

Extension Access, Quality and Impact: Lessons from Strengthening Agriculture and Nutrition Extension Project in Malawi

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ABSTRACT

The study was conducted to evaluate the influence of the Strengthening Agriculture and Nutrition Extension (SANE) project on the Malawi extension system (DAESS). The effectiveness of SANE was evaluated based on changes in extension access, quality and impact on farm productivity and income. A questionnaire was administered to 389 randomly selected SANE participating farmers of Dedza district. Using descriptive and content analysis, the study found that 91% of farmers accessed extension services from the Ministry of Agriculture (MoA), mostly through demonstrations, the lead-farmer approach, and field days. The results also demonstrated that while farmers view extensionists as competent, they perceive the overall quality of extension services to be low. Most respondents rated MoA staff as competent, with 81 and 69% endorsing their technical and soft skills, respectively, yet at least 35% reported no improvement in access to financial institutions, markets and farm inputs. Finally, the results show that extension programs positively impact farm productivity, but their effect on farm income is limited. Productivity for maize increased from 2.08 mt/ha to 2.25 mt/ha in the last two years of SANE, while farm income remained low, with the mean total value of sales for major crops in 2020-2021 at 228,068 Malawian Kwacha (MK). Overall, extension access improved, but gaps in quality and in income impact persist. The study recommends making DAESS platforms market-oriented.

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1. INTRODUCTION

With approximately 85% of Malawi's population depending on smallholder farming (World Bank, 2022), agriculture is a mainstay of the country's economy, contributing 30% of gross domestic product (GDP) (World Bank, 2025a), 62% of the labour force (World Bank, 2025b), and over 80% of foreign exchange earnings (World Bank, 2025c). Agricultural extension is central to development and crucial for delivering knowledge, technologies, market connections, and other solutions to the rural economy (Ongachi & Belinder, 2025; Mungaia, Messinaa, Zulub, Chikowo & Snapp, 2024; Abhijeet, Sahu, Bardhan, Chouhan, Dixit, Tripathi, Pandey & Ahmed, 2023; Loki & Mdoda, 2023). Extension systems outline how extension is organised, implemented, financed, and coordinated in a country (Christoplos, 2010). In 2000, Malawi adopted the decentralised agricultural extension services system (DAESS), which is based on the model village approach "a process of getting farmers to analyse their situations, articulate demands and needs, generate solutions and options, and demand quality extension services from service providers available in their respective areas" (Chinsinga, 2008: 12). However, by 2015, many elements of DAESS remained unimplemented, vindicating the need for a system-strengthening intervention, the Strengthening Agriculture and Nutrition Extension (SANE) project.

The USAID/Malawi project, Strengthening Agricultural and Nutrition Extension (SANE), was implemented in collaboration with the Malawi Department of Agricultural Extension Services (DAES) from 2015 to 2020 across 10 districts of the Feed the Future (FTF) Expanded Zone of Influence (E-ZOI) (USAID, 2017). The SANE project aimed to strengthen DAESS platforms to support farmers' voices and improve coordination among service providers, thereby enhancing access to and the quality of extension services (Álvarez-Mingote, Moore & McNamara, 2020). Álvarez-Mingote *et al.* (2020) and Soroko, Mtinumi, Masangano, Fiebig, Phillips, & Price (2019) reported improvements through SANE in transforming DAESS platforms into functional, coordinated extension service providers, thereby increasing farmers' voice and ability to raise needs. Ragasa & Comstock (2019), however, reported that although coordination of extension services

improved due to SANE, the percentage of farmers requesting information decreased from 12% in 2016 to 4% in 2018. Why are farmers hesitant to request extension advice? Literature suggests reasons like farmers' unawareness of information needs (Sani, Boadi, Oladokun & Kalusopa, 2014), lack of empowerment (Masangano & Mthinda, 2012), inappropriateness of communication channels (Talib, Ashraf, Agunga, & Chaudhary, 2018), and non-credibility of the extension system (Stevens & Ntai, 2011; Maake & Antwi, 2022). In Malawi, Chowa, Garforth, & Cardey (2013), along with more recent studies by Stull, Kambewa, & Tchuwa (2020), Mikwamba, Dessein, Kambewa, Messely, & Strong (2020), and FAO (2021), have highlighted the weaknesses in pluralistic, demand-driven extension systems; however, none provide a clear explanation for these shortcomings. Their findings are largely consistent with those of Ragasa and Comstock (2019). It is against this background that this study was conducted in Dedza to provide empirical evidence on the effectiveness of Malawi's extension service system following the SANE programme, addressing a gap in the literature. Dedza was an implementing district of SANE and has been a focal point for comparable research studies.

This article seeks to determine whether extension services are accessible, perceived as high quality by farmers, and impact productivity and income. Access to extension services is measured by contact with extension messages or visits (Owens, Hoddinott, & Kinsey, 2003), while extension quality is assessed through farmers' satisfaction with access, learning procedures, and service outcomes (Agholor *et al.*, 2013; Ragasa & Camstock, 2019; Landini, 2020). Farming productivity is defined as the increase in output not accounted for by input growth but by advances in production techniques (Odhiambo & Nyangito, 2003). This study measures productivity using yield per hectare and proceeds from crop and livestock sales, following Owens *et al.* (2003) and Al-Sharafat, Altarawneh and Altahat (2012).

2. RESEARCH METHODOLOGY

This study was conducted in Dedza, one of the implementing districts of the SANE project. The literature reviewed (Suvedi, 2011; Dedza SEP, 2013; Ragasa & Niu, 2017; Stull *et al.*, 2020; Tchuwa, 2021) was instrumental in selecting the district. Dedza had had a relatively longer-term active engagement with the SANE project, a factor necessary for evaluation studies. Besides, Dedza has perfect representations of all the topographic areas the SANE project worked in. The district has also

been a focal point for research studies on extension systems. These studies present a basis for comparison with the current research.

Dedza lies in the Central Region of Malawi at 14.3817°S, 34.3255°E. It borders the southern part of Lilongwe, the capital city district. To the east lies part of Lake Malawi, and to the southwest lies the Malawi-Mozambique border. Dedza covers a total land area of 3 624 square kilometres, which is about 4% of Malawi's total land surface area (94 276 square kilometres) (Dedza SEP, 2013). The district has four topographic zones: (i) the Lilongwe-Kasungu Plain; (ii) Dedza Highlands; (iii) the Escarpments zone, falling steeply to the Great Rift Valley; and (iv) the Coastal Plain of Lake Malawi in the Great Rift Valley. Each of these zones has its own distinctive climatic features, geomorphology, soils and human factors that affect agricultural development differently (Remmington, 1963). Dedza has eight traditional authorities (T/As) with 222 416 farming households. The district is also demarcated into 10 extension-planning areas (EPAs) and 169 sections for agricultural operations. An Assistant Agricultural Extension Development Officer is supposed to staff each section. At the time of the study, only 62 sections were staffed, implying a staff: farm household ratio of 1:3 587, against a recommendation of 1:750 (MoAIWD). At that time, 7 non-governmental organisations were also involved in providing agricultural services.

A mixed-methods approach was used to conduct the study, combining quantitative and qualitative research methods (Johnson & Onwuegbuzie, 2004). Results of descriptive and content analyses of the system's performance were compared with information from previous studies.

2.1. Sampling

A total of 931 farm households participated in at least one SANE activity in Dedza and were therefore sampled. A disproportionate multi-stage random sampling method was used to select 389 respondents from all eight TAs in the district. The list for SANE farmers was obtained from the SANE registers.

TABLE 1: Number of Group Villages and Farm Households in Dedza, and the Sampled Farmers

Name of TA/ASP	Number of Group Villages	Number of Farm Households	Participating houses/ sampled farmers	Sampling fraction
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Kachere	46	47 582	122	0.4
Chilikumwendo	34	23 132	128	0.4
Kamenyagwaza	7	11 902	168	0.3
Kachindamoto	20	31 819	146	0.3
Kaphuka	74	48 883	125	0.4
Kasumbu	21	25 302	118	0.4
Tambala	22	25 161	65	0.8
Chauma	10	8 635	59	0.8
Total	234	222 416	931	0.4

Source: SANE registers, own calculation (2021)

The data were collected through structured household questionnaires administered during interviews in the TAs.

2.2. Measurement of Variables

i) Access to Extension Services

This was measured by the farmers' frequency of contact with messages or extension workers' visits. It also included the number of sources and channels farmers used to access extension services.

ii) Farmers' Perception

Perception was measured through farmers' judgements, opinions, and self-reported experiences with extension services. Farmers were free to be subjective in their judgement of extension workers' skills, improvements in overall farm activities, and preferences for extension channels. These were measured on a 3-point Likert scale, where 1 indicated dissatisfied, 2 satisfied, and 3 very satisfied.

iii) Quality of Extension Services

This was measured by the number of farmers who expressed satisfaction with both the service outcomes and the technical and interpersonal skills of the extension workers. It was also measured by the number of farmers who applied the recommendations delivered by the service and by the increase in farm productivity.

iv) Impact of Extension Services on Farming Productivity

Farming productivity in this study is defined by two key output metrics: yield per hectare for various

crops and farm income per farmer. These outputs were analysed in relation to inputs such as land (in hectares) and access to extension services.

v) *Competency*

This was measured by the sufficiency of extension workers' technical skills and soft skills as observed by farmers. Technical skills relate to production technologies, such as proper plant spacing, while soft skills relate to facilitation or group mobilisation. These were measured on a 3-point Likert scale, where 1 indicated not competent, 2 indicated marginally competent, and 3 indicated competent.

3. RESULTS AND DISCUSSION

3.1. Extension Access and Delivery Channels

Extension accessibility and delivery channels are central to extension systems. Respondents were first asked about their sources of extension and frequency of access, and Table 2 shows the results.

TABLE 2: Proportion of Farmers That Accessed Extension by Source and Frequency

Sources of Extension Services	Access to extension (%)	Frequency of extension access per year (%)		
		Annually	Bi-yearly	Quarterly
Ministry of Agriculture staff	91	21	18	61
NGOs	49	21	32	47
Private companies/agro-dealers	14	34	25	41
Lead farmer	73	17	19	64
Traditional leaders	44	21	24	55
Other government departments	26	33	39	28
Fellow farmer/friend	38	23	22	55
Farmer organization	28	33	15	52

Note: Farmers reported access from multiple sources; hence, percentages are not mutually exclusive.

3.2. Access to Extension Services

3.2.1. *Ministry of Agriculture*

Table 2 shows that most farmers (91%) received their agricultural-related information from the Ministry of Agriculture officials. This means most farmers accessed extension services through public extension workers, despite the presence of various players in the district. This is not surprising because, despite having many other extension providers in the district, most partners lack frontline staff and use government officers to implement their projects (Stull *et al.*, 2020; Ragasa & Niu, 2017; Chinsinga, 2008). The implication in extension delivery is that areas not substantially staffed by government extension staff still suffer despite being shown as covered by an NGO partner.

3.2.2. *Non-Governmental Organisations*

Moreover, as shown in Table 2, 49% of farmers reported receiving agriculture-related information from NGOs, confirming the role NGOs are playing in complementing extension efforts in the district. The high level of engagement of NGOs in the implementation of SANE certainly influenced high access to extension knowledge sources in the district, as NGOs attend to specific interventions in which they have resources and special skills. Alex, Byerlee, Helen-Colion, and Rivera (2004) also observed that NGOs are flexible and can provide integrated assistance to the poor and disadvantaged.

3.2.3. *Lead Farmer and Farmer Organisations*

Table 2 also shows that up to 73% of farmers reported receiving agriculture-related information from lead farmers, thereby improving access to extension services. The lead-farmer extension approach began in the 1990s in Malawi to improve the quantity and efficiency of extension services (MoAFS). Nevertheless, only 28% of farmers reported accessing agriculture-related information from farmer organisations despite 92% belonging to farmers' groups (Saidi, 2023). The Neuchatel group (2006) observes that working with farmer groups can secure a more responsive and efficient extension service.

3.2.4. *Private Sector*

As shown in Table 2, private companies accounted for the fewest farmers (14%). This finding implies that many private companies do not offer extension advice to farmers. Possibly, this is because there are still a few localised and homogenous private companies that are not capable of reaching out to more farmers of different needs, or farmers are unwilling to pay for services as these companies are profit-oriented, or it is an issue with the awareness and capacity of the companies to provide

extension support to farmers. Therefore, the DAESS needs to establish mechanisms for formally integrating these private companies through a structured registration process.

3.3. Frequency of Extension Access

3.3.1. Ministry of Agriculture

According to Table 2, up to 61% of farmers reported that government officials visit them quarterly during the farming season. The frequency of farm visits is higher than in other countries, such as South Africa, where the largest proportion of farmers (35%) receive only one visit per year (Loki, Aliber & Sikwela, 2021).

3.3.2. Lead Farmers and Farmer Organisations

Lead farmers were also a frequent source of agriculture-related information, with 64% of farmers accessing them at least quarterly (Table 2). Similarly, in India, 65% of farmers relied mostly on progressive farmers for extension support (Singh, Narwal & Malik, 2003). In contrast, only 22% of farmers in Nigeria regularly sought agricultural information from contact farmers (Okwu & Daudu, 2011), possibly due to differences in the design of the extension system, farmer preferences, or accessibility. This suggests that lead farmers play a crucial role in disseminating agricultural knowledge, though their effectiveness may vary across contexts. Overall, the findings highlight the role lead farmers play in addressing staff shortages in the agriculture sector. Similarly, agricultural information from farmers' organisations was frequently accessed. Table 2 shows that 52% of farmers who accessed agriculture-related information from farmers' organisations did so at least once a quarter.

3.3.3. Traditional Leaders

Table 2 shows that 55% of farmers who accessed agriculture-related information from traditional leaders also did so at least once per quarter, which is quite frequent. This confirms the role chiefs play in agricultural development. Chiefs mobilise their communities to pursue development goals, including those related to agriculture, during village meetings, funeral ceremonies, and similar communal gatherings (Msewa, 2005). The mobilisation has elements of force because, generally, the chiefs are autocratic (Msewa, 2005). Without necessarily suggesting that chiefs should be chairpersons of DAESS platforms, the finding underscores the need to consider mechanisms for tapping into the chiefs' authority in the extension systems for agricultural development. In Namibia,

Jona and Terblance (2018) suggested that village headmen be leaders of extension platforms, as 29% of the farmers they interviewed reported depending on such influential people for information.

3.3.4. Fellow Farmers

Table 2 also highlights that 55% of farmers accessed agriculture-related information from neighbours or friends at least quarterly, which is also fairly frequent. In Nigeria, Okwu and Daudu (2011) reported that friends/neighbours/relations were the most frequent sources of agricultural-related information. This indicates that these relations are generally frequent sources of agriculture-related information. In Northern Malawi, Mtika & Kistler (2015) observed that when farmers receive training in specific farming technologies, they often disseminate this knowledge to others through peer-to-peer idea sharing. This is encouraging in extension service, considering that extensionists are not able to reach all the farmers frequently.

Comparing the results of this study with those reported by Ragasa & Comstock (2019), an expressively rising trend in access to extension advice can be deduced. The results show that only 33% of households in 2016 and 35% in 2018 accessed agricultural advice from Ministry of Agriculture (MoA) staff compared to 91% of SANE farmers in the current study. The same trends are seen for all other sources of advice, including NGOs and lead farmers. This confirms that SANE farmers experienced improved access to extension services. According to a 2021 USAID report, access to extension services in the FTF Zone of Influence (ZOI) increased by 10% over the past five years. This improvement can be attributed to advancements in communication technologies, such as farmers' use of mobile phones, and the growing pluralism of extension service providers, as illustrated in Table 2.

3.4. Channels Used for Extension Support to Farmers

Channels extensionists use to support farmers are vital in the extension system. Respondents were asked to identify and rank the channels through which extension services were delivered to them. Table 3 shows the results.

TABLE 3: Extension Channels Used in Dedza, Their Prevalence and Farmers Preference (n=389)

Extension channels	Farmers who accessed extension through the channel (%)	Farmers who ranked it as number one (%)
Field tours	52	43
Individual farm/household visits	48	26
Workshops	40	10
Farmer field/business schools	64	6
Field days	69	4
Presentations during the village meeting	49	4
Demonstrations plots	84	3
Agriculture shows/fairs	44	2
Publications	28	1
Lead farmer (F2F) approach	73	1
Electronic media	39	0

Note: Farmers could identify multiple channels; hence, the percentages are not mutually exclusive.

Access to extension services through different channels ranges from 28% to 84% among farmers, with demonstrations, the lead-farmer approach, and field days being the most widely used channels. The rates are quite remarkable compared with the 0.3-47% channel usage rates reported by Ragasa and Comstock (2019) between 2016 and 2018. This suggests progress towards the use of varied extension delivery channels. This diversity is more likely to meet the varied needs of farmers than relying on a single-channel approach. However, Jafry *et al.* (2014) suggested that extension channels in Malawi do not account for differences such as gender, an aspect not directly examined in this study.

3.5. Farmers' Perceptions on the Competency and Quality of Extension Services

The distribution of technical and soft skills can be different among players in pluralistic extension. Table 4 illustrates the farmers' perceived competencies of extension sources in these skills.

TABLE 4: Perceived Competence Levels of Service Providers in Technical and Soft Skills

Service Providers	N		Percentage Score (%)					
			Competent		Marginally competent		Incompetent	
	Tech	Soft	Tech	Soft	Tech	Soft	Tech	Soft
Min of Agriculture	350	350	81	69	15	22	4	9
Lead farmer	286	284	75	60	20	31	5	9
NGOs	193	193	75	67	23	28	2	6
Private Agro-dealers	56	55	64	65	29	29	7	6
Traditional leaders	182	181	78	66	18	29	3	5
Other govt departments	101	100	80	64	20	26	0	10
Fellow farmer/friend	146	146	72	69	27	19	1	12
Farmer organisation	106	106	66	61	31	31	3	8

Most farmers perceived MoA staff as competent in both technical farming skills (81%) and soft skills (69%). Similarly, 80% of farmers perceived staff from other government departments as technically competent, although a smaller proportion (64%) acknowledged their soft skills. While a slightly lower percentage (72%) perceived fellow farmers as technically competent, 69% also matched MoA staff's rating and acknowledged fellow farmers' soft skills. The results show that formal institutions excel in technical competence but have significant gaps in soft skills, whereas informal networks demonstrate a more balanced skill set. The results underscore the crucial role of both formal and informal institutions while emphasising the need for formal institutions to intensify soft skill development. The findings also reflect the trust farmers have in public service providers, aligning with Luwanda (2015), who reported that farmers regarded government extension workers as the most technically competent.

3.5.1. Farmers' Assessment of Extension Technical Skills

According to farmer assessments, extensionists' technical skills varied widely, with manure-making and application being the most frequently observed skill (ranging from 2% to 32%, as shown in Figure 1). While the results confirm the competency of extensionists, very low rates for most managerial skills, such as planning, suggest limited innovativeness in the extension system, which is worrisome.

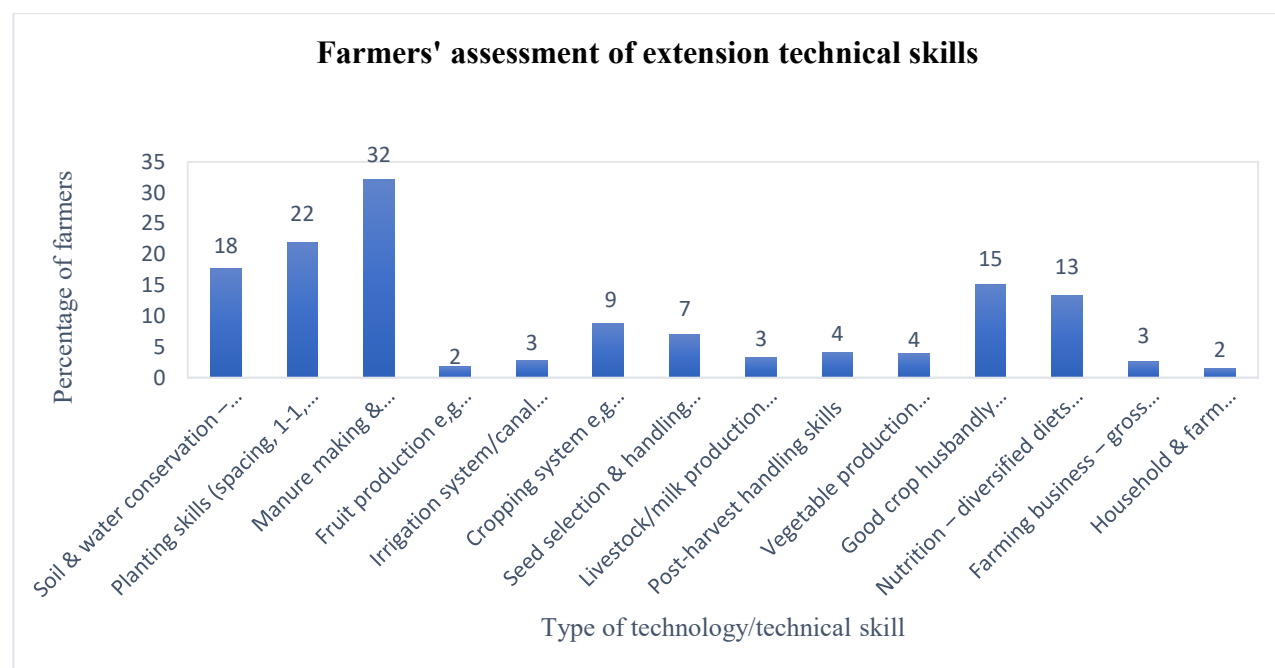


FIGURE 1: Improved Extension Technical Skills and the Percentage of Farmers Associated

The finding is consistent with Ragasa and Niu's (2017) observation that extensionists tend to reiterate the same messages to farmers rather than provide new technological information. This underscores the need to strengthen the farmer-extension-research linkage to facilitate innovation. Still, the confirmation that farmers perceive extensionists as competent is encouraging, considering technical expertise is reported as a long-standing problem even in countries like South Africa (Loki, Mudhara & Pakela-Jezile, 2020).

3.5.2. *Extension Advice Application Rates and Reasons for Non-Application*

The results of our survey showed that only 30% of the farmers applied all the recommendations they received over the previous two years (Saidi, 2023), suggesting challenges with the quality of extension services. The respondents were asked to give reasons for not implementing extension-

delivered technologies on their farms, and Table 5 shows that most farmers did not apply recommendations from extensionists because they did not understand them well (59%), or it required inputs that they cannot afford (43%) or inputs that are not available locally (38%). A significant portion of farmers (28%) found it not useful.

TABLE 5: Reasons for not Implementing Extension Delivered Technologies on the Farm (n=258)

Reason	N	%
Did not understand the recommendations well	152	59
Requires inputs I cannot afford	110	43
Requires inputs that were not available locally	99	38
The recommendation was too complicated	95	37
The recommendation was not useful	71	28
Requires a lot of time	61	24
Tried it in the past, it did not work	14	5
Other	15	6

The complexity and limited usefulness of recommendations, combined with poor understanding among farmers, undermine the effectiveness of extension services, highlighting a mismatch between messaging and farmers' needs.

3.5.3. *Farmers' Perceived Improvements in Overall Farm Activities*

The study assessed improvements in overall farm activities. Respondents were asked to rate the level at which their farm activities had improved on a 4-point Likert scale. Table 6 shows the results.

TABLE 6: Farmers' Perceived Improvements in Various Aspects of Extension Benefits (n=389)

Benefits	N	Level of improvement (% score)				Total % of n
		None	Little	Moderate	Substantial	
Farm productivity	381	7	25	36	30	98
Profitability on the farm	382	13	30	38	18	98

Visibility of extension providers	381	10	28	36	24	98
Number & quality of training events	382	13	32	38	17	98
Your technical skills for farming	382	7	21	45	24	98
Linkages with markets	381	43	27	24	4	98
Access to farm inputs	382	35	28	28	7	98
Access to institutions for credit	381	56	19	17	7	98
Preservation and storage of produce	382	15	32	35	16	98
Planning for agricultural production	381	11	33	36	18	98

Despite 30% of farmers reporting improved productivity, a substantial proportion saw no gains in access to financial institutions (56%), market linkages (43%), or farm inputs (35%). Compared with 2016, when 77% of farmers found extension advice extremely useful (Ragasa & Niu, 2017), the current findings suggest that extension service quality may not have improved from the farmers' perspective. Research on extension quality improvement yields mixed results (Ching'onda-Nkhoma *et al.*, 2018; Stull *et al.*, 2020), with quality assurance emerging as a challenge in Malawi's DAESS (NAEASS, 2020) and elsewhere, such as South Africa (Loki *et al.*, 2021).

3.6. Impact of Extension Service on Farm Productivity

Farm productivity was sought by calculating crop and livestock production levels for farmers. Table 7 depicts the change in crop productivity in Dedza in the final two seasons of the implementation of the SANE project.

TABLE 7: Change in Crop Productivity in Dedza from 2019/2020 and 2020/2021

Season	Productivity (kg/ha)										
	Maize	Beans	Soya	G/nuts	Rice	Irish Potato	Sweet Potato	Tobacco	Vegetable	Cassava	Other
2020-2021	2254	393	1208	842	2359	2582	4537	1180	3399	2269	1317
2019-2020	2077	365	1168	779	2184	2192	3340	1431	2446	2700	853

As shown in Table 7, productivity increased for all crops except tobacco and cassava. Maize productivity rose from 2.08 mt/ha in the 2019-2020 season to 2.25 mt/ha in 2020-2021, higher than the national average of 1.77 mt/ha in 2016 (Ragasa & Niu, 2017). Mean productivity figures for maize, rice, groundnuts, and pulses, which remain below or around 2,500 kg/ha, are still significantly lower than their reported potential yields of 10,000 kg, 6,000 kg, 2,500 kg, and 2,000 kg per hectare, respectively (MoAIWD, 2015). While these findings suggest a positive impact of extension support, as noted by Loki *et al.* (2021), multiple factors, such as rainfall, planting time, and disease outbreaks, also influence productivity. Without controlling for these factors, the observed yield increases cannot be attributed solely to extension efforts, highlighting the need for cautious interpretation of the findings.

3.6.1. Improvements in Farm Income

Farm income was determined by the mean annual income in Malawian Kwacha (MWK) from farmers' crop sales during the 2020/2021 season. Table 8 shows the results.

TABLE 8: Mean Annual Income from Crop Sale During 2020/2021 Seasons

Crop	Maize	Beans	Soya	G/nuts	Irish Potato	Mean total value of sale
Mean values of sales (MK)	123 593	48 128	93 466	158 198	321 890	228 068
Households involved (%)	31	22	50	44	18	

Mean total produce sold = total crop income / total number of households.

The mean total value of sales of the five major crops, including maize, beans, soya, groundnuts and Irish potato, for SANE farmers in 2020/2021 is MK228 068. This is lower than the mean total produce sold (K247 072) for these crops by farm business school farmers in the district in 2017, as reported by Chilemba and Ragasa (2018). That is, the results do not provide evidence of an increase in farm income. Our findings diverge from those of Loki *et al.* (2021), who found differences in farm income between farmers who accessed extension services and those who did not. This divergence may be due to differences in the research methods used across the studies. The non-participating farmers in SANE programs could be worse off in terms of farm income over the period. However,

given that 89% of these SANE farmers were full-time farmers (Saidi, 2023) and that farming was therefore their main source of income, this finding is worrisome if smallholder farming is to be the engine of Malawi's economic growth. This underscores the need for the extension system to be more market-oriented to improve farmers' incomes.

4. CONCLUSION AND RECOMMENDATIONS

The study showed that public extension services remain the dominant source of agricultural information for farmers, but the growing presence of NGOs and other partners significantly improved access. The results highlight progress in the utilisation of varied extension delivery channels, with demonstrations, the lead-farmer approach, and field days being the most widely used, aligning with the principle of pluralism. While formal institutions demonstrated stronger technical competence, they exhibited gaps in soft skills, whereas informal networks showed a more balanced proficiency, underscoring the importance of both and the need for formal institutions to strengthen soft skill development. Farmers also recognise that extensionists' expertise is largely confined to traditional technical practices, with minimal managerial skills, reflecting limited innovativeness and weak farmer-extension-research linkage, implying that the Agricultural Innovation System (AIS) underpinning DAESS is not functioning optimally. Moreover, while farmers perceive productivity improvements, low adoption rates of extension advice, due to unclear guidance, limited access to inputs, and restricted access to financial and market institutions, suggest that extension service quality has not improved. Finally, despite modest increases in crop productivity, farm income has not shown corresponding improvements, indicating extension services remain insufficiently market-oriented.

The lack of impact on farm income, among other factors, appears to undermine DAESS's effectiveness. Making DAESS platforms more market-oriented would improve their effectiveness. The Department of Extension Services, in collaboration with SANE, should have ensured that all agribusiness activities, including cooperatives, market linkages and credit facilities, are implemented through DAESS. Going forward, the Department of Extension Services and the District Council should draft mechanisms to promote agribusiness activities in the DAESS platforms.

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