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Original Research Article

Exploring bottlenecks towards accelerating grassroots innovation in Namibia

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ABSTRACT

Grassroots innovation (GI) provides significant opportunities to develop creative solutions to address challenges of developing economies, like Namibia, where the majority of the people live under difficult economic conditions. Despite substantial research on grassroots innovation, there is still little understanding of the inputs required for its acceleration. This article explores; the existing legislation governing Science, Technology and Innovation (STI) in Namibia, concepts of grassroots innovation and techno-entrepreneurship as a premise for mitigating any bottlenecks towards accelerating GI in Namibia. The Honey Bee Network (HBN) approach was employed in ten (10) regions of Namibia, to scout for and document locally designed solutions and traditional knowledge. The HBN framework was specifically used to explore existing bottlenecks to grassroots ideas with the potential to be refined to impact communities in terms of providing solutions to consumer needs through enhanced productivity, sustainability and poverty reduction. The findings of the study revealed that while there were some good grassroots innovation ideas, there is a lack of policy support for these ideas to reach their commercial or non-commercial potential. It was concluded that there was a need for the services provided by technological business incubators in developing the marketing capabilities of grassroots innovators in Namibia. In light of the findings it is recommended that Namibia develops a National Innovation Strategy, with specific focus on acceleration of grassroots innovation, through establishment of regional makerspaces and provision of Technology Business Incubation (TBI), particularly in rural areas.

1. Introduction

Unemployment in Namibia remained relatively high at 33.4% by 2018. The youth (15-34 years) were the most affected, constituting 46% of the total unemployed population, of which 49% represented female youth (National Planning Commission, 2020). The impact of the current global economic crisis, coupled with the COVID-19 pandemic, demands new focus on issues of inequality and social inclusion. Innovation at grassroots level has been shown to respond to local problems, when there is active involvement of Non-Governmental Organisations (NGOs), formal sector, individuals in the informal sector and local people, collaborating with industry (Seyfang and Smith, 2007).

It is in this backdrop that this paper explored bottlenecks faced by Grassroots Innovators (GIs) in Namibia. The data for this analysis was obtained from a grassroots innovation (GI) mapping exercise, conducted by the Ministry of Higher Education, Technology and Innovation in ten (10) regions during the year 2018, using the Honey Bee Network (HBN) approach.

The paper is structured as follows; the section that follows provides the literature review on grassroots innovation as well as insights on the relevance of GIs for developing economies and Namibia in particular. The section also presents an overview of the legislation governing Science, Technology and Innovation (STI) in Namibia, pointing out identified policy gaps in relation to support to grassroots innovations. Then, the Honey Bee Network framework that was used in mapping the innovation bottlenecks, is explained at the end of the second section. Section 3 discusses the methodology of the study. Finally, section 4 presents the findings of the study while section 5 presents the conclusions and recommendations.

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2. Literature Review

Grassroots innovation is defined by many scholars as a network of activists of innovative product or process created at the bottom of the pyramid, usually due to necessity, hardship and challenges (Seyfang, 2006; Hosssian, 2016:15 Reinsberger *et al*., 2015). GI is portrayed through varied dimensions such as: grassroots creativity, the grassroots movement or community-led innovations, traditional-knowledge based innovations, rural innovation, empathetic innovation, and informal innovation (Joshi, Challah and Ramanathan, 2015).

Joshi *et al*. (2015) also maintain that GI is primarily undertaken to solve local problems, empower local people and improve livelihoods and, these objectives differentiate GI from the other closely-associated innovations. According to Daniels (2015), STI policies in most African economies, do not yet target innovation at grassroots level. This view is supported by Lundvall (1992; Gupta, 2019), who argues that national innovation policies typically focus on supply-side interventions in the mainstream market. As a result, innovations at grassroots level arise as a reaction to local challenges, such as agricultural needs, food supply, social injustices and environmental needs, hence often remain unrecognised and unsupported by existing innovation policies.

The Honey Bee Network framework was adopted as the research approach of the study. The Honey Bee Network evolved in the late 80's, not only to correct the asymmetry of power and influence in the formal and informal sectors but also to create a more reciprocal, responsible and respectful relationship between them (Gupta *et al*., 2016). It continues as a voluntary organisation working in the field of educational, technological, cultural and institutional innovations and promotes viable and sustainable traditional knowledge systems.

There are four main principles of the Honey Bee Network philosophy: (a) whatever is learnt from the people must be shared with them in a local language, with or without value addition, in order to enrich the collective understanding of the ways in which different individuals and groups have solved specific problems, (b) the cross-pollination of ideas across languages and other cultural barriers fertilizes the imagination of communities and encourages further experimentation, (c) both scouts and innovators should be acknowledged by name for their contributions, and (d) any benefit arising from the commercial or non-commercial dissemination of innovations should be shared with those who contributed knowledge or innovations in a fair and just manner, with or without value addition.

For the purpose of this study, the HBN was constituted by 4 staff members of the Directorate of Research and Innovation in the Ministry of Higher Education, Technology and Innovation, 1 staff member from the Namibia National Commission for UNESCO (United Nations Educational, Scientific and Cultural Organization), a development planner from the regional council of each region that was visited, technical and vocational education centres, research institutions, rural development centres, the governor of each region visited, identified community leaders, NGOs and industry representatives where applicable.

The findings of this study will hopefully inform policy makers about typical bottlenecks currently retraining grassroots innovation in Namibia. Hence contribute towards the development of a more inclusive policy landscape that facilitates stronger interactions between mainstream and grassroots innovation ecosystems and thus establish a supportive environment for incubation and commercialisation of grassroots innovation ideas.

3. Methodology

The study used a qualitative research design based on in-depth, semi-structured interviews as the means to explore the dilemmas experienced by the grassroots innovators that were visited in 10 regions of Namibia. An exploratory, partially-inductive research design was adopted given the lack of theoretical research examining this phenomenon. This research design is appropriate when it is not clear a priori what specific grassroots innovation bottlenecks exist (Hossain, 2016).

Purposive sampling was used in selecting 10 regions out of the fourteen (14) regions of Namibia. On the other hand, convenience sampling was used in selecting the grassroots innovation value chains and projects that were assessed using the Honey bee network (HBN) approach. The regions were selected on assumption that grassroots innovation activities were prominent because of high rural community population residing in the chosen regions, whereas the actual projects were visited on the basis of availability of the members at the time of the HBN's visit.

Various grassroots entrepreneurs and innovators were asked to complete a needs assessment questionnaire. The HBN paid courtesy visits to the governors' offices in each respective region through which the regional leaders were briefed about the purpose of the grassroots innovation mapping, and reciprocally for the HBN to obtain an overview of the key innovative activities and projects in each region.

4. Findings and Results

4.1 Existing Grassroots Innovations

The study identified several existing innovations in Namibia. Potentially successful grassroots

technological innovations per region were identified, with a view of supporting them through the regional research institutions, vocational training centres, rural development centres or makerspaces. The following section discusses some of the grassroots innovation value chains and or projects that were mapped by the HBN, in the different regions.

4.1.1 Worm Silk Manufacturing Project

The project is run by five (5) women, using homemade technology. The project is hampered by lack of appropriate technology with the current spinning and weaving machines needing upgrading or replacement, as seen on Figure 1. The women have identified lucrative European markets, including exports and sales to Austrian markets.

Figure 1: The worm silk processing innovators using old technology.

4.1.2 Traditional Fence Manufacturing Project

The wire fence manufacturing project form the Hardap Region manufactures and sells wire fence to farmers and communities of the town of Mariental. The challenges faced by the project, is that it is using old technologies (see Figure 2), that results in uncompetitive pricing, hence reduced market demand, making its operations unsustainable.

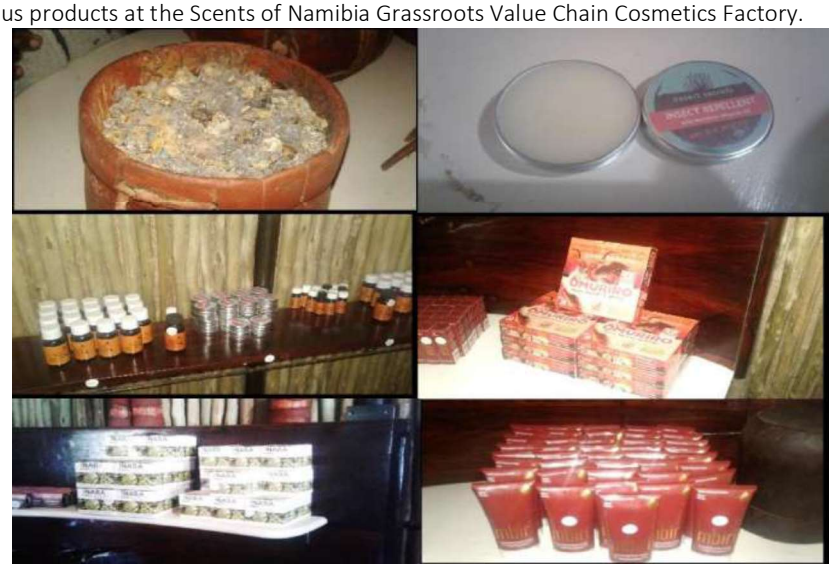
Figure 2: The traditional wire fence manufacturing technology.

4.1.3 Scents of Namibia Project

The Scents of Namibia project, is an oil processing facility situated in the outskirts of Opuwo town. The raw materials are sourced from members of the community who sell them to the facility. These raw materials are Commiphora resin and Mopane seeds.

The Commiphora resin has for years been used by Himba women (Himba is a nomadic tribe in Kunene region) to make their traditional perfume. The oil produced from the resin (Figure 3) is used to produce various cosmetic products. Similarly, the essential oil is extracted from the mopane seeds and used to make various cosmetic products. Other projects with a potential of generating income for the local communities is the traditional Himba powder, known for skin protection against the sun. The powder (see top right of figure 3) is not only used by Himbas but used by other indigenous Namibian tribes for instance Hereros and Wambos.

Figure 3: Various products at the Scents of Namibia Grassroots Value Chain Cosmetics Factory.



4.1.4 Lubata Community Bee Keeping Project

The project is run by community members living in the Lubata Community Forest of the Zambezi region, and produces organic honey, as seen in Figure 4. This project is supported by Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ), while the Ministry of Agriculture, Water and Forestry works closely with the beekeepers and assists the community members with the harvesting and selling of the honey. All the profits go to the communities. The team learnt that there is high demand for the locally produced honey and there is thus potential to expand the project to produce more honey. However, there is no value addition to the honey and parallel post-harvest bi-products, like wax, and the beekeepers have not explored the market for such by-products.

Figure 4: Honey extraction process using outdated technology.

4.2 Grassroots Innovation Challenges

At national level, Namibia has recognised the value of grassroots innovation in generating bottom–up solutions that respond to the needs of local communities and that have an immense potential for wealth creation. The study identified the absence of not having specific policy measures to guide government on how to promote grassroots innovation, to be a challenge at macro level. The other challenges the study found at micro level were lack of technology in business incubations for value addition and marketing strategies. Small scale farmers and entrepreneurs interviewed, indicated that they lack skills such as bookkeeping and proposal writing for bankable proposals as well as access to SME micro-financing schemes.

It is a well-known fact that at grassroots level, local communities suffer from inefficiency and low production capacity owing to lack of automation and shortage in the availability of skilled human resources (Singh, Maiyar and Bhowmick, 2020). Ultimately, grassroots innovation offers alternative technologies that meet the basic need of the grassroots communities at affordable prices. These innovations may not be of the highest quality but are cost efficient, affordable and frugal in terms of resource requirements, and have the potential to improve local productivity thereby contributing to regional development and social capital at the bottom of the pyramid (Joshi *et al*., 2015).

4.3 Possible Areas of Innovation

There is an indication that there is more and more interest in using grassroots innovation in combating poverty, providing employment, and increasing income. Empowering rural youth through Information Communication Technology (ICT) skills can enhance new innovations through development of locally relevant mobile applications. The challenges of outdated technologies could be addressed by establishing stronger networks between innovators and vocational training centres, rural development centres, makerspaces, universities and other research institutions. There is capacity for these institutions to collaborate in the design and fabrication of frugal technologies to accelerate production and value addition processes.

5. Conclusions and Recommendations

5.1 Conclusions

While there are a number of potential marketable grassroots innovations, these innovations are not documented. The absence of proper documentation hinders innovators from getting needed support. Remarkably, most regional councils do not have support programmes for small businesses and young entrepreneurs, and this could be one of the reasons they fail to grow.

The Ministry of Higher Education, Technology and Innovation has already facilitated the establishment of three (3) pilot makerspaces in Khomas two (2) and Oshikoto one (1) regions. The Ministry has also commenced with stakeholders' consultations for inputs towards the development of an inclusive National Innovation Strategy.

5.2 Recommendations

There is need for Namibia to develop a National Innovation Strategy to address the observed bottlenecks. To mediate the challenges of lack of or outdated technologies in grassroots value chain processes, the establishment of grassroots makerspaces, equipped with digital fabrication tools is recommended. Such tools could be deployed in regional makerspaces, ideally to be hosted at vocational training or rural development centres as may be appropriate. The makerspaces provide a suite of digital design and manufacturing technologies, including 3D-printers, web-based design tools, electronics kits, computerised welding equipment, laser and plasma cutters.

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