World Journal of Social Science and Humanities
worldsocialjournal.com
Online ISSN: 3107-989X
Received: 12-10-2026, Accepted: 11-11-2026, Published: 26-11-2026
Volume 2, Issue 4, 2026, Page No. 12-25

Integrating entrepreneurial ecosystems, women's entrepreneurship and Indigenous Knowledge Systems: A conceptual framework for community-centred sustainable enterprise development

B Dharmalingam
ICSSR Senior Fellow, Dept of Women's Studies, Alagappa University, Karaikudi, Tamil Nadu, India

Abstract
Purpose: This conceptual paper addresses the limited theoretical integration of entrepreneurial ecosystems, women's entrepreneurship and Indigenous Knowledge Systems (IKS), particularly in culturally diverse developing economies. Design/methodology/approach: Drawing on Entrepreneurial Ecosystem Theory, the Resource-Based View, women's entrepreneurship scholarship, Indigenous Entrepreneurship research and sustainable livelihoods and capability perspectives, the paper develops an integrated conceptual framework through an interdisciplinary synthesis of established literature. Findings: The proposed EE–WE–IKS framework conceptualises entrepreneurial ecosystems as enabling institutional environments, Indigenous Knowledge as culturally embedded knowledge resources, and women entrepreneurs as agents who mobilise and transform knowledge through entrepreneurial innovation. The framework proposes ten theoretically examinable propositions linking ecosystem support, women's entrepreneurial agency, responsible knowledge mobilisation, innovation, enterprise competitiveness, sustainable livelihoods, community resilience and inclusive development. Originality/value: The paper extends entrepreneurial ecosystem scholarship by incorporating gender, Indigenous Knowledge, cultural embeddedness and multidimensional value creation. It also connects women's entrepreneurial agency with Indigenous Knowledge mobilisation and community-centred sustainable enterprise. The framework is conceptual and has not been empirically validated; the propositions therefore provide an agenda for future quantitative, qualitative, mixed-method, longitudinal, comparative and community-based research.

Keywords: Entrepreneurial ecosystems, women's entrepreneurship, Indigenous Knowledge Systems, entrepreneurial innovation, community-centred entrepreneurship, sustainable enterprise development

Introduction

Entrepreneurship is increasingly understood as a driver of economic growth, innovation, employment and social transformation. Rather than resulting solely from individual initiative, entrepreneurial activity is shaped by interactions among institutions, markets, policies, knowledge networks, finance, culture and human capital within entrepreneurial ecosystems [1, 2, 3, 4]. This perspective directs attention to contextual conditions that support opportunity recognition, innovation, enterprise creation and sustainable regional development [5].

Entrepreneurial ecosystems depend on coordinated interaction among governments, universities, financial institutions, industry, civil society, technology providers, incubators and communities. Together, these actors influence entrepreneurial capabilities, innovation, resource mobilisation, market access and enterprise sustainability, making ecosystems important for regional competitiveness and inclusive development [5, 6].

Within this broader discourse, women's entrepreneurship has emerged as a significant contributor to inclusive economic growth, poverty reduction, employment generation, and gender equality. Across the world, women-owned enterprises contribute substantially to economic diversification, local development, innovation, and community resilience. In India, women increasingly participate in micro, small, and medium enterprises, self-help groups, cooperatives, social enterprises, digital businesses, and home-based enterprises. Government initiatives such as Startup India, Stand-Up India, Pradhan Mantri Mudra Yojana, and the National Rural Livelihoods Mission have expanded opportunities for women entrepreneurs by improving access to finance, entrepreneurship development, and institutional support. Nevertheless, women continue to encounter structural barriers, including unequal access to productive resources, financial capital, technology, markets, business networks, education, and decision-making opportunities [7, 8, 9]. These constraints limit enterprise growth and reduce the overall contribution of women entrepreneurs to national economic development.

Parallel to these developments, Indigenous knowledge systems have gained increasing recognition within sustainable development scholarship as valuable sources of innovation, ecological wisdom, cultural heritage, and community resilience. Indigenous Knowledge Systems refer to cumulative bodies of knowledge, practices, skills, and beliefs developed through generations of interaction between communities and their natural, social, and cultural environments [10, 11]. Such knowledge encompasses traditional agriculture, biodiversity conservation, herbal medicine, handicrafts, weaving, food processing, natural resource management, architecture, and numerous livelihood practices. Unlike externally generated scientific knowledge, Indigenous knowledge is locally embedded, context-specific, experience-based, and culturally transmitted across generations, making it an important resource for sustainable entrepreneurship and local economic development.

Women occupy a central position in preserving and transmitting Indigenous knowledge systems. In many rural and tribal communities across India, women possess specialised knowledge relating to medicinal plants, traditional foods, seed preservation, handloom weaving, embroidery, pottery, natural dyes, handicrafts, bamboo products, forest-based livelihoods, and community resource

management. These knowledge systems represent not merely cultural assets but also significant entrepreneurial opportunities capable of generating employment, strengthening household incomes, preserving biodiversity, and promoting environmentally sustainable production systems. Growing consumer demand for organic products, eco-friendly goods, ethical consumption, and culturally authentic products has further enhanced the commercial relevance of Indigenous knowledge-based enterprises.

Despite this potential, Indigenous knowledge remains underutilised as an entrepreneurial resource because of weak institutional support, inadequate market integration, insufficient intellectual property protection, limited access to finance, poor digital connectivity, and gender-specific socio-cultural constraints. Women entrepreneurs often lack opportunities to scale Indigenous enterprises, access formal markets, adopt appropriate technologies, or integrate into national and global value chains. Consequently, much of India's Indigenous entrepreneurial potential remains untapped, particularly in rural, tribal, and economically marginalised regions.

The entrepreneurial ecosystem perspective offers an appropriate theoretical lens for addressing these challenges. A well-functioning ecosystem creates favourable conditions through supportive public policies, entrepreneurial education, innovation systems, financial inclusion, business incubation, digital infrastructure, market linkages, mentoring networks, and collaborative partnerships. These ecosystem components strengthen women's entrepreneurial capabilities and enable the sustainable commercialisation of Indigenous knowledge while preserving cultural authenticity and environmental sustainability. Rather than viewing entrepreneurship solely through the lens of technology-driven innovation, this perspective recognises that Indigenous knowledge itself constitutes a strategic source of innovation capable of generating both economic and social value.

Although entrepreneurial ecosystems, women's entrepreneurship and Indigenous knowledge systems have received substantial scholarly attention, they have largely developed as separate streams. Ecosystem research often emphasises high-growth ventures, technology start-ups and urban innovation; women's entrepreneurship research focuses on gender barriers, finance, performance and policy; and Indigenous knowledge scholarship emphasises cultural preservation, biodiversity and community development [3, 6, 7, 10]. Limited attention has therefore been given to how ecosystems can enable women to transform Indigenous knowledge into innovative, competitive and sustainable enterprises that advance economic, gender, cultural and environmental goals.

This conceptual paper addresses this gap by integrating entrepreneurial ecosystem theory, women's entrepreneurship and Indigenous knowledge systems within the broader objective of inclusive and sustainable development in India. It argues that institutional quality, gender-responsive policies, finance, entrepreneurial education, innovation support, digital technologies, market connectivity and social capital can strengthen women's capabilities and facilitate responsible commercialisation of Indigenous knowledge. These interactions may generate employment, women's economic empowerment, livelihood diversification, cultural preservation, environmental sustainability and resilient local economies.

The paper makes three principal contributions. First, it extends entrepreneurial ecosystem theory by treating Indigenous knowledge as a strategic entrepreneurial resource alongside formal innovation. Second, it positions women as key actors whose knowledge, skills and cultural practices contribute to inclusive and sustainable development. Third, it integrates ecosystem dynamics, gender and Indigenous knowledge to explain pathways towards equitable economic development in India, offering a basis for future research and practical guidance for policymakers and development institutions.

Literature Review and Research Gap

1. Entrepreneurial Ecosystems

The entrepreneurial ecosystem (EE) perspective has emerged as one of the most influential paradigms in entrepreneurship and regional economic development research over the past two decades. Unlike earlier approaches that viewed entrepreneurship primarily as an outcome of individual characteristics or firm-level capabilities, the entrepreneurial ecosystem perspective conceptualises entrepreneurship as a product of dynamic interactions among multiple actors, institutions, resources, and socio-cultural conditions operating within a specific geographical context [2, 12]. This systemic perspective argues that entrepreneurship flourishes when entrepreneurs operate within supportive environments characterised by favourable institutions, accessible finance, skilled human capital, knowledge networks, innovation infrastructure, and entrepreneurial culture [5]. Consequently, entrepreneurial ecosystems have become an important analytical framework for understanding regional competitiveness, innovation capacity, and sustainable economic development.

The concept of entrepreneurial ecosystems gained prominence through Isenberg's [1] influential framework, which proposed that entrepreneurship depends on the interaction of six mutually reinforcing domains: policy, finance, culture, support organisations, human capital, and markets. Rather than advocating isolated policy interventions, Isenberg argued successful entrepreneurship requires the simultaneous development of complementary ecosystem components. His work shifted entrepreneurship policy from firm-centric support programmes towards ecosystem-based development strategies.

Subsequent scholarship substantially refined this perspective. Stam [2] conceptualised entrepreneurial ecosystems as a set of interdependent actors and factors coordinated to enable productive entrepreneurship, while Spigel [6] emphasised that ecosystems comprise material, social, and cultural attributes that collectively shape entrepreneurial outcomes. Brown and Mason [3] further argued that entrepreneurial ecosystems are place-specific and path-dependent, cautioning against attempts to replicate successful ecosystems such as Silicon Valley without considering local institutional and historical contexts. More recently, Stam and Van de Ven [5] integrated earlier frameworks into a comprehensive systems model distinguishing between framework conditions (formal institutions, culture, infrastructure, and demand) and systemic conditions (networks, leadership, talent, finance, knowledge, and support services), thereby providing one of the most comprehensive theoretical explanations of ecosystem functioning.

1.1 Conceptual Models and Theoretical Perspectives

Stam and Van de Ven [5] provided further theoretical refinement, developing one of the most comprehensive

systems frameworks for entrepreneurial ecosystems. Their model identifies ten ecosystem elements—formal institutions, culture, networks, leadership, talent, knowledge, finance, physical infrastructure, intermediary services, and demand—and explicitly links these to entrepreneurial outputs and broader societal outcomes. Importantly, they argue that entrepreneurial ecosystems should be evaluated not merely by the number of start-ups created but by their capacity to generate productive entrepreneurship, sustainable value creation, innovation, and regional prosperity. Their framework also introduces measurable ecosystem indicators, thereby strengthening empirical research in this field.

Spigel [6] offers another influential perspective, who conceptualises entrepreneurial ecosystems as configurations of material, social, and cultural attributes. Material attributes include infrastructure, universities, finance, and support organisations; social attributes comprise entrepreneurial networks, mentors, investors, and collaborative relationships; while cultural attributes encompass societal attitudes towards innovation, risk-taking, and entrepreneurial success. Unlike earlier models that emphasised structural components, Spigel argued that entrepreneurial ecosystems are fundamentally relational systems in which interactions among actors continuously reproduce ecosystem capabilities. His subsequent process theory further explains ecosystem evolution as an ongoing process of adaptation, feedback, and institutional learning rather than a static configuration of resources.

Brown and Mason [3] provide an important critical perspective by challenging the tendency to treat entrepreneurial ecosystems as universally transferable policy models. They argue ecosystems are heterogeneous, path-dependent, and geographically embedded, implying that ecosystem development depends upon historical trajectories, institutional contexts, entrepreneurial culture, and regional capabilities. Consequently, policies attempting to replicate globally successful ecosystems such as Silicon Valley without recognising local conditions are unlikely to achieve comparable outcomes. Their critique significantly advanced ecosystem scholarship by emphasising contextual diversity and place-based development strategies.

Recent scholarship has sought to integrate these conceptual perspectives into a broader entrepreneurial ecosystem research programme. Wurth, Stam, and Spigel (2022) argue that despite its rapid popularity, entrepreneurial ecosystem research remains theoretically fragmented and requires stronger explanations of causal mechanisms linking ecosystem elements with entrepreneurial outcomes. They advocate moving beyond descriptive ecosystem frameworks towards interdisciplinary, process-oriented, and longitudinal research capable of explaining ecosystem emergence, evolution, resilience, and sustainability. Similarly, evolutionary ecosystem scholars argue that ecosystems continuously adapt through entrepreneurial recycling, institutional learning, knowledge spillovers, and technological change, making entrepreneurial ecosystems dynamic rather than static regional phenomena [13].

1.2 Critical Debates and Research Gaps

Despite its rapid emergence as a dominant paradigm in entrepreneurship research, the entrepreneurial ecosystem literature continues to face several conceptual, theoretical, and methodological challenges. One of the most persistent debates concerns the absence of a universally accepted definition of entrepreneurial ecosystems. While Isenberg [1] conceptualises ecosystems as interdependent domains that support entrepreneurship, Stam [2] defines them as coordinated actors and factors enabling productive entrepreneurship, whereas Spigel [6] emphasises relational, cultural, and material attributes [6]. Brown and Mason [3] further argue that ecosystems are geographically embedded, historically contingent, and institutionally path-dependent. These diverse conceptualisations have enriched the literature but have also resulted in fragmented theoretical foundations and inconsistent operationalisation across empirical studies [5, 13]. A second major debate concerns the measurement of entrepreneurial ecosystems. Existing studies employ diverse indicators, including start-up density, venture capital investment, innovation outputs, university–industry collaboration, entrepreneurial culture, network connectivity, and institutional quality. However, scholars argue that no single indicator adequately captures ecosystem performance because entrepreneurial ecosystems are multidimensional and dynamic. Recent studies advocate composite indices that integrate structural, institutional, social, and economic dimensions rather than relying solely on business formation or firm growth statistics [5, 12]. Furthermore, longitudinal assessment remains limited, making it difficult to explain ecosystem evolution, resilience, and adaptation over time.

Another important critique relates to the geographical and contextual bias of existing entrepreneurial ecosystem research. Much of the literature has been developed using evidence from high-income economies, particularly the United States, Western Europe, Canada, and Israel, where entrepreneurship is strongly supported by advanced innovation systems and venture capital markets. Consequently, prevailing ecosystem models often inadequately explain entrepreneurship in developing countries characterised by institutional voids, informal economies, cultural diversity, and resource constraints [3, 14]. Scholars increasingly argue that entrepreneurial ecosystems should be understood as context-specific rather than universally transferable policy models.

The literature also reveals significant theoretical limitations regarding inclusivity and diversity. Existing ecosystem frameworks largely prioritise technology-intensive, high-growth, and innovation-driven enterprises while paying comparatively limited attention to women entrepreneurs, Indigenous communities, rural enterprises, social entrepreneurship, and informal sector innovation. Although recent studies acknowledge that ecosystem outcomes are influenced by institutional quality, social capital, and cultural norms, gender and Indigenous knowledge remain peripheral within mainstream ecosystem theory [6, 13]. This limitation is particularly significant because women entrepreneurs frequently depend on community networks, traditional knowledge, and locally embedded innovation systems that differ substantially from conventional technology-based entrepreneurial models.

From a methodological perspective, scholars have criticised the predominance of cross-sectional case studies and descriptive policy analyses. Comparative, longitudinal, mixed-method, and multi-level investigations remain relatively scarce, limiting understanding of causal relationships among ecosystem elements and entrepreneurial outcomes. Recent reviews recommend greater integration of systems theory, institutional theory, and network analysis to explain ecosystem dynamics more rigorously [5, 13].

These debates reveal an important research gap directly addressed by the present study. Existing scholarship has rarely integrated entrepreneurial ecosystems, women's entrepreneurship, and Indigenous knowledge systems within a unified conceptual framework, particularly in the context of emerging economies such as India. Given India's rich Indigenous knowledge traditions, expanding entrepreneurial ecosystem initiatives, and growing policy emphasis on women-led enterprises, there is a compelling need for an interdisciplinary framework that explains how ecosystem resources can facilitate the commercialisation of Indigenous knowledge through women's entrepreneurship to achieve inclusive and sustainable economic development. Addressing this gap constitutes the principal theoretical contribution of the present study.

2. Women's Entrepreneurship

Women's entrepreneurship has developed from a peripheral topic into a major field of entrepreneurship research. The literature has moved beyond male-centred and gender-neutral assumptions towards analyses of how gender, institutions, culture, family and entrepreneurial ecosystems shape women's entrepreneurial behaviour. This development has produced distinctive conceptual frameworks and policy implications while also enriching mainstream entrepreneurship theory.

Prior research during the 1970s and 1980s portrayed women entrepreneurs through a male-centred entrepreneurial lens, assuming that entrepreneurship was essentially gender-neutral. Consequently, women-owned enterprises were often evaluated using frameworks originally developed for male entrepreneurs, with limited attention given to gender-specific institutional and socio-cultural contexts. Comprehensive reviews by Jennings J E. and Brush, C.G argue that this approach underestimated the distinctive experiences, motivations, constraints, and opportunities encountered by women entrepreneurs and constrained theoretical development within the field [29].

A major theoretical advancement emerged through the gender-aware framework proposed by Brush, de Bruin, and Welter (2009). Extending the traditional entrepreneurship framework of Markets, Money, and Management (3Ms), they introduced two additional dimensions - Motherhood and the Meso/Macro Environment - forming the widely recognised 5M Framework. This model suggests that women's entrepreneurial decisions are simultaneously influenced by access to markets, financial resources, managerial capabilities, family responsibilities, institutional arrangements, public policies, and socio-cultural norms. The framework significantly broadened entrepreneurship theory by recognising that entrepreneurial behaviour is embedded within gendered institutional environments rather than determined solely by individual characteristics [7].

Closely related to the 5M framework is the growing influence of feminist theories of entrepreneurship. Liberal feminist theory attributes gender disparities primarily to unequal access to education, finance, property ownership, business networks, and entrepreneurial opportunities. According to this perspective, women possess entrepreneurial capabilities comparable to men but experience structural barriers that constrain enterprise creation and growth. Social feminist theory, by contrast, argues that women often develop distinctive entrepreneurial competencies - including collaborative leadership, relationship building, participatory decision-making, and community orientation - that constitute unique entrepreneurial strengths rather than disadvantages. These theoretical perspectives have shifted research away from deficit-based explanations towards recognising women's entrepreneurship as a distinctive yet equally valuable entrepreneurial pathway.

Institutional and contextual theories have further enriched the field. Welter's contextual perspective argues that entrepreneurship is embedded within interconnected social, spatial, institutional, historical, and cultural contexts, making entrepreneurial behaviour inseparable from its environment. Consequently, women's entrepreneurship cannot be adequately understood without considering family structures, cultural expectations, regulatory systems, labour markets, educational opportunities, and entrepreneurial ecosystems. Recent studies similarly demonstrate that institutional quality - including gender-sensitive policies, legal frameworks, financial inclusion, and governance - substantially influences women's entrepreneurial participation across countries.

Recent systematic reviews conclude that the field has matured considerably but remains theoretically pluralistic. Rather than relying on a single explanatory model, contemporary women's entrepreneurship research increasingly integrates feminist theory, institutional theory, social capital theory, contextual perspectives, and entrepreneurial ecosystem approaches to explain the complexity of women's entrepreneurial experiences. At the same time, scholars emphasise the need for greater attention to intersectionality, Indigenous entrepreneurship, sustainability, digital transformation, and developing-country contexts. These emerging priorities provide the foundation for integrating women's entrepreneurship with entrepreneurial ecosystems and Indigenous knowledge systems in the present study.

Among the most widely examined determinants is access to financial resources. Numerous empirical studies demonstrate that women entrepreneurs continue to experience greater constraints in accessing formal credit, venture capital, and equity finance than their male counterparts. Limited ownership of productive assets, lower collateral availability, gender bias within financial institutions, and restricted investment networks frequently reduce women's access to growth-oriented finance. Consequently, many women-owned enterprises depend on microfinance institutions, self-help groups, cooperative credit societies, and family financing during enterprise formation. Brush and colleagues argue that financial constraints should be understood within broader institutional and family contexts rather than merely as market failures, while subsequent studies demonstrate that financial inclusion policies significantly improve women's entrepreneurial participation and enterprise growth.

Human capital constitutes another fundamental determinant. Education, professional experience, entrepreneurial training, managerial competencies, and digital literacy enhance opportunity recognition, innovation capability, strategic decision-making, and business performance. Entrepreneurship education strengthens entrepreneurial intentions by increasing self-efficacy, business planning skills, leadership capacity, and financial literacy. Recent systematic reviews indicate that higher educational attainment positively influences women's entrepreneurial entry and survival, particularly when combined with mentoring and continuous skill development. Nevertheless, disparities in access to higher education, technical training,

and digital technologies continue to constrain women entrepreneurs, especially in rural and economically disadvantaged regions.

Institutional and socio-cultural environments have become central explanatory variables in women's entrepreneurship research. Institutional theory proposes that formal institutions—including legal systems, regulatory quality, property rights, education policies, and financial regulations—interact with informal institutions such as gender norms, cultural values, and social expectations to influence entrepreneurial behaviour. Comparative international studies demonstrate that women are more likely to establish and expand enterprises in countries characterised by supportive institutional environments, gender-equal policies, and inclusive governance structures. Conversely, restrictive gender norms, discriminatory inheritance practices, limited property ownership, and weak institutional support substantially reduce entrepreneurial opportunities. Recent multi-level analyses further reveal that formal and informal institutions jointly determine women's entrepreneurial participation across different national contexts.

Recent scholarship has also highlighted the growing significance of entrepreneurial ecosystems as enabling environments for women entrepreneurs. Entrepreneurial ecosystems comprising government agencies, universities, financial institutions, incubators, digital infrastructure, business development services, and innovation networks create favourable conditions for enterprise creation and growth. Studies demonstrate that ecosystem quality influences women's access to entrepreneurial education, mentoring, technology, markets, and institutional support. Inclusive ecosystems that integrate gender-sensitive policies with entrepreneurship support programmes substantially improve enterprise survival, innovation, and scalability. These findings reinforce the argument that women's entrepreneurship should be analysed within broader entrepreneurial ecosystem frameworks rather than through individual-level explanations alone.

The recent Journal of Enterprising Communities (JEC) scholarship reinforces the importance of examining women's enterprise development within enabling institutional and ecosystem conditions. Banu, Baral and Vijayalakshmi (2024), for example, identify financial, social, institutional and support-related factors affecting the sustained growth of women-owned micro-enterprises in India, strengthening the case for a context-sensitive ecosystem perspective [35].

3. Indigenous Knowledge Systems and Entrepreneurship

Indigenous Knowledge Systems (IKS) have increasingly gained recognition as valuable intellectual, cultural, ecological, and economic resources that contribute to sustainable development and entrepreneurship. Traditionally regarded as local or traditional knowledge, IKS encompasses the cumulative body of knowledge, practices, innovations, beliefs, and skills developed by Indigenous and local communities through long-term interaction with their natural, social, and cultural environments [10]. Unlike formal scientific knowledge, Indigenous knowledge is largely experiential, community-based, orally transmitted, and deeply embedded within specific ecological and cultural contexts. Contemporary scholarship argues that Indigenous knowledge should not be viewed as inferior to scientific knowledge but rather as a complementary knowledge system capable of generating innovation, resilience, and sustainable livelihoods.

Indigenous entrepreneurship emerged partly in response to the Western, individualistic and market-oriented assumptions of conventional entrepreneurship theory. Anderson [15, 16] argued that Indigenous entrepreneurship should be understood within its historical, cultural and institutional contexts. Peredo *et al.* [17] similarly defined it as entrepreneurial activity that benefits Indigenous communities while preserving cultural identity and supporting self-determined economic development. This perspective places collective well-being alongside economic performance.

Peredo and Chrisman [18] further conceptualised Indigenous entrepreneurship as a community-based process contributing to economic development, cultural preservation, social cohesion and empowerment. Indigenous enterprises may pursue employment, intergenerational knowledge transfer, environmental stewardship and cultural continuity alongside financial returns. Dana and Anderson [19] likewise emphasised culturally embedded economic behaviour and broader measures of entrepreneurial success, including community welfare, cultural resilience and social sustainability.

Recent systematic reviews demonstrate that Indigenous entrepreneurship has evolved into a recognised interdisciplinary research field integrating entrepreneurship, anthropology, development studies, Indigenous studies, rural development, environmental sustainability, and institutional theory. Croce's [20] systematic review identified three broad contextual models of Indigenous entrepreneurship - urban, rural, and remote - illustrating that entrepreneurial behaviour varies according to geographical location, institutional context, and community characteristics rather than following a universal model. More recently, AlMehrzi, Tipu and Sarker (2023) reviewed 84 scholarly publications and concluded that Indigenous entrepreneurship research has expanded considerably but remains theoretically fragmented. Their review identifies determinants such as family and clan relationships, traditional leadership, cultural identity, government support, institutional arrangements, social capital, and Indigenous knowledge as critical drivers of entrepreneurial success while recommending stronger theory-building and interdisciplinary integration [30].

An important conceptual development within this literature concerns the recognition of Indigenous knowledge as a strategic entrepreneurial resource. Drawing upon Barney's (1991) Resource-Based View, scholars argue that Indigenous knowledge possesses characteristics of potentially valuable, culturally embedded, context-specific, and subject to ethical governance resources capable of generating sustainable competitive advantage. Traditional medicinal knowledge, Indigenous agriculture, seed conservation, food processing, handloom weaving, handicrafts, natural dyes, bamboo products, forest-based livelihoods, ethnos botanical knowledge, and cultural tourism represent examples of Indigenous assets that can be transformed into innovative entrepreneurial opportunities. Unlike conventional technological innovation, these enterprises derive their competitiveness from authenticity, cultural legitimacy, ecological sustainability, and locally embedded innovation rather than technological sophistication alone [21].

Despite significant theoretical progress, important research gaps remain. Existing studies continue to be concentrated in

Australia, Canada, New Zealand and Latin America, while comparatively limited research examines Indigenous entrepreneurship in South Asia, particularly India. Moreover, most studies analyse Indigenous entrepreneurship independently from entrepreneurial ecosystem theory and gender studies. The interaction between entrepreneurial ecosystems, women's entrepreneurship, and Indigenous knowledge systems therefore remains insufficiently explored. Addressing this gap is particularly important in India, where women play a central role in preserving traditional knowledge relating to agriculture, herbal medicine, handicrafts, handloom production, food systems, biodiversity conservation, and cultural heritage. Integrating these three domains offers significant potential for advancing both entrepreneurship theory and inclusive, sustainable economic development.

3.1 Indigenous Knowledge as a Source of Entrepreneurial Innovation

Contemporary entrepreneurship scholarship increasingly recognises Indigenous Knowledge Systems as strategic resources for innovation and enterprise development. Contrary to earlier perceptions that viewed Indigenous knowledge as static, informal, or incompatible with modern economic systems, recent studies argue that IKS constitutes a dynamic knowledge base capable of generating context-specific innovations, sustainable products, and locally embedded entrepreneurial opportunities [10, 22]. Indigenous knowledge is accumulated through generations of observation, experimentation, and adaptation to local ecological and socio-cultural environments, making it particularly valuable for developing innovative solutions that are environmentally sustainable, culturally appropriate, and economically viable [11].

Scholars further argue that Indigenous entrepreneurship should not be understood merely as the commercialisation of traditional products but as a process of knowledge-based value creation that combines cultural heritage with contemporary entrepreneurial practices [17, 23]. Indigenous entrepreneurs frequently adapt traditional knowledge to changing consumer preferences by integrating modern product design, digital marketing, quality certification, geographical indication protection, and sustainable business models without compromising cultural authenticity. Consequently, Indigenous knowledge functions not only as a repository of traditional practices but also as a catalyst for innovation, enterprise diversification, and regional competitiveness.

Indigenous innovations may remain under-recognised because formal innovation systems privilege scientific and technological knowledge. Weak intellectual property protection, limited market access, biopiracy concerns, inadequate documentation and insufficient policy support also constrain commercialisation [10, 19]. The literature therefore supports integrating Indigenous knowledge into entrepreneurial ecosystems involving communities, universities, government, finance and private enterprise, while ensuring equitable benefit-sharing, cultural preservation and sustainability. IKS should thus be understood as a contemporary source of entrepreneurial innovation rather than a relic of the past.

3.2 Indigenous Knowledge, Sustainable Livelihoods and Community Development

The relationship between Indigenous Knowledge Systems, sustainable livelihoods, and community development has become a major focus within contemporary development and entrepreneurship scholarship. Increasingly, researchers argue that Indigenous knowledge is not merely a cultural asset but also an important economic resource that enables communities to achieve livelihood security, environmental sustainability, and social resilience [22, 24, 25]. Unlike conventional development models that often rely on external technologies and institutions, Indigenous knowledge-based livelihood systems are grounded in locally evolved practices that promote efficient resource utilisation, ecological balance, and community participation. Consequently, IKS has emerged as a critical component of sustainable entrepreneurship, particularly in rural and Indigenous communities.

The Sustainable Livelihoods Framework (SLF) provides an important theoretical basis for understanding this relationship. Chambers and Conway [24] define sustainable livelihoods as the capabilities, assets, and activities required for a means of living that can withstand external shocks while maintaining natural resources for future generations. Scoones [25] further argues that livelihood sustainability depends upon the interaction of human, social, natural, physical, and financial capital. Indigenous knowledge contributes significantly to each of these livelihood assets by strengthening local skills, preserving biodiversity, enhancing community cooperation, and promoting adaptive resource management. From this perspective, entrepreneurship based on Indigenous knowledge represents an effective strategy for strengthening livelihood resilience rather than merely generating income.

Recent scholarship also highlights the important role of Indigenous entrepreneurship in community development. Peredo and Chrisman [18] argue that Indigenous entrepreneurship should be understood as a community-centred process in which entrepreneurial activities generate collective rather than purely individual benefits. Community enterprises often reinvest profits in education, health, infrastructure, cultural revitalisation, and environmental conservation. Such enterprises strengthen local institutions, promote social cohesion, and reduce dependence on external economic systems. Dana and Anderson [19] similarly emphasise that entrepreneurial success in Indigenous communities should be evaluated using broader indicators - including cultural continuity, community empowerment, environmental stewardship, and social inclusion - rather than financial performance alone.

The contribution of women within Indigenous livelihood systems deserves particular attention. Across many Indigenous and rural societies, women possess specialised knowledge relating to seed conservation, medicinal plants, food preservation, weaving, embroidery, basket making, livestock management, and household-based production systems. This knowledge contributes substantially to household food security, income diversification, and community resilience. When supported through entrepreneurship training, producer cooperatives, self-help groups, digital marketing, geographical indication protection, and fair-trade initiatives, women are able to transform traditional knowledge into sustainable enterprises that generate employment while preserving cultural identity [7, 26]. Thus, Indigenous women function not merely as producers but also as innovators, knowledge custodians, and agents of local economic transformation.

Despite these contributions, the literature identifies several persistent challenges. Indigenous communities often face inadequate market access, limited financial services, weak infrastructure, insufficient technological support, insecure intellectual property protection, and the commercial exploitation of traditional knowledge without equitable benefit-sharing [10, 22]. Moreover, many development policies continue to prioritise technology-intensive industries while underestimating the innovation potential of Indigenous knowledge systems. Scholars therefore advocate stronger institutional support, community participation, legal protection of traditional knowledge, and integration of Indigenous enterprises into broader entrepreneurial ecosystems. Such ecosystem-based approaches can enhance the commercial viability of Indigenous products while ensuring cultural integrity, ecological sustainability, and equitable economic development.

3.3 Commercialisation, Protection and Ecosystem Support

The commercialisation of Indigenous Knowledge Systems has emerged as one of the most significant yet contested themes in contemporary entrepreneurship and development literature. While Indigenous knowledge possesses considerable potential for value creation through traditional medicine, handicrafts, agro ecological products, handloom textiles, natural dyes, forest-based products, cultural tourism, and traditional food systems, its transition from community knowledge to market-oriented enterprise requires appropriate institutional, legal, and entrepreneurial support [17, 19]. Scholars argue that commercialisation should not be understood merely as market expansion but as a process that balances economic opportunities with cultural integrity, community ownership, and ecological sustainability [22].

A central issue within this debate concerns intellectual property rights (IPR) and the protection of traditional knowledge. Conventional intellectual property regimes, including patents and copyrights, often inadequately recognise the collective, intergenerational, and community-based nature of Indigenous knowledge [10]. Consequently, Indigenous communities remain vulnerable to bio-piracy, unauthorised commercial exploitation, and inequitable benefit-sharing. International policy frameworks such as the Convention on Biological Diversity (CBD) and the Nagoya Protocol on Access and Benefit-sharing have strengthened global recognition of community rights over traditional knowledge and genetic resources. Similarly, the World Intellectual Property Organization (WIPO) has emphasised the development of legal mechanisms that protect traditional knowledge while facilitating equitable innovation and commercialisation. In the Indian context, initiatives such as the Traditional Knowledge Digital Library (TKDL) and the expansion of Geographical Indication (GI) protection illustrate important institutional efforts to safeguard Indigenous knowledge while supporting market access [27].

Recent studies argue that legal protection alone is insufficient unless accompanied by supportive entrepreneurial ecosystems. Entrepreneurial ecosystem theory suggests that successful commercialisation depends upon coordinated interactions among government agencies, universities, financial institutions, business incubators, research organisations, producer cooperatives, civil society organisations, and markets [1, 2, 5] For Indigenous knowledge-based enterprises, ecosystem support includes entrepreneurship education, product design, quality certification, technology adaptation, branding, digital marketing, logistics, export facilitation, access to finance, and incubation services. Such ecosystem interventions enable Indigenous entrepreneurs to transform culturally embedded knowledge into competitive enterprises while preserving authenticity and community ownership.

Policy support has therefore become an essential determinant of Indigenous entrepreneurship. International organisations increasingly advocate integrating Indigenous knowledge into national innovation systems, rural development strategies, biodiversity conservation programmes, and inclusive entrepreneurship policies [11, 28]. In India, programmes such as Startup India, Stand-Up India, the National Rural Livelihoods Mission (NRLM), TRIFED, the Pradhan Mantri Formalisation of Micro Food Processing Enterprises (PMFME) scheme, and One District One Product (ODOP) seek to strengthen rural enterprises, tribal livelihoods, women's entrepreneurship, and traditional industries. Although these initiatives have expanded opportunities for market participation, empirical evidence suggests that Indigenous entrepreneurs continue to face barriers related to institutional coordination, financial inclusion, technological capability, market intelligence, and value-chain integration.

An emerging body of literature further argues that digital transformation has created new opportunities for the commercialisation of Indigenous knowledge. E-commerce platforms, digital payment systems, social media marketing, blockchain-based traceability, and geographical indication branding enable Indigenous producers to reach wider markets while improving product authenticity and consumer confidence. Nevertheless, unequal digital access, limited technological literacy, inadequate infrastructure, and weak digital entrepreneurship ecosystems continue to constrain the effective participation of many Indigenous and rural communities [26, 28]. These findings highlight the importance of integrating digital capabilities into entrepreneurial ecosystem frameworks.

Despite growing interest, important gaps remain. Indigenous entrepreneurship has largely developed separately from ecosystem research, while gender is still insufficiently integrated into Indigenous entrepreneurship theory [5, 14, 7, 29]. Research is also concentrated in Australia, Canada, New Zealand and Latin America, with comparatively limited attention to India and South Asia. Commercialisation, intellectual property, policy, entrepreneurship and sustainability are often examined separately rather than through an integrated framework. These gaps justify linking entrepreneurial ecosystems, women's entrepreneurship and Indigenous knowledge as mutually reinforcing dimensions of inclusive and sustainable development.

These gaps justify the development of an integrated framework linking entrepreneurial ecosystems, women's entrepreneurship, and Indigenous knowledge systems. Such a framework conceptualises entrepreneurial ecosystems as enabling institutional environments, Indigenous knowledge as a strategic entrepreneurial resource, and women entrepreneurs as transformative agents who convert traditional knowledge into innovative, culturally grounded, and sustainable enterprises. This integrated perspective not only advances entrepreneurship theory but also provides practical guidance for policymakers seeking to promote inclusive economic development, cultural preservation, and sustainable livelihoods in India.

Recent JEC work on Indigenous entrepreneurship similarly demonstrates that the field remains theoretically fragmented and benefits from stronger integration of contextual, institutional and ecosystem perspectives [30]. Research on artisanal entrepreneurship further positions artisans as both cultural custodians and innovative actors, reinforcing the relevance of linking cultural heritage, innovation, sustainability and entrepreneurial ecosystems [31].

4. Synthesis and Research Gap

Integrating Entrepreneurial Ecosystems, Women's Entrepreneurship, and Indigenous Knowledge Systems for Inclusive Economic Development

From an ecosystem perspective, entrepreneurship is a systemic process shaped by interactions among entrepreneurs, educational institutions, finance, government, incubators, research institutions, markets and infrastructure [1, 2]. Yet ecosystem scholarship has been criticised for insufficient attention to gender and socio-cultural diversity, while feminist entrepreneurship research highlights structural constraints, unpaid care responsibilities, financial exclusion and institutional discrimination affecting women [3, 6, 7, 29]. Ecosystem effectiveness should therefore be assessed not only by venture creation but also by the inclusiveness and equity of entrepreneurial opportunities.

Women are particularly important within the integrated framework because they may act simultaneously as entrepreneurs, custodians of Indigenous knowledge and agents of community development. Their knowledge of agriculture, seed conservation, herbal medicine, food preservation, weaving, handicrafts, natural resources and household enterprises can support livelihoods, innovation, cultural preservation and environmental sustainability. However, limited access to finance, technology, markets, networks, property and decision-making institutions can constrain these opportunities. Gender-responsive policies, digital inclusion, education, mentoring, incubation and financial support can therefore strengthen sustainable enterprise development.

Policy discourse increasingly supports combining traditional knowledge, gender equality, entrepreneurship, innovation and sustainability. UNESCO, OECD, WIPO and the United Nations promote such linkages, while Indian initiatives including Startup India, Stand-Up India, NRLM, TRIFED, ODOP and TKDL provide institutional foundations. However, these initiatives often operate separately, limiting policy convergence and cross-sectoral collaboration.

The present study proposes an integrated conceptual perspective in which entrepreneurial ecosystems constitute the enabling institutional environment, Indigenous Knowledge Systems represent the primary knowledge resource, and women entrepreneurs' function as transformative agents who convert traditional knowledge into innovative, market-oriented, and culturally sustainable enterprises. The interaction among these three dimensions generates multiple developmental outcomes, including entrepreneurial innovation, livelihood diversification, women's economic empowerment, biodiversity conservation, cultural preservation, community resilience, rural transformation, and inclusive economic development. This integrated framework not only addresses important theoretical gaps within entrepreneurship research but also provides a comprehensive policy framework for promoting gender-inclusive, knowledge-based, and sustainable entrepreneurial development in India.

Table 1: Research Gap Matrix

Research domain	What the literature establishes	Key gap	Contribution of this paper
Entrepreneurial ecosystems	Institutions, networks, finance, markets and infrastructure shape entrepreneurial activity.	Limited integration of gender, culture and Indigenous Knowledge.	Extends ecosystem analysis towards gender-responsive, culturally embedded and sustainability-oriented entrepreneurship.
Women's entrepreneurship	Agency, constraints, capabilities and institutional support shape enterprise development.	Insufficient integration with Indigenous Knowledge and ecosystem-level conditions.	Positions women as entrepreneurial agents and potential knowledge mobilisers.
Indigenous Knowledge Systems	Locally embedded knowledge is socially, culturally and ecologically significant.	Weak integration with entrepreneurial ecosystems and women's entrepreneurship.	Conceptualises IKS as a potentially valuable, context-dependent entrepreneurial resource.
Innovation and development	Innovation, value addition and entrepreneurship can contribute to enterprise and livelihood outcomes.	Cultural continuity, knowledge protection and community resilience are often separated from enterprise performance.	Connects innovation and enterprise outcomes with economic, social, cultural and environmental value.

Source: Author's synthesis of the literature reviewed in this study

Integrated EE–WE–IKS Framework and Research Propositions

1. Theoretical Foundation

The preceding literature review suggests that Entrepreneurial Ecosystems (EE), Women's Entrepreneurship (WE), and Indigenous Knowledge Systems (IKS) have matured into important yet largely independent streams of research. Entrepreneurial ecosystem theory explains how institutional environments influence entrepreneurial activity through interactions among government, universities, financial institutions, markets, innovation systems, culture, and support organisations [1, 2, 6]. Women's entrepreneurship research emphasises the influence of gendered institutions, family embeddedness, social capital, entrepreneurial capabilities, and ecosystem support on enterprise creation and growth [7, 26, 29]. Indigenous entrepreneurship scholarship highlights the strategic importance of traditional knowledge, community ownership, ecological sustainability, and cultural identity in promoting sustainable livelihoods [17, 19, 22].

2. Components of the Framework

The first component of the framework consists of the entrepreneurial ecosystem, which provides the institutional foundation for entrepreneurial activity. Following Isenberg [1], Stam [2], and Stam and Van de Ven [5], entrepreneurial ecosystems comprise interconnected actors and institutions

including government agencies, universities, financial institutions, business incubators, technology centres, markets, civil society organisations, digital infrastructure, entrepreneurial culture, and supportive public policies.

The second component is Indigenous Knowledge Systems. Building upon Barney's (1991) Resource-Based View, Indigenous knowledge is conceptualised as a potentially valuable, culturally embedded, context-specific, and subject to ethical governance entrepreneurial resource [21].

The third component positions women entrepreneurs as the principal actors who mobilise Indigenous knowledge into commercially viable enterprises. The Gender-aware 5M Framework developed by Brush *et al.* [7] suggests that entrepreneurial outcomes depend upon markets, money, management, motherhood, and the meso/macro institutional environment. Women entrepreneurs simultaneously manage household responsibilities, community relationships, traditional knowledge, and entrepreneurial activities, thereby functioning as bridges between Indigenous communities and formal markets.

The framework proposes that entrepreneurial ecosystems positively influence women's entrepreneurship by improving institutional support, entrepreneurial education, digital infrastructure, finance, mentoring, incubation, and market access [1, 2].

Similarly, entrepreneurial ecosystems strengthen the preservation and commercialisation of Indigenous Knowledge Systems through research collaboration, intellectual property protection, geographical indication registration, digital platforms, innovation centres, and policy support [11, 27].

Indigenous Knowledge Systems, in turn, enhance women's entrepreneurial capability by providing culturally embedded opportunities for innovation, product differentiation, livelihood diversification, and sustainable enterprise creation [19, 22].

Women entrepreneurs function as mediating agents by converting Indigenous knowledge into entrepreneurial products and services that create economic, social, environmental, and cultural value. This interaction generates multiple developmental outcomes, including innovation, women's economic empowerment, rural employment, biodiversity conservation, social inclusion, cultural continuity, and sustainable livelihoods.

Ultimately, these multidimensional outcomes contribute to inclusive economic development, consistent with the capability approach proposed by Sen [32] and the Sustainable Development Goals articulated by the United Nations [33].

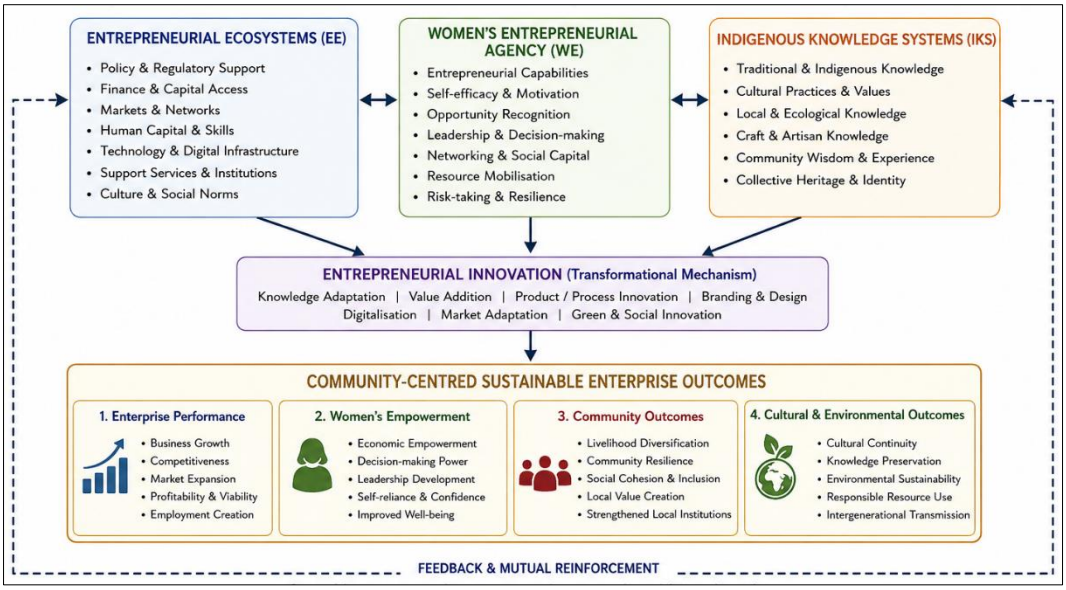

Fig 1: Integrated EE–WE–IKS conceptual framework

3. Theoretical Contribution of the Framework

The proposed framework contributes to entrepreneurship scholarship in several important ways:

First, it extends entrepreneurial ecosystem theory by incorporating gender and Indigenous Knowledge Systems, thereby addressing criticisms that ecosystem research remains predominantly technology-oriented and institution-centric [3, 6].

Second, it advances women's entrepreneurship literature by conceptualising Indigenous knowledge as a strategic entrepreneurial resource rather than examining women primarily through the lens of institutional constraints [7, 29].

Third, it enriches Indigenous entrepreneurship theory by embedding community-based entrepreneurship within broader entrepreneurial ecosystems, demonstrating how institutional actors facilitate knowledge commercialisation while preserving cultural integrity [17, 19].

Finally, the framework integrates entrepreneurship theory, gender studies, Indigenous studies, innovation theory, and sustainable development into a single interdisciplinary model applicable to developing economies, particularly India. The model therefore provides both a theoretical foundation for future empirical research and a policy framework for strengthening women's entrepreneurship through Indigenous knowledge-based entrepreneurial ecosystems.

4. Research Propositions

Because this paper is conceptual and does not analyse primary data, the propositions are theoretically examinable rather than statistical hypotheses. They identify relationships

for future empirical testing and should not be interpreted as established causal findings.

P1. The quality and inclusiveness of entrepreneurial ecosystems are positively associated with women's entrepreneurial opportunities, enterprise development and business sustainability.

P2. Supportive entrepreneurial ecosystems strengthen the recognition, preservation, responsible adaptation, innovation and market linkage of Indigenous Knowledge Systems.

P3. Indigenous Knowledge Systems can enhance women's entrepreneurial opportunity recognition and innovation when supported by appropriate capabilities, institutional conditions and market linkages.

P4. Women's entrepreneurship can contribute to inclusive economic development through income generation, employment, livelihood diversification, economic participation and enhanced agency.

P5. Responsible mobilisation of Indigenous Knowledge Systems can contribute to inclusive and sustainable development through livelihood diversification, cultural continuity, ecological sustainability and community resilience.

P6. Women's entrepreneurship may mediate the relationship between Indigenous Knowledge Systems and inclusive and sustainable development by transforming culturally embedded knowledge into enterprise, livelihood and community-level opportunities.

P7. The relationship between Indigenous Knowledge Systems and women's entrepreneurial activity is likely to be stronger in supportive, inclusive and gender-responsive entrepreneurial ecosystems.

P8. Entrepreneurial innovation may mediate the relationship between Indigenous Knowledge Systems and enterprise competitiveness by facilitating knowledge adaptation, product differentiation, value addition and market engagement.

P9. Women's Indigenous Knowledge-based entrepreneurship can contribute to sustainable livelihoods and community resilience through enterprise diversification, income generation, employment, knowledge continuity and locally embedded resource use.

P10. The interaction among entrepreneurial ecosystems, women's entrepreneurship and Indigenous Knowledge Systems provides a theoretically grounded pathway towards inclusive and sustainable economic development.

Discussion and Theoretical Contributions

1. Extending Entrepreneurial Ecosystem Theory

Entrepreneurial Ecosystem Theory has significantly influenced entrepreneurship research by emphasising the role of institutions, policies, finance, culture, education and networks in shaping entrepreneurial activity [1, 2, 6]. Recent developments have further highlighted ecosystem interactions, institutional complementarities and regional entrepreneurial dynamics [4, 5].

Despite these advances, ecosystem research has largely concentrated on innovation-driven, technology-oriented and high-growth entrepreneurship. Comparatively less attention has been given to women-led enterprises, community-based entrepreneurship and Indigenous Knowledge-based entrepreneurial activities, particularly within developing economies.

The EE–WE–IKS Framework extends Entrepreneurial Ecosystem Theory by proposing that ecosystem quality should be evaluated not only by enterprise formation, venture growth or innovation outputs but also by its capacity to promote gender inclusion, knowledge mobilisation, community participation and sustainable development. Entrepreneurial ecosystems therefore become enabling institutional environments that support diverse forms of entrepreneurship, including enterprises grounded in local culture, traditional knowledge and community resources.

This broader interpretation responds to recent calls for more inclusive and context-sensitive ecosystem research while expanding the theoretical boundaries of Entrepreneurial Ecosystem Theory.

2. Advancing Women's Entrepreneurship Theory

Research on women's entrepreneurship has traditionally focused on gender-based constraints, including restricted access to finance, markets, entrepreneurial education, business networks and institutional support [29]. Although these structural barriers remain important, recent scholarship has increasingly recognised women as innovators, entrepreneurial leaders and contributors to inclusive development.

The proposed framework advances this perspective by positioning women not merely as participants within entrepreneurial ecosystems but as central agents who mobilise knowledge, recognise opportunities, generate innovation and strengthen communities. Women's entrepreneurial agency is conceptualised as the mechanism through which ecosystem resources and Indigenous Knowledge are transformed into sustainable entrepreneurial outcomes.

This perspective complements the Capability Approach [32], by emphasising that entrepreneurship depends not only on resource availability but also on women's freedom, capabilities and institutional opportunities to convert available resources into valued social and economic outcomes.

Consequently, the framework shifts women's entrepreneurship research from a predominantly constraint-oriented perspective towards an agency-centred understanding of entrepreneurial transformation.

3. Reconceptualising Indigenous Knowledge Systems within Entrepreneurship

Indigenous Knowledge Systems have traditionally been examined within the fields of anthropology, environmental studies, rural development and sustainability [10, 22]. Entrepreneurship research has increasingly acknowledged Indigenous Knowledge as a source of innovation and local economic development, yet its integration into entrepreneurial ecosystem scholarship remains limited.

The EE–WE–IKS Framework reconceptualises Indigenous Knowledge as a strategic entrepreneurial resource that contributes to enterprise competitiveness through authenticity, cultural differentiation, ecological sustainability and local innovation. Consistent with the Resource-Based View [21], Indigenous Knowledge is understood as a valuable and distinctive resource capable of generating competitive advantage when appropriately mobilised.

However, the framework deliberately avoids reducing Indigenous Knowledge to a commercial asset. Indigenous Knowledge is socially embedded, culturally significant and frequently governed through collective ownership and community norms [11]. Its entrepreneurial utilisation therefore

requires ethical governance, community participation, benefit sharing and respect for cultural integrity.

This balanced perspective contributes to entrepreneurship theory by integrating commercial opportunity with social responsibility.

4. Integrating Complementary Theoretical Perspectives

One of the principal theoretical contributions of this paper lies in its integration of four complementary theoretical perspectives.

Entrepreneurial Ecosystem Theory explains how institutional conditions shape entrepreneurial opportunities [1, 2].

The Resource-Based View explains how unique resources generate competitive advantage [21], with Indigenous Knowledge functioning as a distinctive strategic resource.

The Capability Approach [32], emphasises women's freedom and capability to transform ecosystem resources into entrepreneurial achievements.

The Sustainable Livelihoods Framework [25], broadens entrepreneurship outcomes beyond business performance by recognising livelihood security, resilience, social inclusion and sustainability.

Rather than operating independently, these perspectives complement one another by explaining institutional environments, entrepreneurial capabilities, strategic resources and multidimensional development outcomes within a unified conceptual framework.

5. Entrepreneurial Innovation as the Transformational Mechanism

The proposed framework also contributes by broadening the understanding of entrepreneurial innovation.

Entrepreneurship research frequently associates innovation with technological invention, research and development or high-technology industries. However, innovation within community-based enterprises often occurs through incremental adaptation, design improvement, branding, value addition, digital marketing and the creative application of traditional knowledge.

The EE–WE–IKS Framework conceptualises entrepreneurial innovation as the mechanism that transforms Indigenous Knowledge into market-oriented products, services and business models while preserving cultural authenticity. Innovation therefore bridges tradition and modernity rather than replacing one with the other.

This broader conceptualisation is particularly relevant for women-led enterprises operating within local production systems, traditional crafts, cultural industries and rural economies.

6. A Multidimensional Understanding of Entrepreneurial Value

Another significant contribution concerns the measurement of entrepreneurial success.

Conventional entrepreneurship research commonly evaluates enterprise performance through profitability, productivity, innovation output, business survival and employment creation [4, 5]. While these remain important indicators, they provide only a partial understanding of entrepreneurship within community settings.

The proposed framework argues that women-led Indigenous Knowledge-based entrepreneurship generates multiple forms of value simultaneously:

- Economic value through enterprise growth, income generation and employment.
- Social value through women's empowerment, inclusion and community participation.
- Cultural value through the preservation and transmission of Indigenous Knowledge.
- Environmental value through sustainable production and responsible resource use.
- Resilience value through livelihood diversification and strengthened adaptive capacity [33, 22].

This multidimensional perspective aligns entrepreneurship more closely with the Sustainable Development Goals and contemporary debates on inclusive development.

7. Dynamic and Recursive Entrepreneurial Processes

The framework further contributes by conceptualising entrepreneurship as a dynamic and recursive process.

Most entrepreneurship models imply a relatively linear progression from opportunity recognition to enterprise creation and performance [34]. In contrast, the EE–WE–IKS Framework proposes continuous interactions among entrepreneurial ecosystems, women's agency, Indigenous Knowledge, innovation and community development.

Successful enterprises strengthen entrepreneurial ecosystems by expanding local networks, creating employment, attracting institutional support and encouraging further entrepreneurial activity [6]. Likewise, continued entrepreneurial application contributes to the preservation, adaptation and renewal of Indigenous Knowledge across generations [22].

This recursive perspective provides a more realistic explanation of entrepreneurship as an evolving ecosystem process rather than a one-time entrepreneurial event.

8. Contribution to Community-Centred Entrepreneurship

The proposed framework closely aligns with the mission of the Journal of Enterprising Communities by emphasising entrepreneurship as a mechanism for community development rather than merely business creation.

Community-centred entrepreneurship recognises that enterprises create value not only for entrepreneurs but also for families, producer groups, local institutions and wider communities [18]. Women-led Indigenous Knowledge-based enterprises frequently strengthen local supply chains, generate employment, preserve cultural heritage and reinforce social capital.

Accordingly, entrepreneurship should be understood as a collaborative and locally embedded process that mobilises community knowledge and institutional resources to achieve inclusive and sustainable development.

9. Overall Theoretical Contributions

The EE–WE–IKS Framework makes five principal theoretical contributions to entrepreneurship scholarship.

- First, it integrates Entrepreneurial Ecosystems, Women's Entrepreneurship and Indigenous Knowledge Systems into a unified conceptual framework.
- Second, it extends Entrepreneurial Ecosystem Theory by incorporating gender responsiveness, community-centred entrepreneurship and Indigenous Knowledge into ecosystem analysis.

- Third, it advances women's entrepreneurship research by emphasising entrepreneurial agency, capability development and knowledge mobilisation rather than focusing exclusively on structural barriers.
- Fourth, it reconceptualises Indigenous Knowledge as a strategic entrepreneurial resource whose responsible mobilisation contributes to innovation, enterprise competitiveness and sustainable development.
- Finally, it proposes a multidimensional understanding of entrepreneurial value that incorporates economic performance, women's empowerment, cultural continuity, environmental sustainability and community resilience.

Collectively, these contributions strengthen entrepreneurship theory by providing a more holistic understanding of how entrepreneurial ecosystems can support inclusive, knowledge-based and community-oriented enterprise development.

Policy and Practical Implications

1. Gender-Responsive Entrepreneurial Ecosystems

Governments and support institutions should improve women's access to appropriate finance, entrepreneurship education, digital literacy, technology, mentoring, networks, leadership development, and markets, with attention to accessibility and coordination.

2. Recognition of Indigenous Knowledge

Entrepreneurship, innovation, rural-development, and sustainability policies should recognise the potential contribution of Indigenous Knowledge while protecting cultural integrity and community rights.

3. Knowledge Protection and Benefit Sharing

Policies should support appropriate documentation, community participation, intellectual-property mechanisms, geographical indications where applicable, access and benefit sharing, and prevention of unauthorised commercial exploitation.

4. Role of Universities

Universities can connect women entrepreneurs and knowledge-holding communities with research, technology, innovation centres, industry, finance, incubation, policy, and markets, while developing interdisciplinary education.

5. Inclusive Financial Mechanisms

Financial institutions should consider diversified and context-sensitive mechanisms, accompanied by financial literacy, mentoring, and market support.

6. Digital Transformation

E-commerce, digital payments, branding, digital storytelling, traceability, and market information can expand opportunities, but digital inclusion requires infrastructure, skills, affordability, and local-language support.

7. Institutional Convergence in India

Programmes and institutions concerned with entrepreneurship, women's livelihoods, rural development, Indigenous Knowledge, digital transformation, and sustainability should be better coordinated to reduce fragmentation and duplication.

8. Sustainable and Community-Centred Enterprise

Support should incorporate sustainable resource management, biodiversity protection, community participation, fair remuneration, knowledge transmission, and equitable benefit distribution.

9. Overall Policy Direction

Women's entrepreneurship, Indigenous Knowledge, and ecosystem development should be treated as interconnected policy domains, combining gender inclusion, knowledge protection, finance, digital access, innovation, market linkage, institutional coordination, and sustainability.

For JEC's community-oriented entrepreneurship agenda, the principal practical implication is that women-led Indigenous Knowledge-based enterprises should be supported through coordinated ecosystem interventions rather than isolated credit, training or market programmes. This includes institutional coordination, responsible knowledge protection, capability development, digital inclusion, market access and community participation [35, 31].

Limitations and Future Research

The framework is conceptual and therefore does not establish causal relationships, statistical mediation or moderation, or measurable development effects. Indigenous knowledge is heterogeneous; not all knowledge is intended for commercialisation, and women's experiences differ across cultural, socioeconomic, institutional and geographical contexts. The framework should therefore be adapted rather than treated as a universal model.

- Empirical Testing
- Longitudinal Research
- Comparative Research
- Intersectional Research
- Digital Entrepreneurship and Indigenous Knowledge
- Ecosystem Governance
- Policy Evaluation
- Community-Based Research
- Measurement Development
- Theory Development

Conclusion

Entrepreneurship is an important component of contemporary development strategies, yet gender inequality, rural disadvantage, environmental pressures, cultural erosion, and uneven regional development reveal the limitations of approaches centred only on economic growth, finance, technology, and firm performance.

This paper developed an Integrated Conceptual Framework linking Entrepreneurial Ecosystems, Women's Entrepreneurship, and Indigenous Knowledge Systems to inclusive and sustainable economic development. Entrepreneurial ecosystems are conceptualised as enabling environments, Indigenous Knowledge as culturally embedded knowledge resources, and women entrepreneurs as important agents of entrepreneurial mobilisation and transformation.

The framework proposes that entrepreneurship can be understood as a process through which knowledge, capabilities, institutions, markets, culture, and community resources interact to generate economic, social, cultural, environmental, and resilience-related value. Indigenous Knowledge is neither treated solely as static heritage nor

reduced to a commodity; its entrepreneurial relevance depends on context, capabilities, ecosystem support, innovation, market relevance, and ethical governance.

The paper's principal conceptual proposition is that inclusive and sustainable economic development may be strengthened when supportive and gender-responsive entrepreneurial ecosystems enable women entrepreneurs to responsibly mobilise, adapt, protect, and transform Indigenous Knowledge into innovative enterprise and sustainable livelihood opportunities.

The paper is conceptual and does not establish causal relationships, statistical mediation, moderation, or measurable development effects. Future research should therefore test the propositions through quantitative, qualitative, mixed-method, longitudinal, comparative, and community-based approaches.

For India, the framework is particularly relevant because rich and diverse Indigenous Knowledge Systems coexist with expanding entrepreneurial ecosystems, growing women's participation in enterprise, and increasing policy attention to sustainable and inclusive development. The paper ultimately argues that EE, WE, and IKS should not be treated as independent research or policy domains; their interaction provides a promising basis for understanding entrepreneurship as a contributor to economic opportunity, women's empowerment, cultural continuity, community resilience, and environmental sustainability.

Acknowledgement

The author gratefully acknowledges the financial support received from the Indian Council of Social Science Research (ICSSR), New Delhi, under the ICSSR Senior Fellowship (Fellowship No. ICSSR/SF/2025–26/386).

References

1. Isenberg DJ. How to start an entrepreneurial revolution. Harvard Business Review,2010:88(6):40–50.
2. Stam E. Entrepreneurial ecosystems and regional policy: a sympathetic critique. European Planning Studies,2015:23(9):1759–1769. doi: 10.1080/09654313.2015.1061484.
3. Brown R, Mason C. Looking inside the spiky bits: a critical review and conceptualisation of entrepreneurial ecosystems. Small Business Economics,2017:49(1):11–30. doi: 10.1007/s11187-017-9865-7.
4. Sussan F, Acs ZJ. The digital entrepreneurial ecosystem. Small Business Economics,2017:49(1):55–73. doi: 10.1007/s11187-017-9867-5.
5. Stam E, van de Ven A. Entrepreneurial ecosystem elements. Small Business Economics,2021:56(2):809–832. doi: 10.1007/s11187-019-00270-6.
6. Spigel B. The relational organization of entrepreneurial ecosystems. Entrepreneurship Theory and Practice,2017:41(1):49–72. doi: 10.1111/etap.12167.
7. Brush CG, de Bruin A, Welter F. A gender-aware framework for women's entrepreneurship. International Journal of Gender and Entrepreneurship,2009:1(1):8–24. doi: 10.1108/17566260910942318.
8. Minniti M. Female entrepreneurship and economic activity. European Journal of Development Research,2010:22(3):294–312. doi: 10.1057/ejdr.2010.18.
9. Organisation for Economic Co-operation and Development. The Missing Entrepreneurs 2017: Policies for Inclusive Entrepreneurship. OECD Publishing,2017.
10. Agrawal A. Dismantling the divide between Indigenous and scientific knowledge. Development and Change,1995:26(3):413–439. doi: 10.1111/j.1467-7660.1995.tb00560.x.
11. United Nations Educational, Scientific and Cultural Organization. Local and Indigenous Knowledge Systems (LINKS) Programme. UNESCO,2017.
12. Audretsch DB, Belitski M. Entrepreneurial ecosystems in cities: establishing the framework conditions. Journal of Technology Transfer,2017:42(5):1030–1051. doi: 10.1007/s10961-016-9473-8.
13. Wurth B, Stam E, Spigel B. Toward an entrepreneurial ecosystem research program. Entrepreneurship Theory and Practice,2022:46(3):729–778. doi: 10.1177/1042258721998948.
14. Roundy PT. Hybrid organizations and the logics of entrepreneurial ecosystems. International Entrepreneurship and Management Journal,2017:13(4):1221–1237. doi: 10.1007/s11365-017-0452-9.
15. Anderson RB. Economic Development among the Aboriginal Peoples in Canada: The Hope for the Future. Captus Press,1999.
16. Anderson RB. Entrepreneurship and Aboriginal Canadians: a case study in economic development. Journal of Developmental Entrepreneurship,2002:7(1):45–65.
17. Peredo AM, Anderson RB, Galbraith CS, Honig B, Dana LP. Towards a theory of Indigenous entrepreneurship. International Journal of Entrepreneurship and Small Business,2004:1(1–2):1–20. doi: 10.1504/IJESB.2004.005374.
18. Peredo AM, Chrisman JJ. Toward a theory of community-based enterprise. Academy of Management Review,2006:31(2):309–328. doi: 10.5465/AMR.2006.20208683.
19. Dana LP, Anderson RB (eds). International Handbook of Research on Indigenous Entrepreneurship. Edward Elgar Publishing,2007.
20. Croce F. Contextualized Indigenous entrepreneurial models: a systematic review of Indigenous entrepreneurship literature. Journal of Management and Organization,2017:23(6):886–906. doi: 10.1017/jmo.2017.69.
21. Barney JB. Firm resources and sustained competitive advantage. Journal of Management,1991:17(1):99–120. doi: 10.1177/014920639101700108.
22. Berkes F. Sacred Ecology. 4th ed. Routledge,2018.
23. Hindle K, Lansdowne M. Brave spirits on new paths: toward a globally relevant paradigm of Indigenous entrepreneurship research. Journal of Small Business and Entrepreneurship,2005:18(2):131–141.
24. Chambers R, Conway GR. Sustainable Rural Livelihoods: Practical Concepts for the 21st Century. Institute of Development Studies,1992.
25. Scoones I. Sustainable Rural Livelihoods: A Framework for Analysis. Institute of Development Studies,1998.
26. Welter F. Contextualizing entrepreneurship – conceptual challenges and ways forward. Entrepreneurship Theory

and Practice,2011:35(1):165–184. doi: 10.1111/j.1540-6520.2010.00427.x.
27. World Intellectual Property Organization. Intellectual Property and Genetic Resources, Traditional Knowledge and Traditional Cultural Expressions. WIPO,2022.
28. Organisation for Economic Co-operation and Development. Entrepreneurship at a Glance 2023. OECD Publishing,2023.
29. Jennings JE, Brush CG. Research on women entrepreneurs: challenges to (and from) the broader entrepreneurship literature? Academy of Management Annals,2013:7(1):663–715. doi: 10.5465/19416520.2013.782190.
30. AlMehrzi AA, Tipu SA, Sarker AE. Determinants, processes, and impacts of Indigenous entrepreneurship: a systematic literature review. Journal of Enterprising Communities: People and Places in the Global Economy,2023:18(3):646–681. doi: 10.1108/JEC-10-2022-0155.
31. Ramadani V, Rodrigues A, Galvão A, Marques C. Artisan entrepreneurship revisited: toward a contemporary conceptual framework. Journal of Enterprising Communities: People and Places in the Global Economy,2025. doi: 10.1108/JEC-04-2025-0110.
32. Sen A. Development as Freedom. Oxford University Press,1999.
33. United Nations. Transforming Our World: The 2030 Agenda for Sustainable Development. United Nations,2015.
34. Shane S, Venkataraman S. The promise of entrepreneurship as a field of research. Academy of Management Review,2000:25(1):217–226. doi: 10.5465/amr.2000.2791611.
35. Banu J, Baral R, Vijayalakshmi V. The enablers and stumbling blocks in sustaining growth of women-owned micro-enterprises in India – a qualitative inquiry. Journal of Enterprising Communities: People and Places in the Global Economy,2024:18(5):918–944. doi: 10.1108/JEC-05-2023-0060.