

# Perceived Benefits and Tradeoffs of Local Service Providers for Functioning as Extension Agents in Aquaculture

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**Abstract:** This paper systematically investigated the reasons why local service providers (LSPs), primarily aquaculture input sellers, appear more effective as extension agents, as well as their motivations for participating in advisory and extension services, including perceived benefits and tradeoffs, commitments, and socio-economic factors. Results showed that the LSPs have to perceive several tradeoffs to function as extension agents. For example, they must spend enough time visiting farmers and their ponds. Some LSPs sell inputs (seed, feed, or medicine) on loans to farmers, with the condition that the loan is paid back after harvest. Some LSPs help farmers develop networks with backward and forward market actors. In return, the LSPs received several tangible benefits, which served as motivational factors for them to accept these trade-offs. They are primarily motivated because it enables them to establish a reliable customer base for their product sales. We have applied the qualitative research method to conceptualize, collect, analyze, and interpret our findings. We collected primary data through in-depth interviews, adhering to a developed checklist that outlined the research objectives.

**Keywords:** Advisory and Extension Services, LSP Model, Local Service Providers, Aquaculture

Quick Response Code

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## 1. BACKGROUND

Innovation in technological advancements and good management practices, as well as their dissemination to farmers, is necessary to increase agricultural production (including aquaculture) and achieve food security (1). Despite the ongoing advancements in technology and practices, recent studies have revealed that a weak knowledge diffusion process in the agriculture sector prevents farmers from receiving updated information, leading to a low adoption of productive farming practices and underutilization of resources. This threatens food security, which is linked to poor living standards and malnutrition, particularly for the economically marginalised segment of the population (2–5). Research demonstrated that effective extension and advisory services (EAS) can successfully change and improve farmers' knowledge, attitude, and practice (KAP) (6, 7). EAS is about disseminating knowledge, changing farmers' mindsets to accept updated information and new

technologies, and implementing best management practices. It aims to increase farmers' capacity to make better decisions, adopt sustainable agricultural practices, and design and implement effective strategies by utilizing available resources to increase agricultural production (5, 8). In addition, EAS develops a linked network between agricultural experts, resource persons, and farmers to solve existing agricultural problems (4). It also develops the capacity of the farmers to cope with resource scarcity and natural and man-made calamities to meet supply-side demand for agricultural production (5). Both public (government departments and ministries) and private actors (non-governmental organisations, non-profit organisations, research centres, farmers, farmer associations, input manufacturers, and marketing firms) function as EAS agents in the agricultural sector

(including aquaculture). While private actors participate in executing extension services, the public sector handles 81 percent of this work (4).

However, agricultural extension experts are uncertain about the most appropriate approach for EAS to disseminate knowledge to farmers, given their socio-economic circumstances. Currently, extension workers apply three approaches, such as the traditional approach, the experiential approach, and the performance-based approach (9,10).[1] We can further classify these approaches as formal and informal, as well as advisory and participatory. However, experts identified several challenges and limitations in these public sector-led (in most cases) extension approaches. For instance, studies have shown that the traditional approach is ineffective due to its slow, linear, and hierarchical nature (11), its inability to take into account the socio-economic context of farmers (4, 9), its neglect of non-commercial small farmers, who often include women and economically and ethnically marginalized groups, and its unpopularity among extension workers due to resource constraints, a lack of incentives, recognition, and facilities (9). Similarly, the experiential approach is a relatively time-consuming and expensive approach that has the limitation of not being able to reach a large number of farmers. Most importantly, this approach offers a one-size-fits-all solution (12, 13). Critics criticise the performance-based approach for its (1) limited scope, (2) disregard for long-term sustainability, and (3) resource limitations (14). Furthermore, these three approaches mandate centralized and top-down extension services. If we roll out the incentives, these incentive-driven approaches cannot establish any sustainable mechanisms (9). Recently, Afrad, Wadud, and Babu (2019) shifted the target of EAS from increasing food production to making the system sustainable.

The private sector has introduced agriculture value-chain-based extension services to address the limitations and challenges of training-based extension services, primarily led by the public sector. These services offer decentralised, narrowed-down, bottom-up, and pluralistic advisory services, with the aim of strengthening the institutional base to sustain the EAS after the implementation of incentives (9). In addition to disseminating agricultural information through the value chain-based EAS, it also provides services such as credit facility distribution, network development for post-harvest management, and marketing activities. Agriculture input manufacturers and marketing firms are active in patronising the value chain-based extension model through their local service providers to maximise agricultural production, which will increase the sale of input in return (Afrad, Wadud, and Babu, 2019). The value chain-based decentralised extension model, known as the LSP model, primarily involves local service providers (LSPs). The LSP model, as defined by Kruijssen et al. (2019), is a decentralised extension model that involves training local actors such as farmers, business owners,

and breeders to provide extension services such as knowledge transfer and training to farmers. Along with promoting increased production, the LSP model emphasizes enhancing social networks among farmers and resource persons, as well as market links with backward and forward market actors (9). Agricultural input value chain actors such as village sale agents, input supply systems, and retail networks have delivered extension services to the farmers (5). Research showed that LSPs were effective in disseminating information on best management practices. A study in Bangladesh showed that the farmers who received advice from LSPs had higher yields and profits than those who did not receive it (15).

It is believed that the LSPs are in a better position to understand the needs of the farmers because they are from the same community to execute extension services. Their familiarity with the socio-economic conditions, farming practices, and requirements of the farmers aids them in devising strategies to disseminate knowledge to the farmers, thereby preventing potential mismatches between extension agents and farmers (9). Since the LSPs are conducting their input-selling business within the same locality, the time and transportation costs for farmers to access them have significantly decreased (9). Most importantly, because they are from the same community, the LSPs are directly accountable to the community for their activities (16). As the LSPs work at no cost, self-motivation is important for them to execute extension services along with their ongoing input-selling business. A high level of motivation is required to influence farmers to work to their full potential (17). Though different public and private actors have increasingly applied the LSP model for EAS in recent years, a systematic investigation of the motivational factors, such as perceived benefits and tradeoffs, of the LSPs to engage in EAS and disseminate information to the farmers is still absent.[1]

The most common EAS approaches include demonstration plots, farmer field days, visits to model farmers, and demonstration plots. Extension agents visit farmers one-on-one. Extension agents form and train farmer producer groups and conduct farmer field schools. Training model or lead farmers, Training agro-retailers, Establishing new agricultural extension service centers, Crop-specific advice packaged with agricultural services, Call center/hotlines, Video screening, Mobile phone or website agronomic information, Agricultural exhibitions (Kruijssen et al., 2019).

## 1. RESEARCH OBJECTIVE

The main objective of this research is to explore what the perceived potential benefits and tradeoffs of LSPs to participate in aquaculture AES activities to disseminate knowledge to the farmers. Specifically, this research intends to answer the following questions:

- What are the perceived benefits (i.e., personal, institutional, economic, and social) of LSPs to participate in aquaculture AES activities?
- How perceived benefits translated into tangible benefits (i.e., more profit, expansion of business, social reputation)?
- What are the perceived tradeoffs, commitments, bets and risks for the LSPs to engage in AES activities?

## 2. RESEARCH METHODOLOGY

We have applied a qualitative research method for conceptualization, data collection, analysis, and interpretation of findings to understand the perceived benefits and tradeoffs of the LSPs engaged in aquaculture AES activities (18, 19). This study relied on in-depth interviews to explore the opinions of the LSPs and understand their perspectives. We developed a checklist covering the objectives of this research, which guided the conduct of the in-depth interviews. This research solely aimed to comprehend the 'perceptions' of the LSPs in their role as extension agents, and therefore, it collected no additional data beyond the basic information about their business. We reviewed relevant journal articles, books, reports, and available information on the internet as secondary sources of information. We triangulated data collected from various sources for analysis. We adopted a qualitative content analysis method for data analysis, considering a single SLP as the unit of analysis. Content analysis entails counting and comparing among the contents, followed by an interpretation of the underlying context (20). This method categorizes qualitative data based on content, using a code to facilitate summarization, description, and interpretation. We have presented the study's results narratively. We interviewed 24 LSPs from various aquaculture business categories, including aquaculture farmers, nurseries, breeders, and feed and medicine business owners. We purposively selected these LSPs from five upazillas in Rajshahi (Natore, Kahalo, Bogura Sadar) and Rongpur (Pirgacha, Rongpur Sadar) districts. The World Fish and Fisheries Department has trained all of these LSPs as 'designated' extension agents in their locality, covering topics such as aquaculture, pond preparation, pre- and post-stock pond management, harvesting, pondside gardening, family nutrition, women's role in aquaculture, business planning, account management, and maintaining linkages with the backward and forward market actors in the value chain. Furthermore, their reputation as extension agents in their community stems from their extensive experience in the aquaculture value chain, their ability to solve farmer problems, and their self-motivation to provide professional extension services.

## 4. FINDINGS

### Farmer's frequently asked questions and sources of information

The farmers, who have been in the aquaculture business for a long time, are aware of traditional practices from their own experience or from seeing their fellow farmers. These farmers rarely seek any 'advice' or 'best management practice' from anywhere until they face problems that they cannot solve, such as fish dying, not growing as per expectation, a shortage of oxygen, and changing the colour of pond water. They are proactive in seeking advice whenever they encounter problems that financially impact them. Few farmers are curious to seek advice about how to grow fish faster by using less feed and reducing production costs. They also seek needed information about when it is necessary to use pesticides, better harvesting times, and fish selling prices in different markets.

Farmers primarily seek advice from their neighbors, who are experienced and reputed to be successful in the aquaculture business in the community. While seeking advice from their peers, they do not limit themselves to seeking solutions for immediate problems; they discuss a variety of issues they face in their aquaculture practices. Farmers also 'learn by seeing' other farmers' practices that have led to their success. At times when farmers fail to get any appropriate solution from their peers, they seek information from LSPs, feed dealers or retailers, feed company doctors, hatchery owners, and Department of Fisheries (DoF) officials. Some farmers seek advice from these sources firsthand when they have good access to them in comparison to their peers. However, non-commercial and semi-commercial farmers rarely prefer to seek information from DoF officials because of the distance and uncertainty of their availability in an emergency. In general, commercial farmers have good relationships with DoF officials, from whom they seek information firsthand. Farmers also seek information from feed company retailers and dealers and feed company doctors firsthand when they are locally available. However, farmers harbor skepticism towards the solutions provided by feed retailers, dealers, and feed company doctors, as they perceive them as motivated by a desire to sell more inputs rather than addressing their problems. In some cases, farmers discussed the solutions offered by a feed company retailer, dealer, and doctor with LSPs or peer farmers for further validation. When mainly seek help from feed company doctors when they need to test soil or water. Feed company doctors have kits and equipment to conduct those tests at no cost. Recent advancements have led to some farmers seeking information from specific aquaculture apps and websites.

Farmers' interest in searching for information on websites is slowly increasing. However, these farmers also validate the information they get from websites and apps with their peer farmers or LSPs when they are sceptical.

Farmers prefer to seek advice and solutions from the LSPs because they are easily accessible in comparison to other sources of information. They interact with the LSPs in several ways. Typically, they reach out to LSPs by phone during any emergency situation. Some LSPs also visited the farmers' ponds to provide accurate solutions when requested in an emergency. Additionally, farmers physically meet LSPs at various locations, such as their business station (shop), LEAF office, home, or a common meeting place, to discuss their problems. These stations are mostly located in common places where farmers normally come for their daily shopping or leisure time. For the LSPs who have shops where they sell aquaculture inputs, farmers discuss their problems when they come to these shops to purchase inputs. Farmers also meet other farmers and discuss their aquaculture practices among themselves at evening market gatherings, in which LSPs also participate. This informal evening market gathering plays an important role in sharing ideas among farmers and LSPs.

Beyond answering the questions raised by the farmers, some LSPs also proactively meet with farmers to offer advice, in addition to answering the farmers' questions. They voluntarily visit the farmers' ponds to observe their overall aquaculture practices and offer advice when necessary. Specifically, the LSPs, who are involved in other businesses such as veterinary and poultry treatment, visited the farmers' villages for business purposes. On their way, they meet the aquaculture farmers and discuss their overall aquaculture practices. The LSPs, who sell inputs for loans, visit the farmers to determine when they plan to harvest fish to repay their loans or to remind them to do so. However, the LSPs with large businesses are unable to visit the farmers' ponds upon request. These large business owners provide solutions to the farmers either through phone consultations or in-person visits. Women farmers typically contact LSPs over the phone whenever they need assistance. Normally, they do not meet the LSPs at their stations in public places due to socio-cultural restrictions. In an emergency, the women farmers send male members of their family to the LSPs to seek advice on their behalf.

As the LSPs sell aquaculture inputs, the farmers believe that they are aware of the 'best management practices' of aquaculture, which motivated them to seek advice and solutions to the problems they are facing in their aquacultural practices. In addition to selling inputs, some LSPs have successfully operated aquaculture in the local area for years, which further encourages farmers to choose them as trustworthy sources of information. Farmers trust LSPs more than feed company retailers, dealers, doctors, or others because they are part of the same community. Several farmers assert that they have

a deep familiarity with the LSPs. Some LSPs have been providing these advisory services for years, building a reputation that serves as social accountability for them. Besides, the availability, accessibility, and proactive helping attitude of the LSPs motivate non-commercial and semi-commercial farmers to come to them for advice, solutions, or information. Some LSPs provide loans or sell inputs as loans to the farmers. These loan recipients primarily seek advice from LSPs. However, big commercial farmers rarely go to the LSPs for information or advice. Given their experience in aquaculture, they engage in discussions with other large farmers in similar situations. These commercial farmers have good relationships with feed company retailers, dealers, doctors, and DoF officials. They seek information from them whenever they face an uncertain accident. Moreover, the doctors from the feed company made proactive visits to the large commercial farmers, as they sold them inputs in bulk. Commercial farmers rarely buy inputs from local LSPs.

#### **4.1 Perceived tradeoffs of LSPs to function as EAS agent**

To advise farmers, the LSPs carefully listen to their concerns and try to offer appropriate solutions at no cost. Some LSPs periodically monitor the farmers' aquaculture activities and provide advice when necessary. These LSPs believe that it is their social responsibility to offer appropriate advice and solutions to the farmers, as they receive them as their 'trusted' source of information. For this reason, they try their best to provide appropriate solutions to the farmers' problems that can help them make a good profit from aquaculture. For the same reason, LSPs (input sellers) aim to sell the best-quality inputs to farmers. Farmers primarily seek information from LSPs on how to reduce production costs. For this reason, the LSPs provide solutions to the farmers, taking into account their financial situations. They normally do not suggest anything that the farmers cannot comply with. In the most common situations, the LSPs offer low-cost solutions to farmers that would allow them to make a profit from their business. However, if their low-cost solution fails to yield a profit, they offer costly alternatives. In this regard, one LSP said:

*"I don't mind if they [farmers] call me at night. I try my best to help them. [...] Farmers come to me for advice as they do not have that knowledge. Now, it is my responsibility to offer the best advice to them. They trusted me, I cannot betray them. If I don't have that information, I search for it from all other available sources."*

The LSPs face several perceived tradeoffs in their role as extension agents, tasked with disseminating knowledge about best management practices to farmers. First and foremost, the LSPs must dedicate a substantial amount of their time to assisting farmers during their visits

and answering their phone calls, with the goal of providing solutions to their problems. When requested, the LSPs visit the farmers' ponds and participate in their evening market gatherings to discuss aquaculture practices. The LSPs believe that they must spend a lot of time answering farmers' questions. However, most of the LSPs do not need to find spare time to attend to the farmers. In most cases, they attend to and advise the farmers while they are doing their regular business. The LSPs only need to find spare time in case they visit the farmers' pond, though it is not very frequent. However, some LSPs claimed that spending time on AES negatively impacted their business.

Some LSPs sell inputs, such as seed, feed, or medicine, to farmers on a loan basis, with the condition that they repay the loan after harvest. This is vital support for some farmers who have financial constraints. However, the LSPs only provide inputs on loan to farmers who are regular customers, have a good reputation in their industry, and pose no risk of loan repayment. In some cases, the LSPs cannot refuse to sell inputs on loan because the farmers are regular customers, relatives, friends, or known to them. The LSPs are motivated to closely monitor the overall aquaculture activities of these loan recipients, as they are concerned that they may be able to repay the loan if their production is high. If they notice any activities outside of best management practices, they advise these farmers. Beyond advisory and loan services, the LSPs help these farmers build up a linkage with the backward and forward market actors. They also advise farmers on good harvesting times, taking into account market fish prices. Farmers use the linkage provided by the LSPs to sell their fish, which benefits them financially. One LSP said,

*"I have good contact with the fish markets in Dhaka as I sell fish to them regularly. Some small farmers from my locality sell fish in those markets through my channel. They use my networks. They even receive payment through my bank account. Through this, they do not need to face any trouble that they normally face if they go to the market by themselves."*

In some situations, the LSPs have to accept the risks of negative outcomes associated with the advice and suggestions they offer to the farmers. Some farmers blame the LSPs for their losses in aquaculture while they follow the advice and suggestions of the LSPs. Such blame negatively impacted the reputation of the LSPs as 'trusted' sources of information and their input-selling business as well.

#### **4.2 Perceived benefits of LSPs to function as EAS agent**

In exchange for the perceived tradeoffs associated with serving as extension agents, the LSPs received several tangible benefits, which served as motivational

factors for them to accept these tradeoffs. Primarily, the LSPs provided advisory services driven by their desire to expand their clientele and boost farmers' productivity. Normally, LSPs sell inputs to a limited number of customers. They have the motivation to create a 'trusted' customer base in return for the tradeoff of functioning as extension agents through increasing their reputation as trusted extension agents. They take great care to market top-notch products and offer optimal solutions to farmers' issues, as they hold the conviction that if farmers don't benefit from the inputs they buy from a particular LSP and don't adhere to their guidance, they won't seek advice from them in the future or buy inputs from them. On the other hand, if farmers are able to generate a significant profit, they are more likely to purchase inputs and encourage their fellow farmers to do the same, thereby increasing the LSP's customer base. For this reason, the LSPs are interested in providing free advice on the best management practices and selling high-quality products, with the aim of enabling the farmers to make a profit, thereby enhancing their reputation. This reputation will aid in expanding their customer base, leading to increased purchases of their inputs, thereby yielding financial benefits. This increase in customer base is a primary motivational factor for the LSPs to function as extension agents.

This is a win-win situation for the LSPs and farmers. Ideally, the adoption of best practice management knowledge by farmers will lead to a reciprocal boost in the LSPs' business. On the one hand, by offering best management practices at no cost and selling the best quality inputs, the LSPs create a social acceptance that helps to increase their number of customers. Selling more inputs to their increased customer base financially benefits the LSPs. On the other hand, farmers can generate significant profits by utilizing high-quality products and implementing the best management practices they acquire from the LSPs. If they could do so, they would come to those specific LSPs to purchase inputs afterwards. Furthermore, the farmers serve as communicators between the LSPs and other community farmers. Any farmer's success story influences other farmers, who may become new customers of that specific LSP. In this way, a 'reliable' and 'trust'-based relationship builds up between the LSPs and farmers who serve each other. If LSPs are able to sell more inputs to their 'confirm' customers, they become proactive in supporting the farmer by selling the best quality and right inputs and advising them from time to time to help them increase their production. If the farmers generate a significant profit, they may expand their operations, necessitating the purchase of additional inputs from the designated LSP. In this context, an LSP based in Rajshahi stated,

*"Whenever they (farmers) visit my shop for any reason, I ask them about their overall aquaculture practices to understand whether they are following the appropriate procedures. From my heart, I try my best for them to make*

*a profit. If they could make a profit, it would spread to other farmers that I sell quality products and my advice is accurate. This will increase my customer base."*

Thus, increasing a customer base is the main reason for many LSPs to function as AES agents. For instance, some LSPs, such as seed producers, do not sell inputs directly to farmers, but rather to seed traders. They do not sell seed directly to the farmers. These LSPs are very reluctant to provide advisory services to farmers. They only advise farmers when they arrive. Comparatively financially poor LSPs, who have some motivation to earn after selling inputs to farmers or creating a customer base for their other businesses (such as veterinary, poultry, or agriculture), are proactive in supporting and advising farmers. As selling inputs are the main motivational factors for the LSPs, they are proactive in delivering messages that are relevant to their business. For example, if an LSP has an aquaculture medicine-selling business, he emphasises using medicine when he advises farmers. Similarly, seed traders prioritize stocking more fingerlings. They prioritise the sale of their products over the dissemination of best management practice knowledge. They rarely deliver a message that is not associated with their business. For the same reason, many LSPs discontinue their proactive extension services when their input-selling business declines. Observations also reveal that some LSPs operate large businesses, supplying large commercial farmers with bulk products. Non-commercial and semi-commercial farmers are not confirmed customers. These LSPs were reluctant to offer advisory services to smallholder farmers. Similarly, smallholder farmers hesitate to interact with these big business owners because they remain busy and find it difficult to get their access.

Some LSPs that provide advisory services to smallholder farmers (non-commercial or semi-commercial) do not have a very strong business interest because these farmers purchase a very nominal amount of input from them. They sell the majority of their products to big commercial farmers, contract seed dealers, and patilwalas. Although these LSPs may gain new customers through their connections with small-holder farmers, they offer advisory services to these farmers out of a concern for social responsibility and mental satisfaction, rather than for business motivation. For these LSPs, helping their community cultivate fish by following the best management practices is the only motivation behind their efforts for advisory services. They claimed that they feel good when farmers are profiting from their aquaculture business after following their advice and support. At the same time, some LSPs believe that delivering advisory services at no cost increases their social reputation and prestige. They get respect from the farmers for their advisory role. In this regard, one LSP said:

*"I sell 70% products (feed) to some big farmers who are my regular customers. I sell a very small amount of feed to smallholder farmers. It would be less than 10% of my total sales. So, the smallholder farmers are not important to me from a business perspective. Sometimes I suggest them to buy inputs from others when I have my own. [...] I don't treat them as customers. I do it (advisory services) from the concern of my social responsibility. They offer me a chair first to sit on, and they greet me when we meet. This is my pride. I do not want to make money after selling products to them."*

As extension agents and sellers of aquaculture inputs, some of the interviewed LSPs established connections with input manufacturers, government fisheries departments (like LEAF), NGOs, and received training on aquaculture best management practices from various extension programs. Several other opportunities presented themselves to them, including the nomination of some LSPs as authorized dealers or sellers of specific input companies' products. This designation serves as a "trusted salesperson" for the company, significantly boosting sales. For instance, the Fisheries Department of the government designates some LSPs as LAEF members and extension agents. The government's nomination of these LEAFs as extension agents has garnered positive acceptance among farmers. Therefore, receiving training and establishing connections with external stakeholders have motivated these LSPs to serve as extension agents. These trainings assist these LSPs in enhancing their knowledge about the best management practices in aquaculture and new technological innovations, enabling them to advise farmers effectively. When they advise farmers with updated knowledge, the LSPs become known as EAS agents in the community. These training sessions also help the LSPs develop an effective network and working relationship with the backward and forward market actors that creates an opportunity to share ideas among themselves. One LSP in Rajshahi, who had received training from an NGO, stated,

*"From attending training at an NGO, I was introduced to other people who are doing aquaculture in my surrounding areas. In this training session, everyone shared their ideas that helped me to identify what mistakes I made and I helped others to identify what mistakes they made. We continued our contact even after the training sessions. Everyone shares their ideas from their practical experiences. Most importantly, we were introduced to the trainers who are aquaculture experts. We can call [over the mobile phone] afterward for advice. I called one of them on several occasions and his advice benefitted me."*

Based on the social and cultural practices of the

researched area, the farmers do not consider paying the LSPs for their advisory services, as they believe that advice should be provided without charge. For the same reason, the LSPs never expect that the farmers would pay them for their advisory services and they accepted it. Thus, the LSPs remain unpaid for their advisory services. However, it is a common practice to offer tea or snacks to the LSPs when they visit the farmers' ponds upon request. When they visit the ponds during harvest time, some LSPs receive fish as a reward. Though it is very rare, some LSPs reported that they received a payment from the farmers for their advisory services. However, this happened only in some situations, such as (1) LSP visits the pond of farmers in an emergency case and (2) LSP conducts soil or water tests, etc. Generally, farmers make this payment to the LSPs saying 'it is for their fuel cost.' Some LSPs receive this payment, however, in most cases, the LSPs who are financially solvent refuse to receive such payment. Despite not anticipating payment for visiting ponds, the LSPs experienced a sense of satisfaction when they received an offer.

Though the LSPs never asked for payment for their advisory services, some of them believe that advisory services should not be 'free of cost.' They believe that 'advice for a payment has more importance than advice for free.' They believe that a nominal payment could serve as a motivating factor for them, given that not all LSPs are financially solvent. However, the LSPs are worried that if they ask for a payment then the farmers will never come to them for advisory services. Thus, the LSPs provide advisory services at free of cost to build a 'trusted' relationship with farmers. If the relationship gets developed, they could earn money after selling inputs to the farmers. The LSPs believe that, in the future, farmers will also pay for advisory services, just as they pay now for veterinary and poultry services.

## 5. CONCLUSION

This study qualitatively assessed the perceived tradeoffs and benefits of the LSPs to offer advisory services to the farmers to improve their productivity and livelihoods. Findings showed that the LSPs play an important role in disseminating best management practices and new technological knowledge to aquaculture farmers. They help in educating farmers about the necessary skills for aquaculture. Farmers prefer to seek information from the LSPs because they are well-positioned, for example, they are from the same community, locally available, and accessible in comparison to other extension agents. The LSPs are famous because they offer solutions to the farmers considering their financial condition. They do not offer any solution that the farmers can not comply with in terms of cost and accessibility.

Some LSPs are offering advisory services as part of their social responsibility without expecting financial gain.

They consider that it is their social responsibility to help farmers with their advance knowledge. However, the majority of the LSPs have a keen interest in creating a customer base for their inputs selling business against the perceived tradeoffs they received, such as attending and listening to the concerns of the farmers, and spending time as part of disseminating extension and advisory services. They expect that this customer base will convert to tangible benefits by selling inputs.

Many of these LSPs do not have sufficient financial or other incentives to function as EAS agents without any interest in financial gain. Thus, they utilize their EAS role to earn money. In some cases, they advise farmers to use more inputs than they require from a target in order to increase their sales. It's also noteworthy that the LSPs have a vested interest in advising farmers to sell only the inputs they sell. Lack of financial incentives also lead to a lack of motivation for some LSPs to execute effective advisory services.

In addition to lacking motivation, LSPs often lack up-to-date knowledge about best management practices and new innovative technologies. Similarly, some of them have lack of technical expertise, training, and resources to disseminate up-to-date information to the farmers. For this reason, sometimes, they disseminate incorrect information to the farmers which may bring negative outcomes. It is essential to carefully consider the perceived tradeoffs and benefits of the LSPs to utilize them as EAS agents in the aquaculture sector. Necessary measures should be adopted to address the potential drawbacks to motivate them to function as EAS agents. The focus should be given to ensure their financial security and sustainability of the advisory services. Simultaneously, we should focus on enhancing their ability to act as extension agents by offering training on the latest best management practices and technologies.

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