HOA DRIVE: VALIDATING OPTIONS FOR DISTRIBUTION OF DROUGHT INSURANCE UNDER COMPONENT 1 IN SOMALIA

Report

By Takaful Insurance of Africa – Somalia (TIASOM)

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EXECUTIVE SUMMARY

Pastoralism is a means of livelihood for most people living in southern and central Somalia. Extreme weather events have become more frequent due to global climate change. Droughts, intermittent floods, and desert locust infestation result in livestock and agricultural production loss, which account for more than 70% of GDP while employing millions directly and indirectly. Index-based livestock insurance (IBLI) is specifically designed to protect against catastrophic livestock loss due to drought. Under the Horn of Africa (HoA) Initiative, the World Bank Disaster Risk Financing and Insurance Program (DRFIP), in support of the preparation of the regional Horn of Africa De-Risking, Inclusion and Value Enhancement of Pastoral Economies project (HOA DRIVE), has partnered with Takaful Insurance of Africa – Somalia (TIASOM) in the study of the implementation of component 1 of the project. Takaful Insurance of Africa Ltd-Somalia (TIASOM) is Somalia's first pioneering and dynamic insurance company. To evaluate options for distributing index-based drought insurance and potentially other financial services to pastoralists in Somalia, we borrowed the best practices from Kenya and Ethiopia's experiences, given their rich history in the sector. The assignment aims to evaluate options for distributing index-based drought insurance and potentially other financial services to pastoralists, most notably: i) understand how to build on existing community structures and groups and ii) quantify the cost of proposed options.

The study was implemented in the Puntland and Galmudug regions of Somalia. TIASOM provided a list of associations with potential agents in consultation with the relevant government departments and stakeholders in the sector. The potential clients were the pastoralists' households in the selected sites. The household sampling frame was obtained from the relevant government representative entities, the administrative, and the ministry of agriculture/livestock sector. The approach was informed by the fact that IBLI is new in Somalia. The study adopted a mixed approach, both quantitative and qualitative. For the distribution arrangement evaluation, key informants' interviews (KIIs) were administered to selected groups with the potential of becoming agents, i.e.: agrovet/stockists shops, regular shops, pastoralist farmer self-help groups, farmer associations, water-user associations, fodder groups, cooperative groups, community animal health workers (CAHW), small-livestock traders and pastoralists households. An abstractive analysis approach and an evolvement of grounded theory were used for the distribution arrangement evaluation. While for the quantitative household survey, descriptive statistics were used.

The findings underscored the extensiveness of livestock-related economic ventures in the regions. Pastoralists in Somalia were exposed to high risks of livestock losses. To cushion the losses, they intake livestock in addition to those born within the households. The pastoralists mainly stocked camels, goats, and sheep. However, cattle were stocked in small quantities. To generate income and meet other family needs, pastoralists were offtaking livestock. The pastoralists benefited from the production and selling of milk. The milk was mainly produced by camels, cattle, and goats. Thus most of the pastoralists in Bari anticipated bad seasons in the future. In other regions, most respondents were expecting normal or very good seasons. Livestock acted as a source of income and food. Besides Mudug, most respondents owned a satellite camp and used it to move livestock during harsh conditions. The study revealed that most pastoralists depended on charcoal and

firewood for fuel. The main water sources were water tanks, pipes, public tap water, and unprotected tap. It is noteworthy that most respondents shared their main water source with livestock.

The main households owned by the pastoralists were the axe, radio, animal carts, water drums, and mobile phones. Most of the respondents in Bari owned a smartphone, while other regions had a basic feature phone. The respondents mostly utilized the phone for calling and private purposes. Most of the regions in Somalia had network coverage. Most respondents used their phones daily and spent approximately 4.30 to 14.50 airtime. The study revealed that pastoralists Sanaag region did not save and borrow. Across the other four regions, savings ranged from low to high. However, the borrowing ranged from moderate to high. Most respondents saved and borrowed from traders.

There was a low livestock insurance awareness across different regions in Somalia. More so, none of the respondents in Bari had an insurance policy. Despite the low insurance coverage, the pastoralists were willing to participate in the IBLI program. The main sources of insurance information were commercial banks, friends, and relatives.

Evaluating the incorporation of shop owners as IBLI agents is vital. The findings showed mixed results in the education of the shop owners. Literacy is essential in selling and distributing the IBLI. The shop owners were males and females, highlighting the possibility of gender integration in the IBLI. Most of the shop owners owned livestock. The level of group membership among shop owners ranged from low to high. This suggested that the groups could be used as entry points in training the shop owners. Most shop owners had a smartphone and moderate to very good proficiency. The shop owners used the phones for calling and private purposes. Most of the regions in Somalia had network coverage. However, their network preferences across regions are different. This showed that pastoralists could use site-specific network operators in the IBLI. The study showed that only two shop owners had an insurance policy. However, most shop owners were willing to participate in the insurance program. For them to participate in the insurance program, they were interested in the payment.

To build on the existing groups, Community animal health workers and small livestock traders could boost the IBLI distribution. The study revealed that most CAHWs and small livestock traders favored their inclusion in the IBLI as agents. Most respondents had acquired at least primary education except in Galgadud, where most were illiterate. Respondents were both males and females. Most respondents could read Somali and owned livestock. The membership in agricultural associations ranged from low to high. The IBLI could capitalize on the available groups to train the respondents on insurance. The penetration of smartphones among CAHW and small livestock traders ranged from moderate to high. The phones were mainly used for calling and private purposes. The regions had high network coverage. Only one respondent in Somalia had a livestock insurance policy. However, most respondents were ready to participate in the livestock insurance program. To participate, they requested payments ranging from 8.80 to 257.37. This suggested that paying commission to the CAHWs and small livestock traders could turn them into IBLI agents.

Finally, the study explored the potential of incorporating group associations and cooperatives as IBLI agents. Education varied across the regions. The insurance program is a recruitment process, so the study could rely on educated respondents. Male and females were sampled, thus possibly having gender-sensitive agent compositions. Most respondents could read Somali and owned livestock. Apart from Sanaag, most of the respondents in other regions owned a smartphone. The group associations and cooperatives representatives used the phone mostly for calling and private purposes. The study revealed a high network coverage level. Regarding the IBLI, only four respondents had an insurance policy. However, over 90% of the respondents were willing to participate in the insurance program. The respondents only needed payments that ranged between 14.20 to 284.52. Therefore, absorbing group associations and cooperatives could boost the IBLI distribution.

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1. INTRODUCTION

Under the Horn of Africa (HoA) Initiative, the World Bank Disaster Risk Financing and Insurance Program (DRFIP), in support of the preparation of the regional Horn of Africa De-Risking, Inclusion and Value Enhancement of Pastoral Economies project (HOA DRIVE), has partnered with Takaful Insurance of Africa – Somalia (TIASOM) in the implementation of component 1 of the project. The HOA DRIVE project aims to build the resilience of pastoralist communities against drought shocks by increasing access to a package of financial services under project Component 1.

Takaful Insurance of Africa Ltd-Somalia (TIASOM) is the first pioneering and dynamic insurance company in Somalia. The philosophy behind TIASOM lies in the need to provide risk management and financial security services that are founded on ethical principles and values. Its head office is in Mogadishu and has full branches in Hargeisa-Somaliland and Garowe-Puntland, with operational agents in Bosaso and Kismayu. For this assignment, we are with Agriscience & Farm Management Limited, a Kenyan Agritech company involved in servicing its clients' agricultural-based needs within Africa. The agriscience team brings competent staff with a wide range of experience and proven expertise, especially in index-based insurance (i.e., AYII and IBLI), insurance risk surveys, and loss assessments.

Pastoralism is a livelihood for most people living in southern and central Somalia (Boitt et al., 2018[1]). Pastoralist communities are very diverse and differ in religion, culture, and the form of pastoralism practiced, with some keeping cattle, others keeping camels, and other communities keeping both, often combined with keeping small stock such as goats and sheep (Boitt et al., 2018). Extreme weather events have become more frequent due to global climate change. The number and length of warm weather spells and the frequency of extreme precipitation events have increased globally and in Somalia, causing more and more intense droughts (Maystadt et al., 2013[2]). Somalia has two rainy seasons, Gu (April to June) and the Dayr (October to November), and droughts usually occur every two to three years in the Dayr and every eight to ten years in both the Dayr and the Gu (Boitt et al., 2018). Droughts, intermittent floods, and desert locust infestation result in livestock and agricultural production loss, which account for more than 70% of GDP while employing millions directly and indirectly (The Federal Republic of Somalia, 2021[3]). Droughts cause herders to sell more of their livestock than they would sell under normal conditions because of either livestock fodder and water shortages or insufficient household income to cope with rising staple food prices (Maystadt et al., 2013).

Index-based livestock insurance (IBLI) is specifically designed to protect against catastrophic livestock loss due to drought (Bageant et al., 2017[4]). It has been implemented in the rangelands

1 Boitt, M.K., Langat, F.C., Kapoi, J.K., 2018. Geospatial agro-climatic characterization for assessment of potential agricultural areas in Somalia, Africa. Geospatial agro-climatic characterization for assessment of potential agricultural areas in Somalia, Africa. https://doi.org/10.17700/jai.2018.9.3.479

2 Maystadt, J.-F., Ecker, O., Athur Mabiso, 2013. Extreme Weather and Civil War in Somalia Does Drought Fuel Conflict through Livestock Price Shocks?

[3] The Federal Republic of Somalia, 2021. Updated Nationally Determined Contribution (NDC)

[4] Bageant, E.R., Barrett, C.B., Bageant, E.R., Barrett, C.B., 2017. Are There Gender Differences in Demand for Index-Based Livestock Insurance? J. Dev. Stud. 00, 1–21. https://doi.org/10.1080/00220388.2016.1214717

of northern Kenya and southern Ethiopia. Unlike standard insurance, index insurance contracts are not designed around policyholders' actual losses but around an exogenous index highly correlated with policyholders' losses. Following the seasonal precipitation patterns of a region, IBLI, a market-mediated initiative (meaning that pastoralists are required to pay for coverage), provides coverage (Jensen et al., 2017[5]). In Kenya and Ethiopia, through the years, IBLI premiums have varied, and insurers have revised their premiums to take into account increasing incidences of drought and the operational and marketing costs of delivering insurance. Still, pastoralists pay premiums at least equal to actuarially fair prices (Jensen et al., 2017).

To evaluate options for distributing index-based drought insurance and potentially other financial services to pastoralists in Somalia, we borrowed the best practices from Kenya and Ethiopia's experiences, given their rich history in the sector. Using the agency distribution model based on temporary employment of local youths, largely secondary-school leavers, has many challenges. They include low levels of trust by the community towards the temporary agents, a high turnover rate after training, and difficulty in monitoring and retaining agents before, during, and after the sales period.

According to Banerjee et al. (2017[6]), the other conventional approach is the agency structure that entails having a regional/district coordinator who identifies lead agents for each IBLI division who, in turn, would be responsible for identifying 'sub-agents' at the village/ward level. The network created under the lead agents comprises sub-agents who should have a business established within the community, be well known in the community and be competent enough to sell IBLI products, i.e., it is a shop-based agency model. This approach also has its share of challenges, such as varying literacy levels among the subagents, technology-related challenges in using mobile-based sales transaction platforms, and the high cost of remuneration of lead agents throughout the year, including months that are non-IBLI sale windows. Given these constraints, the model might not be commercially viable in Somalia and might limit IBLI's adoption, expansion, and scalability.

The assignment aims to evaluate options for distributing index-based drought insurance and potentially other financial services to pastoralists, most notably: i) understand how to build on existing community structures and groups and ii) quantify the cost of proposed options.

[5] Jensen, N., Ikegami, M., Mude, A., 2017. Integrating Social Protection Strategies for Improved Impact: A Comparative Evaluation of Cash Transfers and Index Insurance in Kenya. Geneva Pap. Risk Insur. - Issues Pract. https://doi.org/10.1057/s41288-017-0060-5

[6] Banerjee, R.R., Khalai, D.C., Galgallo, D., Mude, A., 2017. Improving the Agency Model in distribution of Index Based Livestock Insurance (IBLI)–a study of Takaful Insurance of Africa, Nairobi, Kenya.

2 METHODOLOGY

2.1 Site sites and sampling

The study sites were Puntland and Jubbaland regions. Given the region's vastness, study sites (districts) were selected in a manner representative of the other districts of the region. TIASOM provided a list of associations with potential agents in consultation with the relevant government departments and stakeholders in the sector. The potential clients were the pastoralists' households in the selected sites. The household sample frame was obtained from the relevant government representative entities, either administrative or from the ministry of agriculture/livestock sector. The approach is informed by the fact that IBLi is new in Somalia.

2.2 Data collection

The study adopted a mixed approach, both quantitative and qualitative. For the distribution arrangement evaluation, key informants' interviews (KIIs) were administered to selected groups with the potential of becoming agents, i.e., agrovet/stockists shops, regular shops, pastoralist farmer self-help groups, farmer associations, water-user associations, fodder groups, cooperative groups, community animal health workers (CAHW), small-livestock traders and pastoralists households. A questionnaire was administered to pastoralist households to establish market density, potential clients, location, and socio-economic status.

2.3 Data analysis

For the distribution arrangement evaluation, an abstractive analysis approach and an evolvement of grounded theory (Strauss and Glaser 1967[7]) will be used. While for the quantitative household survey, descriptive statistics will be used.

[7] Strauss, L.A. and Glaser, G.B. 1967. Discovery of grounded theory: strategies for qualitative research. New York, USA: Hawthorn.

3. RESULTS AND DISCUSSION

This chapter presents the results of four groups interviewed to understand how to build on existing community structures and groups and quantify the cost of proposed options. The groups included: Shop owners, Community animal health workers (CAHW), small livestock traders, and group associations & cooperatives that were interviewed to assess the potential synergies in the IBLI. The groups were essential as they provided the channels through which the IBLI could be used to reach the target farmers. In addition to acting as IBLI distribution channels, they are key personnel within the society who provide livestock-related services to pastoralists. Therefore, it is essential to assess their characteristics, willingness, and capability to be integrated into the IBLI. Notably, the groups could play a central role in the distribution of the IBLI to the pastoralists. Therefore, the three groups could be instrumental in boosting the distribution of IBLI. The chapter is subdivided into sections as per the findings of the targeted respondents: household survey, followed by Shop owners, community animal health workers and small livestock traders, and group associations, and cooperatives.

3.1 Household survey

3.1.1 Pastoral household heads demographics

To understand the available markets for the IBLI, their information on the pastoralists' descriptive characteristics is essential. Though household heads make specific decisions to uptake IBLI, demographic profiles highly influence the uptake of insurance. The gender of the household head is vital to determining the IBLI uptake decision. The respondents were asked specific questions about their demographics (Table 1). The respondents revealed that most household heads were male, especially in Galgadud, Mudug, Nugaal, and Sanaag. However, in Bari, most of the respondents (80%) were female. When asked about the education level, most of the household heads were illiterate (no formal education), Galgadud (90%), Mudug (37.2%), Nugaal (50.0%), and Sanaag (36.4%). It is noteworthy that only a few household heads had acquired tertiary education Galgadud (0%), Mudug (16%), Nugaal (12.5%), and Sanaag (0%). However, in Bari, most household heads had tertiary education (70%), while none were illiterate. Most of the respondents were able to speak Somali as the primary language.

Table 1: The descriptive characteristics of the Pastoral households.

Variable/Description	Bari N=10	Galgadud N=40	Mudug N=94	Nugaal N=32	Sanaag N=11
Gender					
Male	2(20.0)	27(67.5)	62(60.0)	30(93.8)	8(72.7)
Female	8(80.0)	13(32.5)	32(34.0)	2(6.3)	3927.3)
Education					
No formal education	0(0)	36(90)	35(37.2)	16(50)	4(36.4)
Primary education	2(20)	1(2.5)	31(33)	5(15.6)	4(36.4)
Secondary education	1(10)	2(5)	13(13.8)	7(21.9)	3(27.3)
Tertiary education	7(70)	0(0)	15(16.0)	4(12.5)	0(0)
Somali main language					
Yes	10(100)	40(100)	85(90.4	19(59.4)	11(100)
Household description					
Fully settled	9(90)	20(50)	67(71.3)	5(15.6)	1(9.1)
Nomadic	0(0)	4(10)	6(6.4)	25(78.1)	6(54.5)
Partially settled	1(10)	16(40)	21(22.3)	2(6.3)	4(36.4)
Age of the household heads					
Years	50.60±5.23	40.75±1.74	47.44±1.25	49.69±2.90	50.27±4.80
*Age distribution of household heads (*years)					
Under age 11	1.6±0.52	4.65±0.3	3.19±0.2	5.06±0.6	4.45±0.6
Aged between 11-18	2.3±4.42	2.74±4.4	2.80±4.2	3.40±4.4	2.73±4.6
Aged above 18	5.4±1.42	2.05±1.5	2.80±1.2	3.71±1.8	2.82±1.7

Values in parenthesis are the percentages preceded by frequency,
± indicates the means plus minus standard error of the mean

Understanding the pastoral household setting pattern is essential for an insurance company. Notably, households with permanent settings could acquire insurance for the livestock to reduce the vagaries of climate-associated losses. Most of the respondents in Bari (90%), Galgadud (50%), and Mudug (71.3%) were permanently settled. However, few respondents in Nugaal (15.6%) and Sanaag (9.1%) had permanent residences.

The age of the household head is an essential factor in determining the IBLI uptake among pastoralists. The average age of the respondents ranged from 40.75 to 50.60 years. The findings indicated that the respondents were aged and could make solid decisions on insurance. However, the study showed mixed results on the distribution of households by age bracket—most of the family members in Bari aged over 18 years. However, most family members in the four other regions were aged below 11 years.

The study showed mixed results on whether household members lived or worked away from home (Table 2). Most of the households in Bari (60%) and Nugaal (53.1%) lived or worked away from home. However, only a few household members in Galgadud (20%), Mudug (36.2), and Sanaag (9.1) were living or working away from home. The respondents were requested to highlight the main reason the family member(s) lived. Most family members across the regions lived away from the home because they were herding livestock. Though in low proportions, some households lived away from home due to livestock production, livestock trading,

drought, lost livestock, joining relatives, conflict, work as a health worker, education, and salaried employment (Table 2)

Table 2 Pastoralists' households settling patterns.

Variable /Description	Bari (N=10)	Galgadud N=40	Mudugà N=94	Nugaal N=32	Sanaag N=11
Household member lived away					
Yes	6(60.0)	8(20.0)	34 (36.2)	17(53.1)	1(9.1)
Reason for living away					
Herding livestock	5(50)	34(85)	65(69.1)	10(31.3)	6(54.5)
Livestock production	0(0)	0(0)	0(0)	0(0)	1(9.1)
Livestock trading	3(30)	3(7.5)	2(2.1)	0(0)	0(0)
Drought	0(0)	19(47.)	43(45.7)	18(56.3)	4(36.4)
Lost livestock	0(0)	0(0)	1(1.1)	1(3.1)	1(9.1)
Join relatives	0(0)	0(0)	2(2.1)	0(0)	0(0)
Conflict	0(0)	0(0)	2(2.1)	0(0)	2(18.2)
Health work	1(10.0)	0(0)	2(2.1)	0(0)	0(0)
Education	0(0.0)	0(0)	2(2.1)	0(0)	0(0)
Salaried employment	3(30.0)	0(0)	0(0.0)	0(0)	0(0)
Casual labor	0(0.0)	0(0)	0(0.0)	0(0)	1(9.1)
Standard shop	5(50)	1(2.5)	0(0.0)	0(0)	0(0)
Farming	0(0.0)	1(2.5)	10(10.6)	0(0)	0(0)
Residence duration					
Years	21.80±4.14	12.33±5.55	13.20±1.34	3.50±1.92	3.10±1.77

Values in parenthesis are the percentages preceded by frequency,
± indicates the means plus minus standard error of the mean

The household heads were asked to state how many years they have been the area's residents. This is essential to understand whether the households could have a fixed residence hence increasing the propensity for insurance coverage. On average, the residence period ranged from 3.10 years in Sanaag to 21.80 years in Bari. This suggested that residents in Bari had inhabited the location a long period ago.

3.1.2 Economic roles and individual mobility

Understanding the household heads' economic and mobility is vital to determining IBLI uptake. Household heads whose main economic activity is farming could be interested in uptaking insurance to reduce the risks. Most of the respondents' in Bari (30%) shop owners, Galgadud (57.5%) herding livestock, Mudug (43.6%) herding livestock, Nugaal (37.5%) livestock production, and Sanaag (54.5%) livestock production and the main activities (Table 3). The finding suggested that most Somali household heads were involved in livestock rearing.

Table 3 Household heads primary activity across different regions in Somalia

Primary activity	Bari N=10	Galgadud N=40	Mudugà N=94	Nugaal N=32	Sanaag N=11
Casual labor	0(0)	7(17.5)	2(2.1)	5(15.6)	0(0)
Farming	0(0)	0(0)	5(5.3)	00)	0(0)
Herding livestock	1(10.1)	23(57.5)	41(43.6)	9(28.1)	1(9.1)
House domestic work	0(0))	3(7.5)	3(3.2)	0(0)	0(0)
Livestock production	1(10)	2(5.0)	16(17.0)	12(37.5)	6(54.5)
Livestock trading	1(10)	2(5.0)	13(13.8)	3(9.4)	2(18.2)
Looking for job	2(20)	0(0)	0(0)	0(0)	0(0)
Petty trading	1(10)	0(0)	0(0)	2(6.3)	0(0)
Shop business owner	3(30.0)	1(2.5)	10(10.6)	1(3.1)	0(0)
Student	1(10.0)	0(0)	3(3.2)	0(0)	0(0)

Values in parenthesis are the percentages preceded by frequency

Not all members of the family stay full-time. Some households stay away from the household for a few months during a calendar year. Household heads were requested to state whether any family member was absent during the year and the reason for absenteeism (Table 4). Most of the respondents in Galgadud (50%) and Sanaag (54.5%) had their family members absent during the year. However, the rate of absenteeism in Bari (20%), Mudug (42.6%), and Nugaal (43.6%) were low. The study established various reasons for absenteeism, such as attending schools, attending traditional ceremonies, selling livestock products, herding livestock, trading livestock, petty trade, staying with relatives, starting a business, and studying.

Table 4 Household head mobility for the last 12 months in Somalia

Variable description	Bari N=10	Galgadud N=40	Mudug N=94	Nugaal N=32	Sanaag N=11
Household member away for last 12 years					
Reason for being away	2(20)	20(50)	40(42.6)	14(43.8)	6(54.5)
Attending traditional ceremony	0(0)	0(0)	0(0)	1(3.1)	0(0)
Gone to sell livestock products	0(0)	0(0)	0(0)	3(9.4)	0(0)
Herding livestock	0(0)	21(52.5)	40(42.6)	1(3.1)	3(27.3)
Ill injured	0(0)	0(0)	0(0)	4(12.5)	0(0)
Livestock trading	0(0)	0(0)	4(4.3)	0(0)	1(9.1)
Looking for work	0(0)	0(0)	2(2.1)	1(3.1)	1(9.1)
Petty trading	0(0)	0(0)	0(0)	1(3.1)	0(0)
Shop Business owner	0(0)	1(2.5))	0(0)	1(3.1)	0(0)
Studying	1(10.0)	0(0)	4(4.3)	0(0)	0(0)
Visiting relatives	10(10)	0(0)	3(3.2)	2(6.3)	1(9.1)
Months absent					
months	4.50±1.50	3.28±0.33	4.24±0.47	3.00±0.63	1.83±0.65

Values in parenthesis are the percentages preceded by frequency.
± indicates the means plus minus standard error of the mean.

The duration of a household member of absence ranged from 1.83 to 4.50 months. The results suggested that household members' average absenteeism duration was low. This implied that most of the household members were spending time.

3.1.3 The stock of livestock at the end of March 2022

Understanding the number of livestock in a household annually is instrumental in IBLI. The stock of animals is the core of determining the anticipated market. Given that the insurance is given against the number of livestock, it is plausible to identify the different livestock categories. Table 5 shows the number of livestock (Camel, cattle, sheep, and goats) kept by households segregated into livestock owned by the family, livestock owned by the household, adult livestock, adult livestock always kept at home for the last one year, lactating livestock, lactating livestock always kept in the last one year, number of lactating livestock move at least once to the satellite camp in the last one years. The stock of livestock across the five regions is found in Table 5. The findings highlighted differences in the quantity of livestock stocked by the pastoral household heads a year.

Table 5 Stock of livestock kept in the last 12 months

Livestock/Description	Bari	Galgadud	Mudug	Nugaal	Sanaag
Camel					
Number owned by a family	9.90±3.13	3.18±0.86	13.47±2.92	76.34±7.84	15.73±4.77
Number owned by household	8.90±3.11	2.90±0.83	10.86±2.42	71.44±7.59	9.36±2.91
Number adult	4.00±1.36	1.80±0.58	7.12±1.57	55.59±6.66	7.18±2.76
Number always kept home in the last 1 year	2.20±0.93	0.18±0.10	1.87±0.73	32.50±6.49	2.45±1.12
Number lactating	3.10±0.94	0.63±0.23	2.15±0.57	15.22±1.93	2.73±0.90
Number lactating always kept at home in the last 1 year	2.00±0.83	0.25±0.12	1.13±0.50	14.16±2.70	1.09±0.42
Number lactating moved to satellite camp at least once in the last 1 year	1.30±0.87	0.63±0.22	3.62±1.56	5.69±1.53	1.91±0.84
Cattle					
Number owned by family	5.70±2.87	0.00±0.00	1.06±0.87	4.06±4.06	0.00±0.00
Number owned by household	5.70±2.87	0.00±0.00	0.74±0.56	4.06±4.06	0.00±0.00
Number adult	3.50±2.16	0.00±0.00	0.24±0.16	2.19±2.19	0.00±0.00
Number alwayd kept home in the last 1 year	4.60±2.81	0.00±0.00	0.06±0.06	0.00±0.00	0.00±0.00
Number lactating	1.40±0.58	0.00±0.00	0.10±0.07	0.00±0.00	0.00±0.00
Number lactating always kept at home in the last 1 year	1.10±0.57	0.00±0.00	0.00±0.00	0.00±0.00	0.00±0.00
Number lactating moved to satellite camp at least once in the last 1 year	0.50±0.40	0.00±0.00	0.05±0.04	0.00±0.00	0.00±0.00
Sheep					
Number owned by family	52.50±12.02	19.20±2.83	22.88±3.57	54.13±14.81	88.18±25.14
Number owned by household	45.90±10.57	16.40±2.59	20.13±3.39	43.50±11.02	49.55±14.55
Number adult	25.40±7.20	10.45±1.88	15.80±2.64	31.94±10.70	38.09±12.87
Number always kept home in the last 1 year	25.10±10.16	1.68±0.51	5.2446±1.15	19.66±4.63	2.55±0.97
Number lactating	7.30±2.94	0.73±0.24	4.60±1.22	8.41±2.82	12.826.19
Number lactating always kept at home in the last 1 year	7.30±3.01	0.55±0.22	2.23±0.62	4.25±1.46	5.00±2.25
Number lactating moved to satellite camp at least once in the last 1 year	0.00±0.00	0.78±0.31	3.56±0.95	11.16±7.34	51.36±20.18
Goats					
Number owned by family	204.70±89.26	56.15±6.41	60.03±6.15	85.16±21.49	90.18±26.61
Number owned by household	185.30±90.97	49.80±5.33	54.21±5.73	81.25±19.48	52.36±12.08

Number adult	111.70±57.14	30.55±4.90	43.19±5.28	57.22±17.14	41.00±7.87
Number always kept home in the last 1 year	117.50±63.00	3.83±0.01	15.48±2.26	27.66±5.60	5.73±2.04
Number lactating	36.00±13.97	2.83±0.54	9.10±1.03	12.22±2.22	10.91±4.32
Number lactating always kept at home in the last 1 year	34.40±14.34	2.13±0.57	5.33±1.03	11.47±2.99	3.45±1.12
Number lactating moved to satellite camp at least once in the last 1 year	1.60±0.66	2.50±0.59	10.05±2.16	8.53±4.77	37.00±11.20

± indicates the means plus minus standard error of the mean.

3.1.4 Livestock Losses in the last year

The insurance company needs to capitalize on the livestock losses to earn the market. High livestock losses could lead to increased demand. However, poor calculation of the premium could lead to losses for the insurance firm. Against this backdrop, IBLI needs to have up-to-date information on the livestock losses and potential average income household to the livestock loss. Table 6 shows that most of the household heads experienced livestock losses. The losses ranged from 70.2% in Mudug to 100% in Bari and losses. The loss was mainly experienced on sheep and goats. The findings suggested that the goats and sheep were hardly hit by the vagaries (causes) of livestock loss.

Table 6 The livestock losses in Somalia.

Variable description	Bari N=10	Galgadud N=40	Mudugà N=94	Nugaal N=32	Sanaag N=11
Livestock loss					
Yes	10(100%)	39(97.5)	66(70.2%)	27(84.4%)	11(100)
Type of livestock					
Goat	10(100)	39(97.5)	81(86.2)	19(59.4)	10(90.9)
Sheeps	8(80.0)	27(67.5)	52(55.3)	19(56.3)	8(72.7)
Camels	2(20.0)	1(2.5)	19(20.2)	26(81.3)	1(9.1(
Cattle	1(10)	0(0)	1(1.1)	0(0)	0(0)
Cause of loss					
Diseases and droughts	6(60.0)	38(95.0)	73(77.7)	29(90.6)	8(72.7)
Accident and poison	2(20.0)	0(0)	4(4.3)	0(0)	0(0)
Just lost	1(10)	1(2.5)	6(6.4)	0(0)	1(9.1(
Predation	0(0)	0(0)	4(4.3)	1(3.1)	2(18.2)
Raiding rustling and conflict	1(10)	0(0)	0(0)	0(0)	0(00
Animal lost from					
Base camp homestead	7(70.0)	15(37.5)	43(45.7)	17(53.1)	7(63.6)
Satellite camp	3(30.))	24(60.0)	46(48.9)	15(46.9)	4(36.1)
Total number of livestock lost	21.5±5.87	16.13±1.70	17.24±2.57	59.03±17.94	14.45±7.40
The total number of adults lost	10.60±3.56	15.21±1.98	11.53±1.75	42.06±13.51	13.27±7.38

Values in parenthesis are the percentages preceded by frequency,
± indicates the means plus minus standard error of the mean.

The causes of loss are equally crucial in determining coping strategies. Understanding the primary causes of livestock loss also could inform the insurance company choosing the IBLI. In Somalia, the leading cause of livestock loss is a disease. Though in small quantities, accidents, and poison, just loss, predation, raiding, rustling, and conflict resulted in livestock losses. Notably, most of the casualties were on livestock that was kept at the base camp homestead as opposed to those transferred to the satellite camp.

In addition to highlighting whether there was livestock loss or not, determining the exact number of livestock lost is essential. The average number of animals lost for the last year ranged from 14.45 in Sanaag to 59.03 in Nugaal. Similarly, the total number of adult livestock lost ranged from

10.60 in Bari to 42.06 in Nugaal. The results indicated considerable livestock losses in Somalia, and Pastoralists could be cushioned by insurance.

3.1.5 Livestock Intake in the last three years

Pastoralists' household heads intake livestock to replace the lost, offtake, and slaughtered ones. Therefore, there is a need for an insurance company to have details of the intake patterns. Table 7 shows the livestock intake patterns in Somalia. The household heads were requested to highlight whether there was an intake of livestock. The intake level ranged between 20% in Baria to 63.6% in Sanaag. The findings suggested a modest level of livestock intake in Somalia. From the result, it is evident that most of the intake was for Goats and Sheep.

Table 7 Livestock intake among Pastoral households in Somalia

Variable description	Bari N=10	Galgadud N=40	Mudug N=94	Nugaal N=32	Sanaag N=11
Purchased or acquired livestock					
Yes	2(20.0)	16(40.0)	48(51.1)	7(21.9)	7(63.6)
Type					
Goat	4(40.0)	16(40.0)	64(68.1)	4(12.5)	9(81.8)
Sheep	3(30.0)	1(2.5)	39(41.5)	3(9.4)	8(72.7)
Camel	1(10.0)	0(0)	18(19.1)	6(18.80	0(0)
Cattle	0(0)	0(0)	2(2.1)	0(0)	0(0)
Where livestock acquired					
Outside the district	0(0)	0(0)	6(6.4)	2(6.3)	2(18.2)
Within the district	4(40.0)	2(5.0)	56(59.6)	1(3.1)	1(9.1)
Within the location	0(0)	15(37.5)	7(7.4)	4(12.5)	2(18.2)
Within the sub-location	1(10.0)	0(0)	6(6.4)	0(0)	6(54.4)
Average price per marketable animal					
	41.20±14.68	29.29±1.31	85.29±17.50	412.86±149.55	58.27±12.52

Values in parenthesis are the percentages preceded by frequency, ± indicates the means plus minus standard error of the mean

Understanding the market location is essential for enhancing livestock demand and ease of acquiring them. Most of the livestock in Bari and Mudug were sought within the district. In Galgadud, most livestock was from within the location. The market was nearest to the Pastoral households in Sanaag where most intakes were from within the sub-location. The average price per marketable income ranged between 29.29 in Galgadud to 412.86 in Nugaal.

3.1.6 Livestock Offtake in the last three years

Pastoralists' households offtake livestock for various reasons. Table 8 demonstrates the offtake of animals in Somalia. Most of the pastoral households in Bari (89%), Galgagud (87.5%), Mudug (55.3%), Nugaal (84.4%), and Sanaag (100%), participated in livestock offtake. Most of the pastoralist's households were offtaking goats and sheep. Understanding the leading cause of

offtake is essential in the livestock markets. In Somalia, pastoralist households offtake livestock mainly to generate cash and cope with drought. Additionally, settling household bills, poor performance and cultural practices, paying a debt, spreading risks, and helping others during hard times are dominant reasons for offtake.

Table 8 Livestock offtake among pastoralists households in Somalia

Variable description	Bari N=10	Galgadud N=40	Mudugà N=94	Nugaal N=32	Sanaag N=11
Livestock offtake					
Yes	9(90.0)	35(87.5)	52(55.3)	27(84.4)	11(100)
Type of livestock					
Goat	10(100)	36(90.0)	67(71.30	12(37.5)	8(72.7)
Sheep	8(80.0)	10(25.0)	42(44.7)	9(28.1)	9(81.8)
Camel	0(0)	1(2.5)	16(17.0)	24(75.0)	0(00
Cattle	1(10)	0(0)	1(1.1)	0(0)	0(0)
Reason for offtake					
Regular cash	6(60.0)	27(67.5)	24(25.5))	20(62.5)	6(54.5)
Coping with drought	3(30)	14(35.0)	40(42.6)	9(28.1)	2(18.2)
Settle household bills	1(10)	0(0)	7(7.4)	0(0)	1(9.1)
Poor performance	0(0)	6(15.0)	2(2.1)	3(9.4)	0(0)
Cultural practices	0(0)	3(7.5)	1(1.1)	0(0)	0(0)
Pay debt	0(0)	1(2.5)	15(26.0)	6(18.8)	2(18.2)
Spread risks of loss	0(0)	4(10.0)	0(0)	2(6.3)	0(0)
Help others during bad times	3(30.0)	4(10.0)	4(4.3)	2(6.3)	1(9.1)
Offtake to where					
Outside district	0(0)	0(0)	8(8.5)	6(18.8)	2(18.2)
Within district	4(40)	15(37.5)	56(59.6)	16(18.2)	2(18.2)
Within location	1(10.0)	21(52.5)	6(6.4)	5(25.6)	2(18.2)
Within sub-location	5(30.0)	1(2.5)	9(9.6)	1(3.1)	5(45.5)
Number of animals offtake	5.60±0.87	8.65±1.55	6.72±0.75	13.26±2.30	12.11±2.07
Number of female animals offtake	4.22±1.94	4.47±0.85	3.77±1.26	4.67±1.01	6.11±0.77
Average piece per marketable animal	110.89±46.39	28.11±1.32	88.18±18.20	1043.38±308.34	51.22±9.39

Values in parenthesis are the percentages preceded by frequency,
± indicates the means plus minus standard error of the mean

Only a few households have a market far from the homestead—most households in Bari, Galgadud, and Mudug offtake livestock within the district. Most household heads in Nugaal (25.6%) were oftaking livestock with the location, while Sanaag (45.5%) was in the sub-location. The findings indicated that the average offtake ranged from 5.6 in Bari to 13.26 in Nugaal. Regarding the number of female offtakes, the average number ranged from 3.77 in Galgadud to

6.11 in Sanaag. Notably, the average price of commercial livestock ranged from 28.11 in Galgadud to 1043.38 in Nugaal. The findings indicated that livestock offtake is a lucrative venture, and households could earn a living from selling livestock.

3.1.7 Livestock Born and Slaughtered in the last 36 months

Livestock production (born) is fundamental in increasing the number available in the household. Consequently, newly born livestock replaces the adult and offtake from the household. The study revealed that most of the households recorded livestock increment through birth. The livestock born ranged from 81.8% in Sanaag to 100% in Bari. The findings suggested that most households received new livestock through birth. Table 9 further highlights the distribution of livestock born in different regions of Somalia. The study revealed that most of the livestock born were goats and sheep. The study showed that goats and sheep were the most livestock slaughtered.

Table 9 Livestock born across different regions in Somalia

Variable description	Bari N=10	Galgadud N=40	Mudugà N=94	Nugaal N=32	Sanaag N=11
Livestock born					
Yes	10(100)	38(95.0)	90(95.7)	28(87.5)	9(81.8)
Type of livestock born					
Cattle	1.50±0.67	0.00±0.00	0.11±0.08	0.00±0.00	0.00±0.00
Goats	21.60±10.33	8.93±1.24	8.69±0.99	18.13±4.43	30.82±13.73
Sheep	10.30±3.89	4.65±0.82	3.66±0.63	11.75±3.07	14.27±5.29
Camels	6.40±4.87	0.80±0.26	1.72±0.54	9.81±7.87	2.09±1.28

Values in parenthesis are the percentages preceded by frequency
± indicates the means plus minus standard error of the mean

Households slaughter livestock for various reasons ranging from reducing guaranteed losses, ceremonies and guests, for sale, and household consumption (Table 10)—most households slaughter livestock.

Table 10 Livestock slaughtering across different regions in Somalia

Variable description	Bari N=10	Galgadud N=40	Mudugà N=94	Nugaal N=32	Sanaag N=11
Slaughtered livestock					
Yes	10(100)	27(67.5)	83(88.3)	31(96.9)	10(90.9)
Reason for slaughtering					
The animal would have died anyway	3(30)	3(7.5)	6(6.4)	0(0)	0(0)
For ceremony or guest	3(30)	3(7.5)	25(26.6)	1(3.1)	0(0)
For sale	0(0)	0(0)	13(13.80	3(9.4)	0(0)
For households consumption	4(40)	26(65)	43(45.7)	27(84.0)	10(91)
Type of livestock					
Camel	0±0	0.1±0.07	0.34±0.12	1.31±0.35	0±0
Cattle	0.1±0.1	0±0	0.02±0.21	0±0	0±0
Goats	4±1.03	4.78±0.8	3.35±0.34	2.22±0.54	13.55±6.89
Sheep	1.3±0.4	2.03±0.6	1.46±0.2	1.72±0.69	8.36±4.55

Values in parenthesis are the percentages preceded by frequency,
± indicates the means plus minus standard error of the mean

3.1.8 Milk Production

In addition to selling whole livestock and meat, livestock (camel, cattle, and goats) play a central role in milk production. The milk produced can be used internally by the family or sold to earn income. Table 11 highlights the milk produced and sold across different regions in Somalia. The milk production from camels ranged from 27.3% in Sanaag to 60% in Bari. The milk sold from camels ranged from 18.2% in Sannag to 40% in Bari. The findings suggested that milk production and marketing from camels ranged from low to moderate. The volumes produced, sold, and selling price per liter are highlighted in Table 11.

The milk production and selling from cattle were low. The production level ranged from 0% to 40% across the different regions in Somalia. Regarding milk selling, the rate went from 0% to 40 across various areas of Somalia. These findings suggested that there was generally low milk production and sale in Somalia from Livestock.

Table 11 Milk production and marketing across different regions in Somalia

Variable description	Bari N=10	Galgadud N=40	Mudugà N=94	Nugaal N=32	Sanaag N=11
Camel					
Milk production (Yes)	6(60)	13(32.5)	29(30.9)	16(50.0)	3(27.3)
Milk sell	4(40)	6(15.0)	23(53.1)	17(53.1)	2(18.2)
Number lactating	2.90±0.89	0.63±0.22	1.61±0.44	8.97±2.17	0.82±0.55
Milk produced in liters	6.20±1.93	2.76±2.25	2.09±0.67	10.50±3.33	1.32±1.27
Sold per day (liters)	3.90±1.60	3.10±2.35	1.87±0.53	7.72±1.89	1.27±0.95
Average price per liter	1.95±0.94	0.22±0.14	1.38±0.56	0.72±0.13	0.32±0.27
Cattle					
Milk production (Yes)	4(40.0)	1(2.5)	1(1.1)	0(0)	0(0)
Milk sell (yes)	4(40)	0(0)	1(1.1)	0(0)	0(0)
Number lactating	1.30±0.56	0.00±0.00	0.05±0.04	0.00±0.00	0.00±0.00
Milk produced in liters	2.30±1.17	0.00±0.00	0.074±0.06	0.00±0.00	0.00±0.00
Sold per day (liters)	1.80±1.01	0.20±0.20	0.04±0.03	0.00±0.00	0.00±0.00
Average price per liter	0.69±0.29	0.00±0.00	0.04±0.03	00.00±0.00	0.00±0.00
Goat					
Milk production (Yes)	7(70)	18(45.0)	53(56.4)	1(3.1)	4(36.4)
Milk sell (yes)	7(70.0)	13(32.5)	43(45.7)	1(3.1)	1(9.1)
Number lactating	34.70±14.24	4.43±0.94	5.35±0.98	3.44±1.72	2.91±1.46
Milk produced in liters	43.90±20.29	3.41±1.18	1.08±0.19	0.19±0.14	4.82±1.28
Sold per day (liters)	42.00±20.08	2.05±0.62	0.86±0.14	0.06±0.06	0.09±0.09
Average price per liter	1.05±0.37	2.63±0.75	0.83±0.11	0.03±0.03	1.27±1.27

Values in parenthesis are the percentages preceded by frequency,
± indicates the means plus minus standard error of the mean

The milk production from goats ranged from a low 3.1% in Nugaal to 70% in Bari. The selling also ranged from a meager 3.1% in Nugaal to 70% in Bari. The findings suggested mixed results in goat milk production and marketing in Somalia. The findings showed that goat's milk production and marketing could cushion the economy.

Pastoralists' perceptions play a central role in shaping adaptation and mitigation strategies. Pastoralists were asked to rank the livestock losses. Table 12 shows the pastoralist perception of livestock losses. From the findings, most pastoralists ranked conflict as the main source of livestock. The pastoralists' perceptions were in the order conflict, raiding, disease outbreak, and lack of rains and forage availability.

Table 12 Pastoralist perceptions on livestock losses.

Descriptive	Bari N=10	Galgadud N=40	Mudugà N=94	Nugaal N=32	Sanaag N=11
Lack of rain and forage availability	3.00±0.00	2.5±0.09	2.48±0.08	3.00±0.00	2.27±0.14
Disease outbreak	2.50±0.22	2.15±0.06	1.91±0.04	2.88±0.06	1.64±0.20
Conflict	1.57±0.30	1.11±0.11	1.24±0.07	1.50±0.20	2.09±0.16
Raiding	2.20±0.05	1.50±0.13	1.22±0.06	1.21±0.16	2.00±0.19

± indicates the means plus minus standard error of the mean

The pastoralist was requested to state their expectation of the seasons in the future. The findings showed that pastoralists had mixed expectations of the seasons. The expectation varied across the regions where most of the respondents in Bari expected bad seasons; Galgadud, Nugaal, and Sanaag had regular seasons while Mudug had very good seasons. It is noteworthy that seasonal expectations could be vital in influencing insurance uptake. Pastoralists who perceive bad seasons in the future could uptake IBLI to curb the losses.

Table 14 Pastroralist future seasons expectations and risks coping strategies in Somalia

Expectations	Bari N=10	Galgadud N=40	Mudugà N=94	Nugaal N=32	Sanaag N=11
Bad season	8(80)	2(5)	18(19.1)	13(40.6)	3(27.3)
Normal season	2(20)	34(85)	6(6.4)	16(50.0)	8(72.7)
Very good season	0(0)	4(10)	70(74.5)	3(9.4)	0(0)
Risks copping					
Borrowing from local traders	0(0)	1(2.6)	0(0)	0(0)	0(0)
Provision of food to animals	3(30.0)	0(0)	6(6.4)	2(6.7)	0(0)
Searching for water fodder/pasture or food	5(50.0)	1(2.6)	8(8.5)	22(71.8)	8(72.7)
Isolation of animals	0(0)	0(0)	5(5.3)	0(0)	0(0)
Learning from other farmers	0(0)	0(0)	1(1.1)	0(0)	0(0)
Migration	0(0)	2(5.1)	0(0)	0(0)	0(0)
Monetary assistance	0(0)	0(0)	8(8.5)	0(0)	0(0)
Reduce expenditure	0(0)	1(2.6)	0(0)	0(0)	0(0)
Selling livestock	0(0)	6(15.4)	0(0)	0(0)	0(0)
Shifting to crop farming	0(0)	0(0)	4(4.2)	0(0)	0(0)
Treatment of animals	2(20.0)	0(0)	16(16.8)	1(3.3)	1(7.7)

Values in parenthesis are the percentages preceded by frequency

The pastoralist household heads were requested to highlight the primary roles of livestock to the households. The findings suggested that the livestock part differed across the regions (Table 15). For instance, income from selling milk and income from livestock trading was the main roles of

livestock in Bari. In Galgadud, livestock mainly acted as a source of food from milk. The source of income from selling milk was the primary role of livestock in Mudug and Nugaal. Notably, in Sanaag, livestock was a source of income from livestock trading.

Table 15 The role of livestock in the Pastoralists households

Role of livestock	Bari N=10	Galgadud N=40	Mudugà N=94	Nugaal N=32	Sanaag N=11
Source of food from milk	1(10)	2(55.0)	15(16.0)	3(9.4)	4(36.4)
Source of food from meat and blood	0(0)	1(2.5)	7(7.4)	1(3.1)	1(9.1)
Source of income from selling milk	4(40)	11(27.5)	39(41.5)	16(50)	0(0)
Source of household saving status	0(0)	1(2.5)	11(11.7)	11(34.4)	0(0)
Source of income from livestock trading	4(40.0)	4(10)	17(18.1)	1(3.1)	6(54.5)
Source of income from selling meat	0(0)	0(0)	5(5.3)	0(0)	0(0)

Values in parenthesis are the percentages preceded by frequency,
± indicates the means plus minus standard error of the mean

It is noteworthy that the main challenges facing milk production are lack of forage, disasters, diseases, and cattle raiding. Also, pastoralist household heads are forced to confront the risks of bad weather. The pastoralist household head uses satellite camps to cope with the milk production challenges. The livestock is moved to the satellite camps when there are high risks. The main coping strategies were providing food to the animal, selling livestock, searching for water, food, fodder/pasture, livestock isolation, animal treatment, and migration. However, some pastoralists perceived shifting from livestock to crop farming as a key coping strategy.

3.1.9 Main livelihood activities

The ownership of a satellite camp ranged from 23.4% in Mudug to 63.6% in Sanaag (Table 16). On average, the number of centers owned by households ranged from 2.40 to 4.20. The findings implied that respondents who had a satellite camp could reduce livestock losses by transferring them to the camp.

Table 16 Pastoralists' loss management using satellite camp

variables description	Bari N=10	Galgadud N=40	Mudugà N=94	Nugaal N=32	Sanaag N=11
Households with satellite camps	5(50.0)	25(62.5)	22(23.4)	14(43.8)	7(63.6)
Number of satellite camps	4.20±1.70	3.50±1.70	2.40±1.70	4.41±1.12	2.40±1.60
Households that regularly use satellite camps	6(60.0)	12(30.0)	11(11.7)	3(9.4)	2(18)
Number of use in a year	4.30±2.01	2.92±2.32	4.40±2.54	3.50±2.33	-

± indicates the means plus minus standard error of the mean

The study established that the use of satellite camps ranged from low to high. On average, the pastoralist households used the camps more than once. The utilization of the camp (number of

times a year) ranged from 2.92 to4.30. However, none of the pastoralists is the Sanaag region used the camp.

3.1.10 Housing and amenities

The wall of the main house is essential in determining the permanency of the residence. The main house walls could also be used to assess the family's economic status. Table 17 shows the primary materials of the wall. The findings suggested that most of the respondents in Bari were economically well off since the walls were made of stones or bricks. Most of the walls in Galdadud and Mudug were made of stick palm leave, indicating temporary residence and probably low economic status. Most of the walls in Nugaal were made of sticks or plastic sheets, and in Sanaag made of tin. This indicated that the houses in the regions were semi-permanent.

Table 17 Households dominant wall material

Walls	Bari N=10	Galgadud N=40	Mudugà N=94	Nugaal N=32	Sanaag N=11
Brick block cement	4(40)	0(0)	2(2.1)	1(3.1)	3(27.3)
Corrugated iron	0(0)	3(7.5)	0(0)	0(0)	0(0)
Grass reeds	0(0)	1(2.5)	0(0)	5(15.6)	0(0)
Mud dung	0(0)	0(0.0)	0(0)	7(21.9)	0(0)
Stick palm leaves	1(10)	19(47.5)	32(34)	0(0)	0(0)
Stones	4(40)	13(32.5)	17(18.1)	3(9.4)	4(36.4)
Tin	0(0)	0(0)	2(2.1)	0(0)	4(36.4)
Various sticks, plastic sheets	0(0)	4(10)_	41(43.6)	16(50)	0(0)
Wood	1(10)	0(0)	0(0)	0(0)	0(0)

Values in parenthesis are the percentages preceded by frequency

Somalia's primary cooking fuel sources were charcoal and firewood (Table 18). The findings indicated the least use of improved energy sources, such as biomass residues and gas.

Table 18 Households' main source of cooking fuel and drinking water

Variables description	**Bari N=10**	**Galgadud N=40**	**Mudugà N=94**	**Nugaal N=32**	**Sanaag N=11**
Cooking fuel					
Biomass residue	0(0.0)	0(0.0)	0(0.0)	0(0.0)	1(9.1)
charcoal	7(70.0)	20(50.0)	6(6.4)	0(0.0)	0(0.0)
Collected firewood	0(0.0)	19(47.5)	70(74.5)	31(96.9)	10(90.9)
Gas	1(10.0)	0(0.0)	0(0.0)	0(0.0)	0(0.0)
Purchased firewood	2(20.0)	1(2.5)	18(19.1)	1(3.1)	0(0.0)
The main source of drinking water					
Borehole	0(0.0)	20(50.0)	41(43.6)	15(46.9)	4(36.4)
Dam	3(30.0)	0(0.0)	4(4.3)	0(0.0)	0(0.0)
Piped into dwelling or compound	5(50.0)	4(10.0)	0(0.0)	0(0.0)	1(9.1)
Protected spring	0(0.0)	0(0.0)	2(2.1)	0(0.0)	0(0.0)

Protected well	0(0.0)	0(0.0)	5(5.3)	0(0.0)	1(9.1)
Public tap	1(10.0)	0(0.0)	29(30.9)	0(0.0)	2(18.2)
Unprotected well	0(0.0)	0(0.0)	12(12.8)	16(50.0)	0(0.0)
Water tank	1(10.0)	16(100.0)	1(1.1)	1(3.1)	3(27.3)
The main source of water is also a source of livestock					
Yes	8(80.0)	34(85.0)	55(58.5)	31(96.9)	10(90.9)

Values in parentheses are the percentages preceded by frequency.

The study revealed different sources of water across the regions. In Bari, the primary source of drinking water was a pipe (Table 18). However, in Galgadud, water tanks were the main drinking water source. Mudug mainly depended on public tap, Nugaal on unprotected wells, and Snaag on boreholes for water. The findings revealed that most of the main source of human water was also the source of livestock water. The result showed the possibility of compromised hygiene since the livestock shared water with humans.

Understanding the household's assets is also essential for the IBLI. Table 19 shows the main assets across the regions in Somalia. Most residents owned mobile phones, water drums, radios, wheelbarrows, and animal carts.

Table 19 Households assets.

Description	Bari N=10	Galgadud N=40	Mudugà N=94	Nugaal N=32	Sanaag N=11
Jewelry	0(0.0)	0(0.0)	3(3.2)	0(0.0)	0(0.0)
Pick axe	0(0.0)	0(0.0)	1(1.1)	0(0.0)	0(0.0)
Car	0(0.0)	0(0.0)	8(8.5)	4(12.5)	0(0.0)
wheelbarrow	4(40.0)	3(7.5)	4(4.3)	0(0.0)	0(0.0)
Radio	4(40.0)	5(12.5)	13(13.8)	9(28.1)	0(0.0)
Mobile phone	5(50.0)	25(62.5)	16(17.0)	11(34.45)	0(0.0)
Water drum	6(60.0)	13(32.5)	24(25.5)	9(28.1)	3(27.3)
Machete/ panga	1(10.0)	0(0.0)	0(0.0)	0(0.0)	0(0.0)
Spade /shovel	2(20.0)	0(0.0)	0(0.0)	0(0.0)	0(0.0)
Paraffin lamps	3(30.0)	0(0.0)	0(0.0)	0(0.0)	0(0.0)
Axe	1(10.0)	19(47.5)	19(20.2)	1(3.1)	3(27.3)
Satellite dish	1(10.0)	0(0.0)	0(0.0)	0(0.0)	0(0.0)
Television	1(10.0)	0(0.0)	0(0.0)	0(0.0)	0(0.0)
Computer	1(10.0)	0(0.0)	0(0.0)	0(0.0)	0(0.0)
Plough	1(10.0)	0(0.0)	0(0.0)	0(0.0)	0(0.0)
Sickle	1(10.0)	0(0.0)	2(2.1)	0(0.0)	0(0.0)
Animal cart	2(20.0)	10(25.0)	24(25.5)	0(0.0)	4(36.4)
Washing machine	1(10.0)	0(0.0)	0(0.0)	0(0.0)	0(0.0)
Hoe	0(0.0)	4(10.0)	5(5.3)	0(0.0)	1(9.1)

Values in parenthesis are the percentages preceded by frequency

3.1.11 Saving, borrowing, lending

The study revealed low to high rates among pastoralists in Somalia. The savings level ranged from 0% in Sanaag to 65% in Galgadud (Tab;e 21). The savings ranged from 117.72 in Mudug to 350.00 in Nugaal. The respondents saved their cash at hom e, with traders, or in the bank.

Table 21 The Pastoralists, saving borrowing, and lending patter

Variables /Description	Bari N=10	Galgadud N=40	Mudugà N=94	Nugaal N=32	Sanaag N=11
Those who keep cash saving	2(20)	26(65)	37(39.4)	3(9.4)	0(0)
How much savings do you currently have					
	125.00±25.00	129.42±65.93	117.72±22.51	350.00±225.50	
Where a large part of savings kept					
At home	1(10)	17(42.5)	14(14.9)	2(6.3)	0(0)
Bank	1(10)	8(20)	22(23.4)	0(0.0)	0(0)
With a trader shop	0(0)	1(2.5)	1(1.1)	1(3.1)	0(0)
Those who borrow	4(40)	24(60)	42(44.7)	15(46.9)	0(0)
Saving borrowing lending, how much did you borrow in total in the last 12 months					
	850.80±281.2	266.71±111.5	680.24±110.7	2363.33±679.7	-
Loan from where					
Bank	0(0)	0(0)	2(2.1)	1(3.1)	0(0)
NGO MFI FSA	0(0)	0(0)	3(3.2)	0(0)	0(0)
Family and friends	1(10)	16(40)	17(18.1)	1(3.1)	0(0)
Traders	3(30)	8(20)	20(21.3)	13(40.6)	

Values in parenthesis are the percentages preceded by frequency,
± indicates the means plus minus standard error of the mean

Apart from Sanaag, the borrowing level in the other regions was high. The borrowing ranged from 40% in Bari to 60% in Galgadud. The borrowed amount ranged from 266.71 in Galgadud to 2363.33 in Nugaal. The respondents borrowed money from banks, NGOs, family, friends, and traders. Notably, most respondents borrowed money from traders.

3.1.12 Phone

Pastoralists' household heads were asked technology proficiency-related questions. The study showed that most of the respondents in Galgadu (67.5), Mudug (61.7), Nugaal (81), and Sanaag (81.3) used basic phone features. However, in Bari, most of the respondents had smartphones. Despite the low ownership of smartphones in most regions, smallholders expressed moderate knowledge of smartphone use. However, in Bari, the ability of smartphone use was good.

The main application sued by the pastoralists were browsing, calling, Facebook and Whatsapp. The study revealed variations in the use of the application. Calling was the most common phone application used by pastoralists in Somalia.

Table 22 Pastoralists' technology proficiency in Somalia.

Variables description	Bari N=10	Galgadud N=40	Mudugà N=94	Nugaal N=32	Sanaag N=11
Type of phone do you own					
Basic feature phone	3(30.0)	27(67.5)	58(61.7)	26(81.3)	9(81.3)
Smart phone	7(70)	13(32.5)	36(38.3)	6(18.8)	2(18.2)
How good are you in the use of smartphone					
Basic phone	2.50±29.30	2.33±29.12	2.00±29.10	2.10±29.12	2.00±29.00
Smartphone	7(70.0)	13(32.5)	36(38.3)	6(18.8)	2(18.2)
Phone applications used most					
Browsing internet	0(0.0)	0(0.0)	1(1.1)	0(0.0)	0(0.0)
Calling	5(50.0)	40(100.0)	77(81.9)	32(100.0)	11(100.0)
Facebook	1(10.0)	0(0.0)	0(0.0)	0(0.0)	0(0.0)
WhatsApp	4(40.0)	0(0.0)	16(17.00	0(0.0)	0(0.0)
Main purpose of your phone					
General business and supplies	1(10.0)	3(7.5)	16(17.0)	1(3.1)	0(0.0)
Marketing	0(0.0)	20(50.0)	0(0.0)	0(0.0)	0(0.0)
Private use	9(90.0)	17(42.5)	78(83.0)	31(96.9)	11(100.0)
Any phone network coverage					
Yes	10(100.0)	26(65.0)	89(94.7)	32(100.0)	11(100.0)
How often do you use a cell phone					
Every day	6(60.0)	40(100.0)	94(100.0)	32(100.0)	11(100.0)
A month	1(10.0)	0(0.0)	0(0.0)	0(0.0)	0(0.0)
Once a year	3(30.0)	0(0.0)	0(0.0)	0(0.0)	0(0.0)
How much do you spend on phone units credit per month	14.50±3.04	8.30±2.30	4.30±2.30	7.41±2.93	11.10±2.61

Values in parenthesis are the percentages preceded by frequency,
± indicates the means plus minus standard error of the mean

The respondents used the phone for different purposes, including marketing, private and general business. Most of the respondents used the phone for personal purposes. However, some of the respondents in Galgadud we're using for marketing. Notably, there was high network coverage across different regions in Somalia. Most of the respondents used their phones daily. On average, they spend 4.30 to 14.50 credits daily. From the results, it is noteworthy that the utilization of phones in Somalia is high and could be an essential entry point in selling and distributing IBLI.

3.1.13 The IBLI

The pastoralists' household heads were requested to state whether they were members of any form of group. The findings showed low membership in groups. The main groups included livestock businesses, self-help groups, youth groups, pasture groups, water, and merry-go-round (Table 23).

Table 23 Pastoralists household group membership in Somalia

Group	Bari N=10	Galgadud N=40	Mudugà N=94	Nugaal N=32	Sanaag N=11
Group related to livestock business	0(0.0)	3(7.5)	5(5.3)	2(6.2)	2(18.2)
Self-help group	0(0.0)	0(0.0)	1(1.1)	0(0.0)	0(0.0)
Youth group	0(0.0)	0(0.0)	1(1.1)	0(0.0)	0(0.0)
Group related to pasture	0(0.0)	0(0.0)	4(4.3)	1(3.1)	1(9.1)
Group related to water point	0(0.0)	0(0.0)	1(1.1)	0(0.0)	0(0.0)
Women group	0(0.0)	0(0.0)	1(1.1)	0(0.0)	0(0.0)
Merry go round	0(0.0)	0(0.0)	1(1.1)	0(0.0)	3(27.3)

Values in parenthesis are the percentages preceded by frequency

The study revealed that there was low awareness of livestock insurance among pastoralists. The level of understanding ranged between 0% to 30%. The primary sources of livestock insurance awareness were community barazas, government officers, Non-governmental organizations, commercial banks, network groups, friends, and academic knowledge (Table 24).

Table 24 The IBLI among pastoralists in Somalia.

Variables description	Bari N=10	Galgadud N=40	Mudugà N=94	Nugaal N=32	Sanaag N=11
Those aware of livestock insurance	0(0.0)	12(30.0)	26(27.7	2(6.3)	11(100.0)
Livestock insurance awareness source					
At community baraza	0(0)	0(0)	18(19.1)	0(0)	7(63.6)
From a government officer	0(0)	0(0)	1(1(.1)	1(3.1)	0(0)
From an NGO staff	1(10)	0(0)	1(1.1)	0(0)	0(0)
From commercial bank	2(20)	0(0)	0(0)	0(0)	0(0)
From network groups	0(0)	0(0)	1(1.1)	0(0)	0(0)
From relatives, friends, or neighbors	3(30)	11(27.5)	5(5.3)	1(3.3)	3(27.3)
Involvement in the study introducing livestock insurance	1(10)	0(0)	0(0)	0(0)	1(9.1)
Willingness to have livestock insurance	6(60)	32(80)	62(66)	28(87.5)	1(9.1)

Values in parenthesis are the percentages preceded by frequency,
± indicates the means plus minus standard error of the mean

Most of the pastoralists in Bari (60%), Galgadud (80%) Mudug (66%), and Nugaal (87.5%) were interested in taking IBLI cover. However, in Sanaag only 9.1% of the pastoralists were willing to take insurance. The findings highlight the great potential of venturing into IBLI in Somalia. Despite the low willingness to take insurance in Sanaag, pastoralists could be sensitized to uptake.

3.2 Shop owners

In enhancing the penetration of IBLI, shop owners could be used as potential agents for the program. Since their specialty in the market and providing livestock-related services, shop owners

are an important target group in boosting insurance distribution and sales. Therefore, the shop owners were interviewed to assess their capacity and ability to act as agents.

3.2.1 Potential agent demographics

Education is vital for an insurance agent. An insurance agent needs primary education to pass the insurance policies to the clients. Table 25 shows that most shop owners had not acquired formal education. Though most shop owners had not acquired any formal education, capacity building and organizing insurance training could improve their capacity for IBLI selling and distribution.

The study showed that most shop owners were male (Table 25). Notably, the distribution of gender in the Bari region is 50% male and 50% female. The results suggested that both genders were sampled and gender mainstreaming in the IBLI was possible. Additionally, most shop owners ranging from 83% to 100%, were Somali native speakers. This suggested that the shop owners could sell the insurance to illiterate residents.

Table 25 Descriptive characteristics of the shop owners in Somalia.

Variable description	Bari N=6	Galgadud N=16	Mudug N=25	Nugaal N=11	Sanaag N=4
Education					
No formal education	1(16.7)	8(50.0)	7(28.0)	0(o.o)	0(0.0)
primary	3(50.0)	5(31.3)	9(36.0)	5(45.5)	3(75.0)
Secondary	2(33.3)	2912.5)	5(20.0)	4(36.4)	1(25.0)
Tertiary	0(0.0)	1(6.3)	4(16.0)	2(18.2)	0(0.0)
Gender					
Female	3(50.0)	4(25.0)	6(24.0)	3(27.3)	0(0.0)
Male	3(50.0)	12(75.0)	19(76.0)	8(72.7)	4(100.0)
Those who can read Somali	5(83.3)	16(100.0)	22(88.0)	11(100.0)	4(100.0)
Own livestock	4(66.7)	16(100.0)	22(88.0)	6(54.5)	3(75.0)
Type of livestock owned					
Goats	4(66.7)	16(100.0)	20(80.0)	4(36.4)	3(75.0)
Sheep	3(50.0)	11(68.8)	12(48.0)	2(18.2)	3(75.0)
Camel	3(50.0)	2(12.5)	7(28.0)	4(36.4)	2(50.0)
Cattle	2(33.3)	0(0.0)	1(4.0)	0(0.0)	0(0.0)
Belong to farmer association/groups	0(0.0)	3(18.8)	18(72.0)	0(0.0)	1(25.0)
Common interests of the group					
Building livestock market	0(0)	0(0)	2(8.0)	0(0)	0(0)
Capacity building among members	0(0)	1(6.3)	1(4.0)	0(0)	0(0)
Enhance water resilience among members	0(0)	0(0)	1(4.0)	0(0)	0(0)
Generate income among members	0(0)	0(0)	1(4.0)	0(0)	0(0)
Help the vulnerable community members	0(0)	0(0)	4(16.0)	0(0)	0(0)
To vet services	0(0)	1(6.3)	1(4.0)	0(0)	1(25.0)
To increase productivity	0(0)	1(6.3)	1(4.0)	0(0)	0(0)
Selling Agri inputs	2(33.3)	16(100)	11(44.0)	2(18.2)	3(75.0)
Years	47±8.2	37.6±2.7	41±1.8	37.36±2.4	29.8±3.1

Values in parentheses are the percentages preceded by frequency,
± indicates the means plus minus standard error of the mean

The majority of the respondents owned livestock. The livestock ownership was different across the regions ranging from 54.5% to 100%. The findings on livestock ownership are interesting, as the shop owners who keep livestock could first benefit from the insurance policy even before transferring the innovation to other farmers. The type of livestock owned and the distribution across the regions are described in Table C.

The association membership in Bari (0%), Galgadud (18.8%), Nugal (0%) and Sanaag (25.0%) was low. However, in Mudug the association membership was high (72.0%). Understanding the common interests of the agricultural association is essential for enhancing group-specific and related agendas. The associations were mostly for building livestock markets, capacity building farmers, enhancing water resilience, income generation, helping the vulnerable, accessing veterinary services, and increasing livestock productivity.

Regarding age, the shop owners were within the active age bracket ranging from 29.80 years in Sanaag to 47.00 years in Bari. Age is a determinant of insurance uptake and innovations such as mobile technologies. Since shop owners were not aged, they could easily integrate insurance policies into smartphones.

The study showed mixed results on selling agricultural inputs from shop owners. The findings indicated that shop owners' sales of farm products varied across regions and ranged from low to high.

3.2.2 Technological proficiency

Technology is an integral part of the insurance industry. Technical knowledge of using a smartphone to sell insurance policies and distribution is vital. The study revealed that most shop owners used smartphones. The utilization of smartphones ranged from 63.5% to 100%. When asked to rake their professionally on the use of the smartphone, the finding showed moderate know-how. The shop owners were asked to rate their proficiency in the use of a smartphone as 1 poor, 2 moderate, and three good. The average smartphone utilization proficiency ranged from 2.13 to 2.60, moderate to high. Most of the shop owners primarily utilized calling and WhatsApp applications. However, they could use their phone for marketing and general business in addition to private purposes.

Table 26 Technological proficiency among sho owners in Somalia

Variable description	Bari N=6	Galgadud N=16	Mudug N=25	Nugaal N=11	Sanaag N=4
Technological proficiency					
Basic future phone	1(16.7)	4(25)	11(44)	4(36.4)	1(20)
Smartphones	5(83.3)	12(75)	14(56)	7(63.6)	4(100)
How good are you in use of smartphone	2.33±1.33	2.60±1.20	2.13±1.15	2.20±1.23	2.30±1.30
Phone applications used most					
Browsing internet	1(16.7)	0(0)	0(0)	0(0)	0(0)
Calling	2(33.3)	16(100)	22(88)	9(81.8)	0(0)
WhatsApp	3((50)	0(0)	3(12)	2(18.2)	4(100)
Main purpose of phone					
Genera business purchase and supplies	3(50)	6(37.5)	3(12)	4(36.4)	1(25)
Marketing	1(16.7)	8(50)	8(32)	0(0)	1(25)
Private use	2(33.3)	2(12.5)	14(56)	7(63.6)	2(50)
Phone network coverage	6(100)	12(75)	24(96)	11(100)	4(100)
How many mobile network operators do you know					
	2.83±1.31	2.44±1.18	1.72±1.14	2.10±1.1	3.00±1.58
Preferred mobile network					
Golis	6(100)	0(0)	8(32)	11(100)	4(100)
Hormud	0(0)	15(93.8)	14(56)	0(0)	0(0)
Nicle	0(0)	0(0)	1(4)	0(0)	0(0)
Somtel	0(0)	0(0)	2(8)	0(0)	0(0)
Why prefer the network					
Airtime efficient	0(0)	0(0)	6(24)	0(0)	0(0)
Best for business purposes	1(16.7)	2(12.5)	0(0)	0(0)	0(0)
Best network services	2(33.3)	4(25)	4(16)	0(0)	0(0)
High-quality service	0(0)	8(50)	2(8)	0(0)	0(0)
High-speed internet	0(0)	0(0)	7(28)	0(0)	0(0)
Most common used	3(50)	2(12.5)	6(24)	11(100)	4(100)
Challenges on smartphone use					
Not interested in learning how to use it	0(0)	0(0)	2(8.0)	3(27.3)	0(0)
I don't know how to use it, but interested in learning to use it	0(0)	0(0)	4(16)	0(0)	0(0)
Lack of units /bundles	2(33.3)	1(6.3)	7(28)	0(0)	1(25.0)
Network problems	4(66.7)	12(75.0)	12(48.0)	8(72.7)	3(75.0)
None	0(0)	3(18.8)	0(0)	0(0)	0(0)

Values in parentheses are the percentages preceded by frequency.
± indicates the means plus minus standard error of the mean.

Network availability is critical in the utilization of smartphones. The shop owners revealed that there was network coverage in different Somali regions. The network coverage ranged from 75% to 100%. The findings indicated that thorough network coverage and phone technology could be used among shop owners for insurance distribution. Lack of interest in learning how to use the phone, lack of bundles, and network problems were the key challenges for shop owners.

The shop owners were aware of several network operators (Table C). On average, shop owners' awareness of network operators ranged from 1.72 to 3.00. This suggested that most shop owners knew more than one network operator. Notably, the preference of the operators differs across the regions. The distribution of preference was Golis (100%) in Bari, Hormud in Galgadud (93.8%), and Mudug (56.0).

The shop owners preferred a given network over the other mainly due to effective airtime utilization, best for business, high-quality services, high-speed internet, and the most common network in the region. However, the shop owners experienced several challenges in the use of phones.

3.2.3 IBLI Program

Despite the novel gains associated with IBLI, the uptake by shop owners was low. The study showed that insurance coverage uptake ranged between 0% to 25% across different regions in Somalia. This indicated that in case of losses, only a low proportion of shop owners could be compensated. Among the shop owners with insurance 1 had agricultural insurance while the other had livestock insurance.

Table 27 The IBLI among shop owners in Somalia.

Variable description	Bari N=	Galgadud N=	Mudugà N=	Nugaal N=	Sanaag N=
Having insurance policy	1(16.7)	0(0.0)	0(0.0)	0(0.0)	1(25.0)
Type of Insurance					
Agriculture insurance	1(16.7)	0(0.0	0(0.0)	0(0.0)	0(0.0)
Livestock insurance	0(0.0)	0(0.0)	0(0.0)	0(0.0)	1(25.0)
Willing to participate in a livestock insurance program	5(83.3)	16(100.0)	22(88.0)	11(100.0)	4(100.0)
What kind of remuneration would you expect					
Commission	0(0.0)	0(0.0)	0(0.0)	2(18.2)	0(0.0)
Payment	5(83.3)	16(100.0)	25(100.0)	9(81.8)	4(100.0)
Recognition	1(100.0)	0(0.0)	0(0.0)	0(0.0)	0(0.0)
Commission amount	13.33±4.23	21.60±1.63	109.60±24.82	246.40±84.30	61.30±15.46

Values in parentheses are the percentages preceded by frequency.
± indicates the means plus minus standard error of the mean.

Most shop owners, 83.3% in Bari to 100% in Galgadud and Sanaag, were willing to participate in the insurance program. This highlighted that selling and distributing the insurance using shop owners was highly welcomed. The shop owners were ready to be compensated in terms of payments. The payment commission ranged from 13.33 to 109.60. Therefore, the shop owners' model to distribute IBLI could promote insurance penetration among pastoralists.

3.3 Community animal health workers and small livestock traders

Exploring alternative IBLI selling and distribution mechanisms is essential for expanding and coordinating the policy penetration to pastoralists. The community animal health workers and small livestock traders were assessed for their plausibility in participating in the program. Thirty-seven (37) community animal health workers and 39 small livestock traders were interviewed across different regions in Somalia. The distribution of the sampled groups across the region is shown in Table 28.

3.3.1 Potential agent demographics

Given the need for education in distributing and selling insurance policies, CAHW and small livestock traders were requested to state their education level. The study revealed that most CAHW and small traders in Bari and Nugaal had tertiary education. Most of the respondents in Galgadud and Mudug had acquired no formal education. In Sanaag, most of the respondents had primary education. This study highlighted differences in education distribution across regions. Therefore, site-specific considerations are essential in capacity building the respondents to participate in IBLI. The study revealed that most of the respondents were male Table 28. The distribution of the males across regions ranged from 71.9% in Mudug to 100% in Sanaag. Additionally, all the respondents were able to read Somali. This suggested that selling and distributing the insurance policy even to the locals was easy.

Most of the respondents in Bari, Galgadud, Mudug, and Sanaag owned livestock. However, only 42.1%) of the respondents in Nugaal owned livestock. Most of the respondents owned goats, sheep, camels, and cattle. However, camels were owned but only a few respondents.

The membership in the association by CAWH and small livestock traders ranged from low (0%) to moderate (56.3%). Promoting membership in agriculture among the respondents could enhance information sharing, thus facilitating insurance knowledge acquisition and dissemination.

Table 28 Descriptive characteristics of the CAWH and small livestock traders in Somalia

Variable description	Bari N=4	Galgadud N=16	Mudug N=32	Nugaal N=19	Sanaag N=5
Type of respondent					
Community animal health workers	2(50)	8(50)	16(50)	8(42.1)	3(60.0)
Small livestock trader	2(50.0	8(50)	16(50)	11(57.9)	2(40.0)
Education level					
No formal education	1(25.0)	10(62.5)	10(31.3)	2(10.5)	0(0)
Primary	0(0.0)	2(12.5)	9(28.1)	4(21.1)	4(80.0)
Secondary	1(25.0)	4(25.0)	9(28.1)	4(21.1)	1(20.0)
Tertiary	2(50.0)	0(0)	4(12.5)	9(47.4)	0(0)
Gender of the agent					
Female	1(25.0)	3(18.8)	9(28.1)	5(26.3)	0(0)
Male	3(75.0)	13(81.3)	23(71.9	14(73.7)	5(100)
Can read Somali	4(100.0)	16(100)	32(100)	19(100)	5(100)
Own livestock	4(100.0)	16(100)	28(87.5)	8(42.1)	4(80)
Livestock type					
Goats	4(100.0)	16(100)	25(78.1)	6(31.6)	3(60)
Sheep	4(100.0)	13(81.3)	11(34.4)	4(21.1)	1(20.0)
Camel	4(100.0)	5(31.2)	11(34.4)	3(15.8)	4(80.0)
Cattle	0(0)	0(0)	0(0)	)(0)	0(0)
Member of an association	1(25.0)	4(25.0)	18(56.3)	0(0)	2(40)
What are the common interests of the association					
Building livestock market	0(0.0)	0(0)	3(9.4)	0(0)	1(20)
Capacity building among farmers	0(0.0)	1(6.3)	3(9.4)	0(0)	0(0)
Enhance water resilience	0(0.0)	0(0)	1(3.1)	0(0)	0(0)
Get vet services	1(25.0)	1(6.3)	5(15.6)	0(0)	0(0)
Good livestock production practices	0(0.0)	1(6.3)	1(3.1)	0(0)	1(20)
Help the vulnerable community members	0(0.0)	1(6.3)	5(15.6)	0(0)	0(0)
Age of the agent	44.25±9.20	38.06±1.86	41.94±1.52	41.05±2.97	35.60±3.98

Values in parentheses are the percentages preceded by frequency.
± indicates the means plus minus standard error of the mean.

Most of the agricultural associations were purposely for building livestock markets, capacity-building farmers, and pooling resources to assess veterinary services (Table 28). Notably, most CAHW and small livestock traders were in the active age bracket. Their age ranged from 35.60 in Sannag to 44.25 years in Bari. Given most respondents were in their middle age, they could be interested in learning and implementing new approaches for reducing livestock losses.

3.3.2 Technological proficiency

Mobile phones could play a pivotal role in sensitizing the IBLI in Somalia. Most of the respondents use smartphones as compared to basic phones. Given the plausibility of smartphones in sensitizing, selling, and distributing insurance, the CAHW and small livestock traders could significantly act as IBLI agents. The main application utilized were calling and WhatsApp. However, some respondents were utilizing their phones for browsing. Notably, most of the respondents were using phones for private use, with only a few using them as marketing and business gadgets.

The study revealed that most respondents were familiar with mobile phone utilization. The findings showed that mobile phone proficiency ranged from 81.3% to 100% (Table 28). When requested to state the level of proficiency (poor, moderate, and good, the findings showed moderate to high proficiency. This underscored the novelty of the CAHW and small livestock traders as IBLI agents.

Table 29 Technological proficiency among CAHW and small livestock traders in Somalia

Variable description	Bari N=4	Galgadud N=16	Mudug N=32	Nugaal N=19	Sanaag N=5
Phone type owned					
Basic features phone	2(50)	3(18.8)	12(37.5)	6(31.6)	3(60)
Smartphone	2(50)	13(81.3)	20(62.5)	13(68.4)	2(40)
Phone applications used most					
Browsing internet	0(0)	0(0)	2(6.3)	0(0)	0(0)
Calling	2(50)	16(100)	25(78.1)	17(89.5)	3(60)
WhatsApp	2(50)	0(0)	5(15.6)	2(10.5)	2(20)
The main purpose of your phone					
General business purchases and supplies	0(0)	5(31.3)	6(18.8)	5(26.3)	1(20)
Marketing	0(0.0)	8(50)	6(18.8)	0(0)	1(20)
Private use	4(100)	3(28.8)	20(62.5)	14(73.7)	3(60)
With network coverage	4(100)	13(81.3)	32(100)	19(100)	5(100)
How good are in the use of smartphone	2.50±0.5	2.33±0.14	2.19±0.1	2.65±0.1	2.00±0.3
How many mobile network operators do you know	2.50±1.5	2.19±0,21	1.06±0.13	2.11±0.1	2.40±0.4
Which one do you prefer					
Golis	4(100)	0(0)	13(40.6)	19(100)	5(100)
Hormud	0(0)	13(81.3)	19(70.4)	0(0)	0(0)
Somenet	0(0)	0(0)	3(18.8)	0(0)	0(0)
Why prefer the network					
Airtime efficient	0(0)	1(6.3)	3(9.4)	0(0)	0(0)
Best network services	0(0)	3(18.8)	10(31.3)	0(0)	0(0)
High-quality services	2(50.0)	7(43.8)	0(0)	3(15.8)	1(20)
High-speed internet	0(0)	2(12.5)	13(40.6)	1(5.3)	0(0)

High-speed internet	0(0)	0(0)	0(0)	1(5.3)	0(0)
Most common used	2(50.0)	3(18.8)	6(18.8)	14(73.7)	4(80)
Challenges in using a smartphone					
Not interested in learning how to use	1(25)	1(6.3)	1(3.1)	3(15.8)	1(20)
I don't know how to use it, but I am interested in learning how to use it	0(0)	0(0)	6(18.8)	2(10.5)	1(20)
Lack of units/bundles	1(25)	1(6.3)	9(28.1)	1(5.3)	0(0)
Network problems	2(50)	11(68.8)	16(5)	13(68.4)	3(60)

Values in parentheses are the percentages preceded by frequency.
± indicates the means plus minus standard error of the mean.

Most of the respondents were aware of more than 1 network provider. The study established that the number of network providers the respondents were aware of ranged from 1.06 in Nugaal to 2.50 in Bari. Golis was the common network operator in Bari, Nugaal, and Sanaag regions, while Hormud was most common in Galgadud and Mudug. Therefore, the agents could utilize the most preferred network in the respective regions in distributing IBLI.

The CAHW and small livestock traders were requested to highlight the main reason they preferred a particular network. The study revealed that network preferences were driven by airtime use efficiency, best network services, high-quality services, high internet speed, and commonness of the network, among other individuals. However, the CAHW and small livestock traders experience multiple challenges in utilizing the networks, including a lack of interest in learning the use of smartphones, limited knowledge on the utilization, lack of bundles, and network problems.

3.3.3 IBLI Program

The study revealed a very low penetration of insurance policies among CAHW and livestock traders (Table D). Despite the low penetration of livestock insurance, most respondents showed interest in participating in the insurance program.

Table 30 The IBLI among CAHW and small livestock traders in Somalia

Variable description	Bari N=4	Galgadud N=16	Mudug N=32	Nugaal N=19	Sanaag N=5
With an insurance policy	0(0.0)	0(0)	1(3.1)	0(0)	0(0)
Willing to participate in livestock insurance	4(100.0)	4(100)	16(100)	31(96.9)	3(60)
What kind of remuneration incentive would you expect					
Commission	0(0.0)	0(0)	0(0)	2(10.5)	0(0)
payment	4(100.0)	16(100)	32(100)	16(84.2)	4(80.0)
recognition	0(0.0)	0(0)	0(0)	1(5.3)	0(0)
If you were to be paid based on your sales, what would be your expected commission					
	8.80±1.23	16.56±1.19	87.66±19.00	257.37±59.83	48.75±9.44

Values in parentheses are the percentages preceded by frequency.
± indicates the means plus minus standard error of the mean

The CAHW and small livestock traders exercise interest in payment as compensation for participating in the insurance program. The average commission ranged from 8.80 to 257.37. The findings suggested that engaging CAHW and small livestock traders and paying them pre-determined and agreed commission could enhance agent participation.

3.4 Group associations and cooperatives

Given the cohesion and the management of agricultural groups and cooperatives, they could be used as entry points as IBLI agents. Therefore, understanding the feasibility of including the group association and cooperatives as IBLI agents is essential. This study sampled one hundred and forty-one (141) group associations and cooperative members. Table 28 showed that the main groups were farm associations, fodder groups, merry-go-round, milk aggregation groups, and waster associations. Given the direct linkage of the groups to livestock production, the members could effectively act as an IBLI agent.

3.4.1 Potential agent demographics

The study exhibited mixed results on the education level of group associations and cooperative representatives. Notably, the highest proportion of respondents in Bari (50%) had secondary education, Galgadud ((77.5%) had no formal education, while in Mudud (46.9%), Nugal (51.6%) and Sanaag (72.7%) had acquired primary education (Table 31). Regarding gender, most of the sampled respondents were male across the regions. Notably, the study sampled both male and female group representatives in each area. This underscored the gender mainstreaming possibility in the IBLI agents. There was a high proportion of respondents who were able to read Somali.

The rate of livestock ownership ranged from low to high. The findings implied that livestock ownership in some regions, such as Nugaal (35.5%), was low compared to that in other regions, such as Galgadud (100%). Most of the respondents owned goats, sheep, and camels, with only a small proportion owning cattle.

Table 28 Descriptive characteristics of the group associations and cooperatives in Somalia

Variables description	Bari N=10	Galgadud N=40	Muduga N=49	Nugal N=31	Sanaag N=11
Type of group					
Farm association	4(40.0)	8(20.0)	10(20.4)	7(22.6)	4(36.4)
Fodder group	2(20.0)	8(20.0)	8(16.3)	8(25.8)	2(18.2)
Merry go round	0(0.0)	8(20.0)	8(16.3)	0(0.0)	0(0.0)
Milk aggregation group	0(0.0)	0(0.0)	2(4.1)	3(9.7)	0(0.0)
Milk cooperation	2(20.0)	8(20.0)	9(18.4)	7(22.6)	2(18.2)
Water user association	2(20.0)	8(20.0)	9(18.4)	7(22.6)	2(18.2)
Education level					
No formal education	0(0.0)	31(77.5)	15(30.6)	7(22.6)	1(9.1)
Primary	3(30.0)	3(7.5)	23(46.9)	16(51.6)	8(72.7)
Secondary	5(50.0)	4(10.0)	10(20.4)	8(25.8)	2(18.2)
Tertiary	2(20.0)	2(5.0)	1(2.0)	0(0.0)	0(0.0)
Gender					
Female	3(30.0)	4(10.0)	16(32.7)	6(19.4)	3(27.3)
Male	7(70.0)	36(90.0)	33(67.3)	25(80.6)	8(72.7)
Can Somali	10(100.0)	40(100.0)	42(85.7)	31(100.0)	11(100.0)
Own livestock	9(90.0)	40(100.0)	44(89.8)	11(35.5)	7(63.6
Goats	6(60.0)	40(100.0)	38(77.6)	9(29.0)	7(63.6)
Sheep	4(40.0)	29(72.5)	27(55.6)	7(22.6)	5(45.5)
Camel	6(60.0)	16(40.0)	13(26.5)	7(22.6)	4(36.4)
Cattle	6(60.0)	0(0.0)	3(6.1)	0(0.0)	0(0.0
Belong to farmer group /association	8(80.0)	30(75.0)	41(83.7)	8(25.8)	7(63.6)
Group purpose					
Building livestock market	0(0.0)	0(0.0)	4(8.2)	1(3.2)	0(0.0)
Capacity building among farmers	2(20.0)	9(22.5)	22(44.9)	6(19.4)	2(18.2)
Dispute resolution among members	0(0.0)	1(2.5)	0(0.0)	0(0.0)	0(0.0)
Enhance water resilience among farmers	2(20.0)	2(5.0)	0(0.0)	0(0.0)	1(9.1)
Generate income	0(0.0)	1(2.5)	2(4.1)	0(0.0)	3(27.3)
Good livestock production practice	1(10.0)	7(17.5)	3(6.1)	0(0.0)	0(0.0)
Help vulnerable community members	0(0.0)	1(2.5)	5(10.2)	0(0.0)	0(0.0)
Improve access to agricultural inputs	0(0.0)	0(0.0)	1(2.0)	0(0.0)	0(0.0)
Increase productivity	1(10.0)	7(17.5)	2(4.1)	1(3.2)	1(9.1)
Learn from other farmers	0(0.0)	0(0.0)	2(4.1)	0(0.0)	0(0.0)
To increase productivity	0(0.0)	1(2.5)	0(0.0)	0(0.0)	0(0.0)
To protect from diseases and drought	0(0.0)	1(2.5)	0(0.0)	0(0.0)	0(0.0)

Values in parentheses are the percentages preceded by frequency.
± indicates the means plus minus standard error of the mean.

The study revealed modest membership in the agricultural association. The membership rate of agricultural associations ranged from 25.5% to 80%. This indicated that most of the group representatives were from farmers' associations. The group was mainly initiated to help vulnerable members, enhance capacity building among members, enhance water resilience, generate

income, promote good livestock practices, improve access to agricultural inputs, increase productivity and reduce the vagaries of diseases and drought.

The average age of respondents ranged from 36.93 years to 52.00 years. The age bracket has active members who could take part in livestock innovations. Therefore, the age is prime for the incorporation as IBLI agents.

3.4.2 Technological proficiency

The use of smartphones among group associations and cooperative representatives ranged from 36.4% to 100%. The findings underscored the need for intensive capacity building on smartphone access and utilization among the respondents to work as IBLI agents effectively. The results revealed that the respondents used phone applications such as internet browsing, calling, and using Facebook and WhatsApp (Table 32). Generally, most of the respondents in Somalia were using their phones for calling. Regarding the primary purpose of the phone, the respondents mainly used it for private purposes, apart from those in Galgadud, who utilized their phones mainly in marketing. The findings are interesting as the respondents in Galgadud were already utilizing phones for marketing, which could boost the acceptability of IBLI agents' recruitment.

Table 29 Technological proficiency among group associations and cooperatives in Somalia

Variables description	Bari N=10	Galgadud N=40	Muduga N=49	Nugal N=31	Sanaag N=11
Phone type owned					
Basic future phone	0(0.0)	20(50.0)	24(49.0)	15(48.4)	7(63.6)
Smartphone	10(100.0)	20(50.0)	25(51.0)	16(51.6)	4(36.4)
Type of application you use most					
Browsing internet	0(0.0)	0(0.0)	1(20.0)	0(0.0)	0(0.0)
Calling	2(20.0)	40(100.0)	42(85.7)	31(100.0)	4(36.4)
Facebook	3(30.0)	0(0.0)	1(2.0)	0(0.0)	0(0.0)
WhatsApp	5(50.0)	0(0.0)	5(10.2)	0(0.0)	7(63.6)
Main purpose of your phone					
General business purchases and supplies	4(40.0)	14(35.0)	10(20.4)	6(19.4)	1(9.1)
marketing	1(10.0)	21(52.5)	17(34.7)	0(0.0)	2(18.2)
private	5(50.0)	5(12.5)	22(44.9)	25(80.6)	8(72.7)
Network coverage available	10(100.0)	31(77.5)	46.(93.9)	31(100.0)	11(100.0)
How good are you in use of smartphone	2.90±3.10	2.30±3.12	2.20±3.10	2.30±3.10	2.50±3.20
How many network operators do you know	3.10±3.23	2.40±3.12	1.80±3.10	1.94±3.04	2.64±3.40
Which one do you prefer					
Golis	2(90.0)	0(0.0)	11(22.4)	31(100.0)	11(100.0)
Hormud	0(0.0)	38(95)	36(73.5)	0(0.0)	0(0.0)
Somnet	0(0.0)	0(0.0)	1(2.0)	0(0.0)	0(0.0)

Somtel	1(10.0)	2(5.0)	1(2.0)	0(0.0)	0(0.0)
Why do you prefer it over others					
Airtime efficient	1(10.0)	2(5.0)	13(26.5)	0(0.0)	0(0.0)
Best network services	3(30.0)	17(42.5)	7(14.3)	0(0.0)	0(0.0)
Good for business purposes	0(0.0)	1(2.5)	0(0.0)	0(0.0)	0(0.0)
High-quality service	2(20.0)	12(30.0)	5(10.2)	0(0.0)	0(0.0)
High speed	3(30.0)	4(10.0)	19(38.8)	0(0.0)	0(0.0)
Most common used	1(10.0)	4(10.0)	5(10.2)	31(100.0)	11(100.0)
Challenges in the use of smartphone					
Not interested in learning how to use it	0(0.0)	0(0.0)	4(8.2)	8(25.8)	0(0.0)
I don't know how to use it, but I am interested in learning how to use	0(0.0)	0(0.0)	3(6.1)	2(6.5)	2(18.2)
Lack of units/bundles	3(30.0)	2(5.0)	16(32.7)	1(3.2)	0(0.0)
Network problems	7(70.0)	29(72.5)	21(42.9)	19(61.3)	9(81.8)

Values in parenthesis are the percentages preceded by frequency, ± indicates the means plus minus standard error of the mean

The network coverage in Somalia was high. The findings established that the respondents were good at using mobile phones. Additionally, the respondents were aware of more than one network provider. Golis was the most preferred network in Bari, Nugaal, and Sanaag. In Galdadud and Mudug, most of the respondents preferred Hormud. The findings suggested integrating site-specific network providers in the IBLI coordination and marketing. The insurance company could bank on the proficiency of phone utilization among group members to recruit and train them as IBLI agents.

3.4.3 IBLI Program

The penetration of insurance policies among the respondents ranged from 0% to 20% (Table 33). The insurance was distributed across agriculture and livestock. However, most respondents were willing to participate in the insurance program.

Table 33 The IBLI among group associations and coopertives in Somalia

Variables description	Bari N=	Galgadud N=	Muduga N=	Nugal N=	Sanaag N=
With insurance policy	2(20)	0(0)	0(0)	0(0)	2(18.2)
Type of insurance policy					
Agriculture insurance	1(10)	0(0)	0(0)	0(0)	2(18.2)
Livestock insurance	1(10)	0(0)	0(0)	0(0)	0(0)
Willing to participate in livestock insurance program	10(100)	40(100)	48(98)	29(93.5)	11(100)
What type of remuneration incentive would you expect					
Commission	0(0.0)	0(0.0)	1(2.0)	3(9.7)	0(0)
Motivation	0(0)	0(0)	0(0)	4(12.9)	0(0)
payment	10(100.0)	40(100)	48(98.0)	23(74.2)	11(100)
Expected commission, based on sales					
Amount	14.2±2.74	19.5±2.84	82.7±15.22	284.52±39.3	60.1±9.14

Values in parenthesis are the percentages preceded by frequency,
± indicates the means plus minus standard error of the mean

To effectively implement the insurance program, the respondents were willing to be paid. The commission highlighted ranged from 14.20 to 284.52. Therefore, recruiting the group association and cooperative members and paying them commission could enhance IBLI distribution.

4 CONCLUSIONS AND RECOMMENDATIONS

4.1 Conclusions

The study sought to understand how to build on existing community structures and groups and quantify the cost of proposed options. Four categories were interviewed: pastoralists, household heads, group associations and cooperatives, shop owners, CAHWs, and small livestock traders. Based on the study findings, the following conclusions were made.

The study highlighted variations in pastoralist household headsè demographic profiles across the five regions in Somalia. Both genders were included in the sample. The education of the household head varied across the region, with Galgadud and Nugaal recording high illiteracy levels. Most of the household heads were able to read Somali. Given the novelty of settlement patterns in defining insurance uptake, pastoralists were asked to specify their settlement. Most of the respondents in Bari, Galdadud, and Mudug were fully settled. The age revealed that the respondents were in the active age bracket and could participate in livestock insurance. The main economic activities in Somalia were livestock production, herding, and trading.

The findings underscored the extensiveness of livestock-related economic ventures in the regions. Pastoralists in Somalia were exposed to high risks of livestock losses. To cushion the losses, they intake livestock in addition to those born within the households. The pastoralists mainly stocked camels, goats, and sheep. However, cattle were stocked in small quantities. To generate income and meet other family needs, pastoralists were offtaking livestock. The pastoralists benefited from the production and selling of milk. The milk was mainly produced by camels, cattle, and goats. Thus most of the pastoralists in Bari anticipated bad seasons in the future. In other regions, most respondents were expecting normal or very good seasons. Livestock acted as a source of income and food. Besides Mudug, most respondents owned a satellite camp and used it to move livestock during harsh conditions. The study revealed that most pastoralists depended on charcoal and firewood for fuel. The main water sources were water tanks, pipes, public tap water, and unprotected tap. It is noteworthy that most respondents shared their main water source with livestock.

The main households owned by the pastoralists were the axe, radio, animal carts, water drums, and mobile phones. Most of the respondents in Bari owned a smartphone, while other regions had a basic feature phone. The respondents mostly utilized the phone for calling and private purposes. Most of the regions in Somalia had network coverage. Most respondents used their phones daily and spent approximately 4.30 to 14.50 airtime. The study revealed that pastoralists Sanaag region did not save and borrow. Across the other four regions, savings ranged from low to high. However, the borrowing ranged from moderate to high. Most respondents saved and borrowed from traders.

There was a low livestock insurance awareness across different regions in Somalia. More so, none of the respondents in Bari had an insurance policy. Despite the low insurance coverage, the pastoralists were willing to participate in the IBLI program. The main sources of insurance information were commercial banks, friends, and relatives.

Evaluating the incorporation of shop owners as IBLI agents is vital. The findings showed mixed results in the education of the shop owners. Literacy is essential in selling and distributing the IBLI. The shop owners were males and females, highlighting the possibility of gender integration in the IBLI. Most of the shop owners owned livestock. The level of group membership among shop owners ranged from low to high. This suggested that the groups could be used as entry points in training the shop owners. Most shop owners had a smartphone and moderate to very good proficiency. The shop owners used the phones for calling and private purposes. Most of the regions in Somalia had network coverage. However, their network preferences across regions are different. This showed that pastoralists could use site-specific network operators in the IBLI. The study showed that only two shop owners had an insurance policy. However, most shop owners were willing to participate in the insurance program. For them to participate in the insurance program, they were interested in the payment.

To build on the existing groups, Community animal health workers and small livestock traders could boost the IBLI distribution. The study revealed that most CAHWs and small livestock traders favored their inclusion in the IBLI as agents. Most respondents had acquired at least primary education except in Galgadud, where most were illiterate. Respondents were both males and females. Most respondents could read Somali and owned livestock. The membership in agricultural associations ranged from low to high. The IBLI could capitalize on the available groups to train the respondents on insurance. The penetration of smartphones among CAHW and small livestock traders ranged from moderate to high. The phones were mainly used for calling and private purposes. The regions had high network coverage. Only one respondent in Somalia had a livestock insurance policy. However, most respondents were ready to participate in the livestock insurance program. To participate, they requested payments ranging from 8.80 to 257.37. This suggested that paying commission to the CAHWs and small livestock traders could turn them into IBLI agents.

Finally, the study explored the potential of incorporating group associations and cooperatives as IBLI agents. Education varied across the regions. The insurance program is a recruitment process so the study could rely on educated respondents. Male and females were sampled, thus possibly having gender-sensitive agent compositions. Most respondents could read Somali and owned livestock. Apart from Sanaag, most of the respondents in other regions owned a smartphone. The group associations and cooperatives representatives used the phone mostly for calling and private purposes. The study revealed a high network coverage level. Regarding the IBLI, only four respondents had an insurance policy. However, over90% of the respondents were willing to participate in the insurance program. The respondents only needed payments that ranged between 14.20 to 284.52. Therefore, absorbing group associations and cooperatives could boost the IBLI distribution.

Given that the agent's payment (commission) is essential, there is a need to consider expectations. First, the study revealed that the commission expectations varied across the regions. For instance, in Bari and Galgadud, the commission expectations were low. The high commission variations

across the regions could be attributed to differences in livestock-related vagaries. Though the Pastoral household heads could also serve as policy agents, they were not asked questions regarding payments and commissions expectations. More so, organizing the household heads into groups could be essential in policy marketing.

4.2 Recommendations

(i) The insurance company can recruit some Pastoralists' household heads as IBLI agents, given their willingness to have an insurance policy and technical proficiency.
(ii) The insurance company can coordinate the existing community structure and groups such as shop owners, group associations and cooperatives, community animal workers, and small livestock traders.
(iii) The insurance company can analyze the financial expectation of each category of community structure to design a pro-IBLI agent compensation plan.