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The role of SWOT analysis and stakeholders characterization towards sustainability of dairy innovation platforms in Lushoto District, Tanzania

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Abstract

This study analyzed the role of SWOT (Strengths, Weaknesses, Opportunities and Threats) analysis and stakeholders characterization towards sustainability of the newly established dairy innovation platform (IP) in Lushoto District - Tanzania. A mixed methods approach was used to collect data using a questionnaire, focus group discussions and key informant interviews. Collected data were analyzed by using content analysis and SWOT technique. Findings revealed strengths as presence of constitution, defined Management structure and training access; weaknesses included missing actors, insufficient fund, high dropout and limited access to inputs. Moreover, opportunities were high milk demand, availability of input suppliers, extension services and financial institutions; the major threats were unstable milk price, high borrowing cost and drought. Besides, study characterized stakeholders into eleven groups focusing on interests, role, interaction, influence and contribution to IP. For sustainability purposes, this study recommends IPs to exploit the existing strength and opportunities, address the weaknesses and threats, and capitalize on identified stakeholders.

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Introduction

Innovation platform (IP) refers to the forum in which multi-stakeholders are organized around a commodity or a system of mutual interests where they share knowledge, identify challenges, diagnose problems, identify opportunities, better ways and creative solutions to solve their problems so as to enhance agricultural productivity and improve livelihoods of the value chain actors (Mulema and Mazur, 2015; Fatunbi *et al*., 2015; Victor *et al*., 2013; Adekunle and Fatunbi, 2012). According to Sanyang *et al.* (2014) the IP members usually meet during certain mutually accepted periods to discuss issues and agree on activities of each actor for implementation. In due course of the process the platform convenes again after a certain period of time to assess their progress and plan for the next implementation of activities.

In order to achieve desirable goals of IP, the sustainability issue becomes pertinent. Based on Dusegemungu, (2011) and Gildemacher *et al.* (2011) sustainability of IP is defined as the process whereby an IP demonstrates the ability to continue or extended its activities and deliver benefits to the actors after the end of support from different donors and facilitators. Sustainable IP is able to continue innovating, consolidate its gains, change its focus when necessary, renew its membership to address new issues and thereby continue generating benefits for its members over time with relative stability (Makini *et al*., 2013). According to Pyburn and Mur, (2014) four aspects of sustainability of the IP were distinguish as sustained motivation, sustained resources, sustained capacity and sustained relationship.

Sustained motivation is the continued commitment and motivation among the stakeholders involved in the IP and generation of a sense of ownership of the platform by the stakeholders involved (Pyburn and Mur, 2014). The motivation to participate in the IP activities is highly tied to the benefits and incentives that actors obtain from the IP (Makini *et al*., 2013) however those incentives differ from one actor to another (Mulema and Mazur, 2015). With regard to sustained resources, despite the fact that funding and human resources are essential resources for sustaining platform, funding is the critical resources that IP need to have in order to effectively and efficiently implement its activities such as meetings, trainings, workshops and facilitation (Kusters, *et al*., 2017). According to Schut *et al.* (2017) IP may obtain funding from various sources such as government support, membership contribution, Non-governmental organizations (NGO's), and private sectors. However, Makini *et al.* (2013) argued that for sustainability of IP funding should come from business models developed by actors in the IP.

Moreover, based on Adenkunle *et al.* (2012) and Dangbegnon *et al.* (2011) sustained capacities focus on building capacity of individual actors to innovate and organize to support innovation which is mainly linked to the training and development of abilities of the actors to facilitate , innovate and interact with other actors in the platform. Another aspect of sustaining IP is through capacity building at organizational level which involves institutionalization and formalization of the IP (Pyburn and Mur, 2014) including legal registration of the platform and existence of rules, regulations, and structure that govern the activities of the IP (Wennink and Ochola, 2011). Good governance of IP, which is represented by the criteria such as regular meetings, accountability, transparency, participation, good communication, coordination, good leadership, and organization structure (Nederlof *et al*., 2011: Sanyang *et al*., 2014) is another vitally important aspect. Finally, the last component of sustainability of IP is a sustained relationship among the actors. This can be nurtured and sustained in the situation where trusts exists among different stakeholders because it creates cooperation and good communication (Pyburn and Mur, 2014)

In an effort to address the issue of sustainability of IP in Lushoto District, the current study scrutinized sustainment of motivation, resources, capacity and relationships among different actors using the Strength, Weakness, Opportunities and Threat (SWOT) analysis and stakeholders characterization. A SWOT analysis is the method under the situational analysis that examines the strengths and weaknesses

of a company as well as the opportunities and threats within the market. According to Gretzky (2010), Wang, (2010), FME, (2013) and Osita *et al.* (2014), SWOT analysis is an examination of organization internal strengths and weakness, its opportunities for growth and improvement and the threats the external environment presents to its survival. SWOT analysis aims to make organizations take advantage of opportunities, utilize the strength to avoid threat, eliminate weakness to open new opportunities, minimize weakness and avoid its threat with expectation of influencing survival, prosperity and implementation of plans.

In addition to SWOT analysis, this study also assessed the sustainability of the IP using component of stakeholders' characterization. The motive behind stakeholders analysis is in line with argument of Freeman, (1999) that if the organization wants to be effective it should maintain and support those groups of stakeholders by considering and balancing their interests. A stakeholder is any individual, group of people, institutions or firms that may have a significant interest in the success or failure of a project (European Commission, 2004). Stakeholders can be divided into two categories of primary and secondary stakeholders. Primary stakeholders are those who are directly involved in the project. Secondary stakeholders are those stakeholders who are indirectly affecting or being affected by the project (Lelea *et al*., 2014). Furthermore, Golder *et al*. (2005) points out three steps for stakeholder analysis as: identifying the key stakeholders and their interest; assessing the influence and importance of each stakeholder as well as potential impact of the project on each stakeholder and identifying how best to engage stakeholders in the project. The thorough stakeholder's analysis will enable stakeholder's participation and availability of their respective benefits such as enhanced sustainability, generation of the sense of ownership to the stakeholders, provision of opportunities for learning for both stakeholders and project team, development of capacity and enhancement of responsibility (Golder *et al*., 2005). Therefore, this study considers SWOT analysis and stakeholder's characterization as mandatory components in a process of ascertaining sustainability of IP in the dairy sector. The drive behind this study is based on the fact that weak linkages and interactions among the key actors along the dairy value chain is reported to be amongst the major hindrance towards improved milk production and marketing amongst the smallholder dairy farmers (Omore *et al.,* 2015).

Despite the potential role of IPs to act as tools for enabling stakeholders overcome their constraints through enabling environment to communicate efficiently and co-finding solutions for resolving productivity and marketing constraints (Tenywa *et al*.,2011), IPs are still uncommon in Tanzania, particularly in the dairy sector. For instance, in its preliminary analysis, this study established that only two dairy IPs exist in Lushoto at village level which were formed in 2014 by More Milk Project under the International Livestock Research Institute (ILRI). Furthermore, very little is known with regard to their sustainability. In addition, formal assessments of the sustainability of the platforms have not been formally conducted yet. It is evidenced in Schut *et al.* (2016) that the achievement of holistic overview of any agriculture IPs needs thorough and systematic examination of interactions between the actors, institutions, and its external environment. Therefore this study findings are crucial towards facilitating the formation of efficient and sustainable dairy IPs that are effectively linked to markets and higher learning institutions in the study area as commented in Osita *et al.* (2014).

Materials and methods

Study area

The study was conducted in Lushoto district, located in the northern part of Tanga region in Tanzania. Two villages of Ubiri and Mbuzii were selected conveniently because they are the only two villages in the district where dairy IPs exists after being established under the More Milk project (*Maziwa Zaidi* project-in Swahili).

Data collection methods

Through employment of mixed methods, a SWOT analysis technique was used to identify the strength,

weakness, opportunities and threats of the existing IPs in the study area. Information about the strengths, weaknesses, opportunities and threats of the exiting dairy IPs were obtained through focus group discussions, key informants interview, individual interviews and review of the secondary data. The key informants involved were; district livestock officers, district cooperative officer, milk traders, major transporter (Tanga Dairy Cooperative Union- TDCU), IP chairman, IP secretary of each IP as well as extension officers of each village of the study area. For individual interviews the respondents were interviewed using a semi-structured questionnaire. Group discussions were facilitated by the researcher while a rapporteur recorded all participants view. In addition, digital recorders were used to record participant views during the focus group discussions. With the aid of literature review, the guide for characterization criteria for stakeholders was developed and thereafter data collected was organized and characterized accordingly. For the reliability and validity of information collected, all data collection tools were checked and tested before being administered to the respondents.

Sampling procedure and Sample size

Purposive and convenient sampling was used to obtain the study sample for focus group discussions and key informants who possessed substantial knowledge and information about the existing IPs were involved in the interviews. Convenient sampling method was also used to obtain a sample of the respondents for survey using the semi structured questionnaires. The size of the participants in the focus group discussion per each village was 10 in line with Elliot and associate, (2005) who suggests that a size of the participants in the focus group discussion should range between 6 to 10. Moreover, the selection of 15 participants for the key informant interviews was based on level of knowledge, understanding and involvement in IP establishment and management. The number and type of interviewees were appropriately sought after according to the USAID, (1996) which states that key informant interviews are qualitative, in-depth interviews of 15 to 35 people selected for their first-hand knowledge about a topic of interest. A survey questionnaire was administered to 30 respondents from each village which made a total of 60 respondents from the two villages.

Data analysis

Data collected from focus group discussions and key informants interviewees were analyzed using content analysis by reading the collected qualitative information and then information collected were categorized by identifying the themes, words, ideas, and phrases. Obtained themes, words, ideas and phrases were summarized into meaningful information and presented.

Results and discussion

SWOT Analysis

Strengths

The major identified strengths of IP include; a good and well defined organization structure, presence of constitution, rules and regulations that guide the interaction of actors and activities of the IPs as well as existence of sub -committee within the leadership structure. The findings are in line with Nederlof *et al.* (2011) that the formality of the platform should involve the existence of rules, regulations and structure that guide interaction among the actors. Other strengths identified include availability of farmers and farmer's associations, trust among the members as well as gender balance in IPs management team. Findings revealed that the availability of farmers and their associations enables members to organize themselves and thus be able to derive benefits from the IP. Besides, success and sustainability of the dairy IP requires trust among members in all activities and decision-making process. This is also supported by Kusters *et al.* (2017) who argue that lack of trust among the stakeholders in the platform will lead to lack of transparency and commitment among the members. The gender balance within the leadership of IP will also ensure that all gender groups are reached and engaged accordingly assuring the sustainability of the platform.

Additionally, it was established that through IPs dairy farmers have been able to access training on animal health, feeding and production. Our findings have

also established that IPs have well-defined requirements and procedures in their constitution for a new member to join. Such requirements include possession of dairy cattle together with the agreed membership and registration fees. Furthermore, another identified strength of the platforms is good information flow and communication among members such that exchange of information among the members of the platform about what is going on in the platform is effective. Findings revealed that communication and information flow is aided by periodic meetings of the members that are usually planned according to their constitution, availability of farmer's organizations and availability of dairy farmers. Regular meeting is the key tool that brings platform members together to identify their common objectives, clarify the agenda, share knowledge and facilitate discussion among the actors in the platforms. As supported by Victor *et al.* (2013) clear communication within the IP enhances learning among IP actors, enables engagement and dialogue among the members and documentation of activities of IP and outreach to other community members. The strengths details are summarized in Table 1.

Table 1. SWOT analysis matrix for innovation Platforms in Mbuzii and Ubiri village in Lushoto district, Tanzania.

Strengths	Weaknesses	Opportunities	Threats
• Availability of dairy farmers • A good and well define management structure of the IP • Presence of constitution, rules and regulations that guide the activities of the IP • There is trust among IP members. • Management team of IP is composed both female and male. • Through IP farmers have been able to access training on animal health, feeding and production • There are a well-defined criteria/ requirements and procedures in constitution for a new member join in IP. • Members' fee per month and registration fees is the main source of fund that enables IP to function. • There is information flow and communication between members of IP • There are periodic meetings of the members that have been planned according to their constitution. • Availability of farmers organizations and associations e.g. Shume dairy farmers cooperative, Lushoto dairy farmers cooperative and Ngulwi dairy farmers group	• Missing of some key actors in the IP such as credit providers and input suppliers. • Insufficient fund to run IP effectively and efficiently • Some of the meetings schedules of IP members are not followed • Low attendance among IP members in the scheduled meeting • Dropout among IP members • Lack of access to credit among IP members • Misunderstanding between IP leaders and members. • Lack of access to affordable agricultural inputs among IP members • Low milk price example in milk collection centre the price ranges between 500 & 650/=Tzsh per litre as compared to restaurant and hotels were price of milk is 1000/=Tzsh per litre • Low milk production among the members of IP. • Reluctant of some IP members to contribute membership fees.	• High demand of milk due to presence of milk collection centers, restaurants, kiosk and hotels and dairy processing industry at regional level. • Presence of input suppliers which can supply agriculture inputs to dairy farmers. • Availability of extension officers at village ward and district levels that can advice and support dairy farmers activities and they can be one of the IP actor. • Existence of national policy and regulation that support dairy activities and farmers group organization • Presence of various developmental interventions that support dairy farming in the district level. • Presence of financial institution that can enable to ensure access to credit among the IP members. • Presence of research institution that can enable to provide training to dairy farmer and can be also the actor of IP • Presence of livestock department, agriculture department, cooperative department and community development department that support dairy farming and farmers groups organizations as a strong pool of available technical and indigenous knowledge of dairy sector	• Unstable milk price in the market, • Socio-cultural barriers, • Drought, • High cost of borrowing and high cost of interest among borrowers

Source: Survey data, 2016

Weaknesses

The most identified weakness that could endanger achievement of sustainability of dairy IPs is funding. Across the board, insufficient fund for IP to function smoothly, lack of access to credit and reluctance of some IP members to contribute membership fees were highlighted as the outstanding factors behind the funding challenge. Most of the IP members are not willing to contribute fees that could be used to implement platform activities due to slow realization of their personal and group financial expectations. This makes it difficult for the platform to achieve its set objectives. The findings are in line with Pyburn and Mur, (2014) who reported that funding is the most critical resources required by IPs in order to implement their activities. Funding can be obtained through charging participation fees from the members and income obtained from other business activities initiated by the platform members. Likewise, Makini *et al.* (2013) demonstrated that membership fees is the one of the source of the IP revenue that enable the platform to implement its activities. For that reasons members of the platforms should be motivated and facilitated to contribute their fees so that it can enable the platform to be in operation and to be sustainable.

Moreover, lack of access to credit and affordable agricultural inputs was also identified as the weakness of the platforms. This is mainly attributed to poor link to financial providers and missing of the input suppliers as core stakeholders in the IPs. Additionally, low attendance among members was also observed as contributing to weakness of the IP and hence a major barrier to the planning of the platform activities because the meeting quorum might not be reached thus limiting some decisions which need a certain level of majority. This also jeopardizes implementation of the agreed decisions as majority won't be able to execute and or support the decisions. Apart from that, drop out among members, unfollowed meeting schedules as well as missing of some key actors in the platform was also seen as the weakness of the existing IPs. Regular meetings and stakeholders attendance in the IP is very important because it is a place where platform members discuss and plan their activities (Makini *et al.*, 2013). To overcome these weaknesses IPs need to fulfill stakeholder's expectations in order to encourage stakeholder's attendance in the IP meetings and avoid dropout rate.

Another weakness is regular conflicts and misunderstandings between IP leaders and members which affect the activities of the platform because some of the stakeholders do not cooperate with other actors to implement activities of the platform. According to Boogaard *et al.* (2013) conflicts in IPs usually occur due to either individual power struggle, individual struggle over interest or relationships struggle. These situations could be settled through negotiations done outside the platform meeting. Thus, misunderstandings between leaders and or members must not be allowed, rather worked upon for sake of IP's sustainability. Other identified weaknesses include; low milk production and price which were associated with a number of factors such as poor feeding, animal diseases and lack of proper training. These bottlenecks can be tackled collectively within IPs that are tactfully and smoothly operated. The details of weaknesses are summarized in Table 1.

Opportunities

Various opportunities were identified including the existence of input suppliers within the study area, if well utilized these suppliers will be useful in addressing the weaknesses of limited access to agricultural inputs. This is supported by Fatunbi *et al.* (2016) with the argument that input suppliers are the one of the key actors in the IPs to guide the availability of inputs to the farmers. This will help farmers to improve their production because they can access whatever inputs required and at reasonable price. Furthermore, existence of financial institutions was identified as one of the opportunities because it can be used to overcome the weakness of lack of access to credit. These credit providers must be invited into the IPs and urged to ensure that members especially farmer's access credit at reasonable interest rates. When farmer's access credit it enables them invest more in their activities including purchase of inputs that will improve production.

In addition to that, presence of research institutions and extension agents both at village and district levels was also identified as opportunities. Those opportunities can address the challenge of low milk production by means of providing best animal husbandry training to the farmers, conducting research on how to improve production of farmers and advising the farmers to adopt technology that will improve production. This could be done by engaging research institutions and extension agents with similar interest to the IPs through community action research programs. Examples of such institutions are the Nelson Mandela African Institution of Science and Technology (NM AIST), Sokoine University of Agriculture (SUA), Mzumbe University (MU) and Tanzania Livestock Research Institutions (TALIRI), these institutions have research agendas on IP and dairy development as well as they possess supporting facilities like outreach programs, incubation and living laboratories to support farmers and other actors within the dairy value chain. The details of various opportunities are summarized in Table 1.

Threats

Threats in the SWOT analysis framework are factors outside the organization that are unfavorable for achieving the organization objectives. The most identified threats to dairy IPs is high cost of borrowing and high interest rates imposed by financial institutions like banks which limit stakeholders particularly farmers to lend credit. This may be mitigated by members establishing their own SACCOS or community banks within the IP while working towards reaching banks requirements and standards. Findings also identified socio-cultural barriers as one of the weaknesses towards sustainability of dairy IPs. Socio-cultural barriers which are influenced by cultural practices of the community led to occasions that women are not expected to speak out in meetings and when elders make a decision those decisions are final and should not be questioned. Despite that these threats are getting less and less common, they have huge effect in terms of decision making process and planning process of the platform as some of the decisions need voices of other groups like women and youth for the viability of the platform. The best way to minimize social and cultural barriers is through bringing gender issues into mainstream of the IP. According to Chiuri *et al.* (2015) mainstreaming gender in the IP it is important because it ensures the needs, interest and challenges of men, women and youth are included and addressed.

Drought is another identified threat to the platform because it affects the production and livelihood of the farmers. To mitigate this IPs need to be well strengthened and be inclusive of more actors such as researchers, extension agents and other advocacy groups. Besides, the issue of drought can be dealt in the form of environmental conservation and various solutions towards effects of climate changes. In addition to that, unstable milk price is another threat that limits farmers to obtain income. This is because the price of the milk is always low compared to the cost of keeping dairy cattle, without collective effort to address it this problem will continue persisting. Lobbying and advocacy through IP will bring more impact than it would if individual farmers worked separately. The details of threats are summarized in Table 1.

Stakeholders Characterization

Diverse actors from the dairy value chain were identified, assessed and characterized based on their interest, roles, extent of interaction, impact and influence in the dairy value chain for the sake of co-finding solution to the challenges. Key actors identified are: farmers and farmers' organizations, input supply, credit providers, extension service providers, local government officials, milk traders, milk transporters and processors, researchers, non-governmental organizations and policy makers.

The findings show that when each actor involved in the platform play their role in co-finding solutions to the problem the strength and sustainability of IPs will then be assured. For instance, farmers and farmers organizations with their interest of securing access to training on animal husbandry practices, access to credits at low interest rate, access to affordable inputs and access to collective market work together they will be motivated to pay all statutory fees and attend meetings with a goal to solve their existing challenges

jointly with other actors. With this collective attitude, they will always require a platform by which to bring together diverse actors to safeguard their common interests. Similarly Birachi *et al.* (2013) stated that the existence of the IP enables farmers to organize themselves into groups to sell their products at better prices, learning marketing skills and access credit which they can use to purchase inputs for production purpose and therefore increase their production and productivity. Moreover, based on their interest and role, their impact and influence in the IP will increase as well as improve the interaction with other stakeholders in the platform.

With regard to the input suppliers their main interest is the earned profit from the sale of the inputs to the farmers, thus their presence in the platform will assure supply of inputs to the farmers at the affordable price after negotiation between farmers and input suppliers within the IP, in turn input suppliers are assured of the market for their supplies. When farmers access inputs at affordable prices it motivates them to continue engaging in the platform and improve their production. Therefore the role of the input suppliers in the IP is to understand what kind of input farmers need and in which places farmers need inputs, and thereafter take the action of supplying it to the farmers as revealed by Fatunbi *et al.* (2015). In addition to input suppliers, sustainability of dairy IPs need also reliable credits providers who fulfill their roles of issuing credit and loans to the actors with expectations of obtaining profits in return. It is expected that the acquired credit will enable farmers to purchase inputs which will be used for production. Therefore, regular interaction between IP members, input suppliers and credit providers must be maintained in order to ensure high impact and desirable influence within the IPs and dairy value chain in general.

Apart from that, extension services providers and local government officers are interested to see that the farmers improve their productivity and their livelihood, but their main role is to provide technical assistance to the farmers and also encourage farmers to adopt technologies that will improve their production. The findings revealed that extension agents are crucial members in the IPs and their interaction with farmer is regular because most of the time they work with farmers and support them through issuing of professional advice and technical support on animal husbandry production and management. With these roles extension and local government officers have high influence and impact in the IPs.

On the context of research and development, the core interest of researchers is to develop new ideas and solutions or technology that will solve farmer's problems and increase productivity and their main role is to ensure that the technological solutions and innovations on the platform are relevant to the need of the users. Besides, research institutions have high impact and influence in the IP because of their role of facilitation of interaction among the actors, provision of technical support like capacity building to the farmers and other actors, undertaking of research for the purpose of understanding the challenges facing farmers and coming up with the solutions of the challenges. Based on their role they will be regularly interacting with other members in the IP. According to Makini *et al.* (2013) the interest of the researchers and extension agents is to ensure technologies and innovations in the platform are relevant to the need of the farmers and make sure that farmers adopt and utilize them for the aim of improving the production. Their presence enables other stakeholders identify the real challenges and co-find solutions for the problems facing dairy farmers within and outside the IPs. Besides, non-governmental organizations have interest of ensuring that farmer's livelihood is improved through provision of advocacy, capacity building and technical support.

Further to that, milk traders and milk transporters are among the key stakeholders within the dairy IPs highly interested in accessing more milk and earning more income from selling milk. Besides, they have a role in dairy value chain to purchase milk from farmers and sell it to the milk collection centers. Likewise there are milk collection agents from collection centers who collect milk from traders like milk vendors and from the farmers directly and sell it

to processors, and transport all milk to the factory for processing. Birachi *et al*. (2013) pointed out that IP benefit traders and processors by assuring that they obtain large and reliable quality supply of the product that they require and also supports farmer groups because when farmers are organized, the cost of products that are obtained from the farmers will decrease. Therefore, the involvement of traders, milk collection center agents, and transporters in the platform is important because they alert other stakeholders in the platform on what quality and quantity of milk is required. Based on their role and interest in dairy value chain they will be regularly interacting with other actors thus having a high influence and impact in the functioning of the IP.

Moreover, policy makers are IP stakeholders whose key interest is to see that the livelihoods of the dairy farmers are improved through ensuring that activities of the platform are supported by government policies and frameworks. Policy makers have high influence and impact in IP since their presence contributes towards improvement of the value chain activities by setting policies and enacting by-laws in collaboration with other actors for the sake of regulating the dairy value chain. As explained by Fatunbi *et al.* (2016), when government authority and policy makers engaged in the platform they will make sure that no government policies are breached and learn new way of modifying policies that will address the real situation of the farmers in the value chain. This happens when they interact with different stakeholders in the platform. The details of stakeholders characterization is summarized in Table 2.

Table 2. Stakeholder identification matrix for sustainable dairy innovation platform in Lushoto district.

	Stakeholder category	Relevant stakeholder	Interest of stakeholder	Inter action	Impact	Influence	Stakeholder contribution	Strategy for engaging the stakeholder
1	• Smallholder farmers	• Selected members to implement the project • People living surrounding the study sites • Lushoto Community	• Earn income from dairy activities • Access of affordable inputs • Access to credits at low interest rate • Access to milk market • Access to training on animal husbandry practices • Organized into groups to get better price of their products	RI	H	H. Will have influence in practicing dairy production	• Identifying the problems • Develop solutions to the problem • Testing and evaluating the solutions • Adopt and utilize the solutions in the field	• These are beneficiaries of the project. They will be consulted and involved in the implementation of activities.
2	Farmers organizations • Dairy farmers groups • Farmers cooperatives • Local IPs	• Shume dairy farmers cooperative in Shume ward. • Lushoto dairy farmers cooperative in Lushoto town • Mwangoi dairy farmers cooperative • Dairy farmers group in Ngulwi village • Mbuzii dairy IP in Mbuzii village • Ubiri dairy IP in Ubiri village	• Access to collective market • Access of affordable inputs • Access to credits at low interest rate • Access to training on animal husbandry practices • Organized into groups to get better price of their products.	RI	H	H. Will have influence in practicing and ensuring dairy production	• Identifying the challenges facing farmers group organization • Identifying the solutions to the challenges	• They will be consulted and involved in the implementation of activities.
3	Input suppliers • Vet drug • Feed • Fodder and supplements	• Saidi Amir Pazia: (Inputs supplier Lushoto) • Ismail Shekalage(Inputs supplier Lushoto)	• Profits earned from the sale of inputs to the farmers	RI	H	H. Will have influence in ensuring dairy farmers have access better and affordable inputs	Delivery quality and affordable inputs	• They will be informed and involved in the implementation of IP activities.

	Stakeholder category	Relevant stakeholder	Interest of stakeholder	Inter action	Impact	Influence	Stakeholder contribution	Strategy for engaging the stakeholder
4	Credit providers • Bank • Micro finance institution	• NMB Bank • CRDB Bank • SACCOS • VICOBA	• Profit earned from loan interest • Obtain more customers	II	M	H. They will have influence in ensuring dairy farmers access credit	Provision of credit/ or loans to the farmers	• They will be informed and involved in the implementation of IP activities IP
5.	Extension agents • Village and ward agriculture and livestock officers	• Sikudhani Mwameta (Ubiri Village) • Anataria Kweka- (Ngulwi village) • Mwajabu Zuberi Omari (Hambalawei village) • Saidi Mwanyoka (Viti Village) • Nestory Buliba (Mbuzii village)	• Ensuring dairy farmers practice better animal husbandry activities and production increase	RI	M	H. They will have influence on supporting dairy production activities	Provide advice and technical support on animal husbandry practices.	• They will be involved in the implementation of the IP activities.
6	Local government officials • District livestock officer • District livestock officer • District agriculture officer	• Mr. Elieza Moses(DALDO Lushoto District) • Elizabeth Msoka(Livestock and fisheries officer) • Mdoe Mbazi (District Agriculture officer)	Ensuring dairy farmers practice better animal husbandry activities and production increase	RI	M	H. They will have influence in support dairy activities and dairy farmer's group's organizations.	Provide advice and technical support on animal husbandry practices.	• They will be involved in the implementation of the IP activities
	• District community development officer • District cooperative officer	• Joyce Israel (Acting district community development officer) • Tito Kayugumya (district cooperative officer)	Ensuring functioning of farmers organizations(cooperative, association and farmers groups)	RI	M	H. They will have influence in facilitate registration dairy farmers groups	Provide contribution in strengthen farmers organizations	• They will be involved in the IP establishment and implementation of the activities.
7	Policy makers • Representative from district councilors • Village leaders	• Village leader for each village will be selected • One representative from district council	• Dairy farmers livelihood improved	RI	L	H. They will have influence on all aspect of policy.	• Mobilize farmers • Support formulation of policies	• They will be consulted and involved in the IP
8.	Traders • Milk traders • Collection points agent.	• Manka Kimaro: (Trader Mbuzii village) • Yusuph Kingazi: (Trader Ubiri village) • Omaro Hemed (Trader Mwangoi village)	• Access to available milk • Profit earned from the sale of milk	RI	H	H. They will have influence purchase milk to the dairy farmers	• Purchase milk from farmers and transport to sell to the milk collection centers. • Purchase milk from the farmers and milk traders.	• They will be informed and involved in the IP establishment and implementation of activities.
9	Transporter and processor	• Agent from Tanga processing industry	• Access to available milk • Earning profit from investing in milk transport.	RI	H	H. They will have influence purchase milk to the dairy farmers	• Purchase milk from milk collection centers and transport to Tanga fresh for processing	• Will be involved and consulted and involved in the IP activities
10	Research institutions	• Nelson Mandela African Institution of Science and Technology • Sokoine university of Agriculture • Tanzania Livestock Research Institute - Tanga	• Ensuring capacity building to the actors • Ensuring farmers practice better animal husbandry activities. • Farmers production increase • Ensuring facilitation of the IP • Ensuring farmers increase their production and income • Ensuring research is conducted. • ensure farmers	RI	H	H. They will have influence in facilitation interaction among the actors, capacity building and conducting research	• Training of farmer in good animal husbandry practices • Conduct research • Analysis of farmer's problems and give recommendations	• Will be involved in the facilitation of the IP establishment and ensuring implementation of the activities.

	Stakeholder category	Relevant stakeholder	Interest of stakeholder	Inter action	Impact	Influence	Stakeholder contribution	Strategy for engaging the stakeholder
			problems are analyzed and recommendations are provided to the farmers					
11	Non-governmental organizations (NGo's)	• ILRI • CIAT	• Ensuring functioning of farmers organizations • Ensuring farmers practice better animal husbandry practice • Ensuring capacity building to the actors. • Ensuring dairy farmers livelihood improved.	RI	M	H. They will have influence in supporting animal husbandry practices and farmers organization	Provide extension support in animal husbandry practices and strengthening farmer's organization.	• They will be consulted and involved in the implementation of the IP activities.

SOURCE: Survey data, 2016

NB**: *RI*** = *regular interaction,* ***II*** = *irregular interaction,* ***H*** = *high,* ***M*** = *medium and* ***L*** = *low*

Conclusion and recommendations

This study employed the SWOT analysis method to understand sustainability of the IP by analyzing the strengths, weaknesses, opportunities and threats. The findings from the SWOT analysis can be used to assess the major aspects of sustainability of the dairy IP. The current study assessed those sustainability aspects using a number of verifiable indicators such as: sense of ownership and commitment among various actors (sustained to motivation); current and future status of funding in terms of membership fees and other sources of income as well as quantity and quality of human resources (sustained resources); number and types of training programs, availability and quality of the constitution , agreed rules, regular meetings, accountability, transparency, participation, good communication, coordination, good leadership, and organization structure (sustained actors relationship and capacity of both individual, and the platform. All those aspects if well observed will be useful during planning ways of sustaining IP particularly that of Lushoto District (the Lushoto District Dairy Innovation Platform) which was currently established.

In addition to that, the findings from the stakeholder characterization depicted the crucial role of various stakeholders towards sustaining the IP. This is due to the fact that since all actors from the value chain were identified and characterized based on their interest, influence and role, it will now be possible to identify and set numerous engagement strategies and techniques which will enable all actors to be engaged in the IP effectively and efficiently. This will in turn promote interaction and communication among diverse actors in the value chain which will help to identify and analyze their problems and find the ways to tackle them.

The study therefore, recommends the following actions; capacity building for the IP members to fill the existing technical gaps, regular meetings and attendance of the IP members and key actors is very crucial in order for the actors to discuss the progress of the platform as well as success, challenges and way forward, long term funding should be invested in order for the platform to be able to sustain its activities. Also members should be encouraged to honor their annual fee contribution commitments for sustaining the IP activities. On top of that missing actors from the IPs should be included and invited to work with other actors to address the challenges facing farmers. Through these actions the sustainability and productivity of dairy innovation platforms in Lushoto, Tanzania and elsewhere will be guaranteed and in extension, contributing positively to both individual and national economic growths.

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