



The Typology of Tea Smallholding Development Societies: Assessing Their Multifunctional Approach in *Badulla* District of Sri Lanka

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ABSTRACT

The Farmer-based organizations (FBO) have mechanisms to address the collective issues of farmers. In the present socio-economic context, the traditional approaches adopted by the FBOs to empower the farmers have been challenged by internal and external dynamics. The 'Multipurpose Service Approach' has been proposed to address the broader needs of farmers. Tea Small Holding Development Societies (TSDS) were established to work on the wellbeing of the tea smallholders. This study sought to identify the various activities carried out by TSDS in the Badulla district and classify TSDS based on adherence to the Multifunctional service approach. Data were collected from twenty-one TSDS using structured interviews, selected by stratified random sampling technique. TSDSs' participation in the identified twelve activities was assessed using a 0-10 score method. Data were analyzed descriptively, using signs, the Man-Whitney test, and cluster analysis. TSDS in the Badulla district showed a different level of execution of multifunctions. When considering production support packages, the supply of inputs was at a satisfactory level (Score >6) in the majority of TSDS. However, the role of the organization in linking the extension service with the members was not satisfactory. The provision of loans and other financial services was poor. Market-oriented activities were kept to a minimum. There was a lack of policy dialogue within the organization. Based on the variability of the practicing of multifunctional service approach, six clusters could be identified, including one with almost dormant TSDSs in many of the activities considered. Five other clusters had varying levels of engagement in different functions on certain aspects. The overall multifunctional service approach performances of TSDS were not satisfactory.

INTRODUCTION

Farmer-based organizations (FBO) are entities that represent the farmers in a given geographical area and mainly deal with agriculture enterprise-related needs of the member farmers (Esham, 2012). The low capital, inadequate resources, lack of access to markets, low bargaining power, inadequate knowledge of agriculture technologies, and poor infrastructure facilities are the major constraints faced by the smallholder farmers and FBOs, that established to tackle these issues through a collective approach (Barham and Chitemi, 2009). According to Chamala and Shingi (1997), FBOs are of two types - resources-oriented and market-oriented. The first type

mainly deals with inputs and other resource needs of its members. The second group is specific to a particular commodity and more concerned with value addition and selling their products in the competitive markets. In the modern world, farmer organizations (FBOs) have undergone a rigorous transformation process to survive in the neoliberal economic context. Accordingly, their traditional role has changed, with a relatively greater focus on economic objectives and market orientation (Datta, 2004; Spileman and Bernard, 2009). By understanding the challenges faced by the FBOs, Rondot, and Collian (2007) proposed a multifunctional service approach (Table 1) for the farmer organizations. It includes social and economic-related activities intended to cover a vast array of farmers' needs.

Table 1: Multi-functional service approach to cover the needs of farmers.

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, Warehouse 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)

This multipurpose role of FBOs has also been recognized by the FAO, defines the farmer organization as: "A formal voluntary membership organization created for the economic benefit of farmers and other groups to provide them with services that support their farming activities such as bargaining with customers, collecting market information; accessing inputs, services, and credit, providing technical assistance, and processing and marketing farm products (Kassam *et al.*, 2011). The FBOs in India, Japan, and some African countries have successfully adopted the above multidimensional approach and gained success (Esham, 2012; Trebbin & Hassler, 2012; Salifu *et al.*, 2012).

The traditional FBOs in India, known as Farmers' Producer Co-operatives (FPO) have struggled to

perform their tasks due to various issues, including the problem of sustained collective action (Borshtoen, 2013; Datta, 2004). In this context, the market-oriented approaches were introduced, and FPOs were transformed into Farmer Producer Companies (FPC). The FPCs facilitate the farmers not only to produce the crop but also to process and add value to their primary products, which ensures a better price for them. In addition to these services, FPCs provide transportation, warehouse facilities, irrigation, inputs, extension service, production planning, and branding of products, aligned with a 'multifunctional service approach' (Terribin and Hassler, 2012). Further, studies have shown an immense engagement of the farmers to the FPCs due to associated financial benefits resulting from the integrated business approaches (Trebbin

2015; Ajmal *et al.*, 2018; Dhrshan *et al.*, 2019). The Japanese Agriculture Cooperatives (JACs) is the most widely spread FBO in Japan, considered one of the most effective and efficient farmer organizations in the world (Rajarithna, 2007). The scope of the JAC is comprehensive and covers most of the economic, production supportive and welfare needs of the farmers (Kazuhito, 2013). It includes a vast array of farmers' needs such as financing, insurance, marketing, processing, value addition, purchasing of inputs, welfare, technology transfer and provides a typical example for an integrated service model (Rajarithna, 2007; Esham, 2012; Kazuhito 2013). In African countries, such as Ghana, Tanzania, and Malawi, the multifunctional approach is followed in different ways. In Ghana, the majority of the FBOs do not engage in processing, value addition, and marketing-related activities. Their major functions are labor sharing, welfare activities, dealing with inputs, and providing credit facilities (Salifu *et al.* (2012). The above cases provide pieces of evidence of the success of FBS, which has adopted the multifunctional approach. The multifunctional approach is not widely adopted in many FBOs in Sri Lanka. Nevertheless, Esham and Usami (2007) and Mahindapala *et al.* (2020b) recorded some interventions made by the Ridhi-bedhi-Ela Farmer Company (field crop sector) and MorawakKorale Tea Producers Cooperative Society.

Tea Small Holding Development Societies (TSDS) were established by parliamentary act No. 36 of 1991. Subsequently, nearly 1,300 TSDS were established in tea-growing rural areas of major tea-growing districts and were registered with the TSHDA under Gazette Notification 878/15 of July 1995 (Obasekara, 2009). These are managed by an eleven-member executive committee, including President, Secretary, and Treasurer, appointed from the members' vote. These organizations were expected to assist the members in the field of extension, inputs, marketing, welfare, and credit. However, statistics and evidence show that the small estate sub-sector is facing a crisis in terms of yield, income, technology utilization, and replanting (Ministry of Plantation Industries, 2010-2018; TSHDA, 2010-2018; Central Bank, 2015-2019; ILO, 2018; Mahindapala *et al.* 2019abc; 2020a). According to Bandula and colleagues, members perceived no significant improvement in the tea smallholding sub-sector in Matara district in the areas mentioned above due to the introduction of the TSDSs (Bandula *et al.* (2016).

A substantial number of TSDS are not performing well (Mahindapala *et al.*, 2020b). The speculations from the above discussion indicate a shortfall of

achieving the expected task by the TSDSs. Does this imply that the organizations that were initiated to solve the key issues of the tea smallholders have failed? To explore this matter, it is essential to perform a detailed analysis of their functions. This study has attempted to assess and classify the Badulla district TSDS according to their involvement in the twelve essential multifunctional activities.

The findings will serve to identify what corrective measures need to resort towards the strengthening of these entities.

METHODOLOGY

Rondot & Collian (2007) proposed a multifunctional service approach to the FBOs to meet the border needs of their members. Using that approach, we developed a methodology (considering the level of involvement in such activities) to assess the efficacy of TSDSs, conceptualized as in figure 01

Validation of the functions

The above functions have been identified in the literature and implemented by many successful FBOs. The importance of these functions to be validated in this particular context. A survey was conducted among 85 professionals, including field extension officers and managers (67) and university academics (18) to (i) test the importance of the above functions and their various sub-levels to TSDSs, and (ii) estimate the relative importance of the above functions and associate sub-level functions to the TSDS.

Research strategy

The research strategy adopted was a cross-sectional survey using structured interviews with a questionnaire. The questionnaire contained a set of closed-ended pre-coded questions intended to assess the involvement of the TSDSs concerning the above functions stated in Figure 1. Some activities/functions have sublevels and are given in Annexure 1. Each of the functions was assessed by assigning 0-10 scores based on the level of engagement of the activities. The study participants were the three main officers, the President, Secretary and Treasurer of TSDS, and a committee member. Data were collected through face-to-face interviews, on the actual activities related to the above functions that have been performed by the TSDSs during 2019 (behavioral type data). Certain information regarding the 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 perceptual), thus the technique adopted was compatible. Such types of practice have been adopted in some studies

(Bryman, 1999; Pahl, 1990). The questionnaire was checked for validity (Content and construct validity), and it was pilot tested before being used. After the structured interviews, qualitative data were also collected to clarify the related aspects.

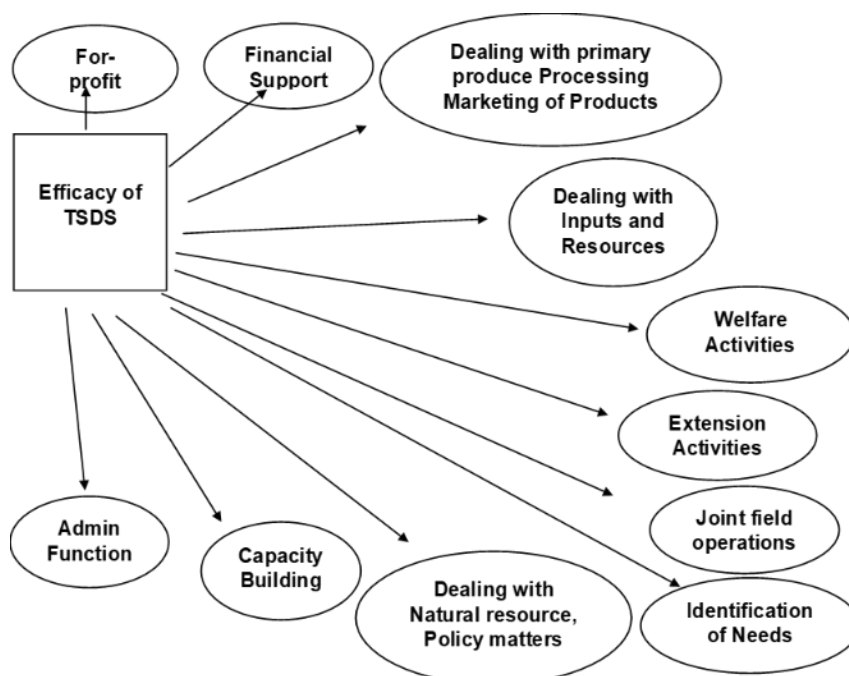


Figure 1: Conceptual framework of the study. (Source: Rondot & Collian, 2007; Terribin and Hassler, 2012;).

Sampling technique

A unit of analysis in this study was TSDS. According to the TSHDA, there were 154 registered TSDSs in the Badulla district. Based on one of the previous studies (Mahindapala *et al.*, 2020b), they may represent different strata based on the 'activeness of TSDS'. From the above sampling frame, a sample of 21 societies was selected for the study. These 21 TSDS were selected from three strata representing 'active' 'moderately active' and 'least active' categories with the support of the Regional Manager of the TSHDA. Equal proportions of samples were drawn randomly within the strata.

Statistical analysis

Data analysis was performed using descriptive statistics (using the score values related to the different functions) and inferential statistics. Sign test, Man-Whitney test, and cluster analysis were the main inferential techniques used. In addition to the above analysis, the overall efficacy index of the TSDS concerning the above functions was also

estimated using (i) scores (0-10), obtained in the main survey, and (ii) the relative importance factor of the functions/sub-functions (weightage for the particular function given in annexure 2 and 1 (The corresponding subfunctions were estimated based on the opinion surveys.

Estimation of overall efficacy index of TSDS

Of the different functions illustrated in Figure 1, all of those may not be equally important to the TSDSs. Hence, to make a relative importance level, we used the data collected in the same opinion survey, stated above under the subsection titled 'Validation of the functions.'

These estimates were made using the responses given by the Sri Lankan university academics in the related disciplines (Mahindapala *et al.* 2021). In this study, participants were asked to assign weights for each dimension (functions) based on their relative importance to the TSDS, in such a way that the total weightage was equal to 100.

There were different sublevel functions under some of the above eleven functions. For example, extension activities related to FBO were separated into the sub-areas of advisory, training, problem diagnosing and monitoring, and motivation. Similarly, an array of welfare activities was found in a rural setup based on the socio-cultural context, such as death donation schemes, scholarships, educational supporting activities, medical aids, recreation facilities, and livelihood support. The value of sub-level functions within the main function was also estimated using the 85 responses collected in the same opinion survey.

Calculation of the overall efficacy index using different weightages and score values for different observations (TSDSs) was as follows.

Assuming the i^{th} function (F_i) has sub-level A_i , B_i , C_i and their weightages are a_i , b_i , c_i ($a_i + b_i + c_i = 1$) respectively, and their respective scores (0-10) obtained in the main survey for the i^{th} function with respect to the n^{th} observation are p_{ni} , q_{ni} , and r_{ni} respectively, the weightage of the main function is X_i .

Then corresponding value (FV_{ni}) for F_i in relation to n^{th} observation is;

$$(FV_{ni}) = X_i / 10 \{ (a_i \cdot p_{ni}) + (b_i \cdot q_{ni}) + (c_i \cdot r_{ni}) \}$$

Likewise, the total value for n^{th} observation (estimate for efficacy) can be calculated as.

$$\text{Total value } (TV_n) = \sum V_{ni} (i=1 \text{-----} 11)$$

Triangulation of Data

Data were triangulated by interviewing the respective Tea Inspector of the region and three ordinary members of the respective society and through the records.

RESULTS AND DISCUSSION

The total membership of the studied 21 TSDSs was 4,876, about 17.3% of the total smallholding population in the Badulla district. These members had about 1,459 ha of total land area, equal to about 16.2% of the total extent under tea in the region) (TSHDA, 2018).

Engagement in Different Activities by TSDS

Identification of needs of the members

The needs/problems identification of the members is an essential requirement for an FBO as it provides information on what actions need to

be focused on at a particular time. It is also essential for planning purposes. It could be an urgent matter (related to the green leaf price), medium-term requirement (a training need), or a long-term policy change. Interventions to identify member needs implemented by the twenty-one (21) TSDSs were assessed in the study. Eight of the TSDSs belonged to the poor (score 4-3) and very poor (score <3) categories and ten TSDSs were identified satisfactory and above (score >6) in the involvement of need identification.

Accordingly, only 48% of TSDSs have a satisfactory 'need identification' mechanism. The majority (52%) of the TSDSs identify the needs mainly through a general meeting, and for many cases, such events were held one or two times per year. Casual meetings were the main way to get the member's feedback concerning current matters faced by the members. In contrast, some (48%) TSDSs have established formal mechanisms (i.e. verbal or written problems are received to office, nominating contact person, receive information regularly through field assistants) to receive the members' needs and related information. The TSDSs having a deeper understanding of their members have a higher chance to satisfy the membership and to maintain the dynamics of voluntary organizations.

Involvement of Extension Activities of Farmers

Unlike some well-established FBOs such as JAC (Rajaratnam, 2007), none of the TSDSs in the sample had their extension officers. The role of TSDS was confined to linking the farmers to the existing extension service of TSHDA. The score value given for involvement in the technology transfer process (both advisory activities and training) of TSDSs revealed that the service was operated poorly by the majority (71%) of the TSDSs.

TSDSs linked a fewer number of farmers (10-20%) to the TSHDA for advisory purposes and land development activities. In this aspect, most TSDSs play a passive role, and the initiatives for the training programs are from the TSHDA officials (not by the TSDSs). We observed that TSDS, providing technical services at a moderately satisfactory level, assists in conducting 4-5 training programs per year. TSDSs have not taken any steps to prepare formal extension messages or leaflets based on their competency or traditional knowledge for the benefit of farmers. However, on a few occasions, TSDSs have distributed basic information about inputs and feedback on the quality of the harvest to the

members through the Field Assistant (FA). Moreover, 12 TSDSs have deployed the FAs to collect the crop from the members. However, none of the TSDSs has explored using FAs as 'Para extension workers' to provide very simple extension information. It seems that TSDSs have not realized extension as a priority area that needs to be handled by an FBO.

Diagnosing field problems and monitoring farmers' activities is part and parcel of the extension process. However, the majority of the

TSDSs have not been satisfactorily involved in identifying their members' field problems, reporting to the extension agency and monitoring the members' activities, and guiding them in the right direction, except for one TSDS (Table 2). They have not developed an internal mechanism to undertake such activities. However, the Indian FPCs have a proper plan concerning the production, which is monitored by the Farmer Board (Trebbin and Husler, 2012; Ojha and Raju, 2018).

Table 2: TSDS Involvement in the process of field problem diagnosing and monitoring of farmers cultivation related activities.

Score value	Category	No. of TSDS (n=21)	
		Problem diagnosing	Monitoring of activities
>7	Very satisfactory	0 (0%)	0 (0%)
7 – 6	Satisfactory	1 (4.8%)	1 (4.8%)
5	Moderate	1 (4.8)	3 (14.3%)
4 – 3	Poor	10 (47.6%)	9 (42.8%)
<3	Very poor	9 (42.8%)	8 (38.1%)

Involvement in Member Welfare Activities

Welfare schemes act as good tools to attract other farmers to the organization and get their

participation in collective activities. Figure 2 illustrates how the studied TSDSs have executed the welfare activities.

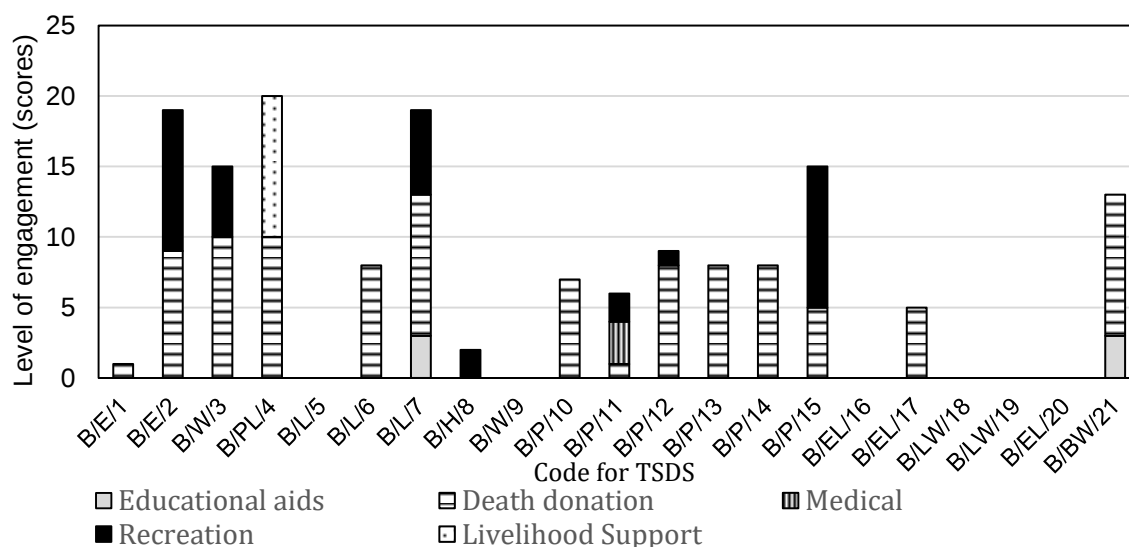


Figure 2: Type and level of welfare schemes executed by different TSDS for their members.

The majority (71%) of the TSDSs offer some kind of welfare scheme. TSDSs are coded for ethical reasons, and in the code, 1st letter indicates the Badulla district, and the 2nd letter indicates the Tea Inspector range (eg. P- Passara) (This doesn't

match here – include in the methodology and the figure legend). However, there are 6 TSDSs that do not offer any kind of welfare facilities for the members. The most common welfare scheme provided was the death donation scheme, and

some TSDS provide up to Rs. 50,000.00 per event in case of demise of closest relative of a member. Eight organizations offer more than one scheme, but their level of involvement in such additional schemes is not significant (<7 scores) except on two occasions.

Dealing with inputs and Resources

Ensuring timely availability of inputs is an integral part of the production support system. If FBO facilitates access to a wide variety of inputs such

as fertilizers, dolomite, agrochemicals, and planting material, it enables members to use them properly and achieve their expected productivity.

None of the TSDS has maintained a tea nursery or multiplication plots that can provide the requirement of planting material for its members. Yet, few TSDSs have brought the nursery plants from outside nurseries and supplied them to the members to meet a portion of their needs. However, as shown in Table 3, their intervention in supplying the planting material was poor.

Table 3: Involvement of supply of planting material (PM) and Fertilizer, dolomite, and agrochemicals to the members.

Score value	Category	No. of TSDS (n=21)	
		PM	Fertilizer, Dolomite, and Agro-chemicals
>7	Very satisfactory	0 (0%)	11 (52.4%)
7 - 6	Satisfactory	0 (0%)	2 (9.5%)
5	Moderate	1 (4.8%)	2 (9.5%)
4 - 3	Poor	3 (14.3%)	3 (14.3%)
1-2	Very poor	4 (19.0%)	2 (9.5%)
0	Not supply	13(61.9%)	1 (4.8%)

However, in contrast to the supply of planting material, the majority of the TSDSs were satisfactorily engaged in supplying the fertilizers and agrochemicals (Table 5). Of the TSDS who provide this service satisfactorily (13), about 6 TSDSs have maintained fertilizer and agrochemical stores and served members throughout the year. Other (7) TSDSs brought the fertilizers and agrochemicals based on the requirement of the members and distributed among members at once a season (coverage varies 45%-100%). In addition to the inputs, some of the entities have physical resources such as agricultural machines and spray tanks. However, this service is not operating effectively, and only two TSDSs provide that service at a moderate level.

Dealing with Primary Produce, Processing, and Marketing

Successful FBO engages in processing, product diversification branding, and marketing finished products in the high-end market.

However, none of the TSDSs in the Badulla district engages in such activities. Farmers can earn more income through value-adding activities than just dealing with primary products. In Kenya, about 63 processing centers belong to smallholders and receive higher prices (KHRC,2008). However, 13 TSDSs involve in collecting members' green leaves. Table 4 indicates the level of engagement in this process by the studied TSDSs.

Table 4: The extent to which TSDSs participate in the process of collecting members' produce and selling to processing centres.

Score value	Category	No. of TSDS (n=21)
>7	Very satisfactory	5 (23.8%)
7 - 6	Satisfactory	4 (19%)
5	Moderate	2 (9.5%)
4 - 3	Poor	2 (9.5%)
<3	Very poor	8 (38.1%)

Accordingly, 9 TSDS were satisfactorily involved in this process, and they were able to collect more than 70% of the member's crop.

Those who are satisfactorily involved in the leaf collection process have collecting centers. Having collecting centers is important as it helps to maintain the quality of green leaf. Out of 13 TSDSs who involve in collecting the leaf, 12 TSDSs have collection centers and of which five of them have more than two centers. It was observed that 12 TSDSs have employed FAs to collect the tea leaves, of which five of them have more than two FAs. Besides collecting tea leaves, these FAs support looking after the various needs of the members. Further, they act as a node between TSDS

management and the members and convey the essential messages to both parties (but not the extension messages). However, TSDSs have not considered using them as Para Extension workers.

Financial Support to the Members

Various financial support systems operated for their members in many FBOs around the world. These financial services are mainly for agricultural purposes. In this area, JAC plays an exceptional role (Esham, 2012). Hence, this aspect TSDSs' intervention was examined. Figure 3 shows the different types of financial schemes available for their members in the studied TSDS.

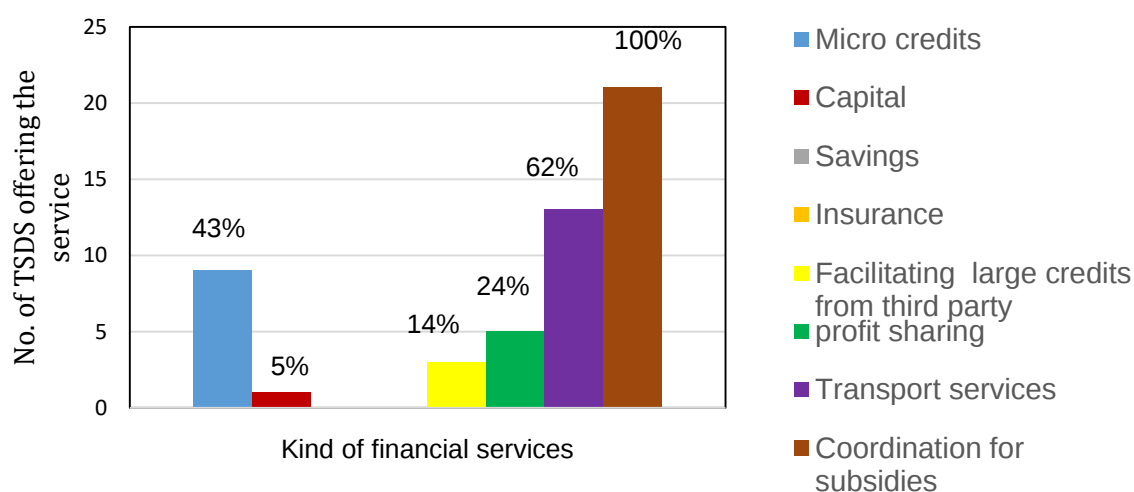


Figure 3: Adoption of different types of financial schemes.

Although all the TSDSs involve coordinating the government subsidy scheme, only a few organizations have their credit schemes. However, it is noteworthy that five TSDSs share the profits among the members.

It demonstrates their intention on business orientation. The level of engagement of the financial-related activities is illustrated in Table 5. It clearly shows that except for two TSDSs, other TSDSs marginally execute such activities.

Combine field operations and collective productions

The members carry out the field activities independently and with hired or family laborers. Collective production does not take place, and joint labor is not used as seen in some African FBOs (Salifu et al. 2012). However, some TSDS organize *Sramadana* campaigns to carry out

common activities such as access road repairs, collection center repairs, road clearing, etc. However, such activities are limited to a low number (maximum 4, average 1.5) due to the lack of participation of members.

Capacity-Building activities

None of the TSDS has implemented capacity-building activities of members sufficiently due to poor understanding of the importance of the event.

Dealing with Natural Resource and Involvement in Policy matters

Environmental protection and natural resource management are important aspects of sustainable agriculture. Such interventions are required to offset harmful effects associated with commercial agriculture and minimize the possible

productivity declining as a consequence of soil degradation, depletion of biodiversity, and changes in weather patterns. It is an area to be worked in collectively for long-term returns. However, we observed that the commitment of the studied TSDS to this thematic area was weak, and in 2019 only three relevant activities were carried out by all TSDS. The TSDS's involvement in industry issues and policy matters was also inadequate. During the period under review, only seven TSDS have discussed the subject matters related to the policy issues that affect their lives, and only ten resolutions were passed. In addition, nine issues affecting their well-being have been identified in the last two years but responded to only two of them.

Administrative Functions of TSDS

The pattern of administration is examined based on the requirements stated in the constitution adopted in 2013. Accordingly, features examined included the general and the number of committee meetings, the mode of accounting, audit, record-keeping, etc. The results are summarized in Table 6. These functions are required to run the society smoothly, enhance the collective actions, participatory decision making, and proper implementation of all other functions.

Accordingly, 13 TSDS were at a satisfactory level, while seven were at a poor level. An important observation made was – those administratively poor-performing TSDS are the ones who do not involve in green leaf dealing activities. Moreover, six TSDS have Office assistants to assist all the administrative activities.

Other For-profit Activities

It is important to engage in other for-profit activities to generate additional revenue for the FBO, which can be used to improve the status of the organization and the well-being of its members. However, only one TSDS engages in such activities and operates communication-related services and retail outlets.

Now the sample attributes will be described using inferential statistics.

Median Score Values of the Sample of Badulla District

If the median score values of the selected sample concerning the studied variables are high, conclude that the sample is performing well.

Thus, the sign test was performed to see whether the median values are greater than 4, and test results are given in Table 7. The test is significant only for the administrative functions, and therefore the behavior of the sample as a group (Badulla district) is not performing satisfactorily concerning the majority of the functions.

However, this explanation is best to give as a segment basis, and therefore, to identify the types, cluster analysis was performed. The purpose of this analysis was to group the TSDSs based on their involvement of the different functions and attempt to look at similarities and differences in attributes for future works.

Cluster Analysis

A cluster analysis was performed for 21 observations (TSDSs) using the respective scores for the different functions. The results of the cluster analysis (Figure 4) indicated that the whole sample (21 observations) is grouped into six clusters at a distance of 6.23.

The grand centroid is higher (table 8) for administrative function and Need identification (5.70 and 5.24) and lower for 'Other for-profit activities' (0.24) and which indicate the level of the overall commitment of TSDSs in the region and hence in overall 'Other for-profit activities' was the least adopted function in the region. Relatively higher centroid values with an average value of 4.0 are observed in cluster five (Table 8), and the second-highest average is observed in cluster 2 (Average value is 3.8), while the least centroids are observed in cluster 1. In other words, the best-performing cluster is cluster one which has only one observation (B/L/7), while the second relatively best-performing cluster is cluster two with two observations (B/E/2 and B/WP/3). The least performing cluster is cluster one with eight observations.

Further, the highest distance between two clusters was observed in between cluster 1 and cluster 5 which is 12.3 and the lowest distance exists between cluster 3 and 4 which is 4.1. Cluster 1 is the furthest cluster from the rest. This distance indicates the variability between clusters with respect to the engagement of the functions that were studied. It is necessary to investigate what factors responsible for the variability. A clustering of the TSDS is an initial approach to identify the common features responsible for the variability of the functions.

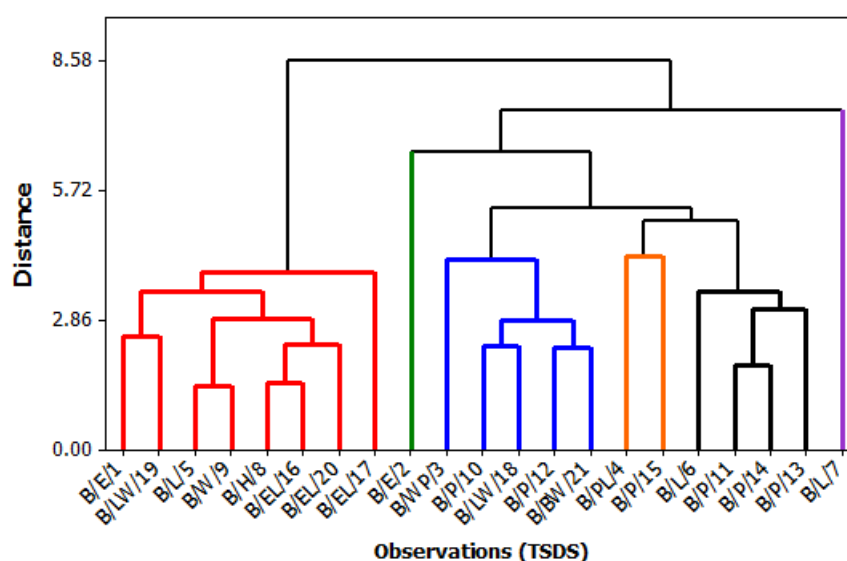


Figure 4: Dendrogram of cluster analysis (with average distance and Euclidean distance).

Table 8: Cluster centroids.

Variable	Cluster centroids						Grand centroid
	1	2	3	4	5	6	
Identification of Needs	3.0	8.0	7.5	4.8	9.0	6.8	5.24
Extension Activities	2.5	3.6	3.4	3.4	3.8	3.9	3.17
Welfare Activities	0.2	3.4	3.5	1.5	3.9	1.5	1.48
Dealing with Inputs	1.8	6.3	5.2	4.8	5.0	4.4	3.74
Dealing with Resources	0.0	5.0	0.0	0.0	1.0	3.3	1.14
Dealing produce/ Processing Marketing	0.0	2.3	2.2	1.9	2.8	1.6	1.21
Financial Support	1.4	4.8	4.9	3.9	5.8	3.3	3.08
Joint field operations	0.4	2.0	0.5	1.3	2.0	1.0	0.90
Capacity Building	0.0	0.0	0.5	1.3	0.0	0.0	0.29
Dealing with Natural resource, Policy matters	0.2	1.7	0.4	0.8	1.0	0.5	0.55
Admin Function	3.3	8.1	7.8	6.2	9.0	6.8	5.70
Other for-profit activities	0.0	0.0	0.0	0.0	5.0	0.0	0.24
Average centroid	1.1	3.8	3.0	2.5	4.0	2.7	

Some of the Features Observed in Clusters

Although cluster 5, cluster 2, and cluster 3 are identified as relatively highest performing clusters, their performers are restricted to a certain functional area. In cluster 5, only five functional areas (identification of needs, dealing with inputs, financial support, for-profit activities, and administrative functions) show at least a centroid value of 5, while only four and three

functional areas exceed the same centroid value (5) in clusters 2 and cluster 3 respectively (Table 8). Cluster 1 appeared to have large variability from the rest of the clusters. Thus, a comparison was made between cluster 1 and a group of clusters consisting of Clusters 2, Cluster 3 Cluster 4, and cluster 6 using Man-Whitney test. The rest of the clusters show significantly higher performance over cluster 1 in almost all the activities. The sign test revealed that the median

value of any variable in cluster 1 does not exceed 4 and therefore it is the most poorly performing cluster. When cluster 4 was compared with cluster 6, significant differences were observed only in the 2 variables. Cluster 4 perform relatively better in the capacity-building activities (mean ranks were 6 vs 3, $p=0.046$), while cluster 6 was performed relatively well concerning dealing with resources (6.5 vs 2.5, $p=0.013$). However, median values of both clusters were examined, and test statistics revealed that only median values of activities related to need identification and administrative functions exceeded 4 at a 90% confidence interval. This means that although there were variations between clusters 4 and 6 regarding the execution of those functions, none of those functions was performed satisfactorily by the relevant TSDS. In delivering welfare service, clusters 2 and 3 jointly performed better than cluster 4 ($p=0.017$) and cluster 6 (0.036) while delivering inputs, marginally performed better than cluster 6 ($p=0.063$).

In the section above, we investigated functional variability between clusters. In summary, more variability was identified between the TSDS in cluster 1 and the TSDS in the other clusters, while some variability was observed between the TSDS in the other clusters. In the next step, it is necessary to explore the factors that cause this variability. For example, TSDS under cluster 1 does not engage in any welfare activity, marketing-related work, and financial support activities. The reason for the behavior is to be

investigated by closely observing the similarities in the clusters.

This kind of comparative analysis for the FBOs has not been carried out previously in the tea sector in Sri Lanka. However, compared to some successful FBOs like JAC and FPC in India (Rajaratna, 2007; Esham 2012; Trebbian and Husller, 2012), these TSDSs seem to lag far behind them, especially in the implementation of multipurpose services. CHECK Cluster or cluster – be consistent

Estimates for overall efficacy index of TSDS.

The discussion focused on the extent to which the various functions, normally followed by the FBO implemented at what level by the TSDS in the Badulla district. The relative importance of those functions did not take into consideration in this exercise. We observed that implementation of certain functions such as extension, processing, and marketing, combined field operations, dealing with natural resources, and other profit-making activities, were relatively poor even in relatively well-functioning TSDS. One could argue that they are not important activities, as long as other activities work well. To find an answer to such a situation, this study attempted to assess the overall efficacy of the TSDS, taking into account the relative importance of these functions, with an overall index of efficacy. The calculated index values are presented in Table 9.

Table 9: Overall values estimated for studied TSDS.

TSDS	Estimated value	Cluster	TSDS	Estimated value	Cluster
B/L/5	8.20	1	B/P/11	27.10	4
B/W/9	8.86	1	B/P/14	28.15	4
B/EL/16	10.22	1	B/LW/18	28.30	6
B/EL/20	10.99	1	B/P/10	29.28	6
B/H/8	11.73	1	B/P/12	29.80	6
B/E/1	13.92	1	B/L/6	30.59	4
B/EL/17	14.72	1	B/P/15	31.83	3
B/LW/19	14.96	1	B/BW/21	32.96	6
B/P/13	25.88	4	B/PL/4	35.57	3
			B/WP/3	37.77	2
			B/E/2	42.18	2
			B/L/7	44.20	5

Accordingly, the index values vary from 8.2 to 44.2, again indicating a huge variability among the observations (standard deviation=11.42, mean value 24.63, median 28.15). The TSDSs with the lowest index value grouped in cluster 1 and TSDSs with relatively moderate values mostly belong to clusters 4 and 6. Ones with relatively high index values grouped to clusters 5, 2, and 3. However, there is a slight disparity between this analysis and cluster formation in two cases (B/BW/21, B/L/6), which occurs due to variability in priority areas of the respective TSDSs (whether engage in a high relatively important area or less important area).

The overall result poses two basic questions. The first question is related to the variability - why this huge variability occurs, simply why can't B/L/5 perform when B/L/7 can perform? Is it due to the problem of collective action? Or members' related factors or leadership issues, or a combination (Gerragama *et al.*, 1999; Senanayake, 2002; Rajarathna, 2007; Esham and Usami, 2007)? The second question arises concerning the level of achievement. Is it possible to be satisfied with 'high achievers'? They have achieved these values out of 100! Thus, the problem seems to be more complex. Why does no one go beyond at least half the scale? Is it a problem in the system? Does the operating system need to be changed as done in India (Trebbin and Hassler, 2012; Parida 2021). Why did members not demand the service? Why TSDSs did not meet the needs of members? Is it because of the problem of collective activism? Many questions have arisen around these two major questions.

At the moment, although the reasons behind such variability cannot be pinpointed, some of the theoretical perspectives proposed by Olson (1965) on the impact of 'incentives' on collective action may have some relevance. Some previous observations regarding MKTPCS as well as the FBOs affiliated to two agribusiness companies have provided clues on this (Mahindapala *et al.*, 2020b; 2021b). The findings of Trebbin and Husler, (2012) on FPC in India are also in favor of the above claim to a greater extent. The contribution of social capital has also been recognized as a factor for the success of FPC in India in many studies (Trebbin and Hassler 2012; Salokhe, 2016; Ajmal *et al.*, 2018). Hence, future studies should focus on finding answers to the above two key questions. This means that while focusing on the variability among the TSDSs, it is important to look for the cause of the stagnation of the entire system.

CONCLUSIONS

TSDSs in the Badulla district show a different level of execution of the multifunctional servicers approach. A substantial number of TSDSs have taken measures to provide members reasonable opportunities to present and discuss the issues that affect their lives. However, it appears that the real issues do not seem to reach the surface and lack policy dialogue. Often the management of TSDS focuses on day-to-day operational issues. Their intervention to assess and handle the external threats is weak. The supply of (other than planting material) is operating at a satisfactory level in the majority of TSDSs. The linking of extension and advisory services with the members and facilitating the flow of the benefits of the service to the members is not satisfactory. The provision of loans and other financial services is poorly functioning. The support for the distribution of government subsidies is noteworthy. Market-oriented activities are kept to a minimum and are limited to a few activities such as the collection and sale of green leaf and the occasional profit sharing. Overall, the behavior of the TSDS in the Badulla district is unsatisfactory concerning the multidisciplinary service approach.

There is high variability in the practicing of the multifunctional service approach with the identification of six clusters among TSDSs with varying levels of engagement. Overall, according to the efficacy index, even the best performers in the region are not satisfactory. This situation leaves two questions for future investigations — why this large variance between TSDSs occurs and why these TSDS stagnate.

Issues and Implications

Results revealed that many TSDS activities in the region are limited. In such a context, it is not clear whether TSDS can have a significant impact on the lives of their members. The MorawakKorale Tea Producers' Co-operative Society provides a great service to its members as an FBO, and members strongly believed in a positive impact on their lives (Mahindapala *et al.*, 2020b). Except for a small number of TSDS, many have not shown any signs of growing as a self-reliant organization. Is it because of their 'Aid dependency'? (Dependency on external/government aids such as subsidy, materials, etc.) Some evidence shows that aid dependency can deteriorate voluntary behavior (Hilton, 1990; Lam, 1998; Adadi, *et al.* 2014). Further, as discussed above, the level of functions can be varied due to various factors such as lack of contribution of members (collective action

problem), internal issues, and influence of modernization (Rostow, 1960). These reasons should be investigated further. In addition to the variability, no TSDS's performances of this region were substantial. These organizations are state-centric and highly influenced by governmental actions and policies. Has that any influence on their functions? This should also be investigated. One of the major problems identified was the lack of policy discussions internally and the inability to deal with some external threats. Is this an extension of state-centric nature?

Recommendation and Future Works

Activities of TSDSs in other main tea-growing districts should be studied and their clusters should be explored. The reason for variability needs to be investigated.

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Annexure 1: Results of the opinion survey

Main factor	Sub-level Factors	Sub-level weightage
Extension	Advisory activities	0.285
	Farmer training	0.267
	Diagnose field problem	0.245
	Monitoring /motivate farmers	0.203
Welfare activities	Educational aids	0.213
	Death donation scheme	0.265
	Medical support scheme	0.202
	Recreation	0.114
Dealing with inputs and resources	Provide other livelihood support	0.206
	Supply of Inputs	0.57
	Supply of physical resources, machines, tools	0.43
Marketing of produce	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	Banking service	0.237
	Sharing of profit/Bonus	0.146
	Coordinating to obtained government subsidies	0.229
	Providing Insurance service	0.142
Involvement in natural Resource management and national/Common/Industry issues	Transport service	0.176
	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	Admin activities	0.294
	Accounting	0.264
	Auditing	0.218
	Record keeping	0.224

Source: Results of the opinion survey

Annexure 2: Estimated Mean Weightages for the different functions.

Dimension	Weightage
Identification of Needs	11.82
Extension Activities	11.41
Welfare Activities	7.59
Dealing with Inputs and Resources	12.53
Dealing with primary produce Processing Marketing of Products	13.53
Financial Support	9.06
Joint field operations	8.47
Capacity Building	8.41
Dealing with Natural resource, Policy matters	5.21
Admin Function	5.09
Other for-profit activities	6.88
Total	100

Source: Mahindapala et al. (2021) *Tropical Agriculture Research*, Vol 32(2) page 142