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Linking Entrepreneurial Human Capital and Institutional Capacity to Sustainable Agribusiness Transformation: A Systematic Review of Uganda's Agricultural Value Chains

Walwambe Peter*[1],
[1]Faculty of Management Sciences, Busitema University, Uganda
*e-mail: peter_uganda@rocketmail.com[1].

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ABSTRACT

Agricultural value chains are central to economic development, employment, food security, and rural livelihoods, yet agribusiness transformation in Uganda remains constrained by limited value addition, weak market integration, inadequate entrepreneurial capabilities, and institutional limitations. This study systematically reviews the relationship between entrepreneurial human capital, institutional capacity, and sustainable agribusiness transformation within Uganda's agricultural value chains. Guided by Human Capital Theory and the Resource-Based View, the review followed PRISMA 2020 procedures and synthesized 31 studies drawn from academic and institutional sources published between 2010 and 2026. The evidence was analyzed through thematic synthesis, generating five interconnected themes: entrepreneurial human capital development, institutional capacity and support systems, innovation and technology adoption, market participation and value addition, and sustainable agribusiness transformation outcomes. The findings suggest that entrepreneurship education contributes to opportunity recognition, innovation, strategic decision-making, and business-management capabilities, while institutional systems provide access to finance, markets, extension services, information, and organizational support. However, structural constraints, including inadequate infrastructure, financial limitations, fragmented institutional support, weak market coordination, and climate-related vulnerabilities, can restrict the productive application of entrepreneurial capabilities. The review indicates that sustainable agribusiness transformation is more likely when entrepreneurial human capital develops alongside institutional conditions that enable innovation, technology adoption, market participation, value addition, and value-chain coordination. The study contributes an integrated framework for understanding these complementary relationships and provides implications for agricultural policy, entrepreneurship education, and future empirical research.

Keywords: Agricultural value chains; Entrepreneurial human capital; Entrepreneurship education; Institutional capacity; Sustainable agribusiness transformation; Uganda.

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1. INTRODUCTION

Agriculture remains a major contributor to economic development, employment, food security, and poverty reduction across developing economies. Its role is closely connected to several Sustainable Development Goals, particularly poverty reduction, zero hunger, decent work and economic growth, and sustainable production. However, sustainable agricultural transformation requires more than improvements in primary production. It increasingly depends on agricultural value chains that are capable of supporting value creation, market integration, enterprise development, and resilience while generating economic, social, and environmental benefits (Barrett et al., 2022; Reardon et al., 2019).

Agricultural value chains connect production, aggregation, processing, distribution, and marketing activities, thereby creating opportunities for value addition, productivity improvement, market access, and enterprise competitiveness. The effectiveness of these interconnected activities depends not only on the capabilities of individual producers and entrepreneurs but also on coordination among value-chain actors and the institutional systems within which they operate (Mishra et al., 2024). These conditions are particularly relevant in Sub-Saharan Africa, where agricultural development continues to be constrained by low commercialization, inadequate value addition, fragmented markets, limited infrastructure, and vulnerability to economic and environmental shocks (Morando, 2023). Evidence from Uganda and neighboring contexts further indicates that climate variability, market disruptions, and institutional weaknesses can undermine the resilience and long-term sustainability of agricultural value chains (Bitzer et al., 2024).

Uganda provides an important context for examining these relationships because agriculture remains central to livelihoods, employment, food security, and export activity. Considerable investments have been directed toward agricultural modernization, extension services, farmer organizations, enterprise development, and value-chain upgrading. Nevertheless, agribusiness actors continue to face persistent constraints related to infrastructure, access to finance, agro-processing capacity, market coordination, and commercialization (FAO, 2023). Information asymmetries, transaction costs, and weaknesses in supply-chain coordination further restrict enterprise performance and value-chain competitiveness (Owot et al., 2023; Arslan et al., 2024). These conditions suggest that improving agricultural productivity alone may be insufficient without simultaneously strengthening the capabilities of agricultural actors and the institutional systems that support their economic activities.

Within this context, entrepreneurship education represents one mechanism through which entrepreneurial capabilities can be developed. Entrepreneurship education refers to learning processes intended to strengthen knowledge, skills, attitudes, and competencies associated with entrepreneurial activity. It can foster opportunity recognition, creativity, problem-solving, strategic decision-making, innovation, and risk management, thereby improving individuals' capacity to identify opportunities and mobilize resources (Tittel & Terzidis, 2020). Entrepreneurship education should therefore be distinguished from entrepreneurial human capital. While entrepreneurship education constitutes a capability-development process, entrepreneurial human capital represents the knowledge, skills, experience, and entrepreneurial competencies accumulated by individuals and subsequently applied to enterprise activities. In agricultural settings, such capabilities may support innovation, business adaptation, and more effective responses to changing technologies and market conditions (Bell, 2021).

Entrepreneurial human capital alone, however, may not be sufficient to produce sustainable agribusiness transformation. The productive use of entrepreneurial capabilities depends on the institutional environment in which agricultural enterprises operate. In this study, institutional capacity refers to the ability of organizations and support systems, including farmer organizations, cooperatives, extension services, financial institutions, governance structures, and market-support mechanisms, to provide resources, coordination, information, and opportunities required for enterprise development. Strong institutional capacity can facilitate knowledge exchange, technology adoption, resource mobilization, market participation, and collective action, whereas institutional weaknesses may restrict enterprise growth and sustainability (Nangobi et al., 2024). Institutional capacity should therefore be understood not simply as an additional determinant of agribusiness performance, but as an enabling condition through which entrepreneurial capabilities can be converted into productive and sustainable outcomes.

This complementary relationship is particularly important in agricultural systems characterized by fragmented markets, resource constraints, technological change, and environmental uncertainty. Evidence from Uganda indicates that entrepreneurial attitudes and

capabilities can influence farmers' willingness and ability to adopt climate-smart agricultural technologies (Kirungi et al., 2023). At the same time, trust, information sharing, and supply-chain coordination are associated with agribusiness performance and the ability of enterprises to participate effectively in agricultural markets (Owot et al., 2023). Taken together, these findings suggest a sequential and relational process in which entrepreneurship education contributes to the formation of entrepreneurial human capital, institutional capacity provides the enabling conditions for its application, and their interaction may facilitate innovation, technology adoption, commercialization, value addition, and value-chain upgrading.

Despite these developments, the relevant literature remains conceptually fragmented. Entrepreneurship research has primarily examined education, entrepreneurial competencies, venture creation, and individual-level outcomes, whereas agricultural development research has more commonly emphasized productivity, technology adoption, commercialization, market participation, and institutional strengthening. Consequently, entrepreneurship education and entrepreneurial human capital are frequently examined separately from the institutional conditions governing agricultural value chains. Existing studies also provide limited integration of the mechanisms through which individual entrepreneurial capabilities and institutional capacity may jointly contribute to sustainable agribusiness transformation. This limitation is particularly important in the Ugandan context, where entrepreneurial activity occurs within agricultural value chains characterized by institutional, financial, infrastructural, market, and environmental constraints.

Existing reviews have contributed important insights into entrepreneurship education, agricultural value chains, institutional development, and agribusiness transformation, but these domains have generally been synthesized independently. As a result, there remains limited systematic understanding of how entrepreneurship education contributes to entrepreneurial human capital, how institutional capacity enables the application of those capabilities, and through which value-chain mechanisms their interaction may support sustainable agribusiness transformation. Addressing this gap requires an integrative perspective that connects capability development at the individual level with enabling resources and institutional arrangements at the organizational and value-chain levels.

Accordingly, this study conducts a systematic literature review centered on Uganda while incorporating evidence from the broader Sub-Saharan African context when it provides direct conceptual or empirical relevance to Uganda's agricultural value chains. Drawing on Human Capital Theory and the Resource-Based View, the study examines three related questions: how entrepreneurship education contributes to the development of entrepreneurial human capital in agribusiness contexts; how institutional capacity enables or constrains the productive application of entrepreneurial capabilities; and how the interaction between these dimensions contributes to value-chain upgrading and sustainable agribusiness transformation. The study further identifies structural constraints and synthesizes the mechanisms linking entrepreneurial capabilities, institutional support, innovation, market participation, value addition, and sustainable agribusiness outcomes. By integrating individual capability development with institutional and value-chain conditions, this review seeks to provide a more coherent conceptual explanation of sustainable agribusiness transformation and to generate implications for agricultural policy, entrepreneurship education, development programs, and future empirical research.

2. METHOD

Research Design

This study employed a Systematic Literature Review (SLR) to examine the relationships among entrepreneurship education, entrepreneurial human capital, institutional capacity, and sustainable agribusiness transformation within Uganda's agricultural value chains. The SLR

approach was selected because it provides a systematic and transparent procedure for identifying, evaluating, and synthesizing existing evidence while reducing potential selection bias and improving the reliability of the resulting synthesis (Tranfield et al., 2003; Page et al., 2021).

Unlike a conventional narrative review, the systematic review applied explicit procedures for literature identification, screening, eligibility assessment, quality appraisal, data extraction, and evidence synthesis. The review was guided by the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA 2020) framework, which was used to structure and report the identification, screening, eligibility assessment, and final inclusion of relevant studies (Page et al., 2021). This approach was considered appropriate because the literature relevant to entrepreneurship education, institutional capacity, agricultural value chains, and agribusiness transformation is distributed across several interconnected research domains.

Review Protocol and Search Strategy

A structured search strategy was developed to identify literature addressing entrepreneurship education, entrepreneurial human capital, institutional capacity, agricultural value chains, and sustainable agribusiness development. Searches were conducted across Scopus, Web of Science, ScienceDirect, Google Scholar, Emerald Insight, SpringerLink, and Wiley Online Library.

To capture policy, institutional, and development-oriented evidence relevant to the agricultural sector, additional searches were conducted through the Food and Agriculture Organization (FAO), World Bank, International Fund for Agricultural Development (IFAD), Organisation for Economic Co-operation and Development (OECD), Ministry of Agriculture, Animal Industry and Fisheries (MAAIF), and Uganda Bureau of Statistics (UBOS).

The search strategy combined terms representing the major concepts of the review using Boolean operators. The principal search structure was:

("entrepreneurship education" OR "entrepreneurial training" OR "entrepreneurial human capital")
AND
("agricultural value chains" OR "agribusiness" OR "agricultural enterprises")
AND
("capacity building" OR "institutional capacity" OR "organizational capability")
AND
("Uganda" OR "Sub-Saharan Africa")

The search emphasized literature published between 2010 and 2026 in order to capture contemporary developments in agricultural entrepreneurship, institutional development, and value-chain transformation. English-language publications were considered for eligibility. Foundational theoretical and methodological literature was also used throughout the manuscript to establish the theoretical and analytical foundations of the review.

Inclusion and Exclusion Criteria

Explicit eligibility criteria were applied to maintain consistency between the objectives of the review and the evidence selected for synthesis. Studies were considered eligible when they examined entrepreneurship education, entrepreneurial competencies, entrepreneurial human capital, capacity building, or institutional development in relation to agricultural value chains, agribusiness development, agricultural enterprises, or rural entrepreneurship.

The review prioritized empirical, review, and policy evidence directly relevant to Uganda and the broader Sub-Saharan African context. Evidence from other geographical settings was retained only when it provided directly relevant theoretical or conceptual insight into entrepreneurship education, entrepreneurial human capital, institutional capacity, or value-chain

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transformation. Such sources were used to support conceptual interpretation and were not treated as Uganda-specific evidence. Eligible publication types included peer-reviewed journal articles, conference proceedings, scholarly books, policy reports, and institutional publications. Publications were required to be available in English and to provide sufficient methodological and contextual information to permit meaningful interpretation and synthesis.

Studies were excluded when they focused exclusively on agricultural production without addressing entrepreneurship or institutional dimensions, lacked sufficient methodological transparency, represented duplicate publications, consisted solely of opinion pieces or non-scholarly commentary, or were unavailable in full-text form.

Study Selection Process

The study-selection process followed the PRISMA 2020 framework. Records identified through academic and institutional searches were compiled and screened for duplicate entries. The remaining records were subsequently assessed through title and abstract screening, followed by full-text evaluation using the predefined eligibility criteria.

The search initially identified **625 records**. After **108 duplicate records** were removed, **517 records** remained for title and abstract screening. A total of **428 records** were excluded at this stage, leaving **89 publications** for full-text assessment. Following full-text evaluation, **58 publications** were excluded, resulting in **31 studies** being retained for the final qualitative and thematic synthesis.

Of the 89 publications assessed in full text, 58 were excluded. The reasons were lack of direct relevance to agribusiness transformation (n = 21), failure to address entrepreneurship education (n = 11), failure to address institutional capacity (n = 9), insufficient methodological quality (n = 7), duplicative findings (n = 5), and inaccessible full text (n = 5). The remaining 31 publications were retained for qualitative and thematic synthesis. Figure 1 summarizes the complete study-selection process.

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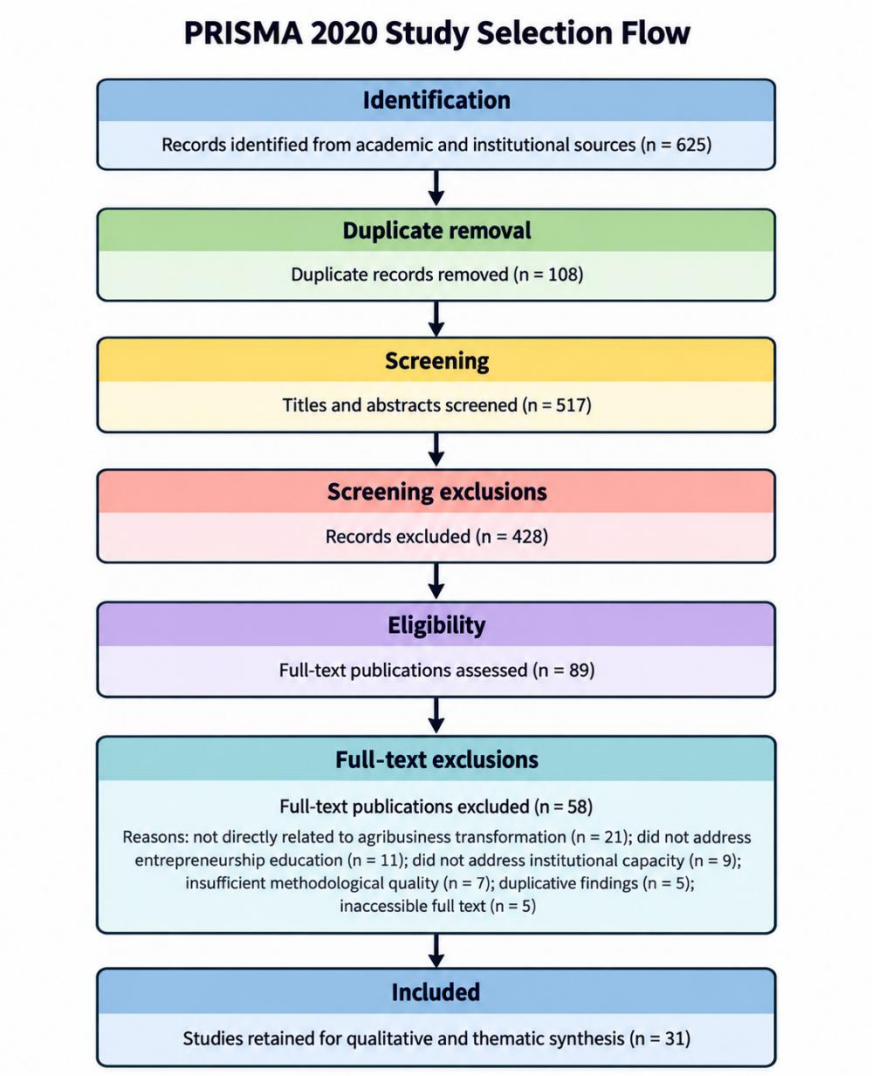


Figure 1. PRISMA 2020 study-selection flow.

Quality Assessment

To strengthen the credibility of the evidence synthesis, the selected sources were subjected to qualitative quality appraisal using criteria adapted from systematic review guidance in management and social science research (Tranfield et al., 2003). The appraisal considered clarity of research objectives, methodological appropriateness, data credibility and reliability, analytical rigor, relevance to the review questions, transparency of reporting, and the strength of the evidence presented.

Because the evidence base included heterogeneous source types, the appraisal was used to judge credibility and interpretive weight rather than to impose a single numerical score across fundamentally different designs. Empirical studies, reviews, and policy or institutional documents were therefore considered in relation to the methodological expectations appropriate to their source type. Sources with substantial weaknesses in methodological transparency or evidentiary relevance were not retained in the final synthesis.

Data Extraction

A structured evidence-extraction matrix was developed to facilitate systematic comparison across the selected literature. Information extracted from each source included

author and publication year, study location or geographical scope, source type, research objectives, theoretical framework, methodology or design, principal findings, implications for entrepreneurship education, implications for institutional capacity, and contributions to agribusiness transformation.

The extraction matrix provided a consistent structure for comparing evidence across different research designs and contexts. It also supported the identification of recurring patterns concerning entrepreneurial capability development, institutional support, innovation, market participation, and sustainable agribusiness transformation.

Data Analysis and Thematic Synthesis

The extracted evidence was analyzed using thematic synthesis. Thematic analysis was employed to identify recurring patterns, relationships, and conceptual themes across the heterogeneous body of literature (Braun & Clarke, 2006). The analytical process involved familiarization with the selected literature, initial coding of relevant findings, grouping related codes into broader categories, identification of recurring patterns, development of higher-order themes, and interpretation of the findings in relation to the study's theoretical framework.

To ensure consistency between the methodology and the presentation of findings, the thematic synthesis was organized around five interrelated themes: **Entrepreneurial Human Capital Development; Institutional Capacity and Support Systems; Innovation and Technology Adoption; Market Participation and Value Addition; and Sustainable Agribusiness Transformation Outcomes**. These themes provided the analytical structure for synthesizing evidence and subsequently developing the integrated conceptual framework.

Human Capital Theory and the Resource-Based View were used as complementary theoretical perspectives for interpreting the relationships identified through the synthesis. Human Capital Theory informed the interpretation of entrepreneurship education and entrepreneurial capability development, whereas the Resource-Based View provided a basis for examining the contribution of organizational and institutional resources to agribusiness transformation.

Review Rigor and Trustworthiness

Several procedures were employed to strengthen the transparency and trustworthiness of the review. These included the use of a predefined search strategy, explicit inclusion and exclusion criteria, systematic study-selection procedures, quality appraisal, structured evidence extraction, and thematic synthesis. The use of multiple academic and institutional information sources also broadened the evidence base and reduced dependence on a single source of literature.

Collectively, these procedures were intended to strengthen the transparency, consistency, and traceability of the review process. Given the heterogeneity of the included evidence, the resulting relationships are interpreted as patterns emerging from qualitative synthesis rather than as causal estimates. This distinction is maintained throughout the Results, Discussion, and Conclusion.

3. RESULTS AND DISCUSSION

Results

Following the PRISMA-guided selection process, 31 studies met the eligibility criteria and were retained for qualitative and thematic synthesis. The evidence base included empirical studies, systematic and literature reviews, theoretical contributions, policy documents, and institutional reports addressing entrepreneurship education, entrepreneurial human capital, institutional capacity, agricultural value chains, and agribusiness transformation.

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The thematic synthesis identified five interconnected themes: (1) Entrepreneurial Human Capital Development, (2) Institutional Capacity and Support Systems, (3) Innovation and Technology Adoption, (4) Market Participation and Value Addition, and (5) Sustainable Agribusiness Transformation Outcomes. These themes indicate that agribusiness transformation cannot be explained solely through individual entrepreneurial competencies or institutional conditions. Rather, the reviewed evidence points to a broader process in which entrepreneurial capabilities are developed and subsequently applied within institutional, technological, market, and structural environments.

Table 1 presents an analytical summary of key evidence sources that are explicitly discussed in the thematic synthesis. It is intended to show how the main strands of evidence contribute to the five themes rather than to function as a complete PRISMA inventory. Foundational theoretical works published before the defined review period are excluded from the table because their role is conceptual rather than evidentiary.

Table 1. Characteristics and Thematic Contributions of Key Evidence Sources

Study	Country/Region	Study Type	Main Focus	Principal Contribution	Theme
Unger et al. (2011)	Multi-country	Meta-analysis	Human capital	Human capital is associated with entrepreneurial success and firm performance	T1
Acemoglu & Robinson (2012)	Global	Comparative analysis	Institutions and development	Institutional conditions influence innovation and economic development	T2, T5
Government of Uganda (2013)	Uganda	National strategy	Long-term development	Commercial agriculture is positioned as an important component of national development	T4, T5
Fayolle & Gailly (2015)	Belgium	Quantitative study	Entrepreneurship education	Entrepreneurship education contributes to entrepreneurial attitudes and competency development	T1
Marvel et al. (2016)	Global	Literature review	Entrepreneurial human capital	Entrepreneurial knowledge and capabilities contribute to innovation and business development	T1, T3

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Study	Country/Region	Study Type	Main Focus	Principal Contribution	Theme
Nabi et al. (2017)	Multi-country	Systematic review	Entrepreneurship education	Entrepreneurship education contributes to entrepreneurial competencies and related entrepreneurial outcomes	T1, T3
Lans et al. (2018)	Africa	Empirical study	Agricultural entrepreneurship	Entrepreneurial competencies support agribusiness performance and innovation	T1, T3, T5
Reardon et al. (2019)	Developing countries	Review	Food-system transformation	Commercialization and value-chain modernization contribute to agricultural transformation	T3, T4, T5
Lackéus (2020)	Sweden	Comparative study	Experiential entrepreneurship education	Experiential approaches strengthen entrepreneurial competency development	T1, T3
Tittel & Terzidis (2020)	Germany	Conceptual review	Entrepreneurial competencies	Entrepreneurial competencies include innovation, opportunity recognition, leadership, and risk management	T1, T3
MAAIF (2020)	Uganda	Policy document	Agricultural development	Agribusiness development requires commercialization, value addition, and institutional strengthening	T2, T4, T5
NPA (2020)	Uganda	Policy document	National development planning	Agricultural modernization is important for structural transformation	T2, T5

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Study	Country/Region	Study Type	Main Focus	Principal Contribution	Theme
Barrett et al. (2022)	Africa	Literature review	Agricultural value chains	Institutional arrangements support competitiveness and market participation	T2, T4, T5
FAO (2023)	Global	Technical report	Sustainable agriculture	Sustainability involves interconnected economic, social, and environmental dimensions	T5
IFAD (2021)	Developing countries	Development report	Rural transformation	Entrepreneurship and rural institutions contribute to rural development	T1, T2, T5
OECD (2023)	Global	Policy review	Agricultural policy	Policy and institutional coordination support competitiveness and resilience	T2, T4, T5
UBOS (2024)	Uganda	Statistical report	Agriculture and economy	Agriculture remains important for employment and livelihoods	T5

Note: T1 = Entrepreneurial Human Capital Development; T2 = Institutional Capacity and Support Systems; T3 = Innovation and Technology Adoption; T4 = Market Participation and Value Addition; T5 = Sustainable Agribusiness Transformation Outcomes. Table 1 reports key sources used directly in the thematic narrative and should not be interpreted as an exhaustive list of all records retained at the PRISMA inclusion stage.

Entrepreneurial Human Capital Development

The first major theme concerns the development of entrepreneurial human capital through entrepreneurship education, training, and competency development. Across the reviewed literature, entrepreneurship education is consistently associated with the acquisition of entrepreneurial knowledge, skills, attitudes, and capabilities that support enterprise development. These include opportunity recognition, strategic thinking, problem-solving, innovation, business planning, risk management, and entrepreneurial self-efficacy (Fayolle & Gailly, 2015; Nabi et al., 2017; Tittel & Terzidis, 2020).

The findings suggest that entrepreneurship education should be understood as a capability-development mechanism rather than as entrepreneurial human capital itself. Entrepreneurship education provides learning opportunities through which individuals develop entrepreneurial competencies, whereas entrepreneurial human capital represents the accumulated knowledge, skills, experience, and capabilities that individuals can apply to entrepreneurial activity. This distinction is important because the effectiveness of entrepreneurship education ultimately depends on whether acquired capabilities can be translated into productive economic activities.

Within agricultural contexts, entrepreneurial human capital becomes particularly important as agricultural actors move from subsistence-oriented production toward

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commercially oriented agribusiness activities. Entrepreneurial competencies can strengthen farmers' and agribusiness operators' ability to identify market opportunities, diversify enterprise activities, engage in value addition, respond to changing consumer demands, and manage business uncertainty. Evidence from African agricultural contexts further suggests that entrepreneurial competencies support innovation and adaptation as agricultural enterprises become increasingly integrated into market-oriented value chains (Lans et al., 2018).

However, the synthesis also identifies limitations in entrepreneurship education. Educational interventions that emphasize theoretical business knowledge and planning without corresponding experiential learning, market exposure, mentorship, and practical enterprise development may generate competencies that are difficult to apply in real agribusiness environments. Entrepreneurial human capital therefore represents an important but incomplete explanation of agribusiness transformation.

Institutional Capacity and Support Systems

The second theme concerns institutional capacity and the support systems through which agricultural actors access resources, information, markets, technologies, and collective opportunities. Institutional capacity includes farmer organizations, cooperatives, extension systems, financial institutions, governance arrangements, and other organizations that contribute to the functioning of agricultural value chains.

The reviewed evidence indicates that stronger institutional arrangements are associated with improved coordination, information exchange, collective action, resource mobilization, and market participation. Farmer organizations and cooperatives can improve bargaining capacity, facilitate access to markets, reduce transaction barriers, strengthen knowledge exchange, and support collective responses to production and market challenges. Agricultural extension systems similarly provide channels through which farmers and agribusiness operators can obtain information, technical knowledge, and support for technology adoption.

Institutional capacity also appears to shape the extent to which entrepreneurial competencies can be productively applied. Agricultural actors may possess knowledge and entrepreneurial capabilities but remain unable to convert them into viable enterprise outcomes when access to finance, infrastructure, market information, extension services, technology, and coordinated value-chain arrangements is restricted.

The findings therefore suggest that institutional capacity functions primarily as an enabling condition for entrepreneurial activity. Its contribution lies not merely in providing isolated services but in creating an environment in which entrepreneurial competencies can be mobilized and connected to economic opportunities.

Innovation and Technology Adoption

Innovation and technology adoption emerged as a third major theme linking entrepreneurial capability development with agribusiness transformation. The reviewed literature indicates that entrepreneurial competencies can enhance agricultural actors' ability to recognize, assess, and exploit technological and business opportunities. Opportunity recognition, problem-solving, strategic decision-making, and innovative behavior may increase the capacity of agricultural entrepreneurs to experiment with new production technologies, business models, marketing methods, and value-adding activities.

However, innovation and technology adoption do not depend exclusively on individual capabilities. Their implementation is also influenced by extension systems, research institutions, financing mechanisms, information networks, organizational support, and access to relevant technologies. An agricultural entrepreneur may recognize the value of a new technology but remain unable to adopt it when financing, technical assistance, infrastructure, or institutional support is unavailable.

The synthesis therefore identifies a complementary relationship between entrepreneurial human capital and institutional support in the innovation process. Entrepreneurial human capital contributes to the recognition and evaluation of innovation opportunities, whereas institutional capacity provides resources and support mechanisms that can facilitate implementation.

This relationship is particularly relevant in agricultural systems characterized by technological change and environmental uncertainty. Innovation and technology adoption can support productivity, enterprise adaptation, value-chain competitiveness, and resilience, but their effectiveness is likely to vary according to the institutional and economic environment within which agricultural enterprises operate.

Market Participation and Value Addition

Market participation and value addition constitute the fourth major theme. Entrepreneurial capabilities can improve agricultural actors' ability to identify market opportunities, interpret consumer demand, differentiate products, diversify enterprise activities, and engage with commercially oriented value chains. These capabilities become increasingly important as agricultural enterprises move beyond primary production toward processing, branding, packaging, commercialization, and other value-adding activities.

Institutional systems complement entrepreneurial capability by providing access to market information, infrastructure, financing, standards, logistics, organizational networks, and governance mechanisms. Agricultural actors may therefore require both market-oriented entrepreneurial competencies and supportive institutional structures to participate effectively in higher-value market activities.

The reviewed evidence suggests that commercialization and value-chain upgrading are unlikely to result from capability development alone. Weak infrastructure, high transaction costs, limited financial access, fragmented markets, and inadequate institutional coordination can prevent agricultural actors from exploiting market opportunities even when relevant entrepreneurial competencies are present.

Market participation and value addition can therefore be interpreted as intermediate transformation mechanisms connecting entrepreneurial human capital and institutional capacity with broader agribusiness outcomes. Their importance lies in translating capabilities and institutional resources into observable changes in commercialization, enterprise upgrading, competitiveness, and value creation.

Sustainable Agribusiness Transformation Outcomes

The fifth theme integrates the preceding findings within the broader concept of sustainable agribusiness transformation. The synthesis indicates that transformation involves more than increasing agricultural production or productivity. It also encompasses commercialization, value addition, enterprise development, institutional coordination, innovation, market integration, competitiveness, and resilience.

The reviewed evidence identifies several structural conditions that may constrain these processes. Persistent barriers include limited access to finance, inadequate agro-processing and market infrastructure, high transaction costs, climate-related vulnerability, weak market coordination, limited digital technology adoption, inadequate policy implementation, and fragmented institutional support systems. These constraints can reduce the ability of agricultural actors to apply entrepreneurial competencies and can weaken the effectiveness of institutional interventions.

Limited financial access, for example, may prevent entrepreneurs from investing in technologies, processing facilities, or market expansion even when viable opportunities have been identified. Similarly, inadequate infrastructure can increase production, transportation, and transaction costs, while fragmented institutional arrangements can restrict access to information, technical support, finance, and markets.

Taken together, the findings suggest that sustainable agribusiness transformation emerges from a configuration of individual, institutional, technological, market, and structural factors. Entrepreneurship education contributes to the development of entrepreneurial human capital, while institutional systems influence the conditions under which those capabilities can be applied. Innovation, technology adoption, market participation, commercialization, value addition, and enterprise upgrading provide mechanisms through which these dimensions may contribute to more sustainable agribusiness outcomes.

Importantly, the synthesis does not establish that entrepreneurial human capital or institutional capacity independently causes sustainable transformation. Instead, the evidence indicates a recurring pattern in which entrepreneurial capabilities appear more useful when supported by appropriate institutional conditions, while institutional resources appear more productive when agricultural actors possess the capabilities required to utilize them effectively.

Discussion

The principal contribution of this review lies in explaining the relationship between entrepreneurial human capital and institutional capacity rather than treating them as isolated determinants of agribusiness development. The reviewed evidence suggests that entrepreneurship education can strengthen individual entrepreneurial capabilities, but the productive application of those capabilities depends substantially on access to resources, markets, infrastructure, information, technology, and institutional support. Conversely, institutional interventions may have limited effects when agricultural actors lack the competencies required to recognize opportunities and utilize available resources productively.

This interpretation strengthens the conceptual distinction between entrepreneurship education and entrepreneurial human capital. Entrepreneurship education represents a developmental process through which individuals acquire entrepreneurial knowledge and competencies. Entrepreneurial human capital, in contrast, represents the capabilities accumulated through education, training, experience, and learning that can subsequently be mobilized in entrepreneurial activity. The distinction clarifies why participation in entrepreneurship education does not automatically result in enterprise transformation. The effects of educational interventions depend partly on whether acquired capabilities can be exercised in supportive economic and institutional environments.

Human Capital Theory and Entrepreneurial Capability Development

The findings are broadly consistent with Human Capital Theory, which conceptualizes education, knowledge, skills, and experience as productive investments capable of improving individual performance and economic outcomes (Becker, 1993). In the context of agribusiness, entrepreneurship education can contribute to entrepreneurial human capital by strengthening opportunity recognition, innovation, strategic decision-making, market orientation, and business-management capabilities.

However, the synthesis also indicates an important limitation to an exclusively human-capital explanation. Entrepreneurial capabilities do not operate independently of context. Agricultural entrepreneurs may possess relevant knowledge and skills while remaining unable to establish or expand enterprises when financing, infrastructure, market information, technology, extension services, and organizational support are inadequate.

The findings therefore suggest that entrepreneurial human capital should be interpreted as a necessary but not necessarily sufficient condition for agribusiness transformation. Its economic value depends partly on whether the broader environment provides opportunities and resources through which entrepreneurial capabilities can be productively exercised. In this respect, the review provides a context-sensitive interpretation of Human Capital Theory by connecting individual capability development to the institutional conditions surrounding agricultural entrepreneurship.

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Institutional Capacity and the Resource-Based Perspective

Institutional capacity represents the complementary dimension of this relationship. Farmer organizations, cooperatives, extension agencies, financial institutions, governance structures, and collaborative networks can facilitate access to information, resources, technologies, markets, and collective action. These institutional arrangements can reduce transaction barriers, improve coordination, support technology adoption, and strengthen market participation.

The Resource-Based View provides a useful but partial lens for interpreting these findings. RBV traditionally explains competitive advantage through the possession and effective utilization of valuable organizational resources and capabilities (Barney, 1991). Entrepreneurial knowledge, organizational learning, managerial capabilities, and enterprise-level networks can therefore be understood as resources that contribute to agribusiness competitiveness.

Nevertheless, institutional capacity should not automatically be equated with firm-level resources. Farmer organizations, public extension systems, financial institutions, policy arrangements, and value-chain governance structures frequently exist outside the boundaries of an individual enterprise. The present findings therefore suggest that RBV is most appropriately applied to explain how entrepreneurial and organizational capabilities create productive potential, while institutional capacity is interpreted as part of the broader enabling environment influencing whether that potential can be mobilized.

This distinction also clarifies the different levels of analysis involved. Entrepreneurial human capital is primarily located at the individual or entrepreneurial-team level. Organizational capabilities exist at the enterprise or collective organizational level, while institutional capacity may operate across organizations, markets, networks, value chains, and policy systems. Sustainable agribusiness transformation therefore involves interactions across multiple analytical levels rather than a single firm-level resource process.

Integrating Entrepreneurial Human Capital and Institutional Capacity

The combined interpretation of Human Capital Theory and a resource-oriented perspective provides a more comprehensive explanation of agribusiness transformation than either perspective provides independently. Human Capital Theory explains how education and training contribute to the formation of entrepreneurial competencies. A resource-oriented perspective explains why capabilities require complementary resources for productive utilization. Institutional analysis then highlights how broader organizations, rules, networks, and support systems affect access to these resources and opportunities.

This integrated interpretation suggests a relational sequence. Entrepreneurship education contributes to entrepreneurial human capital development. Entrepreneurial human capital provides individuals with the capabilities needed to recognize opportunities, innovate, make strategic decisions, and manage enterprises. Institutional capacity provides enabling or constraining conditions that affect whether those competencies can be effectively deployed. Innovation, technology adoption, market participation, commercialization, and value addition subsequently provide mechanisms through which capabilities and institutional support can contribute to agribusiness transformation.

This sequence should not be interpreted as a deterministic causal chain. Rather, it represents a conceptual pattern identified through the synthesis of heterogeneous evidence. The included literature varies in design, geographical setting, unit of analysis, and evidentiary strength. Consequently, the present review proposes theoretically plausible relationships that require subsequent empirical examination.

Innovation and Market Participation as Transformation Mechanisms

One important contribution of the synthesis is the identification of innovation, technology adoption, market participation, and value addition as intermediate mechanisms. Previous discussions of entrepreneurship education often focus on venture creation or entrepreneurial intentions, while agricultural-development literature frequently emphasizes productivity and technology. Integrating these streams indicates that entrepreneurial capabilities may become relevant to agricultural transformation through their influence on how actors recognize, evaluate, and exploit innovation and market opportunities.

Institutional capacity is equally important within these mechanisms. Extension systems and knowledge networks can facilitate access to new technologies, while finance affects whether those technologies can be acquired. Infrastructure and market-information systems influence commercialization, and farmer organizations can strengthen bargaining power and collective market participation.

The effectiveness of similar entrepreneurial or agricultural-development interventions may therefore differ across institutional settings. The same entrepreneurship program may generate different outcomes depending on whether participants can access finance, technology, infrastructure, extension services, and markets. Likewise, institutional investments may generate uneven results when agricultural actors differ substantially in entrepreneurial capability.

Structural Conditions and Boundary Factors

The findings further indicate that the relationship between entrepreneurial human capital and institutional capacity operates within broader structural conditions. Financial constraints, infrastructure deficiencies, climate risks, weak commercialization systems, limited digital adoption, fragmented institutional support, and inconsistent policy implementation can restrict both capability development and its productive application.

These structural conditions represent important boundary factors for the proposed framework. They help explain why improvements in entrepreneurial competencies may not automatically translate into stronger agribusiness outcomes and why institutional strengthening may generate uneven effects across agricultural contexts.

Agricultural value chains also differ in their technologies, market structures, capital requirements, perishability, governance arrangements, and exposure to environmental risks. Consequently, the relative importance of entrepreneurial and institutional capabilities may vary across commodities and value-chain stages. This reinforces the need for future research to test the proposed framework across different agricultural industries rather than assuming uniform relationships.

Uganda and the Use of Regional Evidence

The Uganda-centered scope of the review provides contextual relevance but also requires careful interpretation. Uganda-specific evidence contributes direct insights regarding commercialization, agricultural institutions, enterprise development, farmer organizations, market coordination, and broader development priorities. Evidence from Sub-Saharan Africa supplements this literature by identifying patterns from agricultural systems facing comparable institutional and resource constraints.

Regional evidence, however, should not be treated as automatically transferable to Uganda. Institutional structures, infrastructure, agricultural commodities, market systems, financing arrangements, and policy environments differ across countries. The present synthesis therefore uses broader regional evidence to support conceptual interpretation while maintaining Uganda as the principal context of interest.

This distinction strengthens the review because it avoids both excessive geographical restriction and inappropriate generalization. It also identifies an important future research opportunity: comparative empirical studies could examine whether the relationships proposed here vary systematically across institutional environments and agricultural value chains.

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Theoretical Contribution and Research Gap

The review addresses fragmentation between entrepreneurship and agricultural-transformation scholarship. Entrepreneurship research commonly emphasizes entrepreneurial education, competencies, venture creation, and individual-level outcomes. Agricultural development research more frequently focuses on productivity, market participation, technological change, value chains, and institutional development. Examining these domains separately provides only a partial explanation of agribusiness transformation.
Table 2 summarizes the principal conceptual gaps addressed by the review.

Table 2. Research Gap and Contribution Matrix

Literature Area	Existing Knowledge	Identified Gap	Contribution of This Review
Entrepreneurship Education	Develops entrepreneurial knowledge and competencies	Limited integration with agricultural value-chain transformation	Positions entrepreneurship education as a mechanism for developing entrepreneurial human capital relevant to agribusiness
Entrepreneurial Human Capital	Knowledge and capabilities contribute to entrepreneurial performance	Limited explanation of how contextual conditions influence the application of these capabilities	Connects entrepreneurial human capital with institutional enabling conditions
Institutional Capacity	Institutional systems influence coordination, resources, and organizational performance	Frequently examined separately from entrepreneurial capability development	Explains institutional capacity as an enabling condition for applying entrepreneurial capabilities
Innovation and Technology Adoption	Innovation contributes to productivity and competitiveness	Limited integration with entrepreneurship and institutional-capacity perspectives	Identifies innovation and technology adoption as intermediate transformation mechanisms
Market Participation and Value Addition	Commercialization and value-chain upgrading support agricultural transformation	Limited attention to how entrepreneurial and institutional capabilities jointly enable these processes	Positions market participation and value addition as mechanisms connecting capabilities to transformation

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Literature Area	Existing Knowledge	Identified Gap	Contribution of This Review
Sustainable Agribusiness Transformation	Transformation involves productivity, markets, resilience, and sustainability	Existing explanations remain fragmented across individual, organizational, and institutional levels	Proposes an integrated multilevel perspective linking entrepreneurial human capital, institutional capacity, transformation mechanisms, and sustainable outcomes

The contribution of the study therefore does not lie in claiming that entrepreneurship education or institutional capacity is independently associated with agribusiness development. These relationships are already well established across their respective literatures. The more important contribution is the integration of capability development and institutional enabling conditions within a common explanation of agricultural value-chain transformation.

The proposed framework positions entrepreneurship education as an antecedent of entrepreneurial human capital rather than treating the two concepts interchangeably. Entrepreneurial human capital represents the capability base available for entrepreneurial action, while institutional capacity influences the conditions under which those capabilities can be mobilized. Innovation, technology adoption, market participation, value addition, and value-chain coordination provide pathways connecting these dimensions with sustainable agribusiness transformation.

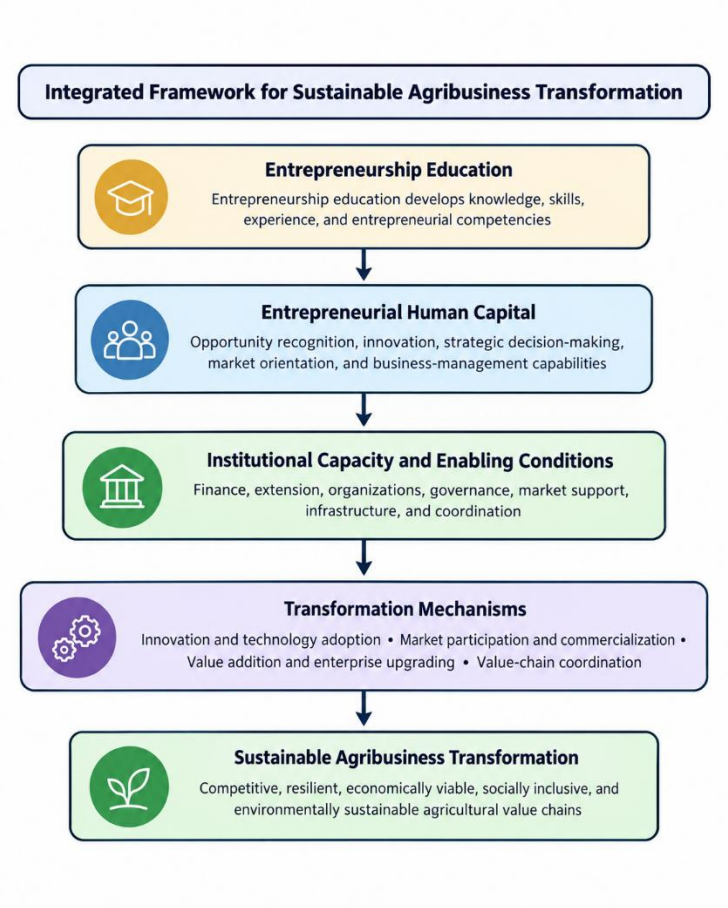


Figure 2. Integrated conceptual framework linking entrepreneurial human capital, institutional capacity, transformation mechanisms, and sustainable agribusiness transformation.

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Emerging Theoretical Proposition

Based on the thematic synthesis and theoretical integration, the study advances the following proposition:

Sustainable agribusiness transformation within agricultural value chains is more likely to emerge when entrepreneurial human capital develops alongside institutional conditions that enable its productive application, particularly through innovation, technology adoption, market participation, value addition, and value-chain coordination.

This proposition should be interpreted as a theoretically grounded outcome of the systematic synthesis rather than an empirically verified causal relationship. Future research can test the proposed relationships using quantitative, qualitative, mixed-method, comparative, and longitudinal designs.

Overall, the review suggests that sustainable agribusiness transformation requires a shift from isolated capability-building or institutional-strengthening interventions toward a more integrated perspective. Agricultural actors require entrepreneurial competencies to identify and exploit opportunities, while those competencies require appropriate institutional, market, technological, and structural conditions to generate productive outcomes. The interaction between these dimensions provides the conceptual foundation for explaining how entrepreneurship education and institutional capacity may jointly contribute to more competitive, resilient, and sustainable agricultural value chains.

4. CONCLUSIONS AND SUGGESTION

This systematic review indicates that sustainable agribusiness transformation within Uganda's agricultural value chains is best understood as a multidimensional process shaped by the complementary roles of entrepreneurial human capital and institutional capacity. Entrepreneurship education contributes to the development of opportunity recognition, innovation, business management, strategic decision-making, and risk-management capabilities, while institutional systems provide access to finance, markets, extension services, organizational support, and value-chain coordination. The reviewed evidence suggests that these dimensions are unlikely to generate optimal outcomes when operating independently. Rather, their complementarity may support innovation, technology adoption, market participation, value addition, enterprise upgrading, and value-chain governance. By integrating Human Capital Theory with a resource-oriented perspective, this study proposes an integrated framework that connects individual entrepreneurial capabilities with the institutional conditions that enable their productive application within agricultural value chains.

These conclusions should be interpreted in light of several limitations. The review relies on secondary evidence, focuses primarily on Uganda while incorporating selected evidence from broader Sub-Saharan African and conceptually relevant international contexts, and does not empirically test the relationships proposed in the conceptual framework. The heterogeneous evidence base also limits direct comparison across source types and contexts. Future research should therefore examine these relationships using quantitative, qualitative, mixed-method, comparative, and longitudinal designs, with particular attention to innovation, digital technologies, market integration, climate resilience, value-chain governance, and inclusion-related factors. From a practical perspective, the synthesis suggests that policymakers, educational institutions, development agencies, financial institutions, and farmer organizations should avoid isolated interventions and instead coordinate efforts to strengthen entrepreneurial capability development, institutional support, financial access, technology adoption, market linkages, and value addition. Such integrated approaches may provide a stronger basis for building more competitive, resilient, and sustainable agricultural value chains.

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