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The role of business accelerators as catalysers of food systems transformations in East and Southern Africa

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The transformation of global food systems is essential for achieving the Sustainable Development Goals (SDGs) and fulfilling the Paris Agreement commitments, especially in vulnerable regions like East and Southern Africa (ESA). In such regions, small and medium enterprises (SMEs) across food systems value chains can drive transformative innovations, but often require external support to build capacity. Business accelerators, originally from the corporate and tech sectors, have emerged as key players in supporting early-stage ventures, yet their role in agriculture and food systems remains underexplored. This paper presents findings from the first cohort of the CGIAR Food Systems Accelerator (CFSA), which supports agribusinesses in ESA in scaling climate-smart innovations. Through its science-backed, tailored approach, CFSA enhances investment readiness and technical capabilities among SMEs. The assessment, based on interviews with agribusiness founders (n = 10), reveals perceived improvements in entrepreneurial skills, partnership opportunities, and organizational capabilities, though challenges related to financial constraints and enabling environment remain. This study highlights the potential of non-profit accelerators in fostering food systems transformation through SME development, with important implications for poverty reduction, food security, and climate adaptation. Expanding such programs and studying their long-term impacts is crucial for driving sustainable growth in food systems in the Global South.

KEYWORDS

business accelerators, food systems, small and medium enterprises, climate change adaptation, East and Southern Africa, developing countries, sustainable development goals

1 Introduction

Transforming global food systems is essential for achieving the Sustainable Development Goals (SDGs) and the Paris Agreement commitments. Such transformation must span the entire food systems' value chain, from food production to consumption and waste management. Furthermore, it must extend beyond purely technological advancements, requiring deep societal changes especially in lower-income countries, the most affected by climate change (Herrero et al., 2020). In East and Southern Africa (ESA), this transformation is particularly critical due to the region's heightened climate vulnerability and structural challenges in agriculture and food security (IPCC, 2022; Sutton et al., 2024).

High-performing small and medium enterprises (SMEs) across the food systems value chain can play a critical role in developing and disseminating transformative bundles of

technological, social and institutional innovations. However, early-stage SMEs often rely on external knowledge and support to build internal capabilities and resources, especially where entrepreneurial ecosystems are underdeveloped (Nuthalapati and Nuthalapati, 2021; Forrest et al., 2023). Over the past two decades, business accelerators have emerged, originally, from the corporate and technology sectors, as key support organizations in the survival and development of early-stage ventures (Pauwels et al., 2016). They have since expanded across sectors, industries, and geographies. However, studies in regions such as Latin America and Africa remain scarce (Aljalalma and Slof, 2022). Similarly, the work of accelerators sponsored by non-profit organizations is underrepresented in the literature, compared to their for-profit counterparts (Del Sarto et al., 2022).

This article presents the design and evaluation of the CGIAR Food Systems Accelerator (CFSA) first cohort in ESA, positioned as an interventional initiative aimed at strengthening investment readiness and technical capacities of early-stage agribusinesses. The evaluation draws on qualitative interviews with the ten participating agribusiness founders, representing the full cohort, for an in-depth exploration of perceived program outcomes. While not establishing causality, it acknowledges the influence of contextual factors—such as prior entrepreneurial experience and concurrent support mechanisms—that may have shaped outcomes. The study highlights the crucial role of non-for-profit and science-backed accelerators in transforming food systems and underscores the need to scale up these initiatives to achieve broader sustainability impacts, including poverty alleviation and food security, amid climate change.

2 The effects of climate change in East and Southern Africa

Climate change is significantly affecting ecosystems in ESA. The rate of surface temperature increase in the Africa region has been faster than the global average, with projections exceeding 4°C by the end of the century under worst-case scenarios (IPCC, 2021). Southern Africa is projected to have a reduction in annual mean rainfall, and considered the droughts 'hottest spot' in Africa (Liu et al., 2018; IPCC, 2021). Key sectors like agriculture and tourism already face significant impacts as a result of human-induced climate change, across biodiversity, water systems, food production, health and economic growth (IPCC, 2022). Increasing drought and aridity will intensify these pressures (IPCC, 2021).

Climate vulnerability in the region is shaped by multiple factors across the socioeconomic, environmental and governance dimensions. In sub-Saharan Africa, most of the workforce is employed in the agriculture sector, and practically all the cropland (95%) depends on rainfall irrigation (IPCC, 2022). The dominant farming system is mixed cereal–livestock, with greater crop diversity in ESA (Thornton and Herrero, 2015). Agricultural productivity growth in sub-Saharan Africa has been reduced by 34% since 1961 due to climate change – more than any other region – with maize crops among the most affected, particularly in ESA (Ray et al., 2019; IPCC, 2022). While some crops (e.g., cassava) will benefit from climatic changes in certain areas, overall, future warming threatens food systems by shortening growing seasons and increasing water stress. Climate change impacts across the value chain undermine food availability, access, and stability. Nutrient-rich foods often perish quickly, making them vulnerable to storage and

transportation challenges (Ickowitz et al., 2019). Extreme weather can further decrease their availability and drive up prices (IPCC, 2022). Rural communities, especially female-headed households, face heightened food insecurity and livelihood risks due to climate hazards. Among households affected, children and pregnant women bear a disproportionate burden of adverse health and nutrition impacts (Garcia and Sheehan, 2016; Sorensen et al., 2018). Extreme climate events have been key factors contributing to acute food insecurity and malnutrition, with 62 million people in Eastern and Southern Africa requiring humanitarian assistance due to climate-related food emergencies between 2015 and 2019 (Gebremeskel et al., 2019; IPCC, 2022).

3 The need for a transformation of agrifood systems

Previous research highlights key priority areas for transforming food systems, including the empowerment of farmers and rural communities – particularly women and youth –, digital climate-informed services, climate-resilient practices, innovative finance, restructuring supply chains, knowledge transfer and innovation, and creating enabling environments (Dinesh et al., 2021). For farmers, expanding urban markets and diversifying production can raise incomes and improve resilience. Crop diversification can improve productivity and reduce pest outbreaks (Schroth and Ruf, 2014) while integrated systems combining crops, livestock, forestry, and aquaculture can enhance nutrient cycles, resource efficiency, and food security (Smith et al., 2019). Approaches like climate-smart agriculture (CSA) which includes climate information, agroforestry, drip irrigation, and erosion control enhance yields and resilience, and reduce greenhouse gas emissions (Lipper et al., 2014).

As post-farm gate activities grow, rural communities, particularly women and youth, can benefit from employment opportunities in logistics, processing and food preparation. However, these opportunities often require access to adequate infrastructure, specialized skills and equipment, presenting challenges in the inclusion of vulnerable groups (Reardon et al., 2019). Gender-responsive and equity-driven adaptation strategies can help mitigate these vulnerabilities (Andrijevic et al., 2020) by identifying and addressing specific needs and barriers in accessing information and services (Gumucio et al., 2020).

Achieving transformation requires significant public and private investment, particularly in underfunded value chain areas like processing and manufacturing (Stephens, 2021). De-risking adaptation strategies would include improving supply chain efficiency and reliability through producer aggregation, monitoring, and traceability (IPCC, 2022). Innovative finance mechanisms and insurance schemes can further de-risk agricultural production and food system investments by addressing market failures and helping small-scale producers managing short-term costs for long-term benefits (Millan et al., 2019).

4 Business accelerators as catalysers of food systems transformations

Business accelerators are considered a “new generation of incubators” (Pauwels et al., 2016), with distinct characteristics. While

both types of organizations support startups and facilitate their market entry, incubators often prioritize infrastructure and services provision (i.e., shared facilities, business assistance, and networking opportunities). Accelerators, instead, aim to fast-track startups' learning and funding opportunities through intensive, time-bound and cohort-based programs offering personalized advisory services and access to potential partners and investors. These programs often conclude in a "Demo day" where participants pitch their business model to investors and stakeholders (Pauwels et al., 2016; Newell et al., 2021).

Accelerators can significantly contribute to food systems transformation. As startups help mainstreaming innovations to close gaps across value chains, accelerator programs act as catalysts, by building SMEs capacity, facilitating knowledge exchange, and promoting networks among participants, funders, government and other stakeholders (Newell et al., 2021; Nuthalapati and Nuthalapati, 2021). While most accelerators continue to prioritize technology, communication, and finance sectors; initiatives targeting agriculture and food systems are emerging and showing promise (Bagnoli et al., 2020; Newell et al., 2021). In United States and Canada, agri-tech accelerators have supported startups in expanding markets and increasing sales (Connolly et al., 2018; Newell et al., 2021). In less industrialized economies, open innovation and accelerating initiatives have also showed positive effects in participants of these programs (Nuthalapati and Nuthalapati, 2021). Despite challenging conditions in such contexts, innovations emerging from startups across the value chain can drive better practices and technology adoption among farming actors. This, in turn, can generate broader sustainability impacts such as poverty reduction, food security and climate change adaptation (Swinnen and Kuijpers, 2019; Nuthalapati and Nuthalapati, 2021).

5 The CGIAR food systems accelerator in East and Southern Africa (CFSA)

The CFSA program was launched in 2023 as part of the Ukama Ustawi initiative, which seeks to promote climate-resilient agriculture and livelihoods in ESA through diversification and risk-reduction strategies to enhance food and nutrition security (CGIAR, 2023). In particular, the CFSA aims to support agribusinesses in ESA by enhancing their investment readiness and scaling climate-smart innovations through a science-backed approach. The CFSA promotes gender and social inclusion, and support to smallholder farmers, focusing on agribusinesses with innovations in thematic areas such as mechanization and irrigation, conservation agriculture, nutrition and agricultural risk-management. In its first version, the 6-month program was constituted by a cohort of 10 agribusinesses from Kenya, Rwanda, Uganda, and Zambia, with activities across the agricultural value chain such as farming inputs supply, agricultural services, product aggregation, processing and distribution, and waste management, among others. The program identified the agribusinesses needs and co-designed the technical assistance across four "standardized" components (i.e., gender equality and social inclusion, investment readiness, enabling environment, impact measurement and management) and one component tailored specifically to each agribusiness' innovation thematic area. The intervention therefore combined universal elements—applied equally across the

cohort—with case-by-case support adapted to the specific challenges and thematic focus of each participant. The delivery of the technical assistance was conducted primarily online through individual and group sessions, supplemented by field visits for needs assessment and solution demonstrations. The program leveraged a mix of entrepreneurs and academics as facilitators and mentors, ensuring a customized, science-based approach tailored to the specific needs of participants. At the end of the program, participants received monetary grants and pitched their business models to a panel of judges, founders and other stakeholders during a Demo-Day (Zulu-Hume et al., 2023).

As part of the collaboration within CGIAR centers, Worldfish conducted the CFSA program endline assessment. For this purpose, the first step was to develop a Theory of Change, which categorized the outcomes of the program into capabilities, performance improvements and sustainability impacts, depending on their expected timeframe (i.e., short, medium, long), and scope (i.e., individual level, intra-organization level, inter-organization level) (Supplementary Figure S1). This step served to identify the themes, scope and data collection methods for the assessment. As the expected progress at the conclusion of the program was limited to predominantly individual changes in founders' capabilities, rather than more concrete performance improvements or broader sustainability impacts, it was decided to conduct semi-structured interviews with each agribusiness founder ($n = 10$). The sample size of ten reflects the total number of agribusinesses in the first cohort, allowing for full coverage and ensuring all participant perspectives were captured. The interviews focused on the founders' perception regarding the progress in the attainment of specific capabilities and resources, the barriers and challenges perceived in this process, and their general satisfaction with the program. The semi-structured interviews allowed to establish pre-determined themes, and at the same time provide flexibility to obtain richer qualitative information from the participants (Lozano Lazo et al., 2023).

The interview protocol consisted in open, closed, and Likert-scale questions covering topics such as: respondent characteristics, business characteristics, entrepreneurial ecosystem characteristics, progress perceived in capabilities and resources from their participation in the program, barriers and challenges identified, and general satisfaction with the program. All the interviews were conducted through online one-on-one meetings between October and November 2023, close to the end of the program. Each interview lasted approximately 1 hour, with the audio being recorded to facilitate the data analysis. Respondents were informed and requested to provide their consent when they were invited to participate in the interview, and once again, before the interview recording started.

The interviews transcripts served to create codes that allowed to identify common themes across the different categories previously established. These codes were used to produce descriptive statistics of the most relevant topics identified, with quotes from the participants supporting and enriching the quantitative results. The Likert-scale questions served to estimate the average progress perceived by the participants across the different categories of capabilities and resources established. While the study did not aim to establish causality, it recognizes that external factors—such as prior entrepreneurial experience, existing networks, and exposure to other support programs—may have influenced the outcomes reported by participants.

6 The outcomes of the CFSA program endline assessment

This section presents a summary of the results of the CFSA endline assessment. [Figure 1](#) displays the distribution of comments regarding perceptions of progress and challenges/barriers across the categories of capabilities and resources. In the case of challenges/barriers, the figure reveals that most of these challenges/barriers were related to the agribusinesses (e.g., internet connectivity, time availability), rather than the CFSA program itself (e.g., program content, program design). For the perceived progress, as expected, most of the comments described improvements in the individual capabilities of the agribusiness founder in terms of business expertise and soft skills, among others. These were followed by intra-organizational capabilities resulting from the participation of other members of the organization in specific activities of the program, like accountants participating in financial management sessions. The inter-organizational capabilities resulted from the participation of other stakeholders in specific activities (e.g., suppliers receiving a talk on better farming practices), or the improvement of aspects related to the agribusiness' ecosystem environment.

The comparison of the average level of each capability before and after participation in the CFSA indicates that participants perceived improvements across all capabilities/resources areas ([Figure 2](#)). The greatest perceived improvement corresponds to the partnership opportunities, highlighting the importance of these types of programs

in helping businesses build and expand networks with domestic and international actors. The second most mentioned type of progress corresponds to improvements in personal skills such as effective communication, leadership and self-confidence, which were achieved through one-on-one coaching sessions tailored specifically for each participant. On the other hand, the smallest improvement corresponds to the enabling environment category, which aims to support agribusinesses in challenges related to policy, regulations and governance. While the program contributed to create awareness of the importance of such variables and identifying the bottlenecks that affected each of the agribusinesses, participants recognized that the program was not able to significantly improve their capabilities or resources in this domain. This result reflects the difficulties that accelerators can face to deal with broader contextual issues related to the political landscape of each country.

While the overall feedback from participants was positive, they also identified several barriers and challenges that could limit their ability to fully benefit from the program ([Supplementary Figure S2](#)). Key challenges included the ongoing need for program support and assistance, as well as the financial and technological constraints to implement the strategies identified during the program. Some participants noted that achieving broader impacts in their specific contexts would require policy changes beyond the scope of the accelerator program. Additionally, a few participants mentioned that their ability to fully benefit from the technical assistance was influenced by individual factors such as prior knowledge, infrastructure and time availability. ([Lozano Lazo et al., 2023](#)).

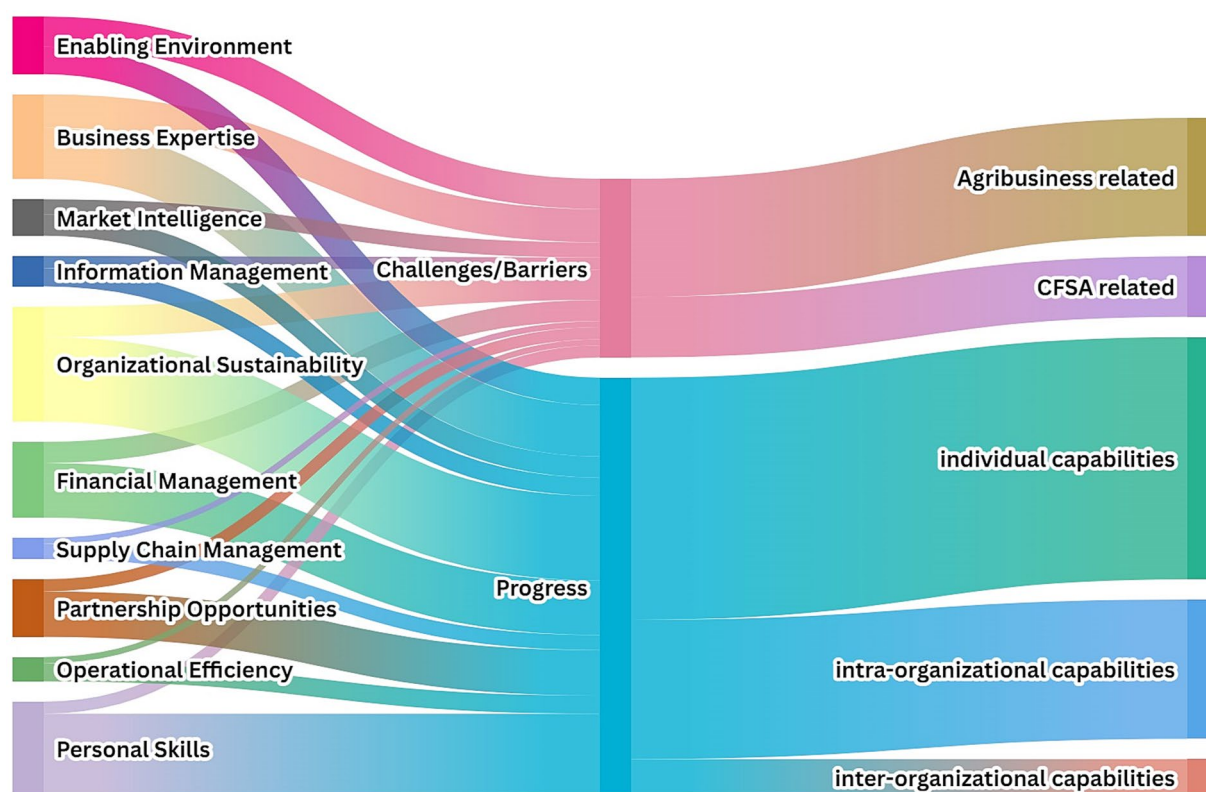


FIGURE 1
Types of progress and challenges/barriers perceived by CFSA agribusiness founders.



7 Concluding remarks

In the face of climate change, food systems in the Global South will require deep transformations to enhance resilience, food security, and sustainability. Small and medium-sized enterprises (SMEs) play a pivotal role by reshaping food value chains through innovation, technology adoption, and sustainable practices (Reardon et al., 2021). As SMEs grow in prominence, supporting their development becomes essential, as they hold the potential to bring broader benefits to the entrepreneurial ecosystem and their communities through job creation, poverty reduction, and climate adaptation.

One key avenue for supporting these ventures is through business acceleration programs. Programs like the CFSA have demonstrated potential in transforming food systems by providing mentorship, technical assistance, and financial support. The findings from the CFSA cohort indicate that participants particularly benefited from enhanced partnership opportunities and personal skill development, underscoring the importance of networking and tailored coaching in accelerator programs. While still emerging, these programs offer crucial opportunities for agribusinesses to scale their impact. Expanding research into these initiatives is essential to identify and understand success factors, business resilience strategies, effective scaling practices, and lasting impacts on food systems.

To maximize accelerators' impact, exploring science-focused models that extend beyond knowledge-sharing is critical. Central to this is understanding how to better integrate scientific research and development (R&D) to ensure scientists' effective contribution to innovations in food value chains. Future accelerator models could benefit from structuring arrangements where scientists are active contributors throughout the product development lifecycle. Thus, stakeholders must rethink accelerator design to prioritize science-led innovation. Stronger partnerships between research institutions and accelerators could ensure R&D aligns with market needs, allowing more resilient, sustainable and scalable innovations.

In the case presented, despite progress, significant challenges remain. CFSA agribusinesses report financial constraints and limited ongoing support as key barriers to fully benefiting from the acceleration program. These findings suggest the need for accelerator programs to incorporate continuous post-program mentorship, facilitate access to financing, and consider technological support to overcome implementation barriers. Policymakers and practitioners should consider integrating continuous support mechanisms beyond accelerator programs, including post-program mentorship, access to financing and policy advocacy. Multi-stakeholder partnerships among governments, academia, and the private sector could help address systemic challenges like regulatory barriers and market inefficiencies. Moreover, the limited improvement in the enabling environment category highlights the necessity for multi-stakeholder

partnerships among governments, academia, and the private sector to address systemic challenges such as regulatory barriers and market inefficiencies. Efforts to scale these initiatives could involve expanding the applicants' numbers, increasing cohort sizes, and offering larger grants. Program design should also weigh trade-offs, such as selecting early- or later-stage ventures and balancing depth versus breadth of support, to enhance effectiveness. These improvements could enable more SMEs to access transformative opportunities, contributing meaningfully to sustainable food systems across East and Southern Africa, and other regions.

As new cohorts of the CFSA program are developed, there is an opportunity to conduct more robust and comprehensive studies involving participants from multiple cohorts. Such research could deepen understanding of contextual variables and participant-specific needs, enabling future interventions to be better tailored and more effective in supporting agribusiness growth and food systems transformation.

Data availability statement

The datasets presented in this article are not readily available because the interview transcripts from this study cannot be placed in a publicly available repository, even after anonymization, due to the risk of re-identification. Despite removing names and direct identifiers, the transcripts contain contextual details specific to each participant's business, industry, and geographic region that could make it possible to trace responses back to individual founders, especially within a limited cohort of just 10 businesses. The participants shared insights under the assurance that their feedback would remain confidential, and publicly sharing transcripts—even anonymized—would undermine this confidentiality commitment. Furthermore, releasing such data could inadvertently expose sensitive competitive or strategic information about the participants' businesses. Therefore, to uphold ethical standards of privacy and maintain the trust placed in the study, it is essential to keep the interview transcripts in a secure, restricted-access repository accessible only to the research team and authorized personnel. Requests to access the datasets should be directed to DL, lozano.denise@gmail.com.

Ethics statement

Ethical approval was not required for the studies involving humans because the paper includes some of the main results of a business accelerator's endline assessment. Ethical approval was not sought for this endline assessment study, as it posed minimal risk by focusing solely on professional feedback from business founders regarding their experiences with an accelerator program. Participants were fully informed, via an email invitation, about the study's purpose, the voluntary nature of participation, confidentiality, and the audio recording requirement solely for analysis. The email also clarified that any related publications would present only aggregated data, ensuring that no information could reveal participants' identities. Consent was indicated by participants selecting an interview time, and verbal consent was reaffirmed at the interview's start. As the study involved no sensitive or private data, targeted only professional insights, and followed confidentiality and anonymity standards across international

jurisdictions, formal ethical approval was deemed unnecessary. Instead, stringent ethical protocols were applied to safeguard participants' rights and privacy. The studies were conducted in accordance with the local legislation and institutional requirements. Written informed consent for participation was not required from the participants or the participants' legal guardians/next of kin in accordance with the national legislation and institutional requirements because written informed consent was not required for this study as participants were fully informed of the study's purpose, voluntary nature, and confidentiality protocols via an initial email invitation. This email outlined the need for audio recording, ensured anonymity, and clarified that any publication would use only aggregated data to protect identities. By selecting an interview time in an interactive calendar, participants indicated their consent to take part. Additionally, at the start of each interview, the ethical information was reiterated, and participants verbally confirmed their consent to participate and be recorded. Given the study's minimal-risk nature and focus on professional feedback without sensitive or personal data, verbal consent provided sufficient assurance of participants' understanding and voluntary involvement. The online nature of the interviews, conducted across various locations, further supported the practicality of this approach in maintaining transparency and respecting participants' autonomy. Written informed consent was not obtained from the individual(s) for the publication of any potentially identifiable images or data included in this article because participants were clearly informed, both in the initial email invitation and at the beginning of each interview, that any publication would use only aggregated data with no identifying information, thereby protecting their anonymity. The study involved minimal-risk professional feedback on the business accelerator program, with no personal or sensitive data collected. Verbal consent was obtained at the start of each interview, with participants confirming their agreement to participate and to be recorded, and receiving assurances of confidentiality and anonymity. Given the study's low-risk nature, professional focus, and transparent communication regarding data handling, verbal consent for publication was considered sufficient and aligned with ethical standards. The online nature of the interviews, conducted via online across diverse geographical locations, further supported the practicality of this approach, allowing transparency and respect for participants' autonomy.

Author contributions

DL: Conceptualization, Data curation, Formal analysis, Methodology, Visualization, Writing – original draft, Writing – review & editing. CN: Validation, Writing – review & editing. NP: Validation, Writing – review & editing. RD: Conceptualization, Writing – review & editing. ED: Writing – review & editing. TM: Writing – review & editing. CR: Writing – review & editing.

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Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

Generative AI statement

The authors declare that no Gen AI was used in the creation of this manuscript.

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Supplementary material

The Supplementary material for this article can be found online at: <https://www.frontiersin.org/articles/10.3389/fsufs.2025.1519125/full#supplementary-material>

SUPPLEMENTARY FIGURE S1

Challenges/Barriers to improve agribusinesses capabilities.

SUPPLEMENTARY FIGURE S2

Theory of change of the CGIAR Food Systems Accelerator.

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