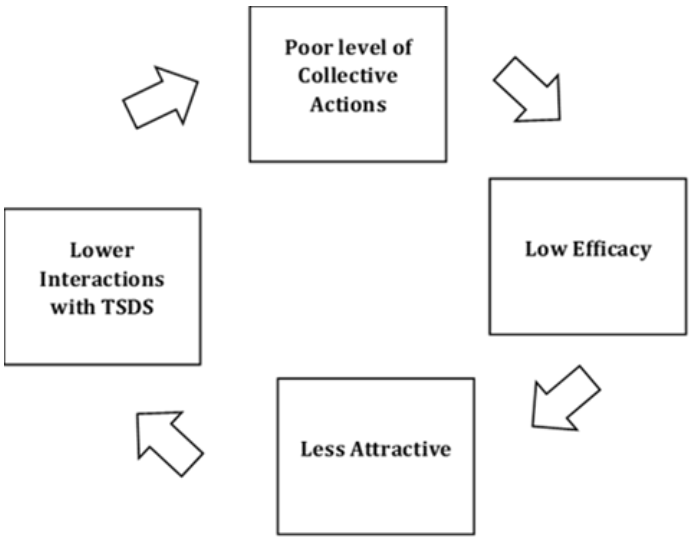

Figure 9: Vicious cycle of collective action.

ACKNOWLEDGEMENT

The authors wish to acknowledge the TIs, STIs RMs of TSHDA in the study areas and Extension staff of TRI regional stations for coordinating works and the research participants for contribution to the study.

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Annexure 1: Estimated relative important factors for different MFA

Main Factor	Relative Importance factor	Sub-level Factors	Sub-level weightage
Need Identification	11.82		
Extension	11.41	Advisory activities	0.285
		Farmer training	0.267
		Diagnose field problem	0.245
		Monitoring /motivate farmers	0.203
Welfare activities	7.59	Educational aids	0.213
		Death donation scheme	0.265
		Medical support scheme	0.202
		Recreation	0.114
		Provide other livelihood support	0.206
Dealing with [1] inputs and resources	12.53	Supply of Inputs	0.57
		Supply of physical resources, machines, tools	0.43
Marketing of produce	13.53	Provide information	0.229
		Handling of members primary products	0.333
		Involve in Value addition	0.240
		Marketing of value-added products	0.198
Financial support for members	9.06	Banking service	0.237
		Sharing of profit/Bonus	0.146
		Coordinating to obtained government subsidies	0.229
		Providing Insurance service	0.142
		Transport service	0.176
Joint field operations	8.47		
Capacity Building	8.41		
Involvement in natural Resource management and national/Common/Industry issues which have Broder level impact	5.21	Natural resource conservation and management programs and	0.409
		Intervening in policy formulation	0.313
		Acting as a pressure group	0.278
Adherence to administrative and financial procedures	5.09	Admin activities	0.294
		Accounting	0.264
		Auditing	0.218
		Record keeping	0.224
Other for-profit activities	6.88		
Total	100.0		

Source: Mahindapala *et al. (*2021) Tropical Agriculture Research, Vol 32(2) page 142 Results of the opinion survey

[1] Inputs - Any materials essential to give a yield (here mainly consider fertilizer, chemicals planting materials and dolomite); Resources – Materials may require to establish and maintain the cultivation (eg. Machineries, tools & equipment)

Annexure 2 Level of engagement of multi-functional activities by TSDSs

		Score value and respective Category (n=120)				
Name of the Multi-function		**>7 Very satisfactory**	**7-6 Satisfactory**	**5 Moderate**	**4-3 Poor**	**2-0 Very poor**
Welfare activities		2 (1.7%)	2 (1.7%)	2 (1.7%)	7 (5.8%)	107(89.1%)
Input and Resource Dealing	Supply of Inputs	2 (1.7%)	2 (1.7%)	12(10%)	12(10%)	92(76.6%)
	Supply of Resources	0	0	3 (2.5%)	16 (13.3%)	101(84.2%)
Financial support activities	Supply credit	1 (0.8%)	3 (2.5%)	1(0.8%)	16(13.3%)	91(82.5%) *[74% - No]
	Overall financial support	0 (0%)	2 (1.7%)	0 (0%)	90 (75%)	25 (20.8%)
Capacity building		0	0	0	4 (3.4%)	116(96.6%)
Joint field activities		0	0	0	5 (4%)	115 (96%) *[53% - No]
Common interest activities	Environmental	0	0	0	0	120 (100%)
	Policy formulation	0	1(0.8%)	1(0.8%)	6(5%)	112 (95%)
	Resisting attempts	0	0	0	0	120
Routine activities		15(12.5%	23 (19.2%)	9(7.5%)	56(46.6%)	17(14.2%)
For-profit activities		0	0	1(0.8%)	1(0.8%)	118(98.4%) *[No- 92%]

Annexure 3: Participation of committee members for different activities

Committee meeting		**Take part in Organizing work**	
Level of participation	**No. of TSDS**	**Level of Involvement**	**No. of TSDS**
>40 (60%)	17 (14.2%)	11-8	4 (3.3%)
30-39 (45-59%)	6 (5%)	6-7	16 (13.3%)
20-29 (30-44%)	14 (11.7%)	4-5	20 (16.7%)
10-19 (15-29%)	26 (21.6%)	2-3	78 (65.0%)
5-9 (8-14%)	36 (30%)	1	2 (1.7%)
No Participation	21 (17.5%)		

Annexure 4: Participation of committee members for different activities