

## How do farmers' groups and cooperatives support smallholder farmers? A Case of Eastern Bhutan

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**ABSTRACT:** The number of registered farmers' groups (FGs) and cooperatives (Coops) increases yearly in Bhutan. However, the benefits of these collective actions are under-researched, particularly in Eastern Bhutan. Thus, we endeavored this research to assess FGs and Coops' benefits covering the six districts of Eastern Bhutan. Data for this study came from interviewing 301 members of FGs and Coops. Our results show that FGs and Coops moderately benefited in terms of economic, human resource development, inputs and infrastructure access, and socio-culture. We discussed these benefits with a few challenges, with examples and evidence wherever possible. The study findings are useful for promoters of FGs and Coops in Bhutan and other developing countries.

**Keywords:** agriculture; Bhutan; cooperatives; farmers' groups; smallholder farmers

### Introduction

A farmers' group (FG) is "a group of not less than three members deriving economic benefits from one or more economic enterprises" (Department of Agricultural Marketing and Cooperatives [DAMC], 2019a). A cooperative (Coop) is "an autonomous association of persons united voluntarily to meet their common economic, social, and cultural needs and aspirations through a jointly-owned and democratically-controlled enterprise" (International Cooperative Alliance, 2018). The coop movement originated in Europe and spread to other countries (Ortmann and King, 2007a). In Bhutan, informal FGs existed as early as the 1960s as community groups. However, the modern cooperative movement, including enacting cooperative acts, approval of coop rules and regulations, establishing the dedicated institution, and FGs and Coop registration, is a recent phenomenon (Tenzin and Natsuda, 2016; Sonam and Martwanna, 2012). For instance, formal registration of FGs and Coops in Bhutan started only in August 2010. As of June 2019, the DAMC registered 509 FGs and 71 Coops (DAMC, 2019a).

FGs and Coops are the solutions to empower small-scale farmers by offering farmers with advantages that are difficult to achieve individually. The advantages of FGs and Coops to smallholders include economies of scale (Meulenbergh, 2000), reduce transaction costs (Ortmann and King, 2007b), improve finance access (Asante et al., 2011), and improve market access (Aref, 2011). As a result, household members could earn more income than non-member households (Getnet and Anullo, 2012). FGs and Coops are also known for improving the household's food security, thereby reducing poverty (Tenzin et al., 2015). FGs and Coops also contribute to community development

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(Egerstrom, 2001). Employment generations (Eum, 2017, Wanyama et al., 2008) and social capital improvements (Tenzin and Natsuda, 2016) explain the FGs and Coops' contribution to the community.

More people aspire to form FGs and Coops, fathoming the benefits of collective actions. Hence, the number of registered FGs and Coops in the country increases yearly. For instance, in 2018-2019, the DAMC registered 99 groups, including 5 Coops and 94 FGs (DAMC, 2019c). Bhutan, in general, has limited academic papers on the benefits of FGs and Coops (Dendup and Aditto, 2020; Wangchuk et al., 2019; Tenzin and Natsuda, 2016; Sonam and Martwanna, 2012, Sherpa, 2010), and most of these studies were cross-sectional studies conducted in West and Central regions of Bhutan. Understanding the benefits of such collective actions is paramount to deciding whether Bhutan should continue registering more FGs and Coops in the future. This study is expected to add findings to the current body of knowledge on the benefits of FGs and Coops from Eastern Bhutan, which is currently unclear. Therefore, the main objective of this study was to assess FGs and Coops' benefits in Eastern Bhutan's six districts.

## Methodology

### Study area

Bhutan can be divided into four regions: East, West, Central, and South. We conducted this study in the Eastern region, covering all its six districts: Lhuntshe, Mongar, Samdrup Jongkhar, Pema Gatschel, Trashigang, and Trashhi Yangtse (**Figure 1**). Formal registration of FGs and Coops in the Eastern region also started in 2010 (DAMC., 2019b). After that, the number of groups has been increasing every year.

Bhutan has six agro-ecological zones: wet subtropical (100-600 meters above sea level [masl]), humid subtropical (600-1200 masl), dry subtropical (1200-1800 masl), warm temperate (1800-2600 masl), cool temperate (2600-3600 masl), and alpine (3600- 7500 masl) (Ministry of Agriculture and Forest [MoAF], 2019). Except for the Lhuentse district – which has humid subtropical to alpine zones – all five other districts have agro-ecological zones ranging from wet tropical to alpine zones (MoAF, 2019). Some important profiles of six districts are present in **Table 1**.

**Table 1** Selected profiles of six districts of Eastern Bhutan

Profiles	Mongar	Pema Gatschel	Trashigang	Samdrup Jongkhar	Trashhi Yangtse	Lhuentse
Area (km <sup>2</sup> )	2,859	1,030	3,066	1,878	1,438	1,905
Temperature (degrees Celsius)	17.5	17.1	16.3	20.4	15.8	20.6
Rainfall (mm)	1,065.2	1,649.6	1,219.1	4,240.7	1,041.4	801.8
Population (persons)	37,150	46,316	45,518	35,079	17,300	14,437
Coops & FGs (numbers)	4 [70]	0 [20]	3 [48]	6 [25]	1[23]	0[11]

**Sources:** National Statistics Bureau (2020), DAMC (2019b), MoAF (2019), and MoEA (2006)

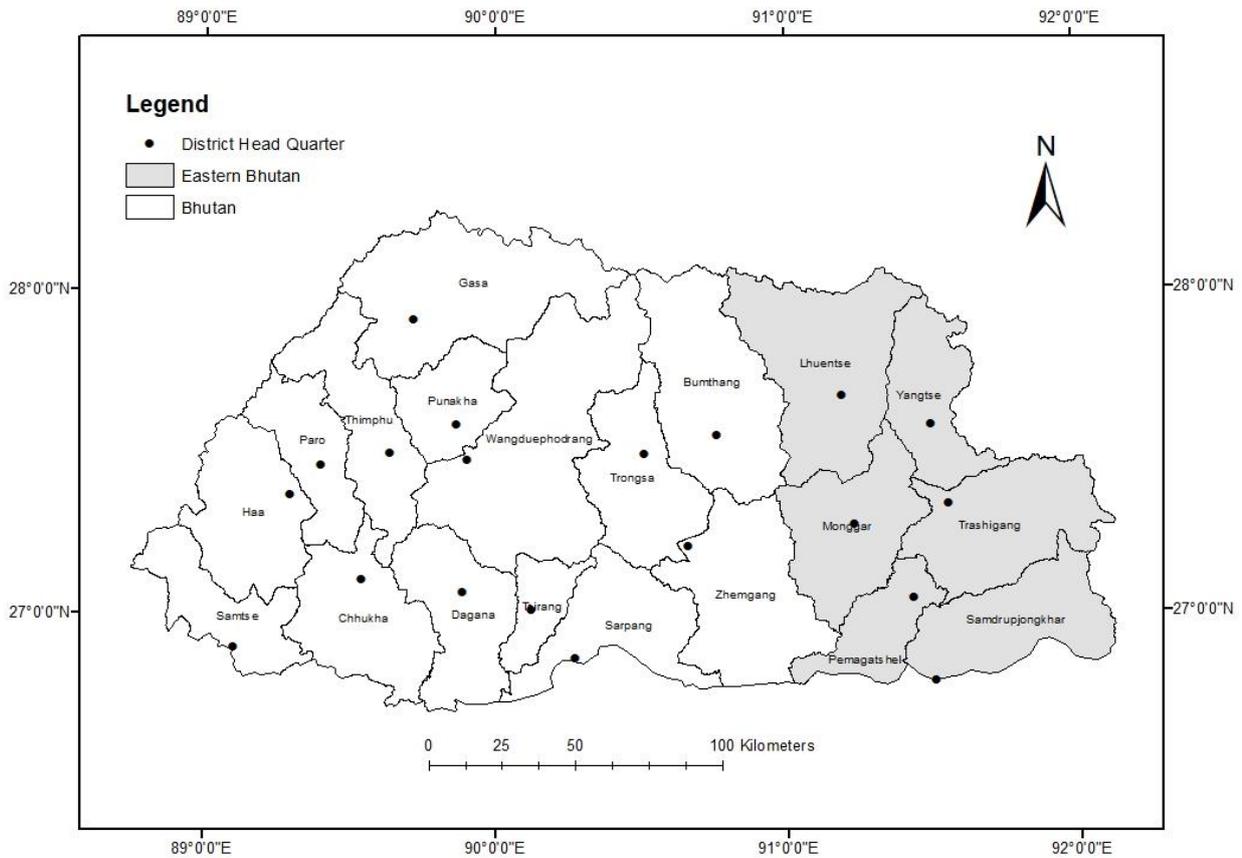


Figure 1 Study area: six districts in Eastern Bhutan

### Sample size and sampling procedure

The target population was all 5,443 registered FGs and Coops members as of 2019 in Eastern Bhutan's six districts. The sample size was determined using the Yamane Formula (Yamane, 1967) with a 95% confidence level, as shown in Equation 1. Although Yamane Formula determined 400 samples, we could collect data from only 301 members as there was travel restriction due to the outbreak of the covid-19 in the country before the completion of data collection. However, 301 members could well represent the planned sample as it covers 75.25%. The multistage sampling technique was adopted in this study. Figure 2 presents the percentages of respondents employed in each district.

$$n = \frac{N}{1 + Ne^2} \tag{1}$$

$$n = \frac{5,443}{1 + 5,443(0.05)^2}$$

$$n = 400$$

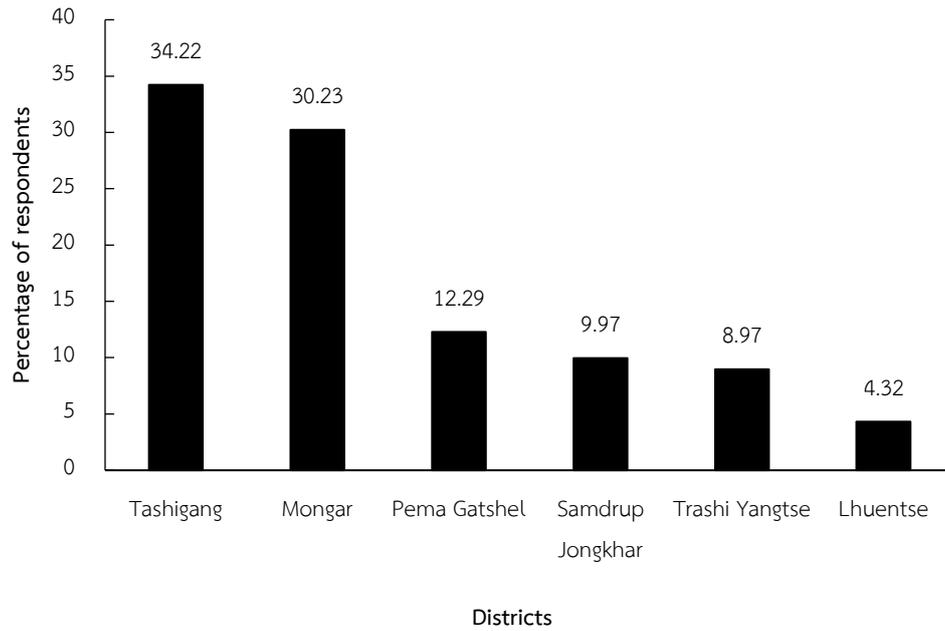


Figure 2 Percentage of members employed in each district

#### Data collection and questionnaire

The Research Committee at the College of Natural Resources (Royal University of Bhutan) approved this research. The RAMCO informed the respective districts, gewogs, and groups through an official letter. DAMC, the head office of RAMCO based in Thimphu, was also informed about this study via an official letter. After all these institutional approvals, we devised face-to-face interviews with selected members in 2020.

The face-to-face interview enabled enumerators to explain the questions, clarify the respondent's doubts, and record the responses more accurately from the illiterate farmers. Researchers informed the chairperson and the extension personnel a day before data collection to gather their selected members in Gewog centers, schools, or other locations for fast and easy data collection. When members gathered the next day, researchers were adequately briefed about the study objective. We also got informed consent for their participation and using their photograph for this study. After that, enumerators took the individual members to a separate location for the interview to avoid interference from other members (Figure 3).



Figure 3 Photo after briefing members with the study objectives (A) and during interviews (B).

We hired enumerators based on three criteria: completed at least class XII (1), could speak local languages (2), and had data collection experiences (3). Enumerators received training on collecting data using the designed questionnaire before their actual data collection in the field. We pre-tested semi-structured questionnaires before collecting the actual data on respondents' profiles (age, gender, and education level) and the benefits of FGs and Coops. FGs and Coops' benefits were measured based on 22 statements partially adopted from Dendup and Aditto (2020) with minor corrections.

#### Data analysis

We used Microsoft Excel 2016 for data coding and cleaning. Members rated 25 statements explaining groups' benefits on the five-point Likert scales ranging from 1 (strongly disagree [SDA]), 2 (disagree [D]), 3 (neutral [N]), 4 (agree [A]), and 5 (strongly agree [SA]). For the interpretation of Likert scale data, interval level was calculated using equation 2, and mid-score calculation and interpretations were shown in **Table 2** (Sonam and Martwanna, 2012).

We used the Statistical Package for the Social Sciences version 23.0 to perform descriptive statistics (frequencies, percentages, means [M], and standard deviations [SD]) and Arc GIS version 10.1.6 to generate the study area map. We also used Inkscape version 1.0.1 to improve picture resolution.

$$\text{Interval level} = \frac{\text{Highest score} - \text{Lowest score}}{\text{Number of Levels}} = \frac{5 - 1}{5} = 0.80 \quad (2)$$

**Table 2** Mid-score calculation and interpretations

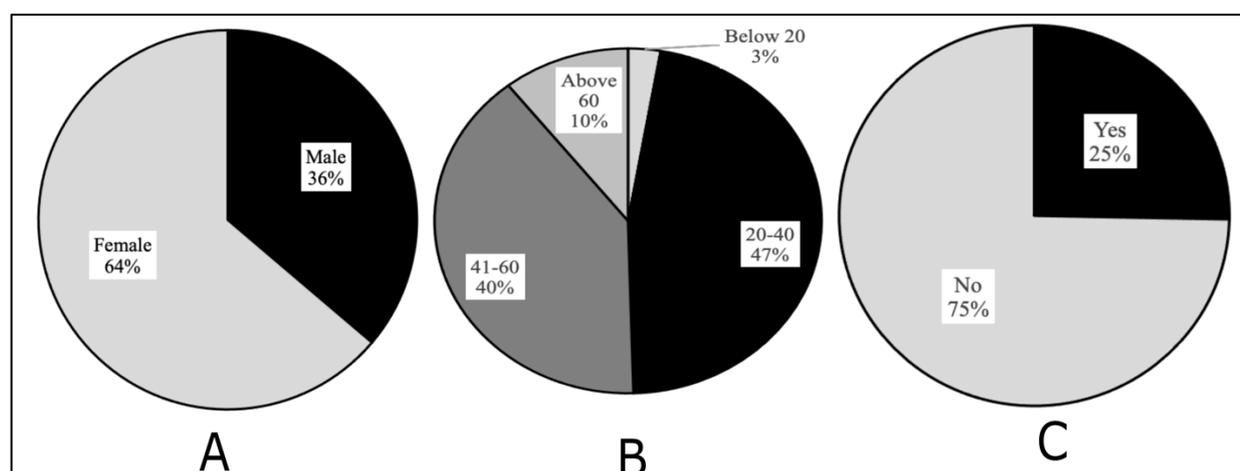
Mid Score	Interpretations
$4.20 + 0.80 = 5.00$	$4.21 - 5.00 =$ Strongly agree [SA]
$3.40 + 0.80 = 4.20$	$3.41 - 4.20 =$ Agree [A]
$2.60 + 0.80 = 3.40$	$2.61 - 3.40 =$ Neutral [N]
$1.80 + 0.80 = 2.60$	$1.81 - 2.60 =$ Disagree [D]
$1.00 + 0.80 = 1.80$	$1.00 - 1.80 =$ Strongly disagree [SDA]

## Results and Discussion

### Demographic profile of members

The study sample comprised 301 members of FGs and Coops from six districts of Eastern Bhutan. **Figure 4(A)** shows that 36.2% and 63.8% of respondents were males and females, respectively. The finding indicates mixed group members but in favor of females by almost a fold. More than half (52%) of the total registered members in Bhutan in 2018-2019 were women (DAMC, 2019c). On a positive note, the more significant number of women in the groups also indicates women's empowerment through their participation in agriculture.

Most respondents ranged from 20 to 40 years old (47%), followed by 41-60 years old with 40% (**Figure 4(B)**). This fact reveals that Bhutan has minimal older people and young people pursuing collective actions such as FGs or Coops. Maximum respondents (75%) also had no formal schooling (**Figure 4(C)**), suggesting mostly illiterate members. The finding agrees with Pelzom and Katel (2017), who reported that higher proportions of educated Bhutanese youth disregard agriculture for employment. The reluctance of educated youths towards agriculture could be because of parents' and relatives' higher expectations from educated youths.



**Figure 4** Demographic profile of respondents: gender (A), age categories (B), and formal schooling (C)

### Economic benefits of FGs and Coops

Combining farmers who agreed and strongly agreed, 94.35% believed that FGs and Coops contribute to the local economy, allow better market access (89.39%), and encourage saving (87.37). The interpretations of means

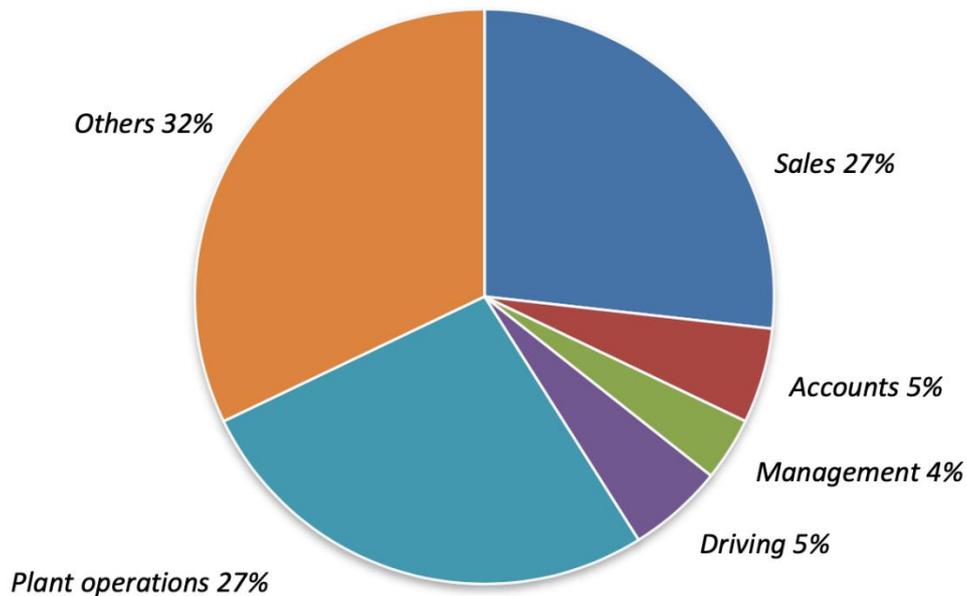
also show that FGs and Coops have strongly benefited in terms of the local economy, market access, and saving (Table 3)

Most members (83.39%) agreed that FGs provide employment opportunities, and the benefit was moderate. Although many FGs and Coops could provide only part-time (or seasonal) employment to their members, successful groups (e.g., Norbugang dairy groups in the Pemagatshel district) could employ non-members from the community as well (DAMC, 2019a). In some cases, the activities of groups have resulted in indirect employment in the community. For instance, the Shazo cooperatives in Tashiyangtse – a cooperative specialized in producing wooden bowls locally known as *Dapa* – generated indirect employment, such as raw-material collectors, lacquerers, and salespersons (Wangdi, 2016). In agreement, Wanyama et al. (2008) reported that FGs and Coops are essential in providing jobs (direct, seasonal, or casual work) in rural communities. Additionally, there is evidence from developing (Getnet and Anullo, 2012) and developed countries (Wang, 2014) on the economic benefits of FGs and Coops.

**Table 3** Economic benefits of FGs and Coops

Economic Benefits	SDA	D	N	A	SA	M	SD	Interpretation
Contribute to local economies	0.33	2.66	2.66	63.46	30.90	4.22	0.65	Strongly agree
Allow better access to markets	3.65	7.64	1.00	32.23	55.48	4.28	1.06	Strongly agree
Encourage saving	4.98	6.98	0.66	36.21	51.16	4.22	1.10	Strongly agree
provide employment opportunities	3.99	8.31	4.32	47.51	35.88	4.03	1.05	Agree
Enable to negotiate better contracts and prices	6.98	12.29	1.33	46.18	33.22	3.86	1.20	Agree
Provide financial assistance	19.60	12.96	3.65	10.30	53.49	3.65	1.66	Agree
Improve access to credits	35.22	8.64	7.64	9.63	38.87	3.08	1.77	Neutral

FGs and Coops employed 121 people in Bhutan (DAMC, 2018). The same report stated that monthly salary ranged from Nu. 1,500 to Nu.35,000, with an average salary of Nu. 8,045. Some groups paid incentives to the office barrier, although they did not employ anyone; if we consider those incentive receivers, the employment number will increase. **Figure 5** shows the types of professionals hired by FGs and Coops. Besides, FGs and Coops also employ other low-skilled workers in Bhutan (DAMC, 2019a). Employing non-member professionals indicates a lack of such skills, suggesting the need to provide training in these areas.



**Figure 5** Types of professionals employed by FGs and Coops

Source: DAMC (2018)

During our interviews, evidence of groups enabling small-scale farmers to access the market surfaced repeatedly. One prominent evidence is the recent promotion of contract farming between groups and schools or hospitals by the DAMC in Bhutan. By the end of 2019, DAMC has already facilitated 53 contracts between farmers' groups and schools (DAMC, 2019c). Farmers can negotiate and bargain for a better price (Aref, 2011), which is difficult at the individual level. For example, the price of dairy products is often lower if one buys from individual farmers than from the Milk processing units (fixed prices). This example indicated the low ability to bargain the price at the individual level.

The average net income of FGs and Coops in 2018 was about Nu. 25,122, but some groups earned a net income as high as Nu. 3,940,000 (DAMC, 2019a). Some FGs had joint accounts where members deposit a certain amount of money monthly, biannually, or annually. Saving culture in FGs has encouraged 87.38% of members to save money. According to DAMC (2019a), the average saving by FGs and Coops was Nu. 135,519. Also, 25 groups have introduced savings and credit functions as part of their regular business in 2018-2019 (DAMC, 2019c). Although almost all FGs aspire to provide micro-credit to their members after their savings reach certain amounts (Sonam and Martwanna, 2012), only a few FGs have provided loans to their members in practice. Loans from FGs are of low-interest rates and collateral-free, unlike loans from commercial banks. Some of the group members' reasons are that the number of members is small, and the amount of regular savings is small; thereby, the accumulated amounts are not adequate for rolling out loans. Limited loans from FGs could have been the reasons for relatively fewer members agreeing that FGs provide financial assistance (63.73%) and improve access to credit.

One major drawback of FGs and Coops is that many do not properly record financial transactions, including revenues, expenditures, and inventories. As a result, some FGs and Coops could not accurately spell out their economic benefits. On the other hand, it will be difficult for future researchers to access the actual financial data.

### Human Resource Development in FGs and Coops

Members who have agreed and strongly agreed that FGs motivated them to pursue farming constituted about 94% (**Table 4**). The rising motivation for farming could be due to FGs improving market access and economic returns. Shifting from self-subsistence to semi-commercial and commercial farming among Bhutanese smallholder farmers (Dendup, 2018) partly reflects their rising motivation in farming. Some groups' use of fallow lands or leasing government land for up-scale farming also indicates the rising motivation for farming.

**Table 4** Human Resource Development in FGs and Coops

Human resource development	SDA	D	N	A	SA	M	SD	Interpretation
Improve motivation toward farming	1.33	3.99	1.00	45.85	47.84	4.35	0.80	Strongly agree
Enhance knowledge and skills	2.99	6.31	0.66	46.84	43.19	4.21	0.96	Strongly agree
Improve information sharing	3.32	5.65	1.66	47.51	41.86	4.19	0.96	Agree
Expand leadership experiences	16.28	19.60	2.33	22.59	39.20	3.49	1.55	Agree
Encourage organic farming	11.30	21.26	2.99	36.54	27.91	3.49	1.38	Agree

FGs have also strongly benefited from enhancing farming knowledge and skills among group members. Pursuing commercial farming or agribusiness requires adequate knowledge and skills specific to the enterprise. Thus, government and non-government organizations provide FGs and Coops with capacity-building programs. The DAMC offered bookkeeping, saving, value addition, marketing, leadership, business development, and group registration protocol training. For instance, the DAMC trained 925 members from 197 FGs and Coops on various subjects in 2018-2019 (DAMC, 2019c). Members of FGs also got exposure tours within the country or ex-country (DAMC, 2019c). Such capacity-building programs enhance their members' knowledge and skills. Having to work in groups enables members to exchange information among themselves. Gargiulo and Benassi (2000) also reported that FGs and Coops enhance information and knowledge exchange.

FGs and Coops moderately benefited members by expanding their leadership experiences. FGs and Coops leaders, including chairpersons, treasurers, and accountants, are elected based on voting or appointed on a rotational basis. In doing so, many members will gain leadership experience. However, as many FGs and Coops have operated for only a few years, other members are yet to shoulder the leadership responsibilities. Thus, relatively fewer members agreed that FGs expand their leadership experiences. However, we expect other members will get a chance to shoulder leadership responsibility in the future.

FGs and Coops have moderately encouraged to pursue organic farming. Although Bhutan's goal of achieving 100% organic is still at bay (Feuerbacher et al., 2018), the current finding suggests that farmers are willing to pursue organic agriculture. Such motivation will contribute to achieving Bhutan's aspiration of attaining 100% organic agriculture (Tashi and Wangchuk, 2016).

### Access to Inputs and Infrastructure by FGs and Coops

FGs and Coops strongly benefitted farmers in terms of access to farm inputs (Table 5). As primary producers, access to adequate and quality inputs is crucial in crops and livestock farming. The RGoB provides subsidized inputs; however, economically backward households have less access to those subsidies than well-off households (Wang et al., 2019). Their finding clearly shows that access to inputs is still a challenge for most small-scale farmers in the country. Thus, smallholders join FGs and Coops to access inputs. By being members of FGs and Coops, members could access inputs, which would be difficult otherwise. Sonam and Martwanna (2011) also reported that FGs and Coops improved access to inputs among their members.

**Table 5** Access to Inputs and Infrastructure by FGs and Coops

Inputs and Infrastructure	SDA	D	N	A	SA	M	SD	Interpretation
Enable better access to farm inputs	1.33	1.66	1.99	45.85	49.17	4.40	0.74	Strongly agree
Improve access to infrastructure	2.99	3.65	2.33	51.16	39.87	4.21	0.89	Strongly agree
Improve access to land	14.62	6.31	2.99	25.25	50.83	3.91	1.45	Agree
Improve access to farming machinery	6.98	12.29	4.98	57.48	18.27	3.68	1.12	Agree
Enable the use of modern technologies	4.98	17.28	6.98	46.18	24.58	3.68	1.17	Agree

More than 70% of members tend to agree that FGs and Coops improved their access to infrastructure, farm machinery, and modern technology. Upscaling small-scale farmers' businesses requires conducive infrastructure and efficient technologies. Some farmers might join FGs and Coops to take advantage of the groups' infrastructure and machinery (Sonam and Martwanna, 2012). During our field visit, we observed that the RGoB and other promoters supported FGs and Coops with various infrastructures, such as milk collection sheds, milk processing units, marketing outlets, and greenhouses. The RGoB and other promoters have also provided farm machinery for agriculture (e.g., power tillers and chaff cutters) and livestock sectors (e.g., milk processing equipment and milk storage containers) in groups or individual members.

DAMC (2019c) reported providing value addition equipment (e.g., refrigerators and freezers) worth over Nu. 8.3 million to FGs and Coops in 2018-2019. These machineries were handed over directly to the groups or group members through the Dzongkhag Agriculture and Livestock Sectors. However, to ensure these technologies reach capable and needed groups, the DAMC initiated a competitive cost-sharing scheme called Cooperative Business Development Scheme as the delivery mechanism (DAMC, 2019c). Supporting the current finding, FGs and Coops have also improved their members' access to technologies in other countries (Msuta and Urassa, 2015).

However, we noted that some FGs and Coops could not use those technologies optimally. One reason was that no trained people to operate the machine when trained members left the groups. Another reason is the lack

of newly established FGs and Coops' technical and financial capacity to repair machines when there is a technology breakdown.

### Socio-cultural Benefits of FGs and Coops

FGs and Coops benefited moderately on all the five variables under the theme of socio-cultural benefits (Table 6). The variables of socio-cultural benefits are closely interconnected. For instance, FGs and Coops could improve members' well-being through networking, trust among members, and mutual support. FGs and Coops have the privilege of interacting with various stakeholders, including government agencies, educational institutes, non-government organizations, and private sectors. FGs and Coops interact with multiple stakeholders soliciting registration, finance, production, processing, marketing, and group management. FGs and Coops are member-oriented ventures; thus, they consult, include, and listen to their members. Trust, cohesion, and shared values among members improved in the process, which is well agreed by other studies (Edelman et al., 2004; Cohen and Prusak, 2001).

We also came across FGs and Coops that provide low or no-interest loans to their members and support other members during difficult times, such as the death of relatives, in cash and kind. Such a culture of support among members of FGs and Coops reveals evidence of mutual support. A dairy group in Eastern Bhutan improved social capital, including bonding, bridging, and linking in the community. Being a community group member also enhances self-esteem and security during emergencies (Tenzin and Natsuda, 2016). Thus, trust, commitment, and satisfaction levels are more significant within the members than among non-members of FGs and Coops (Mojo et al., 2015).

**Table 6** Socio-cultural Benefits of FGs and Coops

Socio-cultural benefits	SDA	D	N	A	SA	M	SD	Interpretation
Promote the well-being of members	1.66	5.65	0.33	67.11	25.25	4.09	0.79	Agree
Improve network with stakeholders	3.99	5.65	1.00	54.82	34.55	4.10	0.97	Agree
Improve trust among members	2.66	6.98	4.32	42.19	43.85	4.18	0.99	Agree
Improve mutual support	4.65	10.63	1.66	48.17	34.88	3.98	1.10	Agree
Promote culture and tradition	3.99	7.64	6.64	71.10	10.63	3.77	0.89	Agree

FGs and Coops also play moderate roles in promoting and preserving local cultures and traditions. For example, one FG in Radi Gewog, Trashigang district, is well known for promoting *sung-sung rice* and *Sorbang* (local rice names) cultivation. A cooperative in the Trashiyangtse district also produces traditional *Dapas* (wooden bowls), cups, and containers from wood. They still practice the traditional way of lacquering curved wooden bowls using the locally available wood known as *Sey shing* (*Rhus succedanea* L) (Agency for Promotion of Indigenous Crafts [APIC], 2013). Other FGs and Coops are also into crafting traditional bamboo alcohol containers known as *Ara Palang* (Tshering, 2017) and Bamboo containers known as *Bangchung* (APIC, 2012). All evidence mentioned here confirms the critical role of FGs and Coops in conserving and promoting local traditions.

As shown in **Table 7**, FGs and Coops moderately benefited from all four themes in this study. Therefore, this study concludes that FGs and Coops have moderate economic, human resources, inputs and infrastructure, and socio-cultural benefits.

**Table 7** Overall benefits of FGs and Coops

Benefits of FGs and Coops	M	SD	Interpretation
Economic benefits of FGs and Coops	3.91	1.32	Agree
Human Resource Development in FGs and Coops	3.94	1.23	Agree
Access to Inputs and Infrastructure by FGs and Coops	3.98	1.14	Agree
Socio-cultural Benefits of FGs and Coops.	4.02	0.96	Agree
Grand	3.96	1.18	Agree

### Conclusion and recommendations

This study assessed the benefits of FGs and Coops in the six districts of Eastern Bhutan. Our results indicated that FGs and Coops improve their members' economic status by improving access to market, employment, and finance. FGs and Coops also showed human resource development by providing avenues for improving farming or enterprise management's social and technical skills. Member households have also reported access to farm inputs, land, and technologies. Besides, working in groups also reported improving social capital and promoting local culture and traditions. These findings imply that strengthening the FGs and Coops can further benefit their members and communities.

Strengthening FGs and Coops requires a multi-facet approach; however, we discussed a few recommendations to be addressed and others within the current study's scope. We noted three weaknesses of FGs and Coops. They have policy implications for the RGoB and other promoters in their efforts to strengthen FGs and Coops. FGs and Coops employing non-member professionals in accounts, management, and sales, indicate a lack of these skills among group members, suggesting the need for related training. Bookkeeping was also not part of many FGs and Coops in Bhutan, declining financial transparency, which can have disastrous impacts later. The DAMC claimed that it provided some bookkeeping training to almost all groups (DAMC, 2019c). However, most FGs and Coops did not maintain bookkeeping calls for stakeholders concerned to design effective training for illiterate rural farmers. FGs and Coops were also unable to use farm machinery optimally, primarily due to skilled operators. Therefore, we suggest training more than one member to operate and repair the machines during breakdowns.

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## Conflicts of Interest

The authors declare no conflict of interest.

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