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Identifying the Sustainability Themes of Rural Entrepreneurial Enterprises Based on Modern Digital Interactions and Private Partnerships

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ABSTRACT

To compete effectively in today's competitive environment and achieve long-term sustainability, rural entrepreneurial enterprises need to leverage modern digital interactions while strengthening private partnerships. As the smallest social unit, villages play a fundamental role in economic and social development, and rural entrepreneurship is recognized as one of the key drivers of sustainable rural development. In this context, modern digital interactions facilitate communication, knowledge sharing, collaborative networks, and coordinated decision-making, while active private-sector participation enhances investment, innovation, and long-term business resilience. Accordingly, the present study aimed to identify the sustainability themes of rural entrepreneurial enterprises based on modern digital interactions and private partnerships through a qualitative research strategy. The study employed thematic content analysis based on the Braun and Clarke (2006) model. Data were collected through semi-structured, in-depth interviews and analyzed using open and axial coding procedures. The research population consisted of 12 experts, including university professors, sustainability and entrepreneurship consultants, and managers of rural small and medium-sized entrepreneurial enterprises. Purposive sampling was applied until theoretical saturation was achieved. The findings revealed that the sustainability of rural entrepreneurial enterprises is shaped through the integration of modern digital interactions and private partnerships, resulting in a comprehensive thematic framework comprising ten overarching themes: economic sustainability, social sustainability, environmental sustainability, governance and leadership, private partnerships, innovation and entrepreneurship, digital transformation, organizational resilience, ESG and strategic sustainability, and infrastructure and institutional environment. These themes were further supported by 236 basic themes, collectively forming a comprehensive sustainability model for rural entrepreneurial enterprises.

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Introduction

In the last two decades, the sustainability of rural entrepreneurial enterprises has become one of the fundamental axes of sustainable development and reduction of regional inequalities in light of the expansion of new digital interactions and the development of private partnerships. The evolution of digital technologies, the formation of interactive networks and the development of smart platforms have provided new opportunities for improving productivity, accessing markets, exchanging knowledge and strengthening cooperation among stakeholders. In contrast, challenges such as climate change, resource constraints, social inequalities, and changing consumer demand patterns for sustainable products and services have led rural entrepreneurial enterprises to rethink traditional ways of operating and move towards new models based on digital interactions and private partnerships (Tshikovhi et al., 2023; Castellani et al., 2024). In this framework, rural entrepreneurship has been proposed not only as an engine for local economic development, but also as a platform for creating social value, strengthening community resilience, and responding to global challenges such as the United Nations Sustainable Development Goals (SDGs) (Smith et al., 2022).

The country's Vision 1404 document also emphasizes achieving the first economic, scientific, and technological position in the region, rapid economic growth, and achieving full employment. Meanwhile, villages, as the smallest social units, are of particular importance, and the development of rural entrepreneurship can play a decisive role in reducing unemployment, increasing employment, and preventing rural migration to metropolises. However, rural entrepreneurial enterprises still face numerous structural vulnerabilities.

Limited access to digital infrastructure, financial resources, cooperation networks, and target markets, coupled with dependence on natural resources and weak institutional support, have presented serious challenges to the sustainability of these enterprises. In such circumstances, the development of new digital interactions and the expansion of private partnerships can enhance the capacity of rural entrepreneurial enterprises to achieve sustainability and competitiveness by facilitating access to markets, creating cooperation networks, transferring knowledge, and attracting capital. (Nabizadeh et al., 2026; Abdullah et al., 2023)

In recent years, rural entrepreneurship development has become one of the important strategies for economic and social development by relying on modern digital interactions and private partnerships. Utilizing the capacities of the private sector, digital technologies, and active participation of local stakeholders provides the basis for promoting innovation, developing markets, and increasing the sustainability of entrepreneurial enterprises. Meanwhile, local institutions, non-governmental organizations, the private sector, and digital interactive networks play an important role in strengthening public participation and creating a sustainable ecosystem for rural entrepreneurial enterprises by facilitating cooperation, knowledge transfer, and resource pooling (Hashemi et al., 2013).

Meanwhile, public-private partnerships have been identified as one of the most efficient mechanisms for providing resources, transferring knowledge, and reducing risk in rural development projects (Akinsulire et al., 2024; Li et al., 2024). These partnerships can reduce the main barriers facing rural entrepreneurs by facilitating access to capital, distribution networks, and new markets (Toha & Elbi, 2026). On the other hand, the development of small and medium-sized enterprises is recommended as a solution for developing countries to overcome the transition period. Improving and promoting the status of rural small and medium-sized entrepreneurial enterprises can play an important and effective role in setting the economic cycle in motion (Akbari et al., 2015; Malekan and Dabaghi-Koopai, 2016). Research has shown that the success and sustainability of these enterprises are influenced by managerial factors, government support, educational, economic, and socio-cultural factors (Mohammadi and Mohammadzadeh, 2019; Hosseininia and Fallahi, 2017).

Recent research findings show that the sustainability of small and medium-sized businesses is influenced by several factors. Li & Lemke (2025) introduced business sustainability as a multidimensional concept that includes economic, environmental, and social dimensions in a comprehensive study (Li & Lemke, 2025). Dalgali et al. (2026) also identified the main thematic clusters of the sustainability literature in small and medium-sized enterprises (Dalgali et al., 2026). In the field of resilient entrepreneurship, Saedi (2025) showed that resilience and stress management, access to diverse markets, a learning organizational culture, and entrepreneurial self-efficacy are among the effective causes of business sustainability (Saedi, 2025).

Awotunde (2025) also examined the psychological and organizational factors affecting entrepreneurial resilience using the dynamic capabilities theory (Awotunde, 2025). Despite the expansion of digital technologies and the increasing role of modern digital interactions in business development, rural small and medium-sized entrepreneurial enterprises still face numerous challenges on the path to achieving sustainability. Initial studies in several rural enterprises showed that despite the use of private partnerships, weakness in digital infrastructure, limitations in technological interactions, insufficient access to digital markets, and the lack of smart collaboration networks have seriously jeopardized the sustainability of these enterprises.

The continuation of this situation has consequences such as increasing unemployment, decreasing living standards, intensifying migration to large cities, and weakening the economic development of rural areas. Despite the increasing importance of digital technologies in promoting competitiveness, evidence shows that many of these enterprises face challenges in effectively utilizing digital interactions, maintaining competitive advantage, attracting resources, and developing private sector partnerships. From a practical perspective, the lack of a comprehensive and indigenous framework to explain the role of modern digital interactions and private partnerships in the sustainability of these enterprises has limited effective decision-making by policymakers and entrepreneurs. Also, from a theoretical perspective, no comprehensive model has been presented to explain the sustainability of rural entrepreneurial enterprises based on modern digital interactions and private partnerships. Based on a systematic review of the research background, there are significant gaps in the literature on the subject: lack of indigenous models for the sustainability of rural businesses in Iran, neglect of the role of private partnerships, insufficient attention to the impact of recent crises, the role of technology and innovation, lack of a comprehensive approach to sustainability dimensions, and neglect of entrepreneurial resilience in crisis situations (Zahmatkesh Momtaz et al., 2024; Azizi et al., 2022; Setiawati & Mastarida, 2024; Kannan and Gambetta, 2025). Internationally, Abdullah et al. (2023) identified barriers to implementing sustainable production in SMEs, and Madrid-Guijarro and Duréndez (2024) demonstrated the key role of management commitment to environmental performance (Abdullah et al., 2023; Madrid-Guijarro and Duréndez, 2024).

Given the above, the main objective of the research is to design a comprehensive model for the sustainability of rural entrepreneurial businesses with an emphasis on the role of private partnerships. This research provides an operational framework that, while identifying effective mechanisms for private partnerships, can be used as a roadmap for policymakers, managers and entrepreneurs towards the sustainable development of rural areas and covers the gap between theory and practice in this area.

Literature Review

Competition, productivity, and the formation of new firms play an important role in economic growth (Gholipour et al., 2021). Entrepreneurial individuals play an important role in the cyclical movement of economic development and are considered the source of major transformations in industrial, manufacturing, and service fields at the organizational level.

Since 1960, entrepreneurship has been considered as an important factor in economic and social change (Sharma et al., 2013), such that entrepreneurship has been introduced as an effective strategy in economic development and sustainable employment creation (Nwankwo and Kanyangale, 2023). Entrepreneurship, creativity, and risky businesses have been considered as the fuel of the modern economy (Anderson et al., 2020). Today, entrepreneurship has become an irreplaceable alternative as a strategy and strategy in the development, prosperity and growth of human societies, through which all factors, resources and facilities of a society are mobilized spontaneously and through being in an evolutionary process to achieve high social ideals, to become the source of many positive socio-economic effects and consequences (Mouraviev et al., 2020). Entrepreneurs, by utilizing creative power, taking risks and imposing ambiguity, are able to turn environmental threats and bottlenecks into opportunities with intelligence, elegance and speed as much as possible, and discover and exploit new opportunities in difficult conditions such as inflation, currency shortages, war, etc. (Fatemi, 2021).

Villages are one of the most important bases for the production of vital materials and meeting the basic needs of every society, and about 96 percent of agricultural products are produced in villages. Entrepreneurship can be a factor in encouraging and encouraging investment in villages by creating a competitive atmosphere among villagers, thereby creating jobs and encouraging new businesses in rural areas and improving the quality of life of villagers. Examples of this type of industry can be found in the repair of agricultural machinery parts or even the production of these parts in the village (Bahmani et al., 2021).

Rural entrepreneurship refers to a set of entrepreneurial activities that are carried out in rural areas and contribute to economic development, job creation, and improving the quality of life of villagers. Research shows that rural entrepreneurship does not occur solely through the development of development infrastructure and the provision of social services, but rather requires the creation of income-generating jobs for villagers and the acceleration of their cultural development through the development of rural entrepreneurial values and the promotion of "entrepreneurial literacy" of villagers (Zandiye et al., 2020).

In addition, given the importance of entrepreneurship, economic studies indicate that the development and growth of entrepreneurship in rural affairs is one of the most important ways to reduce the economic problems of villages, especially in developing countries, and to prevent their intensification in the future (Varkianipour et al., 2019). Rural entrepreneurs are individuals who carry out entrepreneurial activities to create industries and jobs in the rural economic sector (Kulkarni and Narkhede, 2016). A type of entrepreneurship that is carried out in rural areas by an entrepreneur in various fields of business, industry, etc. and involves all village resources, including village human resources, is known as rural entrepreneurship (Chatterjee et al., 2017).

The concept of sustainable corporate performance states that the objective function for any business organization is to create shareholder value for its stakeholders in accordance with the shareholder theory and its stakeholder theory (Hassas Yeganeh et al., 2018). Sustainable reporting forces companies to evaluate competition, conflicts, or providing short-term and long-term benefits to shareholders, society, creditors, employees, and the environment. Considering the classification of sustainable performance dimensions into two general parts: sustainable performance and sustainable disclosure (Rezaei et al, 2018), both parts are important for investors in assessing returns and risk appetite. Business sustainability is defined as the ability of an organization to maintain and continue its operations in the long term, taking into account economic, social, and environmental dimensions (Sharafi et al., 2018). In a comprehensive study using LDA topic modeling on 92,311 articles, Li and Lemke (2025) introduced business sustainability as a multidimensional concept that includes economic, environmental, and social dimensions.

They identified 150 basic theories that advance the concept of business sustainability in different research topics (Li and Lemke, 2025). Malisis et al. (2021) believe that small and

medium-sized enterprises play an important role in any economy because they contribute to GDP and employment. However, the sustainability of SMEs is a major concern because they prioritize economic performance over environmental and social performance to maintain competitiveness (Malisis et al., 2021). Small and medium-sized enterprises in developing countries continue to face difficulties in implementing improvement techniques such as lean and green production due to numerous external and internal barriers (Abdullah et al., 2023). Among them, tourism business owners face numerous challenges, including the vulnerability of the local economy, insufficient financing and investment, seasonality of tourism activities, inappropriate business environment, and low risk tolerance.

In the field of domestic studies, numerous studies have examined various dimensions of rural entrepreneurship and business sustainability. In two separate studies, Zahmatkesh Momtaz et al. (2024) considered the role of institutional factors, including property rights, reward systems, economic stability, transaction costs, transparency, and accountability, to be effective on rural entrepreneurship and emphasized the need to reorganize institutional structures.

These studies showed that family self-employment and lack of innovation are the dominant form of entrepreneurship and economic stability is considered the weakest component in this area. In the area of crises and business continuity, Azizi et al. (2022) identified four categories of financial-facilitative, service-supportive, business empowerment and market by studying rural businesses affected by the Covid-19 crisis, and showed that financial and supportive factors strengthen empowerment and market-oriented decision-making. In the area of entrepreneurship empowerment and development, Zandiye et al. (2020) emphasized the necessity of entrepreneurial values, entrepreneurial literacy and cognitive and emotional empowerment of villagers. Sharafi et al. (2018) in two separate studies introduced the sustainability of small and medium-sized agricultural businesses including three economic, social and environmental dimensions and classified the effective factors into two categories: intra-organizational and extra-organizational. Mohammadi and Mohammadzadeh (2019) also considered managerial, government-supportive, educational, economic and socio-cultural factors as explaining a major part of the variance in the success of rural production cooperatives. Hassas Yeganeh et al. (2018) emphasized the mutual relationship between financial and non-financial sustainable performance and the necessity of periodic reporting of sustainable performance. Ameri and Sabouri (2018) showed that education, membership history and entrepreneurship of board members, as well as age and experience of members, have a positive relationship with the success of rural cooperatives. In the field of rural entrepreneurship and its influencing factors, Hosseininia and Fallahi (2017) introduced a wide range of individual, socio-cultural, infrastructural, natural, legal, educational, institutional, political and economic factors affecting the development of rural entrepreneurship. Kaviani et al. (2018) and Mohammadi et al. (2018) respectively addressed the impact of tourism business environment development on sustainable rural development and the role of ecotourism in the economic sustainability of rural settlements.

Internationally, Rudat & Faems (2026) identified nine factors affecting scalability in sustainable entrepreneurship at three levels: system, investment, and entrepreneur, and presented a future research agenda. Toha & Elbi (2026) showed that green economy plays a mediating role between local income and financial sustainability, and Dalgali et al. (2026) identified the main thematic clusters of the SME sustainability literature, determinants, antecedents, outcomes, and research gaps. Kannan & Gambetta (2025) identified eight key themes including external environment, organizational context, technological opportunities, knowledge management, and sustainability outcomes in technology-based sustainability of SMEs. Zada & Erokhin (2025) found that financial literacy and entrepreneurial knowledge have direct and indirect effects on the growth of small and medium-sized forest enterprises, and access to finance plays a mediating role. Madrid-Guijarro and Duréndez (2024) showed that management commitment has a positive mediating role between sustainability drivers

and environmental performance of SMEs. Castellani et al. (2024) in the European SMEs Annual Report introduced the open strategic autonomy model as an opportunity to improve the competitiveness of SMEs in strategic value chains. Castellani et al. (2024) considered the dimensions of partner selection to achieve sustainable development goals to include economic, environmental, social and purpose, and proposed the "purpose" dimension as a complement to the three dimensions. Tshikovhi et al. (2023) emphasized the necessity of education, skill development and smart growth approaches to increase the sustainability of rural economies. Castellani et al. (2024) showed that green innovation is influenced by cultural elements, economic advantage and stakeholder pressure, and government management does not have a direct effect on it. Smith et al. (2022) found that despite SMEs' interest in sustainable development, power dynamics hinder the full implementation of sustainable development goals. Martins et al. (2022) identified four main clusters of research in the field of SME sustainability and highlighted gaps such as the lack of international, non-production and theory-based studies. Rehman et al. (2022) confirmed the mediating role of green capability between environmental sustainability orientation, CSR and environmental performance. Partlova (2021) explained the business potential of rural areas in four pillars of economic, infrastructure, social and environmental and showed its significant relationship with the financial health of firms. Malesios et al. (2021) proposed a comprehensive framework for analyzing the correlation between sustainability practices and SME performance. Anderson et al. (2020) emphasized the role of active stakeholder participation and networking in the success of rural entrepreneurial businesses and regional development. Weng & Chi (2019) showed that achieving regional advantages has a positive effect on the success of entrepreneurial family businesses.

Table 1. *Domestic Research Background*

Author(s)	Year	Research Focus	Key Findings
Zahmatkesh Momtaz et al.	2024	Institutional factors affecting rural entrepreneurship	Property rights, reward systems, transparency, accountability, transaction costs, and economic stability significantly influence rural entrepreneurship; institutional restructuring is essential.
Azizi et al.	2022	Business continuity during COVID-19	Four dimensions—financial facilitation, service support, business empowerment, and market orientation—enhance resilience in rural businesses.
Zandiye et al.	2020	Entrepreneurial empowerment	Entrepreneurial values, entrepreneurial literacy, and cognitive and emotional empowerment are critical for rural entrepreneurship development.
Sharafi et al.	2018	Sustainability of agricultural SMEs	Sustainability depends on economic, social, and environmental dimensions influenced by internal and external organizational factors.
Mohammadi & Mohammadzadeh	2019	Success factors of rural production cooperatives	Managerial capability, government support, education, economic conditions, and socio-cultural factors explain a substantial proportion of cooperative success.
Hassas Yeganeh et al.	2018	Sustainable performance	Financial and non-financial sustainability performance reinforce each other, highlighting the importance of periodic sustainability reporting.
Ameri & Sabouri	2018	Success of rural cooperatives	Education, board members' entrepreneurial experience, and members' age and experience positively affect cooperative performance.
Hosseininia & Fallahi	2017	Drivers of rural entrepreneurship	Individual, socio-cultural, infrastructural, legal, educational, institutional, political, and economic factors collectively shape rural entrepreneurship development.
Kaviani et al.	2018	Tourism business environment	Tourism business development contributes to sustainable rural development.
Mohammadi et al.	2018	Ecotourism and sustainability	Ecotourism strengthens the economic sustainability of rural settlements.

Table 2. *International Research Background*

Author(s)	Year	Research Focus	Key Findings
Rudat & Faems	2026	Scalability of sustainable entrepreneurship	Nine scalability factors were identified across system, investment, and entrepreneur levels.
Toha & Elbi	2026	Green economy and financial sustainability	Green economy mediates the relationship between local income and financial sustainability.
Dalgali et al.	2026	SME sustainability literature	Four major clusters—determinants, antecedents, outcomes, and research gaps—were identified.

Kannan & Gambetta	2025	Technology-based sustainability	Eight themes, including organizational context, external environment, technology, knowledge management, and sustainability outcomes, shape SME sustainability.
Zada & Erokhin	2025	Forest SMEs	Financial literacy and entrepreneurial knowledge directly improve growth, while access to finance acts as a mediator.
Madrid-Guijarro & Duréndez	2024	Environmental performance	Management commitment positively mediates the relationship between sustainability drivers and environmental performance.
Castellani et al.	2024	European SME Report	Open strategic autonomy enhances SME competitiveness within strategic value chains.
Tshikovhi et al.	2023	Rural economy sustainability	Education, skills development, and smart growth approaches increase rural sustainability.
Smith et al.	2022	Sustainable Development Goals	Power dynamics remain a major barrier to full SDG implementation in SMEs.
Martins et al.	2022	Sustainability research trends	International, service-sector, and theory-driven research remain underdeveloped.
Rehman et al.	2022	Green capability	Green capability mediates the relationship between environmental orientation, CSR, and environmental performance.
Partlova	2021	Rural business potential	Economic, infrastructure, social, and environmental pillars significantly improve firms' financial health.
Malesios et al.	2021	Sustainability practices	A comprehensive framework links sustainability practices with SME performance.
Anderson et al.	2020	Stakeholder participation	Active stakeholder participation and networking strengthen rural entrepreneurial success and regional development.
Weng & Chi	2019	Entrepreneurial family businesses	Regional competitive advantages positively influence entrepreneurial family business success.

The review of domestic and international studies indicates that sustainability in rural entrepreneurial businesses is a multidimensional phenomenon shaped by the interaction of economic, social, environmental, institutional, and managerial factors. Previous research has highlighted the importance of entrepreneurial capabilities, stakeholder participation, financial literacy, green innovation, institutional support, and organizational resilience in improving business sustainability. Likewise, studies on public–private partnerships have demonstrated their potential to mobilize resources, enhance collaboration, and create long-term value for rural communities.

Despite these valuable contributions, the existing literature reveals several important gaps. Most previous studies have examined sustainability drivers in isolation, focused on specific sectors such as agriculture or tourism, or relied predominantly on quantitative approaches. Furthermore, limited attention has been paid to developing an integrated, context-specific model that explains how private partnerships interact with multiple sustainability dimensions to strengthen rural entrepreneurial businesses.

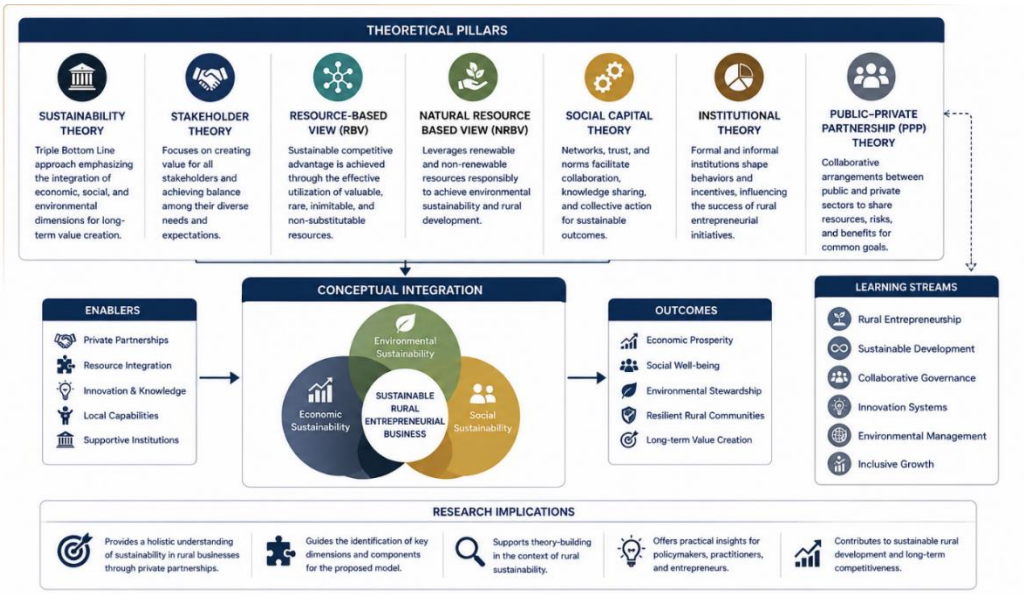

Figure1. *Theoretical Foundations for Rural Sustainability*

Accordingly, this study adopts an inductive qualitative approach using Braun and Clarke's (2006) thematic analysis to develop a comprehensive sustainability model grounded in the lived experiences and expert insights of rural entrepreneurship stakeholders. By integrating the key themes emerging from the literature with empirical evidence obtained through semi-structured interviews, the proposed conceptual model seeks to explain the dynamic relationships among institutional support, stakeholder collaboration, entrepreneurial capabilities, and sustainability outcomes, thereby providing a holistic framework for sustainable rural entrepreneurial development.

Method

The present study, with the aim of designing a sustainability model for rural entrepreneurial businesses based on private partnerships, has used thematic analysis as the main method of analyzing qualitative data. Thematic analysis, as a systematic method for identifying, analyzing, and reporting recurring patterns (themes) in qualitative data, provides a deep and multidimensional understanding of the phenomenon under study and allows the researcher to reveal the hidden meaning in the participants' responses to the research questions (Braun and Clarke, 2006). By providing a flexible but structured process, this method paves the way for discovering new concepts and enriching theoretical literature in less developed areas. Before starting the data analysis process, the unit of analysis for the research was identified. The unit of analysis is an element that has the ability to code and create categories and can include words, themes, people, events, or documents. Given the exploratory nature of the research and its goal of discovering dimensions and Sustainability components, theme was determined as the unit of analysis of semi-structured interviews. Choosing theme as the unit of analysis allows the researcher to identify semantic patterns hidden in the data and organize them at different levels, and allows the researcher to go beyond the level of mere description and interpret and explain the relationships between concepts. This study was conducted with an inductive approach (derived from data). In this approach, the analysis and coding process is completely data-based, and themes are extracted directly from the interviews without any specific theoretical assumptions. This approach, which is somewhat similar to data-based theory, allows the researcher to approach the data with an open mind and identify new and indigenous concepts in the field under study. To implement this process, the Brown and Clarke (2006) model, which is one of the most well-known and practical frameworks for theme analysis, was used. This model consists of six main stages: (1) Familiarization with data, (2) generating initial codes, (3) searching for themes, (4) reviewing themes, (5) defining and naming themes, and (6) generating reports.

The data collection tool in this study was semi-structured interviews. This type of interview, with a general guide to questions, provides the necessary flexibility to follow up in depth on the issues raised by the participants and increases the possibility of discovering hidden dimensions of the phenomenon. The research population consisted of 12 experts, university professors, and consultants in the field of sustainability and entrepreneurship development, as well as managers of small and medium-sized rural entrepreneurial enterprises. These participants were selected using a purposive sampling method and by considering criteria such as relevant work experience, scientific expertise, and practical familiarity with rural business issues and private partnerships. The sample size was determined according to the principle of theoretical saturation, so that the interview process continued until new data did not add new information to the findings.

Table 3. *Demographic Profile of Interview Participants*

Participant	Position	Field of Expertise	Education	Years of Experience
P1	University Professor	Sustainable Development	Ph.D.	22
P2	University Professor	Rural Entrepreneurship	Ph.D.	19
P3	Senior Consultant	Public–Private Partnerships	Ph.D.	18
P4	SME Manager	Rural Agribusiness	M.Sc.	16
P5	University Professor	Entrepreneurship	Ph.D.	20

P6	Rural Business Manager	Cooperative Development	M.Sc.	14
P7	Senior Consultant	Sustainability Management	Ph.D.	21
P8	SME Manager	Rural Tourism	M.Sc.	13
P9	University Professor	Business Management	Ph.D.	24
P10	Rural Enterprise Manager	Local Economic Development	M.Sc.	15
P11	Senior Consultant	Rural Development	Ph.D.	17
P12	SME Manager	Agricultural Entrepreneurship	M.Sc.	12

Participants were selected through purposive sampling based on their academic expertise, professional experience, and practical involvement in rural entrepreneurship, sustainability, and private partnerships. To ensure confidentiality, participants are identified using anonymous codes (P1–P12), while the sample size was finalized upon reaching theoretical saturation.

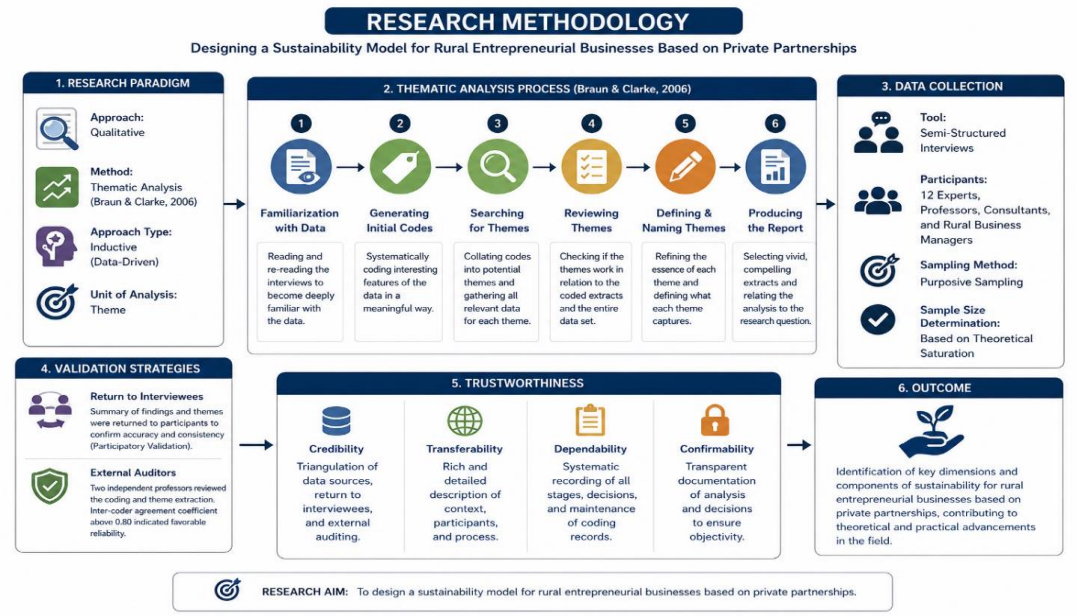

Figure2. *methodology flowchart*

To validate the research findings, two main strategies were used: returning to the interviewees and using external auditors. In the return-to-interview strategy, a summary of the findings and themes extracted was provided to the participants and they were asked to confirm the accuracy and consistency of the findings with their own views. This process, known as participatory validation, played an effective role in increasing the reliability of the results. In the strategy of using external auditors, two experienced professors in the field of management and entrepreneurship who were not involved in the research process, as independent evaluators, reviewed the coding and theme extraction process and their level of agreement with the codes extracted by the researcher was calculated (an inter-coder agreement coefficient above 0.80 indicated favorable reliability). In addition, to increase the transferability of the findings, a rich and detailed description of the research context, participants, and analysis process was provided so that readers could judge the similarities and differences between their research context and the context of this study. Also, the reliability of the research was ensured through accurate and systematic recording of all stages of analysis, documentation of decisions, and maintenance of coding records. Semi-Structured Interview Questions:

1. From your experience, what are the most important factors that contribute to the long-term sustainability of rural entrepreneurial businesses?
2. How do private partnerships influence the development, growth, and sustainability of rural entrepreneurial businesses? Please provide practical examples where possible.
3. What institutional, financial, social, or environmental challenges limit the effectiveness of private partnerships in supporting rural entrepreneurial businesses?
4. What strategies or mechanisms do you believe can strengthen collaboration between private partners and rural entrepreneurs to achieve sustainable development?

5. If you were to design an ideal sustainability model for rural entrepreneurial businesses based on private partnerships, what key components and relationships should it include?

Findings

The data extracted in the first phase were extracted from the interviews. A sample table of extracted codes is given in Table 1.

Table 4. *Example of Thematic Analysis Coding*

Summary and Segmented Text	Basic Themes	Overarching Theme
A higher operating profit margin improves the firm's ability to compete and survive in the long term.	Increasing Operating Margins	Economic Sustainability
Diversifying income sources reduces dependence on a single market and strengthens financial resilience.	Income Diversification	Economic Sustainability
Access to affordable financial resources enables businesses to expand and invest in new opportunities.	Financial Accessibility	Economic Sustainability
Efficient cost management improves profitability without compromising product quality.	Cost Efficiency	Economic Sustainability
Long-term financial planning helps businesses maintain stable growth during economic fluctuations.	Financial Planning	Economic Sustainability
Investing in local value chains increases revenue while supporting rural economic development.	Strengthening Local Value Chains	Economic Sustainability
Market-oriented pricing strategies improve competitiveness and customer retention.	Competitive Pricing	Economic Sustainability
Reinvesting profits into business development enhances long-term sustainability.	Business Reinvestment	Economic Sustainability
Creating stable employment opportunities contributes to both business growth and local economic welfare.	Employment Stability	Economic Sustainability
Continuous investment in innovation improves productivity and strengthens the firm's competitive position.	Investment in Innovation	Economic Sustainability

The extracted basic concepts were categorized into three levels of overarching, organizing, and basic themes based on the analysis model. Table 2 shows the extracted components in this category.

Table 5. *Overarching, organizing, and basic themes of entrepreneurial firm sustainability*

Overarching Theme	Organizing Theme	Refined Basic Themes (Initial Codes)
Economic Sustainability	Financial Performance	Increase operating margins; Smart cash-flow management; Dynamic cost optimization; Value-added product development; Real-time financial monitoring
	Financial Independence	Internal capital formation; Sustainable working capital; Reinvestment reserves; Reduced dependency on subsidies; Community-based financing
	Sustainable Financing	Regional investment funds; Collaborative financing; Supply-chain financing; Shared investment mechanisms; Alternative funding channels
	Market Development	Regional branding; Direct-to-customer channels; Digital marketplace expansion; Export market exploration; Interactive customer engagement
	Sustainable Supply Chain	Local supplier integration; Transparent sourcing; Adaptive logistics; Resource traceability; Collaborative procurement
	Productivity	Lean production; Energy optimization; Equipment efficiency; Time optimization; Standardized workflows
	Economic Resilience	Market diversification; Crisis reserves; Flexible cost structures; Risk-sharing mechanisms; Adaptive pricing strategies
Social Sustainability	Social Capital	Community trust; Local collaboration networks; Organizational belonging; Continuous community dialogue; Shared social identity
	Stakeholder Engagement	Participatory decision-making; Local council collaboration; Customer co-development; Supplier involvement; Multi-actor collaboration
	Social Responsibility	Rural education support; Community health investment; Local infrastructure improvement; Community development projects; Quality-of-life enhancement
	Employee Well-being	Job security; Fair compensation; Career development; Participatory management; Work-life balance
	Human Capital	Technical upskilling; Managerial capability development; Continuous learning; Knowledge-sharing culture; Leadership pipeline
Environmental Sustainability	Resource Management	Smart energy management; Water stewardship; Resource monitoring; Low-impact technologies; Biodiversity conservation
	Green Production	Eco-design; Low-carbon production; Sustainable materials; Cleaner production methods; Environmental compliance
	Waste Management	Circular material use; Recycling systems; Packaging reuse; By-product recovery; Product life-cycle management
	Green Innovation	Clean technology adoption; Sustainable product design; Resource-efficient innovation; Eco-packaging; Green investment

	Circular Economy	Material reuse; Product refurbishment; Equipment renewal; Resource sharing; Reduced raw-material extraction
Governance & Leadership	Partnership Leadership	Shared leadership; Collaborative decision-making; Dialogue-based governance; Conflict resolution; Consensus building
	Corporate Governance	Financial transparency; Internal controls; Board oversight; Accountability; Stakeholder rights protection
	Business Ethics	Fair transactions; Contract integrity; Customer rights; Ethical competition; Responsible conduct
	Long-Term Thinking	Strategic foresight; Scenario planning; Sustainable growth management; Long-term investment; Continuous performance review
	Knowledge Management	Knowledge repositories; Experience transfer; Organizational learning; Innovation documentation; Institutional memory
Private Partnerships	Capital Partnership	Co-investment; Shared ownership; Regional investment pools; Infrastructure investment; Joint financial commitment
	Knowledge Partnership	Technology diffusion; Managerial knowledge exchange; Research collaboration; Specialized training; Expert consulting
	Marketing Partnership	Joint branding; Cooperative promotion; Shared sales channels; Collaborative exports; Market expansion
	Networking	Business clusters; Strategic alliances; Integrated supplier networks; Professional communities; Cross-enterprise collaboration
	Value Co-Creation	Joint product development; Shared R&D; Collaborative design; Process co-improvement; Customer value creation
Innovation & Entrepreneurship	Product Innovation	New product creation; Quality enhancement; Packaging innovation; Customer-oriented design; Product differentiation
	Process Innovation	Workflow redesign; Production optimization; Smart mechanization; Time reduction; Process integration
	Innovation Capability	Creativity sessions; Idea generation; Digital design tools; Advanced equipment adoption; Innovation culture
	Sustainable Entrepreneurship	Opportunity recognition; Local need identification; High-value products; Social problem solving; Sustainable opportunity creation
	Innovation Ecosystem	University-industry collaboration; Student engagement; Applied research; Knowledge commercialization; Joint research initiatives
Digital Transformation	Process Digitalization	Workflow automation; Resource planning; Customer relationship systems; Digital inventory management; Integrated business systems
	Digital Marketing	Online sales; Social commerce; Rural digital platforms; E-commerce integration; Customer experience enhancement
	Data-Driven Decisions	Business analytics; Customer behavior insights; Price forecasting; Performance dashboards; Predictive decision support
	Intelligent Operations	Demand forecasting; Inventory optimization; Production prediction; Smart scheduling; Decision automation
	Digital Maturity	Digital skills; Connected infrastructure; Smart equipment; Digital literacy; Technology readiness
Organizational Resilience	Crisis Management	Economic shock response; Emergency reserves; Supplier diversification; Cost flexibility; Rapid recovery planning
	Adaptive Flexibility	Rapid change adaptation; Multi-skilled workforce; Flexible production; Modular operations; Agile contracts
	Business Diversification	Product diversification; Complementary offerings; Market expansion; Cross-border opportunities; Revenue diversification
	Learning from Crises	Lessons learned; Error documentation; Crisis-plan updates; Process refinement; Continuous improvement
ESG & Strategic Sustainability	Environmental Dimension	Pollution reduction; Water management; Green landscape initiatives; Cleaner production; Environmental stewardship
	Social Dimension	Employee welfare; Family support; Inclusive opportunities; Fair wages; Community inclusion
	Governance Dimension	Contract transparency; Community reporting; Financial disclosure; Accountability mechanisms; Ethical oversight
	Sustainability Reporting	Performance disclosure; Sustainability ratings; Annual sustainability reports; Impact monitoring; Transparency culture
	Organizational Reputation	Brand credibility; Public trust; Social legitimacy; Community acceptance; Reputation resilience
Infrastructure & Institutional Environment	Physical Infrastructure	Reliable transport; Sustainable energy; Clean fuel; Backup systems; High-quality connectivity
	Legal Support	Supportive regulations; Insurance access; Export incentives; Tax facilitation; Administrative simplification
	Local Institutions	Cooperatives; Professional associations; Local councils; Community coordination; Institutional collaboration
	Educational Services	Skill-development programs; Business consulting; Marketing workshops; Financial literacy; Continuous capacity building
	Business Environment	Economic stability; Private-sector support; Regulatory consistency; Inflation resilience; Financial transaction facilitation

Based on the components categorized in Table 5, the thematic network is arranged schematically, showing the relationships within the components and dimensions based on the overarching, organizing, and basic themes in Figure 1.

Figure 2. *Network of sustainability themes for entrepreneurial enterprises*

Analysis of data from semi-structured interviews with experts, academics, consultants in the field of sustainability and entrepreneurial development, and managers of rural small and medium-sized entrepreneurial enterprises led to the identification of a comprehensive network of themes affecting the sustainability of rural entrepreneurial businesses based on private partnerships. The findings were organized into 10 overarching themes, 53 organizing themes, and 236 basic themes that cover different dimensions of sustainability.

The identified overarching themes include: economic sustainability with components such as financial performance, financial independence, sustainable financing, market development, sustainable supply chain, productivity, and economic resilience; social sustainability including social capital, stakeholder participation, social responsibility, employee satisfaction, human capital, and succession planning; environmental sustainability with dimensions of resource management, green production, waste management, green innovation, and circular economy; Governance and leadership, including participatory leadership, corporate governance, business ethics, long-term thinking, and knowledge management; private partnerships with components of capital participation, knowledge participation, marketing participation, networking, and value co-creation; innovation and entrepreneurship, including product innovation, process innovation, innovation capability, sustainable entrepreneurship, and innovation ecosystem; digital transformation with dimensions of process digitization, digital marketing, data-centricity, artificial intelligence, and digital maturity; organizational resilience, including crisis management, flexibility, diversity of activities, and learning from crises; ESG and strategic sustainability with environmental, social, and governance dimensions, ESG reporting, and organizational reputation; and finally,

the theme of infrastructure and institutional environment, including physical infrastructure, legal support, local institutions, educational services, and the business environment.

These themes indicate that the sustainability of rural entrepreneurial businesses is a multidimensional and systematic phenomenon that interacts with each other, and none of the dimensions alone can guarantee the continuity and longevity of these enterprises.

Discussion

The sustainability of rural entrepreneurial enterprises based on modern digital interactions and private partnerships is a complex, multidimensional and systematic phenomenon that is formed in the interaction between economic, social, environmental, institutional, managerial and technological factors. The findings of this study showed that economic sustainability, as the foundation for the continuity of the activities of enterprises, with components such as financial performance, financial independence, sustainable financing, market development, productivity and economic resilience, along with the use of digital technologies and the development of smart markets, plays a fundamental role in the continuity of the activities of these businesses. The theme of "economic sustainability" is consistent with domestic research; in such a way that Zahmatkesh Momtaz et al. (2024) have emphasized the role of economic stability, transaction costs and the reward system in the development of entrepreneurship, which is in line with the components of financial performance, financial independence and economic resilience of this study. Also, Sharafi et al. (2018) have considered business sustainability to consist of economic, social and environmental dimensions, which is consistent with the multidimensional approach of the present study. At the international level, Toha and Elbi (2026) have highlighted the role of green economy and new technologies in strengthening the financial sustainability of rural small and medium-sized enterprises, which is consistent with the components of sustainable financing and the development of digital markets. The findings also showed that economic sustainability will not be sustainable without strengthening social capital and network interactions. In this regard, social sustainability, by emphasizing social capital, stakeholder participation, social responsibility, human capital and digital interactions between actors in the entrepreneurial ecosystem, plays a complementary and essential role in the sustainability of enterprises. This finding is consistent with Mohammadi and Mohammadzadeh (2019) on the role of social and cultural factors in the success of rural cooperatives. Also, Martins et al. (2022) have emphasized the importance of social and cultural interactions in the success of sustainability policies, which is consistent with the findings of this study, especially in the context of the role of digital interactions in strengthening cooperation and participation. On the other hand, environmental sustainability, as one of the fundamental pillars of sustainable development, with components such as resource management, green production, circular economy and green innovation, along with the use of digital technologies to monitor, manage and optimize resource consumption, has become a strategic necessity for rural entrepreneurial enterprises. This theme is consistent with the research of Madrid-Guijarro and Duréndez (2024) on the environmental performance of small and medium-sized enterprises and the research of Castellani et al. (2024) on the role of green innovation and technology in promoting sustainability. Also, Rehman et al. (2022) have emphasized the role of green capabilities in improving environmental performance, which is in line with the components of green production, green innovation, and smart resource management in this research. At the domestic level, Sharifi et al. (2019) have introduced the environmental dimension as one of the main pillars of sustainability, which the findings of the present study complement and explain in the context of modern digital interactions and private partnerships.

New digital interactions and private partnerships, as one of the most important overarching themes, play a pivotal role in the sustainability of rural entrepreneurial enterprises. The research findings showed that these interactions go beyond providing financial resources and include dimensions such as technological collaborations, knowledge exchange, digital

marketing, smart networking, value co-creation, and the development of digital ecosystems. This finding indicates that the sustainability of rural enterprises in the era of digital transformation depends more than ever on the quality of digital interactions between stakeholders and effective private sector participation. Although Castellani et al. (2024) have pointed out the importance of selecting business partners in achieving sustainable development goals, they have not directly examined the role of new digital interactions in the sustainability of rural entrepreneurial enterprises. Also, Hashemi et al. (2013) emphasized the role of local institutions and non-governmental organizations in entrepreneurship development, but they have not considered the technological and digital dimensions. Therefore, components such as technological cooperation, knowledge sharing, digital marketing, smart networking, and value co-creation are considered to be the main innovations of the present study. Also, governance and leadership, with an emphasis on participatory leadership, corporate governance, business ethics, knowledge management, and digital transformation leadership, provide the necessary institutional framework for sustainability. This finding is in line with the research of Hosseininia and Fallahi (2017) on institutional and managerial factors. At the international level, Castellani et al. (2024) have emphasized the importance of governance and the selection of strategic partners in achieving sustainable development goals, which is consistent with the findings of this study. On the other hand, innovation and entrepreneurship, along with digital transformation, are considered the main engines of sustainability of rural entrepreneurial enterprises. Digital technologies increase the ability of firms to adapt to environmental changes and create competitive advantage by providing a platform for innovation, developing communication platforms, making processes smarter, and expanding digital markets. The theme of "innovation and entrepreneurship" is in line with the research of Hosseininia and Fallahi (2017). Also, Castellani et al. (2024) have emphasized the role of green innovation, and Kannan and Gambetta (2025) have emphasized the role of technology in the sustainability of small and medium-sized enterprises, which is consistent with the components of product innovation, process innovation, innovation ecosystem, and digital maturity in this study. In addition, Tshikovhi et al. (2023) have also highlighted the role of training and improving digital skills in the smart development of rural economies, which is confirmed by the findings of the present study. Finally, organizational resilience, infrastructure, and institutional environment are fundamental foundations for the sustainability of enterprises in dynamic and changing environments. The results showed that the development of digital infrastructure, institutional support, quality of laws, capacity of local institutions, and access to technology, along with modern digital interactions and private partnerships, play a decisive role in the continuity of activity and increasing the competitiveness of rural entrepreneurial enterprises. This finding is consistent with the research of Zahmatkesh Momtaz et al. (2024) and Hashemi et al. (2013). Overall, the extracted pattern shows that the sustainability of rural entrepreneurial enterprises based on modern digital interactions and private partnerships requires an integrated approach in which economic, social, environmental, technological, and institutional dimensions interact with each other in a synergistic and systematic manner.

Conclusion

The findings of the thematic analysis demonstrate that the sustainability of rural entrepreneurial businesses cannot be explained through a single economic or managerial perspective; rather, it emerges as a dynamic and interconnected system shaped by multiple organizational, institutional, social, environmental, and technological dimensions. The extracted thematic network reveals that private partnerships extend beyond financial collaboration and function as strategic mechanisms for knowledge exchange, value co-creation, market expansion, resource integration, and collective innovation. Simultaneously, economic sustainability is reinforced through resilient financial structures, adaptive market development, and efficient

resource management, while social sustainability depends on stakeholder participation, community trust, human capital development, and shared responsibility. Environmental sustainability further strengthens long-term competitiveness through resource stewardship, circular economy practices, and continuous green innovation.

Moreover, the results indicate that governance quality, long-term strategic thinking, knowledge management, and organizational resilience operate as enabling capabilities that enhance the effectiveness of private partnerships and improve the capacity of rural businesses to respond to uncertainty and changing market conditions. The emergence of digital transformation as a cross-cutting dimension highlights the growing importance of integrated processes, data-informed decision-making, intelligent operations, and digital capabilities in supporting sustainable business development. Collectively, these findings suggest that sustainable rural entrepreneurship should be understood as an integrated ecosystem in which economic performance, collaborative governance, environmental responsibility, social legitimacy, innovation, and institutional support continuously interact. Based on these interconnected themes, the present study proposes a comprehensive conceptual model that explains how private partnerships serve as a central integrating mechanism linking sustainability capabilities with long-term entrepreneurial success and sustainable rural development.

Practical suggestions

1. Managers of rural entrepreneurial enterprises should use digital technologies to create smart financial systems, develop electronic payments, manage financial data, and reduce dependence on traditional resources, thereby providing the basis for promoting financial independence, improving economic performance, and sustainable investment.
2. By launching online stores, participating in e-commerce platforms, digital marketing, online branding, and identifying national and international markets, access to markets and the sales share of rural products should be increased.
3. By using digital technologies in supply chain management, smart collaboration with suppliers, inventory monitoring, waste reduction, energy consumption optimization, and process standardization, the efficiency and operational sustainability of enterprises should be improved.
4. Through the creation of digital networks of cooperation, continuous interaction with the private sector, local institutions, universities and non-governmental organizations, the field of knowledge exchange, trust building and expansion of stakeholder participation should be provided.
5. By training digital, managerial and entrepreneurial skills, developing organizational learning, training future managers and improving the technological competencies of employees, the innovation capacity and continuity of enterprises should be strengthened.
6. By using smart technologies for resource management, green production, reducing energy consumption, recycling and controlling pollutants, the environmental performance of rural enterprises should be improved.
7. By developing information transparency systems, smart control, knowledge management, information security and compliance with professional ethics, the trust of stakeholders and the quality of enterprise governance should be improved.
8. Investing in high-speed internet, sustainable communications, cloud infrastructure, smart devices and digital services will provide the necessary platform for the development of modern digital interactions in rural areas.
9. Developing facilitating laws, supporting rural digital businesses, providing tax incentives and technological facilities, reducing administrative barriers and supporting innovation will provide the basis for the growth of these enterprises.
10. Increasing the capacity of entrepreneurship and innovation in rural areas by supporting innovation centers, accelerators, cooperatives, local organizations and holding digital training and consulting courses.

11. Facilitating the transfer of knowledge, technology and intellectual capital to rural entrepreneurial enterprises by creating strategic partnerships between enterprises, technology companies, universities and research centers.
12. By creating collaboration platforms, digital marketing networks, joint brands, innovation clusters and inter-firm collaborations, joint value creation and competitiveness of enterprises will increase.
13. By jointly investing in research and development, designing technology-based products, improving processes and using digital innovations, the added value and competitive advantage of rural enterprises will be strengthened.
14. The establishment of enterprise resource planning systems, customer relationship management, process automation, online sales and e-commerce will pave the way for the digital transformation of enterprises.
15. By utilizing big data, artificial intelligence and market and customer data analysis, demand forecasting, inventory management and production planning will be carried out with greater accuracy and efficiency.
16. By developing digital literacy, training in the use of new technologies, access to high-speed internet, and smart devices, the capacity for modern digital interactions among entrepreneurs and residents of rural areas should be strengthened.

Declaration of Competing Interest

The author declares that he has no competing financial interests or known personal relationships that would influence the report presented in this article.

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