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Sustainable Entrepreneurship as a Solution to Urbanization and Food Security Challenges: A Developing Countries Perspective

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ABSTRACT

Urbanization presents significant challenges, particularly in ensuring food security. This study explores sustainable entrepreneurial remedies to address these issues, focusing on the intersection of urbanization, agriculture, and entrepreneurship. Using focus group discussions, the research examines how innovative entrepreneurial models can enhance urban food security and contribute to Sustainable Development Goals. Findings highlight the role of entrepreneurship in mitigating the pressures of urbanization and agriculture, emphasizing the need for collaboration among policymakers, urban planners, businesses, and communities to balance urban development with agricultural preservation. The study underscores the importance of ensuring access to affordable housing, secure food, and employment opportunities. While providing qualitative insights, it calls for quantitative research to compare findings and include perspectives from farmers and urban residents. This study contributes to the limited literature on sustainable entrepreneurship as a practical solution to urbanization and food security challenges, particularly in developing countries.

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1. INTRODUCTION

Urbanization is "the process by which large numbers of people become permanently concentrated in relatively small areas, forming cities" (Ality & Amadu, 2017). Urbanization is blamed for its adverse effect on developed and developing nations (Kuddus *et al*., 2020). In Ethiopia, cities are classified into five distinct city-size groups. These clusters range from the smallest, with fewer than 20,000 inhabitants, to the largest, which boasts a population of one million or more. The five categories are as follows: Small towns: Inhabitants ranging from 2,000 to 20,000; Medium towns: Population between 20,001 and 50,000; large towns: Home to 50,001 to 100,000 residents; Cities: With a population of 100,000 to 1,000,000; Metropolis: Comprising more than 1,000,000 inhabitants (Mendiola *et al*., 2014). According to the United Nation's estimate, 6 billion people of the world's population will live in Urban in 2041 (D'Acci, 2020 and Sun *et al*., 2020). To meet the various demands of the increased population in urban areas, the urban environment continues to expand. However, this move brings stress to the sustainability of natural resources that calls for special remedial solutions. According to the study conducted by Nath *et al*. (2021), in Guwahati city, India, the urban built environment has doubled in area in 30 years (1990–2020) and this resulted in high demand for urban land, mainly for industrial, commercial, and residential purposes at the expense of vegetation and fallow land. Thus, as urbanization rapidly expands and agricultural lands are annexed to urban areas, it becomes crucial to explore sustainable entrepreneurial remedies to reduce the impact of urbanization on rural and urban populations.

In Ethiopia, urbanization is leading to food security problems due to the decreased arable land and its inefficiency, massive waste that pollutes the environment, a decline in biodiversity, and water and soil contamination (Abebe, 2024). Furthermore, this problem would have a ripple effect, hindering stakeholders' ability to achieve several critical SDGs, including Goal 2 (Zero Hunger), Goal 3 (Good Health and Well-being), Goal 9 (Industry, Innovation, and Infrastructure), and Goal 11 (Sustainable Cities and Communities). Despite the larger urban land committed, the land is not efficiently utilized. Another study conducted in Ethiopia by Koroso *et al*. (2021) revealed a prevalence of land use inefficiencies in all cities. The study conducted in Arba Minch City, Ethiopia, also witnessed that the built-up area in the city has increased by 780 hectares from the year 2000 to 2018 and this expansion is at the expense of agriculture, plantation, and mixed forests (Jenberu & Admasu, 2020). In developing countries, urbanization lessens people's capacity to afford food which makes the food security move difficult (Putra *et al*., 2020).

As evidenced in the research conducted by Berry (1978), urbanization is putting pressure on agriculture due to an increase in population and a conversion of farming land to urban uses. Moreover, the study claimed that urbanization has also an indirect effect on agriculture in terms of changes in attitudes about farming, changes in the status of farmers, and land speculation. The study conducted in Pakistan also revealed that the rise in urbanization reduces agricultural land which in turn reduces the agricultural value-added % of Gross Domestic Product and agricultural value-added annual % of growth (Malik & Ali, 2015). Satterthwaite *et al*. (2010) ascertained that a declining ratio of food producers to food consumers is due to rapid urbanization. Applying the agglomeration index methodology, Degefu *et al*., (2021) and Agegnehu *et al*., (2021) discovered that the proportion of the urban population rose from 3.7 percent in 1984 to 14.2 percent in 2007. In 2019, Ethiopia had a lower urbanization rate compared to most African countries, with only 21.2% of its population residing in urban centers (Kitila *et al*., 2021). However, this figure is expected to rise by 40% by 2050 according to D'Acci (2020) and Keyne & Kyei (2024) posing a significant threat to

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sustainable development. Without proactive measures, the consequences would be severe, potentially jeopardizing the achievement of several Sustainable Development Goals (SDGs).

To achieve zero hunger by 2030, feeding the ever-growing population that is exerting pressure on the limited available resources is a real challenge that would require doubling the agricultural productivity of small-scale farmers as per the UN Sustainable Development Goals (SDGs) 2 (Okello *et al*., 2020; Waceke & Kimenju, 2007). In light of growing urbanization and the conversion of fertile agricultural land into urban spaces, achieving a twofold increase in agricultural productivity through conventional methods appears highly improbable.

Consequently, fostering an entrepreneurial mindset and implementing innovative practices becomes crucial to bolster agricultural productivity, provision of good health and well-being, fostering Industry, Innovation, and Infrastructure, and realizing sustainable Cities and Communities. These strategies can help reverse the adverse effect of urbanization and offset the decline in production resulting from the annexation of lands for urban development. The primary objective of this research is to identify and develop sustainable entrepreneurial solutions that can effectively mitigate the negative effects of urbanization on agriculture and food security in Ethiopia, thereby contributing to the achievement of the Sustainable Development Goals (SDGs). This aspect has not been thoroughly explored or emphasized previously and the rare integration between agriculture, urban planning and development, and entrepreneurship is witnessed. In line with the major objective, the research also meets the following objectives:

(i) To explore entrepreneurial solutions that mitigate the impact of urbanization on agricultural yields.
(ii) To investigate the entrepreneurial opportunities arising from urbanization as a means to address food security challenges.
(iii) To suggest policy input on the integrated move of urban planning, agriculture, and entrepreneurship.

2. LITERATURE REVIEW

Urban expansion, driven by population growth and the proliferation of residential and commercial infrastructure, appears to encroach upon agricultural practices. According to a study conducted in Ghana, the expansion of built-up areas hurts farming and food production (Osumanu & Ayamdoo, 2022). Moreover, Berry (1978) reported that urbanization exerts pressure on agriculture due to two main factors: an increase in population and the conversion of farmland into urban areas. Additionally, the study highlights the indirect effects of urbanization on agriculture, including changes in attitudes toward farming, shifts in the status of farmers, and land speculation. Moreover, research conducted in Pakistan revealed that the surge in urbanization leads to a reduction in agricultural land, which subsequently impacts both the percentage of agriculture value added to Gross Domestic Product (GDP) and the annual growth rate of agricultural value added (Malik & Ali, 2015).

Because urbanization and agriculture compete for land, there could be a lack of integration between the urban and agricultural authorities. Moreover, reserving agricultural land for the production of crops could also result in a lack of sustainable territorial development between the urban and peripheral areas. In this regard, the study conducted by Kassis *et al*. (2021) witnessed that the ambition for sustainable territorial development is constrained because of farmland preservation procedures to protect agricultural land to encourage local food production. Using data from the national survey on food security and nutrition in Mali, Macalou *et al*. (2023) reported that households living in urban areas are less food secure which magnifies the adverse effect of urbanization on food security. According to the study

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conducted by Kang *et al*. (2023) in Jiangsu Province, China, urbanization is segregated into population urbanization, land urbanization, and industrial urbanization. In the study, it is shown that overall urbanization had no significant effect on cultivated land pressure, while population and industry urbanization negatively affected it.

Therefore, some researchers linked urbanization to human advancement and progress that urbanization has a positive impact on the agricultural sector, making it difficult to consider it a universal threat. For example, Dhilon and Moncur (2023), reported that urbanization is both an opportunity and threat for agriculture. Urbanization could be an opportunity to develop agricultural technology (Agtech). Regardless of the effect, halting the migration to urban areas and urbanization is improbable and if the issue remains unaddressed, its effect on food security will be substantial. Thus, we should think creatively, even beyond conventional methods, to discover effective solutions that can accommodate urbanization while addressing the associated issues. In essence, bustling urban areas serve as a thriving environment for entrepreneurs who introduce innovation, generate employment, and offer goods and services via fresh business strategies and technological systems that can collectively shape the future city.

Entrepreneurship would be a hope for resolving the adverse effects of urbanization. Entrepreneurs tackle the social and economic issues faced by cities through their innovative business approaches and ingenious problem-solving techniques (Gerding & Vealey, 2017). Despite the annexation of agricultural land to urban areas due to urbanization, farming practices can persist within these urban zones. However, these practices will deviate from traditional methods, as they require the infusion of entrepreneurial approaches. Urban agriculture, with its innovative techniques and adaptability, plays a vital role in ensuring food security and sustainable development in cities. The concept of urban agriculture, when introduced in cities, can be viewed as a form of entrepreneurial endeavor (Eisazadeh *et al*., 2015).

While urbanization can drive innovation and create larger markets for agricultural products, it can also lead to land conversion, labor shortages, and environmental degradation. Thus, balancing urban growth with the needs of the agricultural sector is crucial for ensuring food security and sustainable development. To mitigate the adverse effects of urbanization, it is crucial to identify potential advantages from these challenges and explore innovative entrepreneurial solutions. This approach not only helps in tackling urbanization-related issues but also fosters a positive and growth-oriented mindset within the community.

Unfortunately, research that can show the integration between urbanization, urban development, and agriculture is limited and policymakers are not aware of possible collaboration. Therefore, the researchers explored sustainable and integrative entrepreneurial remedies for the challenges of urbanization and food security problems in Ethiopia. Accordingly, researchers proposed that innovative entrepreneurial solutions could help counteract the adverse effects of urbanization.

As shown in **Figure 1**, entrepreneurship plays a moderating role in the relationship between urbanization and agriculture, influencing the dynamics between the two. This moderation role can be explained in terms of dimensions for urbanization and agriculture. As coined by Berry (1978), urbanization could affect agriculture in terms of farming attitude, farmers' status, and land speculation. Moreover, Kang *et al*. (2023) reported urbanization as population urbanization, land urbanization, and industry urbanization. By promoting innovative farming practices, value-added products, and sustainable land use, entrepreneurship plays a moderating role in the relationship between urbanization and agriculture. Moreover, entrepreneurship can help mitigate the negative effects of

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urbanization on agriculture and create more resilient and sustainable food systems. The moderation role could be further explained in terms of; (1) *Population Urbanization*: As cities expand, the demand for fresh produce and local food systems increases. This can lead to an increase in urban agriculture, as entrepreneurs see opportunities to create innovative farming practices and business models. (2) *Land Urbanization*: As urban areas expand; agricultural land is converted into urban uses. However, entrepreneurs can identify opportunities to develop innovative farming practices that utilize urban spaces, such as vertical farming, rooftop gardens, or community gardens. (3) *Industry Urbanization*: As industries grow, entrepreneurs can develop value-added products from agricultural produce, such as processed foods, biofuels, or bioproducts. (4) *Farming Attitude*: Entrepreneurial farmers are more likely to adopt innovative practices, such as precision agriculture, vertical farming, or organic farming, which can increase yields and reduce environmental impact. (5) *Farmers' Status*: Entrepreneurial farmers are more likely to have a higher social status, as they are seen as innovators and job creators in their communities. This can lead to increased respect for farmers and a more positive attitude towards agriculture. (6) *Land Speculation*: Entrepreneurial farmers can identify opportunities to develop underutilized or vacant land for agricultural purposes, reducing the likelihood of land speculation and preserving agricultural land for future generations.

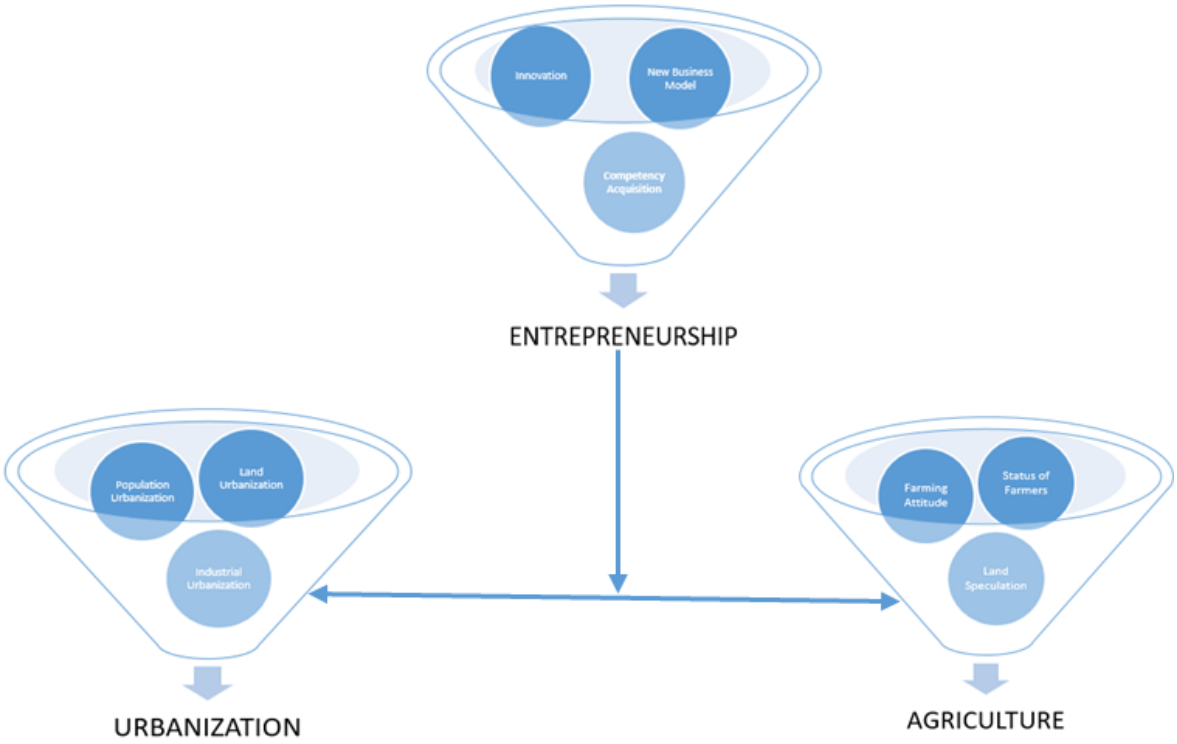

Figure 1. Entrepreneurship as a moderator between urbanization and agriculture.

3. METHOD

We focused on the Ethiopian context. Despite its low urban level compared to other countries, Ethiopia witnessed the fast-urbanizing countries in sub-Saharan Africa. According to the National Urban Policy, released in 2005, the Ethiopian government has formulated various urban strategies and implementation plans. These encompass housing supply, infrastructure provision, and most recently, in 2018, urban

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regeneration and expansion (Tura *et al*., 2018). Due to this move, significant rural arable lands are annexed to urban areas that could pose pressure on agriculture. Rather than making harsh comparisons between having a home and having food, we should focus on integrating housing construction and food production. By doing so, we advise that both agriculture and urbanization can coexist harmoniously, with entrepreneurship acting as the binding force that brings them together in a cohesive manner. Thus, researchers explored potential entrepreneurial remedies for the threat of urbanization on food security using exploratory research design.

To meet the objective of the study, researchers collected data through Focus Group Discussions with experts in the areas of urbanization and housing, agriculture, and entrepreneurship. Discussion took place with experts for a total of three hours and the result triangulated with the existing literature is reported. Expert selection is based on the convenience and availability of experts. The collected qualitative data is analyzed using the narrative and thematic content analysis approaches. Researchers identified common themes to sketch common patterns. Moreover, we used narrative analysis to highlight important aspects of experts' stories. Thus, after reviewing the interview, we annotated important words and phrases to conceptualize and segment for analysis.

4. RESULTS AND DISSCUSION

To meet the objectives stated, researchers analyzed the interview data collected from experts. The interview questions were related to urbanization, agriculture, and the potential remedy of entrepreneurship to resolve the adverse effect of urbanization on agriculture and food security. The questions we raised to interviewees were: (1) How urbanization affects the availability of agricultural land? (2) How to formulate urban planning strategies that balance economic growth, social equity, and environmental sustainability? (3) How urban agriculture could contribute to food security and sustainable development? (4) What innovative techniques can be employed for farming in urban areas? (5) How can entrepreneurial approaches enhance urban agriculture initiatives? (6) What role does innovation play in transforming traditional agricultural practices? (7) Overall, how entrepreneurship can be a solution to neutralize the adverse effect of urbanization on food security?

Once we transcribed the audio interviews and made a detailed analysis, we categorized responses into themes such as Urbanization and food security, Urbanization and land tenure policy, innovative urban planning, Innovative Urban farming, and Entrepreneurial remedies for food security problems.

4.1. Urbanization and Food Security

When urbanization is considered, food security and housing issues are on top of the agenda. However, both housing and agriculture need land which is the reason for the sectorial competition. Thus, it is essential to place appropriate urban planning that can balance the housing needs and food security issues. For this to happen, innovation will be the prime solution. Entrepreneurship and innovation should be emphasized in resolving social problems in terms of economic and other social issues. Recent data indicates that in Ethiopia, built-up land has experienced the most significant increase, while open spaces, agricultural land, and vegetation areas have declined. This trend could potentially pose challenges if not well addressed. Specifically, built-up areas have seen the highest net gain, whereas agricultural land has suffered the greatest loss. Therefore, integrating land use with sustainable urban planning policies becomes crucial for enhancing the resilience of the local environment and the urban ecosystem (Dibaba, 2023).

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Moreover, all interviewees expressed that urbanization hurts the food security effort of a country. Experts elucidated that urbanization could be explained in terms of the growth of urban dwellers, focus on nonagricultural activities, and relatively better infrastructure like roads, electricity, and water. The experts look at the adverse effect of urbanization on food security as urban population growth is compelling rural land annexation. Due to the shrinkage of arable land as a result of annexation, food security is endangered unless productive and integrative activities between urban planners and agricultural authorities. In Ethiopia, citizens organize themselves into housing cooperatives and request residential building areas. According to the constitution of Ethiopia, Article 40, individuals cannot own land. In the constitution, the right to the ownership of rural and urban land is exclusively vested in the state and the people of Ethiopia (Tura, 2018). Because of the clause in the constitution, the local and federal authorities displace peasants from their lands with small compensation. Due to this, the arable rural lands in peripheral areas are shrinking which could harm the production of food crops. The peasants had no right to sell or transfer their land to a third party based on the current value because the government didn't allow citizens to own and sell. Thus, "land is a common property of the Nations, Nationalities and Peoples of Ethiopia and shall not be subject to sale or other means of exchange" and this gives the local and federal authorities "legitimacy" to take peripheral lands and hand over to housing associations organized by the government. Some of the interviewees stressed that the major problem of food security, in addition to urbanization, is the land tenure policy of the government that the government is committing massive land for housing organized youth and veterans. In addition to the formal settlements, arable lands are taken by informal settlements (Chandel & Mathewos, 2023). Regardless of the factor that leads to urbanization, experts agree that urbanization distresses food production which would in turn challenge the food security effort of governments. The expansion of urban areas has significantly diminished available land for agriculture, resulting in severe consequences for peri-urban farmers. These farmers frequently find themselves with limited or no land for cultivation, thereby exacerbating their vulnerability (Ayele & Tarekegn, 2020).

"It is taking significant agricultural land for the construction of houses. The government is taking in proportionate land to the housing areas because house builders are not usually considering significant story building houses". If it is not well addressed, the rapid urban growth would lead to extraordinary and chaotic outcomes, encompassing extended periods of drought, extensive flooding, financial setbacks, and escalated food scarcity for smallholder and subsistence farmers and urban dwellers (Ngcamu, 2022).

4.2. Urbanization and Land Tenure Policy

According to the study conducted in Ghana, households experiencing food insecurity were more inclined to attribute their inability to grow crops primarily to a lack of land which is in turn related to land tenure policy (Nchanji *et al*., 2023). Among the experts, some argued that the effect of urbanization on food security is adverse due to the land tenure policy of the government. In the response, they mentioned that farmers do not have land possession security as it could be repossessed by the government at any time when the government wants to transfer the land to developers. According to the response, farmers could not make medium-term to long-term plans on their land as the ownership is not in their control. The study conducted by Adam (2014) also supports the claim that "urban boundary expansion into the peri-urban areas has been generating a widespread sense of fear of loss land". Moreover, other experts also stressed that an appropriate land tenure policy is essential for farmers to work on their land stably. There was also the argument that the current land

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tenure policy in Ethiopia is important for dwellers to get housing facilities easily. As per their perspective, if tenants already own the land, acquiring additional land for house construction would be an inconceivable notion. The Ethiopian land tenure system is raddled with many challenges. Wubneh (2018) mentioned some of the land tenure system problems in Ethiopia as insecure land tenure, fragmentation, and reduction of farm sizes. Moreover, concerns related to corruption, where both individuals and politically connected corporations engage in land hoarding, and the displacement of farmers and impoverished urban residents is another critical problem caused by the land tenure policy. In addition, the contentious matters of expropriation and unfair compensation for land taken from owners further compound the complexities of the system. In the context of the relationship between agriculture and urbanization, one of the interviewees expressed that the debate often centered on the trade-off between housing and food. However, according to this expert, agriculture holds greater significance, and urban planners should explore alternative sustainable approaches that do not jeopardize food security. To balance economic growth, social equity, and environmental sustainability, however, agile urban planning that entrenches an entrepreneurial mindset is important.

4.3. Innovative Urban Planning and Entrepreneurship

As noted by Schönfeld and Ferreira (2021), economic growth driven by innovation increasingly takes precedence over other values and future visions for cities and regions. Due to the economic, environmental, and technological shifts that impacted society, the emphasis on innovative urban and cities is the agenda of these days (Mayer, 2003). Because innovation involves creating novel ideas and entrepreneurship focuses on transforming those ideas into thriving businesses, blending entrepreneurship and innovation is a good mix for innovating and sustainable urban planning. For the question posed to experts, all of them expressed their agreement that innovative urban planning can be supported by entrepreneurs who would create new and innovative urban-related ideas. However, their concern is the lack of an integrative approach by the stakeholders that could bring urban developers, entrepreneurs, and government agencies together. With this regard, Mayer (2007) stressed that cities are becoming smarter due to the pressure from societal changes. When the innovation is inclusive, the positive effect on marginalized groups and urban agriculture is significant. When urban planning aligns with entrepreneurship, the impact could be substantial, prompting policymakers to carefully consider their approach. A recent study by Angelidou and Mora (2020) in six European countries reveals that integrating urban planning with social entrepreneurship policy is a rapidly evolving field that holds significant promise for addressing the pressing socio-economic challenges faced by cities today. Moreover, urban entrepreneurship involves designing and advancing digital technologies that address the evolving requirements of cities, while also ensuring business sustainability within smart urban environments. Thus, the integration of entrepreneurship and urban planning is essential for the sustainable development of businesses and cities. In addition, experts agreed that urbanization could instigate entrepreneurial thinking to resolve existing social and economic problems.

4.4. Innovative Urban Farming

While most people associate farming with rural areas, Hovorka (2004) discovered an unconventional trend: urban agriculture projects are emerging as a viable locus for commercial farming ventures. In United States cities, approximately 70 entrepreneurial urban agriculture initiatives have taken root (Hovorka, 2004). As stressed in the study, urban farming

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faces challenges from site-related, government-related, procedure-related, and perception-related issues. According to the study conducted by Odame *et al*. (2020), inclusive innovation projects in urban agriculture address key issues of different relegated groups (i) "support to organize into entrepreneur groups to improve their voice and power"; (ii) "promote their unique knowledge and innovative practices in using traditional and scientific knowledge"; and (iii) "facilitate inclusive business connections for the marginalized groups to sustainably grow their businesses". The study highlights that employing straightforward technologies and innovations, such as sack gardening and backyard gardening, within urban agriculture holds promise for addressing food security challenges in urban contexts. Regarding innovative urban farming, consensus among experts exists that farming should occur outside of traditional systems within urban areas. Thus, urbanization could bring new thinking that can fit urban setups and cope with the adverse effects. Urban agriculture could contribute to food security. However, this could be effective if the land tenure policy of governments is changed. In the Ethiopian context, the land is owned by the government, and in different cities, the government has locked many hectares of land without any use. Moreover, urban agricultural thinking is not well articulated by dwellers that they usually plant medicinal plants in their yards rather than planting to secure food. Thus, the problem is dimensional one is the land tenure system and the other is the attitude of residents to use small lands to produce food items.

4.5. Entrepreneurial Remedies for Food Security Problems

As reported in previous research, farmers can improve their welfare if their competency level is enhanced (Abawa, 2023). Entrepreneurial approaches play a pivotal role in enhancing agricultural initiatives by fostering innovation, leveraging technology, creating appropriate models, engaging with the community, and demonstrating adaptability. Entrepreneurs often introduce novel technologies and methods to urban agriculture, including soil-less food techniques that enhance efficiency and sustainability. Furthermore, entrepreneurs can devise financially sustainable business models for urban agriculture, such as direct-to-consumer sales, subscription services, or partnerships with local establishments. By doing so, they encourage community participation, transforming urban agriculture into a collaborative endeavor. Entrepreneurs' adaptability allows them to adjust their business strategies and farming practices in response to societal, technological, and environmental changes. Thus, entrepreneurial approaches offer a viable solution to mitigate the stress on agriculture resulting from urbanization.

Entrepreneurial innovations play a crucial role in transforming traditional agricultural practices and some of the most promising agricultural technologies are vertical farming, hydroponics and aquaponics, rooftop farming, and building-integrated agriculture, also known as Zero-Acreage Farming (Z-Farming). Entrepreneurs use vertical farming to grow crops in vertically stacked layers, specifically in a controlled environment. Moreover, entrepreneurs could also use hydroponic methods to grow plants without soil using mineral nutrient solutions in water. In addition, rooftop farming is another viable option to grow plants in open-air rooftop systems or rooftop greenhouses to reverse the adverse effect of arable land annexation to rural areas.

In developing countries, house demands are beyond the capacity of existing houses which could require annexation of agricultural lands to house constriction. The struggle between agricultural authorities and urban authorities over land has been a contentious issue. Critics argue that these conflicts extend beyond mere competing forms of land use and transfer. Instead, they revolve around authority specifically, who has the power to allocate land and

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settle disputes. As the population increasingly gravitates toward urban areas, the strain on existing urban centers and their capacity intensifies. To address these demands, cities often resort to horizontal expansion, incorporating new lands into their boundaries. Frequently, this expansion involves converting peri-urban land areas on the outskirts of cities into urbanized zones as the city continues to grow. However, the encroachment of urban expansion into peripheral agricultural lands, coupled with changes in the tenure system, has led to heightened perceived tenure insecurity among peri-urban farmers (Teklemariam & Cochrane, 2021).

5. CONCLUSION

As cities continue to grow and sprawl, they increasingly encroach upon fertile land, thereby reducing the availability of arable land for agriculture. This trend has far-reaching implications, as it may compromise the achievement of the Sustainable Development Goals (SDGs), particularly regarding ensuring food security and sustainable agriculture practices, as urban populations continue to swell. To achieve sustainable development, policymakers, communities, and stakeholders must strike a delicate balance between urban development and the preservation of agricultural land, ensuring that both goals are aligned and mutually supportive. This equilibrium is crucial for achieving critical Sustainable Development Goals such as Zero Hunger, Good Health and Well-being, Industry, Innovation, Infrastructure, and Sustainable Cities and Communities. Through urban agriculture, cities can provide fresh, locally grown produce, promote sustainable practices, and foster social equity, environmental stewardship, and resource efficiency, ultimately contributing to food security and sustainable development. This, in turn, can help achieve the ambitious goal of Zero Hunger, ensuring that everyone has access to nutritious food and a safe and healthy environment. Innovative techniques in urban farming can also maximize food production within city limits. For this, entrepreneurial approaches can enhance urban agriculture initiatives by infusing them with creativity, resilience, and economic viability. By nurturing a thriving ecosystem, entrepreneurs can contribute to sustainable food systems and healthier cities. Innovation also plays a crucial role in transforming traditional agricultural practices, making agriculture more efficient, sustainable, and resilient. Ultimately, finding a balance between urban development and preserving agricultural land is essential for creating resilient and livable cities where entrepreneurs can play a lot.

Based on the findings, this research strongly recommends a comprehensive and integrated approach that combines urban planning, agriculture, and entrepreneurship to address the pressing issue of urbanization's impact on food security. This holistic approach can help achieve the Sustainable Development Goals, particularly Goal 2 (Zero Hunger), Goal 3 (Good Health and Well-being), Goal 9 (Industry, Innovation, and Infrastructure), and Goal 11 (Sustainable Cities and Communities), by fostering a more sustainable and resilient urban food system. Policymakers are urged to consider these findings in their efforts to create sustainable and food-secure urban futures. The research has revealed that sustainable entrepreneurial remedies are not only viable but also essential for addressing these challenges. Using the thematic analysis technique, the research explored intervention areas related to urbanization and food security, land tenure policy, innovative urban planning and entrepreneurship, and innovative urban farming. Based on the findings, researchers propose the following policy implications.

(i) Policies should be designed to support the development of urban agricultural initiatives and ensure that the growth of cities does not come at the expense of food security.

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(ii) There is a need for reform in land tenure policies to provide security for urban farmers and encourage the use of underutilized spaces for food production.
(iii) Urban planning should incorporate agricultural considerations, and entrepreneurship should be fostered to create new solutions for food production and distribution within urban centers.
(iv) Investment in innovative farming techniques that are suitable for urban environments, such as vertical farming and hydroponics, should be prioritized.
(v) Entrepreneurs should be encouraged and supported to develop new business models that contribute to solving food security problems, particularly those exacerbated by urbanization.

While the study emphasizes sustainable entrepreneurial solutions for urbanization and food security, it dominantly uses a qualitative approach that necessitates conducting the same research using a quantitative approach to understand the actual moderating effect of entrepreneurship on the relationship between urbanization and agriculture is commendable to compare the result with the existing finding. Moreover, future research could incorporate farmers and dwellers to catch their views and understandings on the matter.

6. AUTHORS' NOTE

The authors declare that there is no conflict of interest regarding the publication of this article. Authors confirmed that the paper was free of plagiarism.

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