



PERCEPTIONS OF INNOVATION SYSTEM STAKEHOLDERS TOWARDS GRASSROOTS INNOVATORS IN TANZANIA

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ABSTRACT

This study explores the perceptions of various stakeholders toward grassroots innovators in Tanzania and how these views shape the innovation ecosystem. Stakeholders, including government agencies, private sector actors, non-governmental organizations (NGOs) and international donors, influence the grassroots innovation journey through their support, policies, and funding mechanisms. Using a qualitative approach, data were collected from 35 grassroots innovators through semi-structured questionnaire, key informant interviews, and observations. Innovators were selected from the COSTECH database, Mashindano ya Kitaifa ya Sayansi, Teknolojia na Ubunifu (MAKISATU) records, and participants in the Dar es Salaam International Trade Fair Exhibition (SABASABA). The findings indicate that while institutions such as the Ministry of Education, Science and Technology (MOEST) and COSTECH are seen as crucial for policy support, bureaucratic delays and budget constraints limit their effectiveness. Meanwhile, organizations such as the Vocational Education and Training Authority (VETA), Small Industries Development Organization (SIDO), National Institute of Transport (NIT), and Dar es Salaam Institute of Technology (DIT) are perceived as more accessible and hands-on in supporting grassroots innovators. However, challenges persist in aligning private sector and international donor support with grassroots needs due to issues of trust and mismatched priorities. The study underscores the importance of addressing these perceptions to enhance stakeholder engagement, improve resource distribution and foster a more inclusive innovation ecosystem

Keywords: Grassroots Innovation, Stakeholders Perceptions, Innovation Support, Innovation Ecosystem, Tanzania.

INTRODUCTION

Grassroots innovation is an essential driver of socio-economic development in Tanzania, addressing local challenges through community-driven solutions (Mdemu, 2023). These innovations often emerge in response to gaps left by formal institutions, particularly in agriculture, health and education, where mainstream approaches may not fully meet community needs (Sommerville *et al.*, 2022). However, the perceptions of innovation system stakeholders play a critical role in shaping the route of grassroots innovations, influencing resource allocation, policy support and commercialization opportunities.

The innovation ecosystem in Tanzania consists of multiple stakeholders, including government agencies, private sector entities, NGOs, and international donors. Each stakeholder's perception of grassroots innovators impacts their willingness to engage, support, and collaborate. Institutions such as MOEST and COSTECH are perceived as key players in providing policy support and funding; however, bureaucratic delays and resource limitations affect their efficiency (Miller and Verhoeven, 2022). Meanwhile, the private sector and international donors offer financial and technical support, yet their engagement is often constrained by concerns over trust and alignment with grassroots needs (Owen and Tidd, 2023).

Although previous research has examined stakeholder perceptions in broader innovation systems, studies focusing on grassroots innovation remain scarce. Most analyses center on industrial and high-tech innovations, overlooking the unique challenges faced by grassroots innovators in Tanzania (Bessant and Tidd, 2022; Martin and Salgado, 2022). This study seeks to address this gap by analyzing the perceptions of key stakeholders toward grassroots innovators. Understanding these perceptions is vital for strengthening partnerships, improving policy interventions and creating a more inclusive innovation ecosystem that empowers grassroots innovators to thrive.

METHODOLOGY

The study used a qualitative research approach to explore the perceptions of various stakeholders involved in the grassroots innovation journey in Tanzania. A cross-sectional design was applied, enabling the collection of stakeholder perspectives at a single point in time. This design was well-suited to capture in-depth, context-specific insights into stakeholders' views on grassroots innovation and the roles they play in supporting or hindering these innovations. Data collection took place from July 2023 to April 2024.

A total of 35 grassroots innovators were purposively selected for the study from several sources. These sources included 16 innovators from the COSTECH Innovators Database, 11 innovators from the MAKISATU databases for the years 2020, 2021, and 2022, and 8 participants from the 45th and 46th Dar es Salaam International Trade Fair Exhibitions (SABASABA) held in 2021 and 2022. The innovators were drawn from various sectors, such as agriculture, ICT, environment, energy, engineering, education, health, security, transport, industrial, and water. The selection criteria ensured diversity by including innovators at various stages of their innovation journeys as documented in the databases.

Table 1: Summary of Sample Size Composition by Sectors, Stages and Exhibitions

Sector	Innovation Journey Stages and non Attendees of 2023 NANENANE and SABASABA Exhibition					NANENANE 2023 Exhibition Attendees			SABASABA 2023 Exhibition Attendees
	Ideation	Exploring	Committin g	Realizing	Optimizing	NANENANE	NANENANE	NANENANE	
						Arusha Exhibition Attendees	Morogoro Exhibition Attendees	Mbeya Exhibition Attendees	
Agriculture					1	3	2	6	
ICT	2	1			2				4
Environment	1								
Education			1		1				2
Health	1		1						
Industrial									
Security			1						
Transport									
Water									2
Energy			1						
Engineering	1	1	1						
TOTAL	5	2	5		4	3	2	6	8
TOTAL SAMPLE SIZE						35			

Source: COSTECH. (2023). *Database of grassroots innovators in Tanzania*. Tanzania Commission for Science and Technology.

The study used semi-structured questionnaires to engage innovators during national exhibitions such as the 2023 NANENANE and SABASABA events. These events served as effective platforms for collecting qualitative data in natural settings. The exhibitions allowed for detailed, context-driven insights from innovators, who were able to express their perceptions of the role of stakeholders in the grassroots innovation ecosystem. For innovators unable to attend these exhibitions, in-depth phone interviews were conducted using semi-structured questionnaire, providing flexibility and ensuring that the study remained inclusive. The interviews were instrumental in exploring participants' experiences and perceptions, particularly for those innovators who had not yet reached the "realizing" stage of their innovation journey. Key

informant interviews were also conducted with stakeholders, including government agencies, private sector representatives and NGOs. These interviews focused on organizations involved in policy formulation, funding and providing technical support to grassroots innovators. Unstructured interview guides were employed to gather insights on how these stakeholders perceive grassroots innovations and the roles they play in supporting them.

Ethical Considerations

The study adhered to ethical research principles to ensure participant safety, privacy, and informed consent. The following ethical measures were implemented:

Informed Consent: Participants were fully informed about the study's purpose, procedures, and potential risks before participation. Written consent was obtained prior to data collection in the questionnaire and checklist of key informant introduction.

Consent Documentation: For phone interview participants, verbal consent was obtained and documented accordingly.

Confidentiality: Participants' identities and responses were anonymized to maintain confidentiality and protect sensitive information.

Ethical Approval: The study received approval from the **Sokoine University of Agriculture (SUA) Research Ethics Committee (SUA/ADM/R.1/8/1033)** ensuring compliance with research ethics standards, including voluntary participation and the right to withdraw without consequences.

The data from interviews, open-ended questions, and observations were analyzed using a SWOT framework. This framework helped categorize stakeholders' perceptions and provided an understanding of the strengths, weaknesses, opportunities, and threats within the grassroots innovation ecosystem. The qualitative analysis of the data revealed common themes, insights, and patterns in how stakeholders interact with and perceive grassroots innovators, highlighting both the support they provide and the challenges innovators face in their journeys.

RESULTS

Perceptions Results for Various Innovation Stakeholders towards Grassroots Innovators

The research results highlight a complex web of perceptions among various stakeholders toward grassroots innovators, revealing both challenges and opportunities within the innovation ecosystem as indicated in Table 2.

Grassroots Innovators (GI) themselves are sometimes perceived as having commitment issues, where their focus appears to be more on securing financial support than on genuine innovation. The Ministry of Education, Science and Technology (MOEST) is perceived as struggling with inconsistent policy coordination, particularly during leadership transitions.

The Tanzania Commission for Science and Technology (COSTECH) faces criticism for its bureaucratic approach to fund disbursement, which is seen as a significant obstacle for innovators trying to access crucial financial resources. The Tanzania Private Sector Foundation (TPSF) is perceived as lacking proactive support for grassroots innovators, often requiring regular follow-up from COSTECH. Meanwhile, the Business Registration and Licensing Agency (BRELA) is seen as having excessively complex patent procedures, which can discourage innovators from protecting their intellectual property. The Copyright Society of Tanzania (COSOTA) faces a different challenge, with many innovators confusing it with other organizations like BRELA.

In contrast, institutions like the Vocational Education and Training Authority (VETA), Small Industries Development Organization (SIDO), Dar es Salaam Institute of Technology (DIT) and the National Institute of Transport (NIT) are generally perceived as supportive of grassroots innovators. These institutions are recognized for their role in hosting and incubating innovators, providing valuable resources and support that contribute to the advancement of their innovations.

The business and financial services sector is perceived as imposing strict conditions and barriers for supporting grassroots innovators. Similarly, lawyers and researchers are seen as having limited engagement with grassroots innovators, often prioritizing other tasks over providing legal and technical support. The public and customers are perceived as undervaluing homemade innovations, which can hinder market acceptance and commercialization of grassroots innovations. Partners, on the other hand, are seen as hesitant to trust grassroots innovators until they receive validation from COSTECH.

Suppliers are recognized for their potential positive influence on the grassroots innovation journey if they are effectively involved. This suggests that more active engagement with suppliers could enhance the support system for innovators and improve overall outcomes. Finally, Local Government Authorities (LGAs) are perceived as valuable in identifying grassroots innovators at the local level. Their involvement in this identification process is crucial in ensuring that innovators, especially those in remote areas, are recognized and supported.

Table 2: Perceptions of Various Innovation Stakeholders towards Grassroots Innovators

SWOT Category	Key Findings
Strengths	- Supportive Role: Institutions like VETA, SIDO, DIT, and NIT are perceived as helpful in hosting and incubating grassroots innovators.
	- Identification of Innovators: LGAs play a valuable role in identifying grassroots innovators, ensuring that local talents are recognized and supported.
Weaknesses	- Commitment Issues: Some grassroots innovators are seen as more focused on financial support than genuine innovation, which may misalign with broader innovation goals.
	- Bureaucratic Challenges: COSTECH is perceived as having bureaucratic processes that delay or obstruct access to financial resources.
	- Inconsistent Policy Coordination: MOEST’s lack of consistent coordination, especially with leadership changes, can disrupt policy stability and continuity.
	- Complex Patent Procedures: BRELA’s complicated patent procedures discourage grassroots innovators from protecting their intellectual property.
	- Misunderstanding of Services: Confusion about COSOTA’s role leads to underutilization of its copyright protection services.
	- Restrictions and Difficult Conditions: Financial services impose strict conditions, making it challenging for grassroots innovators to access financial support.
	- Limited Engagement: Lawyers and researchers are perceived as prioritizing other tasks, resulting in insufficient legal and technical support.
Opportunities	- Improved Communication: Enhancing awareness and understanding of different stakeholders' roles (e.g., COSOTA and BRELA) can improve the use of available services towards grassroots innovation.
	- Simplification of Procedures: Streamlining bureaucratic processes and patent procedures could make it easier for innovators to access necessary support and protect their innovations.
	- Proactive Support: Organizations like TPSF can adopt a more proactive approach to supporting innovators, leading to better engagement and outcomes.
	- Supplier Involvement: Actively engaging suppliers could enhance the grassroots innovation journey by providing essential resources and support.

	- Awareness Campaigns: Increasing public awareness and appreciation for locally-made innovations can improve market acceptance and commercialization.
Threats	- Aggressiveness: The frustration and aggressive behavior of some innovators when facing setbacks may strain relationships with stakeholders and hinder future support.
	- Trust Issues: The reliance on COSTECH validation by partners before engaging with innovators can create trust barriers, potentially slowing down collaboration.
	- Undervaluation of Innovations: The public and customers' undervaluation of homemade innovations poses a threat to market acceptance and the success of grassroots innovations.
	- Policy Instability: Inconsistent policy coordination at MOEST, especially with changes in leadership, can disrupt the overall support system for grassroots innovation.

Source: Field data 2023.

DISCUSSION

Perceptions Discussions for Different Innovation System Stakeholder's Grassroots Innovators

The perceptions of grassroots innovators within the innovation system highlight the complex interplay between their motivations, challenges and the broader support structure. A noticeable perception among innovators is their tendency to prioritize securing financial support over the innovation process itself. This is in line with findings by Tiwari and Bhatia (2022), who argue that financial constraints often drive innovators to focus on obtaining funds rather than nurturing the innovation process. This shift can undermine the core objectives of grassroots innovation, as the drive for financial security may overshadow genuine innovation efforts.

Furthermore, the dependence on external funding can result in frustration when support is not forthcoming. Meyer and Gauthier (2021) discuss how financial dependency can lead to heightened stress and aggression among grassroots innovators, particularly when expectations for funding are not met. As the majority of innovators noted, the absence of financial support can strain relationships with stakeholders, potentially upsetting the progress of innovation projects. These findings validate the notion that financial pressures play a pivotal role in shaping the behavior and interactions of grassroots innovators.

Ministry of Education, Science and Technology (MOEST)

MOEST plays a pivotal role in shaping Tanzania's innovation ecosystem. However, its support for grassroots innovation is often perceived as hindered by inconsistent policy coordination, particularly within the Science, Technology, and Innovation (STI) initiatives. This inconsistency is largely attributed to frequent leadership changes within the Ministry, which result in shifts in policy priorities and disrupt the continuity of policy implementation. As the key informant shared:

"...Every time there's a change in leadership, we face disruptions and priorities shift. It becomes harder to plan long-term innovation projects when you cannot predict the direction of government policy..." (Key informant, MoEST, 19th July 2023). This concern suggests that the MOEST may not provide a stable, coherent policy framework necessary to foster grassroots innovation. Innovators, who rely on consistent policies to secure funding and advance their projects, often find the frequent changes detrimental. The key informant highlighted:

"...Inconsistent leadership in MOEST has created a sense of uncertainty among innovators, the policy framework keeps changing and this affects how we approach grassroots innovations..." (Key informant, MoEST, 19th July 2023). The impact of policy instability on grassroots innovation is well-documented in the literature. Khan and Halder (2022) emphasize that policy inconsistency disrupts innovation ecosystems, noting that stable frameworks are critical for providing direction and building confidence among stakeholders. This aligns with the views of majority of the grassroots innovators, which show that shifts in policy often force them to start over, slowing progress and making it difficult to scale their ideas. As the government changes direction, innovators lose momentum and resources, which hampers the ability to grow and implement their ideas.

Furthermore, the lack of continuity in policy is eroding stakeholder trust, which is essential for fostering effective collaborations and ensuring long-term success. A key informant expressed:

"...We have had policy review in progress since 2018, it is difficult to build trust with grassroots innovators when they cannot be sure when the policies supporting them will be in place..." (Key informant, MoEST, 19th July 2023). This sentiment highlights the importance of trust in the innovation process and supports previous findings that suggest stable policies are crucial for long term innovation success (Khan and Halder, 2022).

Despite the challenges of inconsistent policy coordination, there is a growing need to explore potential solutions that could stabilize policy frameworks and provide sustained support for grassroots innovation. The key informant propose:

"...The Ministry needs to ensure that policy changes are communicated transparently, speedily and that there is a consistent strategy for STI initiatives..." (Key informant, MoEST, 19th July 2023). This indicates that fostering transparency and creating a long term vision for STI could help mitigate the disruptive effects of leadership changes and ensure that grassroots innovators have the support they need to succeed.

Tanzania Commission for Science and Technology (COSTECH)

COSTECH plays a crucial role in supporting innovation in Tanzania, but it is faced with significant challenges related to its bureaucratic processes, particularly in the disbursement of funds. Innovators often find the administrative procedures lengthy and complex, leading to frustration

and delays. The majority of grassroots innovators revealed that, accessing funds from COSTECH is often frustrating due to the many procedures involved as it feels like the process is designed to slow things down.

This sentiment is echoed by several respondents, highlighting the negative impact of funding delays on the momentum of innovation projects. The key informants, underscored the effect of such delays:

"...The long wait for funds often demotivates innovators. The government bureaucratic process is a major barrier to accessing timely support..." (Key informant, COSTECH, 12th July 2023). Cheng and Li (2023) emphasize the broader negative consequences of bureaucratic inefficiencies on innovation ecosystems, noting that delays in resource allocation can slow the overall pace of innovation. This is supported by the majority of grassroots innovators as they perceive COSTECH's bureaucratic inefficiencies as a key barrier. The complexity of the process makes innovators reluctant to seek support from COSTECH. It is not just about the delays, it is also about the confusion that comes especially during the process of innovators funds disbursement.

Moreover, the bureaucratic challenges faced by COSTECH are discouraging potential innovators from applying for support. The majority of grassroots innovators perceived the complicated paperwork and the waiting times make it difficult for grassroots innovators to apply for funding. This perception implies that, while COSTECH aims to support innovation, its bureaucratic procedures may unconsciously limit its effectiveness and accessibility, especially for emerging grassroots innovators who may lack the capacity to navigate the system.

Tanzania Private Sector Foundation (TPSF)

TPSF has faced criticism from key informant and grassroots innovators regarding its perceived lack of proactive support for grassroots innovators. Innovators frequently express frustration with TPSF's approach, often feeling that they must take the initiative to seek assistance. The majority of grassroots innovators revealed that, without reminder from COSTECH about grassroots support, normally TPSF are silent. TPSF involvement in grassroots innovation initiatives perceived to be reactive rather than proactive. The reactive approach of TPSF raises concerns about its ability to effectively foster innovation. A key informant noted:

"...If TPSF took a more active role, it would build stronger trust with innovators. It's about being there before challenges raised through COSTECH..." (Key informant, TPSF, 17th July 2023). This perspective highlights a critical gap in TPSF's current strategy, its failure to anticipate and address challenges proactively. Wang and Zhang (2021) emphasize the critical role of private sector foundations in providing early and consistent support to grassroots innovation. Their research suggests that proactive engagement is crucial in enhancing the success of innovation efforts. A key informant further explained:

"...The foundations that are most successful in supporting innovators are those that stay engaged and actively seek out opportunities to assist..." (Key informant, TPSF, 17th July 2023) This view aligns with the feedback received from the majority of innovators in this study, who stressed the importance of early guidance to avoid preventable challenges. The key informant observed:

"...When foundations engage with innovators from the start and offer consistent support, it creates a more collaborative environment..." (Key informant, TPSF, 17th July 2023). These insights suggest that TPSF has significant potential to improve its support for grassroots innovators by adopting a more proactive approach. The majority of grassroots innovators who have received limited support from TPSF emphasize the value of early and consistent guidance. This feedback underscores the importance of TPSF revisiting its strategy and adopting a more hands-on, active role in fostering innovation.

Business Registration and Licensing Agency (BRELA)

BRELA in Tanzania is often perceived as a barrier to innovation, particularly for grassroots innovators, due to its complex and bureaucratic patent procedures. Key informants consistently highlighted the difficulty of navigating these procedures, which are seen as a significant challenge for innovators. The key informant explained:

"...The complexity of BRELA's procedures discourages many grassroots innovators from even considering patenting their ideas..." (Key informant, BRELA, 11th August 2023). This sentiment was echoed by the majority of grassroots innovators, who emphasized that the bureaucratic nature of the process contributes to innovators' reluctance to engage with BRELA. The innovators are perceived to be discouraged about patents as the process of BRELA is too complicated and also innovators lack funds and knowledge to manage it. Johnson and O'Neill (2022) highlight how complicated patent procedures can hinder innovation, particularly for grassroots innovators. Their research emphasizes that when patenting processes are overly complex, innovators are often deterred from seeking intellectual property protection. This, in turn, limits their ability to secure funding, collaborate with others, and commercialize their innovations. These findings are reflected in the experiences shared by key informants in this study, who expressed frustration with the time-consuming and opaque nature of BRELA's patenting process. The key informant noted:

"...For innovators in rural areas, even simple registration processes feel like insurmountable hurdles..." (Key informant, BRELA, 11th August 2023).

The frustration with BRELA's procedures is particularly acute for grassroots innovators, many of whom face resource constraints and a lack of access to legal expertise. The burden of navigating such complex systems often outweighs the perceived benefits of patenting, as the majority of grassroots innovators perceived to lack resources to keep up all the requirements.

These challenges discourage innovators from protecting their intellectual property, ultimately limiting their capacity to commercialize their ideas or collaborate with larger organizations.

The Copyright Society of Tanzania (COSOTA)

The Copyright Society of Tanzania (COSOTA) is often misunderstood, particularly in its role in supporting grassroots innovators. Many innovators confuse COSOTA with other organizations or mistakenly associate it solely with protecting the work of artists, rather than recognizing its broader mandate in safeguarding intellectual property across various sectors. One informant observed:

"...A lot of grassroots innovators perceive COSOTA as just for artists only. They do not realize they can protect their innovation ideas..." (Key informant, COSOTA, 7th August 2023). This perception is common among grassroots innovators, especially those outside the arts sector. The key informant pointed out: *"...Innovators in rural areas often do not know COSOTA exists or understand its potential role in protecting their innovations..." (Key informant, COSOTA, 7th August 2023).*

This lack of awareness regarding COSOTA's broader role is a significant issue, as it may prevent innovators from seeking the necessary copyright protection for their ideas. Smith and Adams (2021) highlight that poor awareness of copyright protection agencies can result in innovators failing to protect their work, leaving their ideas vulnerable to theft or misuse. The key informant further elaborated on the issue, stating:

"...COSOTA has the capacity to protect a wide range of intellectual property, but few people know about it..." (Key informant, COSOTA, 7th August 2023). This lack of awareness significantly limits COSOTA's effectiveness in supporting the innovation ecosystem. As a result, many innovators miss out on the opportunity to protect their intellectual property, which could otherwise secure their ideas against unauthorized use or commercialization.

Vocational Education and Training Authority (VETA), Small Industries Development Organization (SIDO), Dar es Salaam Institute of Technology (DIT) and National Institute of Transport (NIT)

VETA, SIDO, DIT and the NIT are generally perceived as supportive institutions for grassroots innovators in Tanzania. These organizations provide essential resources, including infrastructure, specialized equipment and access to training, which are critical for the success of grassroots innovations. As a VETA informant shared;

“...We provide innovators with the tools and spaces they need, but often their biggest challenge is the lack of timely funding ...” (Key informant, VETA, 20th July 2023).

This view aligns with Ali and Memon’s (2022) assertion that incubation and hosting institutions are vital in nurturing innovation by offering physical and technical resources. Despite these resources, innovators face significant challenges, primarily related to timely funding. Several informants echoed similar concerns about delays in receiving financial support. A key informant from SIDO noted;

“...The funds take too long to arrive, and by then, the project is already delayed...” (Key informant, SIDO, 4th August 2023).

This delay, highlighted by the informant, is a clear reflection of bureaucratic inefficiencies in the funding process that hinder the timely execution of innovation projects. This finding resonates with Johnson and O’Neill’s (2022) research, which identifies funding delays as a major obstacle to innovation, particularly when innovators must meet time-sensitive deadlines.

Another recurring issue is the inconsistent technical support provided by these institutions. While these organizations are expected to offer technical guidance, this support is often sporadic and insufficient. A DIT informant explained;

“...The technical guidance we offer is not always available when needed...” (Key informant, DIT, 17th July 2023).

Illustrating how staff availability is limited by competing priorities and workloads. This inconsistency mirrors concerns raised by Ali and Memon (2022), who emphasize that successful innovation requires consistent and dedicated support. When staff members are preoccupied with their own duties, rather than focusing on assisting innovators, the impact of these support systems is significantly reduced.

Moreover, the involvement of staff in supporting grassroots innovators is often seen as an additional responsibility rather than a primary task. An NIT informant remarked;

“... Innovation support is not something we are compensated for, and it often feels like an additional burden on top of our regular tasks...” (Key informant, NIT, 17th July 2023).

This sentiment reflects a widespread perception that innovation support is treated as secondary to staff’s regular roles, undermining the overall effectiveness of innovation programs. As Ali and Memon (2022) argue, the motivation and commitment of staff are crucial for the

success of these initiatives. When innovation support is regarded as a secondary duty, the likelihood of sustained and meaningful support diminishes.

Business and Financial Services

The business and financial services sector presents significant challenges for grassroots innovators, primarily due to restrictive and complex conditions for accessing essential funding. Innovators often struggle to navigate these conditions, particularly when they lack connections, resources, or an understanding of the application processes. As a key informant from a financial institution explained;

“...The application process is so complicated that many grassroots innovators, especially those without connections or resources, are unable to navigate it successfully...” (Key informant, IMBEGU, 12th July 2023).

This observation reflects a broader issue within the sector, as financial conditions can severely limit access to funds, crucial for the advancement of innovation projects. Lee and Wang (2023) emphasize that stringent eligibility criteria, complex application procedures, and high collateral demands can be overwhelming, creating significant barriers for innovators who are already resource-constrained.

A major financial barrier noted by grassroots innovators is the high collateral required for loans, which is often beyond the reach of many innovators. As one key informant shared;

“...The collateral required for loans is often out of reach for most grassroots innovators...” (Key informant, IMBEGU, 12th July 2023).

Emphasizing the financial strain many innovators face. Lee and Wang (2023) support this by noting that these barriers create a cycle where only innovators with existing financial stability can access funding, leaving the most innovative yet financially constrained individuals unable to secure necessary support. Innovators who have prior funding or successful ventures are more likely to receive additional financial backing, while those without such resources are left at a disadvantage, limiting their ability to scale their innovations.

Another challenge discussed by innovators is the disconnect between the nature of grassroots innovation and the requirements of financial institutions. The innovators noted that, the financial institutions do not understand the nature of grassroots innovation. They want guarantees that we cannot provide, and so innovators' ideas never make it past the application process. This sentiment is echoed by Lee and Wang (2023), who argue that financial institutions often fail to appreciate the unique needs and risks associated with grassroots innovation. The traditional risk assessment models used by banks and financial institutions are often not suited to the realities of grassroots innovation, which often involves high uncertainty and long-term horizons for returns. As a result, innovators are discouraged from pursuing financial support, perpetuating a cycle of limited access to the resources needed for success.

Moreover, the absence of tailored financial products for grassroots innovators exacerbates these challenges. A key informant from financial institution remarked;

“...There are no specific loan schemes for innovation at the grassroots level except for specific project like IMBEJU as coordinated by COSTECH. The terms for regular business loans do not apply to us...” (Key informant, IMBEGU, 12th July 2023).

This lack of specialized financial products makes it difficult for innovators to scale their ideas. Standard business loans are often unsuitable for grassroots innovators, who require flexible terms that recognize the risks and long timelines associated with innovation. This misalignment between the nature of grassroots innovation and the available financial products significantly limits the ability of innovators to move beyond the ideation stage and bring their innovations to market.

Lawyers and Researchers

The engagement of legal professionals and researchers with grassroots innovators is perceived to be limited, primarily due to the prioritization of other professional responsibilities. As one researcher in the innovation field shared;

“...In my experience, legal professionals and researchers rarely dedicate their time to grassroots innovators. They are often busy with their own projects or more pressing work...” (Key informant, TEMDO, 2nd August 2023).

This statement highlights a significant gap in the support system for grassroots innovation, where the need for legal and research expertise is crucial but often unavailable. This limited involvement leaves grassroots innovators without essential guidance on intellectual property rights, regulatory compliance, and research methodologies. As a result, they are often unable to protect and develop their innovations effectively. Brown and Taylor (2022) identify similar challenges in their research, noting that without the involvement of legal and research professionals, innovators are left to navigate complex issues alone, which frequently leads to costly mistakes. As the interviewed innovators in the current study remarked that they are constantly struggling with legal matters, but they do not know where to turn for help. The lawyers are too busy to assist innovators, while innovators do not have the resources to hire them. The arguments reflect a key issue for grassroots innovators: the lack of accessible legal support and expertise.

The absence of legal support often results in missed opportunities for protection, such as failing to secure patents or intellectual property rights, leaving innovations vulnerable to exploitation. The interviewed innovators highlighted that, they had seen similar products being copied by larger companies because they did not have the legal support to file patents. This aligns with the findings of Brown and Taylor (2022), who emphasize that inadequate legal support exposes grassroots innovators to risks of exploitation, thus stifling their potential for growth and success in the market.

Similarly, the absence of research professionals further hinders grassroots innovation. Innovators expressed frustration at not having the necessary skills or resources to refine their ideas. As the interviewed innovators shared that, they might have great ideas, but they do not have the research skills or tools to refine them. This implies that, if they had researchers working with them, they could improve their products and increase their market potential. This view is supported by

Brown and Taylor (2022), who argue that without adequate research support, innovations are less likely to reach their full potential. This not only affects individual projects but also has a negative impact on the broader innovation ecosystem.

Moreover, a key informant noted;

"...If legal and research professionals took a more active role in guiding innovators, the impact on the local innovation landscape would be tremendous ..."(Key informant, BRELA, 11th August 2023).

This statement underscores the potential positive change that could result from greater involvement of legal and research professionals in supporting grassroots innovators. By offering guidance on intellectual property, legal compliance, and research, these professionals could help to strengthen the innovation ecosystem, enabling innovators to better protect, refine, and scale their ideas.

Customers and Public

A widespread perception exists that locally developed or homemade innovations are often undervalued by both the market and society. This view was strongly reflected by the majority of the interviewed grassroots innovators as they shared that, when their innovations taken to the market, they are often dismissed as inferior to products from well-known brands, even though they are designed specifically for the community's needs. This perception of undervaluation presents a significant barrier, preventing the recognition and growth of grassroots innovations. Despite their potential to meet the specific needs of local communities, these innovations often struggle to compete with mainstream, established products that benefit from extensive marketing and brand recognition.

This issue is further compounded by the local community's failure to appreciate the value of innovations that are tailored to their specific needs. One participant remarked;

"...The community often overlooks innovations made by locals, especially if they don't come from large companies. It is frustrating because these innovations are what we really need ..."(Key informant, customer, 8th August 2023).

This frustration reflects a key challenge for grassroots innovators: public perception can hinder the recognition of their work, even when it offers practical solutions to pressing local issues. Jones and Robinson (2021) highlight how such market perceptions, which often undervalue grassroots innovations, limit their acceptance and growth, especially when these innovations lack the polished appearance or marketing associated with mainstream commercial products.

Several interviewed grassroots innovators voiced concerns over the lack of awareness about their innovations as they noted that, Public do not know about grassroots innovations. They see them as small-scale or homegrown and assume they are not of high quality. Jones and Robinson (2021) argue that this undervaluation stems from the lack of public knowledge and appreciation for the creativity behind locally developed innovations. Lack of public recognition for grassroots innovation efforts hinders their ability to attract attention and investment for scaling, as they are often overlooked in favor of more established products. Jones and Robinson (2021) advocate for

increased public awareness, suggesting that fostering a greater understanding and appreciation for grassroots innovations could shift public and market perceptions. This shift in perception could, in turn, create a more supportive environment, allowing grassroots innovations to gain wider acceptance, adoption, success and with the right attention, innovators products could make a transformative impact.

Suppliers and Partners

Suppliers play a critical role in grassroots innovation, extending far beyond their traditional function of simply providing materials. In fact, they can actively contribute to the innovation process itself. This study reveals that early and effective engagement with suppliers can significantly enhance the outcomes of innovation. As the majority of interviewed grassroots innovators shared that, when suppliers are part of the journey from the start, they do not just provide materials; they bring ideas that refine and elevate what innovators are trying to create. This observation highlights how suppliers, when involved early, contribute more than just their products they bring fresh perspectives that can transform the innovation process. This sentiment aligns with the findings of Nguyen and Tran (2023), who emphasize the value of supplier involvement in fostering innovation. Their research highlights how suppliers can suggest improvements in materials, processes, and cost efficiencies, ultimately improving the overall design and functionality of innovations. The interviewed innovators emphasized that, it is amazing how much suppliers can contribute when they are part of the team early. They know the materials, the processes, and can make suggestions that save us time and money." Such early involvement allows suppliers to leverage their technical expertise, resulting in innovations that are more efficient, cost-effective, and functional. Having suppliers early on makes all the difference in refining our ideas, as they help identify potential challenges innovators did not foresee.

Despite the benefits of early supplier engagement, the study also uncovered a significant gap in proactive supplier involvement. Majority of the interviewed innovators admitted that suppliers are often brought into the process too late, limiting their ability to make substantial contributions. This observation is consistent with Nguyen and Tran's (2023) argument that delayed engagement limits the supplier's ability to influence the direction and success of the innovation. A supplier interviewed in this study echoed this concern, saying;

"...We do not mind helping, but sometimes we are brought in when the innovation project is almost done, and there's not much we can do at that point..."(Key informant, supplier, 7th July 2023).

However, when suppliers are treated as strategic partners, their contributions can be transformative. As the interviewed innovators shared that, Some of innovators best breakthroughs have come from working with suppliers who are deeply involved from the beginning. Their expertise in materials and technology is unmatched. This underscores the potential of collaborative relationships that are built on trust, open communication, and **mutual** benefit. When suppliers are viewed as valuable partners, rather than mere vendors, they can deliver more innovative and

efficient solutions. Nguyen and Tran's (2023) study supports this perspective, suggesting that strategic partnerships with suppliers lead to better innovation outcomes.

Local Government Authorities (LGAs)

LGAs play a vital role in identifying, supporting, and nurturing grassroots innovations due to their proximity to communities and their deep understanding of local dynamics. As one local government official emphasized;

"...We are the closest to the community, and we have the pulse on what's happening. When we find an innovator, we make sure they get the attention they deserve..."(Key informant, Njombe DC, 8th August 2023).

This sentiment underscores the unique position of LGAs to recognize and support grassroots innovators, ensuring that local innovations are not overlooked. Their familiarity with the challenges and needs of the local population positions them to be effective enablers of innovation at the grassroots level. Research by Harris and Thomas (2022) supports this view by emphasizing the critical role of LGAs in facilitating access to essential resources such as funding, training, and infrastructure. These resources are key in bridging the gap between innovative ideas and their commercialization. As the majority of the interviewed grassroots innovators shared that, without the support of the local government, their innovation projects would have remained an idea. They helped innovators connect with the right funding and the right people." This underscores the importance of LGAs as intermediaries that help innovators access networks and resources, transforming their ideas into viable projects. It aligns with Harris and Thomas's (2022) assertion that LGAs serve as critical links between grassroots innovators and the broader support systems necessary for scaling their innovations.

Moreover, the ability of LGAs to provide tailored, context-specific support based on their deep understanding of local needs enhances their effectiveness. One key informant explained;

"...The local government knows what works in our area. They don't offer a one-size-fits-all solution but focus on what can truly help us grow based on our specific needs..."(Key informant, Njombe DC, 8th August 2023).

This observation resonates with Harris and Thomas's (2022) argument that localized support is more impactful, as it addresses the unique challenges and opportunities of grassroots innovators. LGAs, therefore, offer a level of flexibility and personalization that is often lacking in more generalized support systems.

Despite their potential, this study also revealed challenges in the effectiveness of LGAs, particularly regarding resource allocation and bureaucratic delays. Unlike the systematic support structures found in developed contexts, Tanzanian LGAs often face difficulties in delivering timely support due to limited resources and administrative inefficiencies. The majority of grassroots innovators pointed out that, Sometimes it takes too long to get the help innovators need, even when the local government is willing to support us. This statement highlights a critical issue: while local governments are willing to assist, the delay in resource mobilization and bureaucratic red tape often hamper the innovation process. The need for capacity-building initiatives to improve LGAs'

efficiency and responsiveness is apparent, as it would enable them to provide more timely and impactful support to innovators.

Lastly, LGAs play an essential facilitative role in connecting grassroots innovators to larger support systems at regional and national levels. A local government representative share;

"...Often, grassroots innovators have great ideas, but they do not know how to connect to the larger support networks. Our job is to open those doors for them..." (Key informant, Njombe DC, 8th August 2023).

This role is crucial in ensuring that grassroots innovations are not confined to local levels but have the opportunity to reach broader markets and networks. It is consistent with Harris and Thomas's (2022) findings, which emphasize the importance of institutional frameworks that maximize the impact of LGAs in supporting grassroots innovation. By opening doors to national and regional networks, LGAs help innovators expand the reach and impact of their solutions.

CONCLUSION

The perceptions of various stakeholders towards grassroots innovators in Tanzania reveal a nuanced view of the innovation landscape. While stakeholders recognize the value of grassroots innovation, challenges such as coordination, lack of funding and insufficient involvement from key institutions are frequently mentioned. Stakeholders, including innovators, government agencies, regulatory bodies and financial institutions, acknowledge their roles but express concerns about issues such as bureaucratic delays and resource limitations. The perceptions collected suggest a pressing need for a more cohesive and supportive ecosystem that can effectively nurture grassroots innovators and encourage their growth in the Tanzanian context.

RECOMMENDATIONS

To address the challenges revealed in the perceptions of stakeholders, it is important to take several actions to improve the ecosystem for grassroots innovation in Tanzania. The first step should be to increase awareness and outreach efforts, particularly focusing on rural and underserved areas. This will ensure that grassroots innovators have access to support systems, such as those provided by institutions like COSTECH, thus bridging the gap between innovators and supportive institutions.

Furthermore, it is essential to enhance the commitment and efficiency of technical officers and other stakeholders by ensuring they are adequately compensated for their contributions. Incentives such as performance-based rewards could encourage greater dedication and involvement in supporting grassroots innovators.

Host institutions, particularly those responsible for disbursing funds, should also be encouraged to streamline their processes to ensure that innovators receive support in a timely and efficient manner. Clearer guidelines and simplified procedures can help mitigate delays and ensure that innovators can access the necessary resources when needed.

In addition, expanding innovation centers and spaces at the district level will provide grassroots innovators with the physical infrastructure and expert support necessary to advance their

innovations. These centers should be well-equipped with tools and staffed by knowledgeable individuals to guide innovators through various stages of their innovation journey.

Finally, it is important for financial institutions and organizations that support grassroots innovation, such as COSTECH and banks, to reconsider their financial support criteria and make the processes more accessible to grassroots innovators. By simplifying these processes, the bureaucratic barriers that hinder innovation will be reduced, making it easier for promising ideas to thrive.

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REFERENCES

- Ali, M., & Memon, M. A. (2022). The role of incubation and hosting institutions in nurturing grassroots innovation. *Journal of Innovation Systems*, 24(3), 112-128. <https://doi.org/10.1016/j.jois.2021.09.010>
- Bessant, J., & Tidd, J. (2022). *Innovation and entrepreneurship: A primer*. Wiley.
- Brown, A., & Taylor, S. (2022). The impact of legal support on grassroots innovation. *Journal of Innovation Studies*, 18(2), 105-120. <https://doi.org/10.1016/j.jois.2022.03.007>
- Cheng, L., & Li, W. (2023). Bureaucratic inefficiencies and their impact on innovation ecosystems: A case study. *Journal of Innovation and Management*, 38(4), 650-663. <https://doi.org/10.1016/j.joi.2023.01.012>
- Harris, L., & Thomas, D. (2022). Local government support for grassroots innovation in developing economies. *International Journal of Local Governance*, 14(1), 45-60. <https://doi.org/10.1093/ijlg/vcz003>
- Johnson, S., & O'Neill, R. (2022). Complicated patent procedures and their effect on grassroots innovation. *Journal of Innovation Management*, 15(4), 58-74. <https://doi.org/10.1016/j.joim.2021.10.012>
- Johnson, S., & O'Neill, R. (2022). Funding delays and their impact on grassroots innovation. *International Journal of Entrepreneurship and Innovation*, 16(2), 33-45. <https://doi.org/10.1108/IJEI-04-2021-0085>

- Jones, M., & Robinson, P. (2021). Public perception of grassroots innovation: A barrier to growth? *Journal of Social Innovation*, 10(3), 133-145. <https://doi.org/10.2139/ssrn.3527952>
- Khan, M., & Halder, A. (2022). Policy instability and its effects on grassroots innovation: Evidence from developing economies. *Journal of Technology Policy*, 40(7), 123-135. <https://doi.org/10.1080/09724158.2022.1960435>
- Lee, H., & Wang, Z. (2023). Barriers to financial access for grassroots innovators: A study of financial services in Tanzania. *Journal of Financial Innovation*, 10(1), 66-80. <https://doi.org/10.1108/JFI-09-2022-0034>
- Martin, R., & Salgado, M. (2022). Grassroots innovation: The role of informal knowledge systems in local development. *Technology Analysis & Strategic Management*, 34(5), 490-506. <https://doi.org/10.1080/09537325.2021.1916697>
- Mdemu, M. (2023). Grassroots innovation in Tanzania: A community-driven approach to socio-economic development. *Tanzanian Journal of Development Studies*, 45(2), 72-85.
- Meyer, D., & Gauthier, P. (2021). Financial dependency and stress among grassroots innovators. *Journal of Social Innovation*, 29(3), 451-467. <https://doi.org/10.1080/14674657.2021.1903053>
- Miller, D., & Verhoeven, F. (2022). Challenges to innovation in developing economies: Bureaucratic hurdles and resource limitations. *Journal of International Development*, 34(6), 789-806. <https://doi.org/10.1002/jid.3671>
- Nguyen, T., & Tran, M. (2023). The role of suppliers in grassroots innovation: A collaborative approach. *Journal of Supply Chain Management*, 29(4), 235-248. <https://doi.org/10.1108/JSCM-11-2022-0429>
- Owen, R., & Tidd, J. (2023). Trust and alignment: The role of the private sector and international donors in supporting grassroots innovation. *International Journal of Innovation Management*, 27(1), 215-230. <https://doi.org/10.1142/S1363919622500220>
- Smith, L., & Adams, T. (2021). The impact of poor awareness on copyright protection: A study of grassroots innovators in Tanzania. *Intellectual Property Journal*, 29(2), 213-227. <https://doi.org/10.1093/ipj/ijab005>
- Sommerville, M., Edwards, J., & McKinley, R. (2022). Addressing local needs through grassroots innovation: The case of the Tanzanian rural sectors. *Innovation and Development*, 14(3), 345-364. <https://doi.org/10.1080/2157930X.2022.1978354>
- Tiwari, R., & Bhatia, S. (2022). Financial constraints in grassroots innovation: The trade-off between securing funding and nurturing innovation. *Innovation Studies*, 25(2), 102-118. <https://doi.org/10.1177/02704676211027132>
- Wang, Y., & Zhang, Z. (2021). Proactive support for grassroots innovation: The role of private sector foundations. *International Journal of Innovation Studies*, 8(3), 45-59. <https://doi.org/10.1108/IJIS-07-2020-0168>