



Communication Dynamics between Agricultural Extension Agents and Farmers with Disabilities: The Socio-Economic Evidence

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ABSTRACT

Effective communication between agricultural extension agents (AEAs) is essential for the dissemination of information, adoption of new technologies, and overall improvement of agricultural practices. However, the communication dynamics may vary significantly when interacting with farmers with disabilities (FWDs), who often face unique challenges and barriers to accessing information and resources. In this study, we explore the dynamics of communication that exist between AEAs and FWDs. We used a cross-sectional study and collected data from 386 FWDs who were selected from all the 16 regions in Ghana. We used both descriptive and inferential statistics to analyse the data. Results show that extension officers are the primary source of information for FWDs (18%). The communication between FWDs and agricultural agents reveals a rather less than satisfactory experience (57%). Age (1%), gender (5%), type of disability (1%), source of disability (1%), Farmer Based Organisation membership (1%), non-farm activity (5%), and experience in farming (1%) all emerge as significant factors shaping communication dynamics between farmers with disabilities and extension agents. Extension officers should receive training on inclusive communication strategies and disability awareness so that they will be equipped with the knowledge and skills to effectively engage with FWDs, accommodate their diverse needs, and provide tailored assistance and information

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Introduction

Smallholder farming is the prevailing agricultural practice in African nations. It is predominantly reliant on the efforts of family members (Kamara et al., 2019). About 33 million smallholder farmers, which account for approximately 80% of them, cultivate less than 2 hectares of land per farmer (Ritchie, 2021). Remarkably, smallholder farmers, despite their restricted land area, are accountable for the majority of food production in Africa, making up to 80% of the continent's overall food yield (Lowder et al., 2021). They have a profound comprehension of the intricacies involved in farming crops in an evolving environment. Their productivity is crucial for ensuring food security within families, as it enhances the earnings of a substantial proportion of the rural populace (Ricciardi et al., 2021; Ritchie, 2021).

Effective communication between farmers and agricultural extension agents (AEAs) is essential for knowledge sharing and improving farming practices in the field of agricultural development. Access to extension services is a crucial component for enhancing agricultural production in poor nations (Anang et al., 2020). It can improve the adoption of technology and increase the revenue of small-scale farmers (Anang & Asante, 2020). Agricultural extension agents educate farmers on contemporary production techniques and acquaint them with inventive farming methods to augment productivity (Danjumah et al., 2024). Extension workers facilitate the formation of farmer organisations and establish connections between these groups, finance institutions, and other stakeholders in the agricultural industry (Tham-Agyekum et al., 2023a).

Farmers with disabilities (FWDs) are a demographic that deserve targeted attention to promote inclusion and fair access to agricultural resources, face special barriers that increase this significance (Agole et al., 2021). Disability is a social outcome resulting from the impairment that individuals have, which is caused by the inequalities experienced by people with disabilities owing to the way society is structured. This can manifest as physical, sensory, intellectual, mental, or behavioural impairments, which can be caused by accident, sickness, or congenital factors (Siddiqua et al., 2017).

Development organisations, practitioners, and human rights groups acknowledge that individuals with disabilities, regardless of their location, are at a higher risk of experiencing poverty, vulnerability, and marginalisation (Eide & Ingstad, 2018). In addition to this, the lack of access to extension services for this group of farmers makes it difficult to develop evidence-based policies and programmes aimed at improving access to extension services and increasing productivity and profitability in the sector (Abate et al., 2023).

Farmers with disabilities face the challenge of having their opinions ignored in discussions related to food security issues. In addition, agricultural extension services frequently lack opportunities for individuals with disabilities (Trafford et al., 2021). The limited involvement and exclusion of individuals with disabilities from the agricultural labour force have dire economic effects (Pundik et al., 2021). Due to the stigma associated with disability, individuals with disabilities are compelled to pursue informal and hazardous employment opportunities that are avoided by those without impairments. Farmers with disabilities therefore mainly rely on subsistence agriculture and informal employment, such as garbage collection, premises cleaning, farm labour, and begging for alms in urban areas within their communities (UNESCO, 2018).

Several studies have been conducted in the area of extension service delivery and farmers with disabilities. For instance, Sango et al. (2022) examined the role and experiences of individuals with disabilities engaged in the agricultural sector in northern

Nigeria. While the study revealed that these individuals are active participants in agricultural activities, it also exposed the economic and sociocultural challenges they encounter due to their impairments. Chisala & Mkandawire (2023) and Tonne et al. (2020) noted that individuals with disabilities require access to resources and the necessary factors to effectively use those resources in order to fully develop their valued skills. Minus et al. (2021) indicated the importance of strengthening the support system for farmers with disabilities. To improve staff communication with farmers with disabilities, the study promoted individualised training and professional development.

Regarding urban agriculture, Schaffernicht (2023) investigated the procedures for including people with disabilities in urban agriculture in Vienna, Austria. Agro-ecological inclusion farms were proposed as a potential solution to the systemic impediments to inclusion that had been discovered. The study promotes inclusive strategies in urban agriculture to support people with disabilities' right to self-determination. Hammell (2021) popularised the idea of "social farming" or "care farming" in Western European nations, which enables those with impairments to participate in the labour force in a natural setting. The study stressed the need for meaningful occupational activity participation in natural settings for people with disabilities to foster physical and mental health and social inclusion. Agole et al. (2021), focusing on young people, examined the factors influencing young farmers in Uganda—both those with and without disabilities—to participate in agricultural capacity-building initiatives.

In Ghana, Gomba et al. (2021) demonstrated that there are two primary ways in which people with disabilities (PWDs) participate in agriculture: through contributing labour and through making decisions. Agyei-Okyere et al. (2019) looked into the likelihood of developing long-term work possibilities for people with disabilities in Ghana's agricultural sector. They found that a lack of accessible land, money, and farming equipment are the difficulties that prevent farmers with disabilities from participating in agricultural activities. Gomba et al. (2021) found that the extension services offered by the Ministry of Food and Agriculture do not adequately cater to the specific requirements of disabled farmers. Age, gender, level of education, household size, labour availability, membership in farmer-based organisations, influence in household decision-making, and farm size were all important factors that influenced the extent to which disabled farmers were able to actively participate in agriculture.

Previous research has examined several aspects of disability inclusion in agriculture, such as levels of engagement, economic difficulties, and the involvement of extension services. However, there is a lack of in-depth investigation conducted on the dynamics of communication between farmers with disabilities and agricultural extension agents, limiting the development of targeted interventions and support mechanisms. This gap hinders the effective dissemination of vital information, resources, and assistance needed by farmers with disabilities to enhance their productivity, livelihoods, and overall well-being. Therefore, there is an urgent need for research to fill this gap and enhance inclusivity and support for farmers with disabilities in Ghana's agricultural extension services. This would ultimately lead to increased production, improved livelihoods, and overall well-being for FWDs. The purpose of the study was to understand the communication dynamics existing between AEAs and FWDs using socio-economic evidence. Specifically, we assessed the sources of agricultural information used by FWDs, assessed the effectiveness of the communication between AEAs and FWDs and determined the factors that influenced the communication between AEAs and FWDs.

THEORETICAL FRAMEWORK

The social disability theory indicates that disability is the result of the interaction between people living with impairments and an environment filled with physical, attitudinal, communication and social barriers. It therefore carries the implication that these barriers must change to enable people living with impairments to participate in society on an equal basis with others (Oliver, 2019). The theory does not deny the reality of impairment nor its impact on the individual. However, it does challenge the physical, attitudinal, communication and social environment to accommodate impairment as an expected incident of human diversity (Miller, 2019; Lawson & Beckett, 2020). The theory seeks to change society in order to accommodate people living with impairment. It does not seek to change persons with impairment to accommodate society. It supports the view that people with disability have a right to be fully participating citizens on an equal basis with others (Miller, 2019). People with disability are not “objects” of charity, medical treatment and social protection but “subjects” with rights, capable of claiming those rights, able to make decisions for their own lives based on their free and informed consent and be active members of society (Oliver, 2019).

As per the theory, the communication obstacles faced by farmers with disabilities are not inherent to their impairments. Instead, they arise from communication channels that are not accessible, insufficient support systems, and societal attitudes that marginalise or exclude individuals with disabilities. Extension agents may inadvertently perpetuate these obstacles due to their lack of knowledge, insufficient training in disability inclusion, or preconceived assumptions about the talents or communication requirements of farmers with disabilities. By using the theory, we examined communication dynamics in the agricultural extension context from a wider perspective that takes into account social structures, power dynamics, and environmental factors that affect the interaction between extension agents and farmers with disabilities. This viewpoint emphasises the necessity of implementing systemic modifications, such as inclusive communication tactics, easily accessible information resources, and initiatives to enhance skills and abilities, in order to overcome communication obstacles and facilitate meaningful involvement and participation of farmers with disabilities in agricultural extension services.

Methodology

The researcher conducted a nationwide study on FWDs in all sixteen regions of Ghana to acquire full and impartial knowledge of the issues of this group. The research employed a quantitative methodology, a survey technique with a cross-sectional approach, and a positivist philosophy. The Ghana Statistical Service, GSS (2020) conducted an agricultural census in 2017/2018 and recorded 122,209 individuals as farmers with disabilities (FWD) from the sixteen regions of Ghana. This made up the study's population. The sample size calculation we did was to determine the minimal sample size required to achieve a desired level of accuracy in estimating a particular population parameter (Bujang, 2021). Our goal was to generate an estimate that is anticipated to have the same level of accuracy as an actual parameter in the target population. Additionally, we sought to deduce the statistical information obtained from the sample and apply it to the broader population. Based on the proposal by Jan and Shieh (2014), we selected 386 respondents. By requesting an exhaustive list of all farmers with disabilities from the Department of Social Welfare and the Department of Agriculture in the Metropolitan, Municipal, and District Assemblies (MMDAs) in each

of Ghana's sixteen regions, researchers were able to use the simple random sampling technique to choose the sample.

To address important areas on issues of communication in extension services for farmers with disabilities, a well-designed survey instrument was established. The data collection tool underwent comprehensive validation from University of South Africa agricultural extension specialists. A pilot study was carried out to test the validity of the instruments on a sample of twenty farmers with disabilities. This pretest was conducted in Central Region (10 FWDs) to find any potential problems with the questionnaire's layout, or content that would impede the gathering of reliable data. Every issue that was found during the pretest was thoroughly investigated, and the questionnaire was revised as needed. The comprehensive validation and reliability testing guaranteed the validity and precision of the data collection tool. This also promoted increased trust in the accuracy and use of the obtained data. We used the Cronbach's alpha to measure internal consistency. This assessed the extent to which different items within the same instrument measure the same underlying construct. It calculated the average correlation among all items on the scale. The figure of 0.83 showed that greater internal consistency.

A team of knowledgeable enumerators and sign-language interpreters were tasked with collecting data from farmers who had speech disabilities for this study. Three enumerators, three sign language interpreters, and the researchers made up the crew. The enumerators were chosen based on their vast experience in delivering agricultural extension services, ability to interact in local languages, academic experience, and their previous interactions with the populations we were studying. We organized a three-day training session to help enumerators understand the content of the instrument and the goals of the study. This was held before the data-gathering process. To make sure that every team member fully understood the questionnaire, researchers led this session. This meeting guaranteed the consistency of the data gathered and helped establish a common data collection methodology. With a three-month duration for data gathering, every one of Ghana's sixteen regions was thoroughly covered. The methodical strategy, which included baseline testing and focused training, ensured the validity of the study's conclusions as well as the reliability of the collected data.

The statistical programme SPSS Version 28, intended for use by social scientists, was used to analyse the data. Both descriptive and inferential statistics were used to analyse the data. In analysing the source of agricultural information for farmers with disabilities, we used frequency and percentage. They indicated their most used source. In describing the effectiveness of communication between farmers with disabilities and extension agents, we used a five point likert scale, ranging from very poor (1), poor (2), average (3), good (4) to very good (5) to measure respondents' opinion. The question encompassed various aspects of communication, such as the exchange of information, assistance, and support related to agricultural practices, resources, and services. We used frequency and percentage to summarise the results.

The factors influencing farmers with disabilities' communication with agricultural extension agents were examined using the one-way ANOVA test. The one-way ANOVA (Analysis of Variance) test is a statistical method used to compare the means of three or more groups to determine if there are statistically significant differences between them. The one-way ANOVA test was used to compare the presence of significant differences in communication based on different factors. We used the "effectiveness of communication between FWDs and AEAs" as the dependent variable for our ANOVA test.

We also identified the factors that may influence communication between farmers with disabilities and agricultural extension agents. The selection of variables in our study was typically guided by the research objectives, theoretical framework, and literature review. The variables were essential for assessing the different aspects of communication, such as sources of information, effectiveness of communication, and factors influencing communication. We used the social disability theory to guide the selection of our variables. The selection of variables was also informed by previous research findings and gaps identified in the literature. From these considerations, we arrived at the following; age, gender, education, type of disability, source disability, head of household, FBO membership, non-farm activity, and experience in farming (Gomda et al., 2021; Mairiga et al., 2019; Agole et al., 2021; Schaffernicht, 2023; Tham-Agyekum et al., 2023a; Maake & Antwi, 2022; Tham-Agyekum et al., 2023b). Once the factors were identified, we categorised the respondents into different groups based on their communication experiences with extension agents.

The ANOVA test calculated an F-statistic, which compared the variation between groups to the variation within groups. If the F-statistic is greater than expected by chance, it indicates that there are significant differences in communication between the groups. The ANOVA results show the variability in the dependent variable (communication) explained by each independent variable, as indicated by the sum of squares, degrees of freedom, mean squares, F-values, and significance levels (p-values). Significant P-values ($p < 0.01$, $p < 0.05$, $p < 0.10$) suggest that the corresponding independent variables have a statistically significant effect on the communication of farmers with disabilities with extension agents at 1%, 5% and 10% respectively.

Results and Discussion

Sources of Agricultural Information for FWDs

Table 1: Sources of Agricultural Information for FWDs

Sources	Frequency	Percent
Community information centers	39	10.0
Friends	35	9.0
Extension officers	69	18.0
Community opinion leaders	46	12.0
Leaflets	62	16.0
Radio	46	12.0
Disability association	31	8.0
Television	58	15.0
Total	386	100.0

Source: Field Data, 2022

Table 1 illustrates the diverse sources through which farmers with disabilities (FWDs) access agricultural information. Among the respondents surveyed, 18.0% indicated that they rely on extension officers, making them the primary source of agricultural information for FWDs. Extension officers play a pivotal role in disseminating crucial agricultural knowledge, providing tailored assistance, and facilitating access to resources for FWDs. They serve as key intermediaries between agricultural research, expertise, and practice, bridging the gap between farmers, including FWDs, and the agricultural information ecosystem. Their significant presence shows the importance of personalised guidance and support in addressing the unique needs and challenges faced by FWDs in agriculture (Tham-Agyekum et al., 2023a). The expertise of extension agents enables them to offer practical solutions, adaptive strategies (Anang et al., 2020), and relevant information that are specifically tailored to the circumstances of FWDs,

thereby enhancing their capacity to engage in agricultural activities effectively (Rathnachandra et al., 2022). Moreover, extension officers often maintain close and ongoing relationships with farmers, including FWDs, within their assigned communities (Anang & Asante, 2020). This proximity enables them to develop trust, rapport, and familiarity with the farmers they serve, facilitating open communication, active engagement, and personalized support. Extension officers can establish direct channels of communication with FWDs, providing them with a reliable point of contact for seeking advice, assistance, and information on various agricultural matters (Danjumah et al., 2024).

The significance of leaflets and television as notable sources of agricultural information, representing 16% and 15% of the total responses, respectively, underscores the diverse array of channels through which Farmers with Disabilities (FWDs) access agricultural knowledge and resources. Leaflets serve as tangible, written materials that provide concise and targeted information on various agricultural topics, practices, and techniques. They are often designed to be visually appealing, easy to understand, and accessible to diverse audiences, including those with disabilities (Devkota et al., 2020). Leaflets offer FWDs a portable and convenient source of reference, allowing them to review, retain, and apply agricultural information at their own pace and convenience. Moreover, leaflets can be distributed widely through community centers, extension offices, and agricultural events, reaching FWDs in both rural and urban settings (Hammond et al., 2023). Television, on the other hand, leverages the power of audiovisual media to deliver engaging and informative content on agriculture to FWDs. Television programs, documentaries, and educational segments offer FWDs an immersive and interactive learning experience, combining visual imagery, narration, and storytelling to convey complex agricultural concepts and practices in a compelling and accessible manner. Television broadcasts can reach a wide audience, including FWDs who may have limited mobility or access to other forms of communication, making it an inclusive and impactful medium for disseminating agricultural information (Solanki & Verma, 2019).

The low representation of the disability association as a source of information for FWDs, representing only 8% of the total responses, raises important considerations regarding the accessibility, effectiveness, and outreach efforts of disability-focused organisations in serving the information needs of FWDs in agriculture. While disability associations play a critical role in advocating for the rights, welfare, and inclusion of individuals with disabilities, their limited use as a source of agricultural information among FWDs suggests potential gaps and challenges that warrant attention and intervention. It could be that FWDs are not fully aware of the services, resources, and support available through disability associations, or they may perceive these organisations as primarily focused on disability rights advocacy rather than agricultural assistance. As a result, FWDs may not actively seek out or engage with disability associations for agricultural information, leading to underutilisation of this valuable resource.

Effectiveness of Communication between Farmers with Disabilities and Extension Agents

Table 2: Effectiveness of Communication between Farmers with Disabilities and Agricultural Agents

Response	Frequency	Percent
Very poor	28	41.0
Poor	11	16.0
Average	13	19.0
Good	14	21.0
Very good	2	3.0
Total	69	100.0

Source: Field Data, 2022

Table 2 presents data on the effectiveness of communication between farmers with disabilities (FWDs) and agricultural agents. The data reveals that a significant portion of FWDs (57%) reported their communication experiences with agricultural agents as less than satisfactory. Specifically, 41% of respondents rated their communication as "very poor," while an additional 16% rated it as "poor." This could mean that extension officers have a limited understanding of the communication needs of farmers with disabilities. This lack of understanding can impede effective communication, resulting in FWDs' restricted access to necessary resources and services for agricultural success (Kigatiira, 2019).

Although the majority of respondents had a less positive perception of the entire communication experience, a substantial portion of 24% indicated more favourable views. Of those surveyed, 21% rated their communication experiences as "good," indicating a satisfactory amount of interaction and information exchange with agricultural extension personnel. In addition, an extra 3% of participants evaluated their communication as "very good," indicating a greater level of contentment and efficiency in the communication interactions between farmers with disabilities (FWDs) and extension agents. The favourable evaluations from a significant portion of participants indicate that there are situations where the interaction between FWDs and extension agents is seen as efficient and advantageous, potentially highlighting areas of achievement or possibilities for enhancement in agricultural extension services. Maake and Antwi (2022) investigated the communication dynamics between agricultural extension officers and farmers and found that communication between these two groups was generally effective.

Approximately 19% of participants rated their communication experiences as "average," suggesting a moderate level of satisfaction or efficacy in their interactions with agricultural extension agents. This indicates that a large number of farmers with disabilities (FWDs) had communicative interactions with extension agents that met their expectations without exceeding or falling below them.

Factors Influencing Communication of Farmers with Disabilities with Extension Agents

Table 3: Factors Influencing Communication of Farmers with Disabilities with Extension Agents

Variables	Sum of Squares	Df	Mean Square	F	Sig.
Age	Between Groups	33.599	5	6.72	3.937
	Within Groups	227.006	133	1.707	
	Total	260.604	138		
Gender	Between Groups	2.657	5	0.531	2.783
	Within Groups	25.4	133	0.191	0.020
	Total	28.058	138		
Education	Between Groups	12.918	5	2.584	2.241
	Within Groups	153.313	133	1.153	0.054

	Total	166.23	138			
Type of Disability	Between Groups	3.778	5	0.756	0.245	0.002
	Within Groups	410.352	133	3.085		
	Total	414.129	138			
Source of disability	Between Groups	36.192	5	7.238	4.903	0.000
	Within Groups	196.354	133	1.476		
	Total	232.547	138			
Head of household	Between Groups	2.289	5	0.458	2.138	0.065
	Within Groups	28.488	133	0.214		
	Total	30.777	138			
FBO membership	Between Groups	11.136	5	2.227	16.978	0.000
	Within Groups	17.185	131	0.131		
	Total	28.321	136			
Non-farm activity	Between Groups	3.286	5	0.657	2.805	0.019
	Within Groups	30.45	130	0.234		
	Total	33.735	135			
Experience in farming	Between Groups	62.525	5	12.505	6.799	0.000
	Within Groups	240.949	131	1.839		
	Total	303.474	136			

Source: Field Data, 2022

Table 3 presents the results of the ANOVA analysis examining the factors influencing communication of Farmers with Disabilities (FWDs) with extension agents. Generally, the results show that age (1%), gender (5%), education (10%), type of disability (1%), source of disability (1%), head of household (10%), FBO membership (1%), non-farm activity (5%), and experience in farming (1%) are significant factors shaping communication dynamics between farmers with disabilities and extension agents.

Age emerged as a significant factor, implying that communication experiences vary depending on the age of the farmers with disabilities. Older FWDs may have different communication needs or preferences compared to younger ones, possibly influenced by generational differences, life experiences, or technological literacy. Age-related factors such as vision or hearing impairments, mobility limitations, or cognitive changes can also impact communication accessibility and adaptability. Extension agents need to be aware of these accessibility issues and adapt their communication strategies accordingly to ensure effective communication with FWDs of all ages. Similarly, gender has a statistically significant effect on communication, suggesting that gender differences among FWDs may influence their communication dynamics with extension agents (Gomba et al., 2023).

Gender was found to influence communication dynamics, indicating that male and female FWDs may experience interactions with extension agents differently. It is crucial to employ communication tactics that are tailored to the specific gender of individuals in order to effectively address the varied requirements, experiences, and difficulties encountered by both male and female farmers with disabilities (FWDs) when it comes to obtaining agricultural information, resources, and assistance. An important factor to take into account is the social and cultural environment that influences gender roles and customs. Gender roles in agricultural operations may impose distinct expectations and responsibilities on men and women, as observed in several civilizations, including Ghana (Tham-Agyekum et al., 2023b). Consequently, male and female FWDs may exhibit different roles, experiences, and preferences while engaging with extension agents. Women may encounter many obstacles, such as restricted movement, time limitations resulting from caregiving duties, or societal prejudices that impede their access to extension services or involvement in decision-making procedures (Tham-Agyekum et al., 2023a).

The level of education significantly affects communication between FWDs and extension agents. Higher levels of education may correlate with better communication skills, comprehension, and assertiveness in seeking information or assistance from agricultural extension services. Individuals with a greater degree of education are more likely to possess superior literacy abilities, enabling them to comprehend written materials disseminated by extension services, such as pamphlets, manuals, or training modules. Additionally, they may possess a higher level of proficiency in using technology, such as smartphones or computers, to access online materials, receive updates, or engage with extension agents via email or messaging platforms. Furthermore, attaining higher levels of education can improve individuals' capacity to express their requirements, inquire, and assert their interests while engaging with extension agents. Individuals with advanced levels of education are more likely to feel empowered to exercise their rights, express their opinions, and actively engage in decision-making processes about agricultural activities, resource distribution, or programme design (Akintonde et al., 2021).

The type of disability was identified as a significant factor, suggesting that the nature of the disability may impact communication experiences. Different types of disabilities present unique challenges and communication needs for FWDs. Physical disabilities, such as mobility impairments or visual/hearing impairments, may require specific accommodations or assistive devices to facilitate communication with extension agents. Cognitive disabilities, such as intellectual disabilities or developmental disorders, may impact comprehension, expression, and decision-making abilities during communication interactions.

Similarly, the source of disability plays a role in shaping communication dynamics. Whether the disability is congenital, acquired through injury or illness, or related to aging may influence communication preferences, accessibility requirements, or perceptions of self-advocacy. Disabilities acquired from birth may be integrated into individuals' identities and life experiences from an early age, shaping their communication styles, coping mechanisms, and self-advocacy skills. In contrast, disabilities acquired later in life may entail adjustments to new challenges, changes in communication abilities, and psychological adaptations that can impact communication dynamics with extension agents. Addressing these systemic barriers through initiatives like agro-ecological inclusion farms, as suggested by Schaffernicht (2023), can create more inclusive and supportive environments that empower FWDs to actively engage in agricultural extension activities.

The head of household status emerged as significant, indicating that FWDs serving as household heads may have distinct communication experiences compared to non-heads of households among FWDs. This implies that individuals who hold the position of household leaders may have distinct communication problems or opportunities while engaging with extension agents. Household heads also have the power and responsibility to make decisions regarding the distribution of resources, strategies for generating a living, and the overall welfare of the family within the household. Consequently, they may possess unique communication requirements when they seek information, guidance, or assistance from agricultural extension services.

Membership in farmer-based organizations (FBOs) significantly influences communication, suggesting that FWDs who are part of these groups may have different communication dynamics compared to those who are not. FBOs could serve as channels for information dissemination, advocacy, or support, impacting communication patterns. As Minus et al. (2021) asserted, Farmer Based Organisations serve as vital

support networks for FWDs, offering them access to resources, information, and peer support that enhance their communication experiences. Membership in FBOs provides FWDs with opportunities to connect with other farmers facing similar challenges, share experiences, and exchange knowledge and best practices. These support networks foster a sense of belonging, solidarity, and empowerment among FWDs, which can positively influence their communication interactions with extension agents.

Engagement in non-farm activities emerged as a significant factor, implying that FWDs involved in non-agricultural pursuits may have distinct communication experiences with extension agents. Engagement in non-farm activities may provide FWDs with opportunities to develop diverse skills, social networks, and perspectives that enrich their communication interactions with extension agents. By participating in community events, educational programmes, or social initiatives, FWDs may enhance their confidence, social skills, and communication effectiveness, leading to more positive communication outcomes. The findings are consistent with observations made by Agole et al. (2021) on prejudice and marginalisation among young farmers with disabilities, highlighting the importance of addressing societal barriers and promoting inclusive participation in both farm and non-farm domains.

Finally, experience in farming significantly shapes communication dynamics, indicating that FWDs with varying levels of agricultural experience may have different communication needs or expectations. FWDs with extensive experience in farming may possess valuable insights, expertise, and practical knowledge that enhance their communication effectiveness and engagement with extension agents. Their familiarity with agricultural practices, local conditions, and industry trends enables more informed discussions, problem-solving, and decision-making during communication interactions. The findings align with Mairiga et al. (2019) that emphasizes the significance of experiential learning and skill acquisition in fostering effective communication among FWDs in agricultural settings.

Conclusion

In conclusion, the study establishes that extension officers are the primary source of information for farmers with disabilities, implying their pivotal role in disseminating agricultural knowledge and providing tailored assistance to FWDs. Leaflets and television also play significant roles, offering portable, visually appealing, and engaging information channels for FWDs. However, the underutilisation of disability associations suggests potential gaps in awareness and accessibility. The effectiveness of the communication between FWDs and agricultural agents reveals a rather less than satisfactory communication experiences. Age, gender, type of disability, source of disability, FBO membership, non-farm activity (5%), and experience in farming (1%) all emerged as significant factors shaping communication dynamics between farmers with disabilities and extension agents.

Agricultural extension services should actively collaborate with disability associations to improve awareness, accessibility, and outreach efforts. This partnership can help bridge the gap between FWDs and available support services, ensuring that FWDs are fully aware of the resources and assistance available to them. Extension officers should receive specialised training on inclusive communication strategies and disability awareness. This training should equip them with the knowledge and skills to effectively engage with FWDs, accommodate their diverse needs, and provide tailored assistance and information. FBOs should adopt inclusive practices that promote the active participation and representation of FWDs within their organisations. This may include

providing accessible meeting venues, accommodating diverse communication needs, and facilitating networking opportunities for FWDs to share experiences and best practices. The Ministry of Food and Agriculture can provide support programmes and initiatives that promote the participation of FWDs in non-farm activities, such as vocational training, community-based projects, and social inclusion programmes.

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