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Leveraging ecosystems to integrate Tshivenda indigenous knowledge systems for small and medium enterprise sustainability

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Orientation: Indigenous communities possess deep knowledge of local environments, which allows them to contribute valuable insights to resource management, conservation and ethical business practices. This study integrates knowledge management with business strategic management to explore the intersection of Tshivenda Indigenous Knowledge Systems (IKS) and business ecosystems.

Research purpose: To understand how indigenous African communities, who possess deep knowledge of local environments, can contribute valuable insights to resource management, conservation and ethical business models through the adoption of IKS.

Motivation for the study: The study aimed to identify essentials within small and medium enterprise (SME) business ecosystems that support business sustainability through IKS adoption.

Research design, approach and method: The study used a qualitative research methodology, employing a two-round Delphi technique. The Delphi panel consisted of seven purposively selected experts in Tshivenda IKS, SME African business and business sustainability. The panel reached consensus by agreement on proposition wording to establish ecosystem elements based on Tshivenda IKS for resource use by agriculture, forestry and healthcare SMEs.

Main findings: The study identifies nine IKS propositions as declarative statements of relationships necessary between SME strategy and Tshivenda IKS to enhance resource usage in a business ecosystem.

Practical/managerial implications: The study concludes that integrating IKS into business practices is crucial, as acknowledging IKS practised by the local communities has value in creating sustainability.

Contribution/value-add: Business ecosystems, made up of interconnected micro, market and macro-environmental factors, can benefit from IKS considerations. By integrating IKS, businesses can have more sustainable, culturally respectful practices that enhance environmental stewardship and collaboration.

Keywords: indigenous knowledge system; SME; sustainable business practice; Delphi; business ecosystems; Africa; Tshivenda.

Introduction

Background

The influence of indigenous knowledge systems (IKS) on business ecosystems is increasingly important as IKS holds a wealth of wisdom, practices and insights that have been passed down through generations (Mika et al. 2022:446). Balogun and Kalusopa (2021:179) note that the acknowledgement of IKS is important, as it encompasses an understanding of the environment, cultural heritage, local business and community social structures and sustainable practices. While this knowledge has sustained Indigenous communities for centuries it has been within tacit knowledge, a type of knowledge gained only through experience and intuition. Yet, understanding what ensures the longevity of a business by applying IKS insights in business operations is limited (Mika et al. 2022:446). How best to apply IKS for current and future generations' use can only come through understanding of the value proposition that a small and medium enterprise (SME) adopting an IKS ecosystem in daily management, creates. This means understanding the relationships within the ecosystem that enhance strategic business decision-making by adopting

embedded IKS into core business practices enabling businesses to engage in environmentally responsible actions that simultaneously resonate culturally.

Essentially, integrating IKS empowers SMEs to align traditional ecological knowledge with modern sustainability frameworks (Balogun & Kalusopa 2021:177), directly contributing to several United Nations Sustainable Development Goals (SDGs). For instance, this integration promotes ecosystem protection (SDG 15: Life on Land) and enhances sustainable practices in industries, supporting responsible consumption and production (SDG 12). In addition, leveraging IKS fosters inclusive and equitable decision-making, aligning with goals to reduce inequalities (SDG 10) and build partnerships for sustainable development (SDG 17). Indigenous knowledge system is obviously valuable for long-term sustainability so the research question this research sought to answer is: What are essential elements of an IKS ecosystem for the promotion of SMEs' sustainable business practices?

The gap in existing research literature that this study addresses was to propose the relationships necessary within a business ecosystem that is built on Tshivenda IKS thereby ensuring long-term resource use by agriculture, forestry and healthcare SMEs of the future. This study exemplifies a transdisciplinary approach, as it intertwines knowledge management with business and strategic management. This integrative framework allows a comprehensive exploration of the influencers and strategic factors involved in incorporating IKS into small business ecosystems. It further captures and preserves Indigenous insights, facilitating the development of adaptive business strategies. This comprehensive approach enables SMEs to build capacity in sustainability and resilience, positioning IKS as an asset in contemporary business practices. This study specifically focuses on Tshivenda IKS and their role in promoting sustainable business practices in SME ecosystems.

Literature review

Extremely limited information on Tshivenda IKS is available, so this literature review draws on relevant sources on IKS in general, with a specific focus on IKS in the African context. In recent years, there has been a growing recognition of the significant impact that IKS can have on environmental sustainability (Adeola 2023:2). Indigenous knowledge systems are said to have the potential to enhance business sustainability by promoting ethical business practices in the realms of people, planet and profit (the so-called triple bottom line) (Makate 2019). The influence of IKS on business sustainability is multidimensional, as, along with sustainability, the value of indigenous knowledge (IK) lies in leveraging the knowledge embedded in an IKS to foster innovation and problem-solving in businesses. However, literature on how knowledge is leveraged is mentioned in many different knowledge domains as highlighted here. To gather these concepts under one umbrella, these constructs are proposed as conceptually integrated by consideration of the knowledge-based view (KBV) where knowledge is a valuable and inimitable business asset to improving a business's output value (Pereira & Bamel 2021). As knowledge held by a business can come in many forms, IKS may be considered as existing as a self-sustaining ecosystem built from intangible but valuable knowledge elements interrelated to support each other in creating environmental sustainability and future opportunities for business (Makgamatha 2025). By incorporating IKS wisdom into operational practices, SMEs can tap into historically relevant, valuable insights that contribute to their long-term success. To this end, this research proposes identifying and proposing a theory of components of IKS that may be considered as an ecosystem of many interrelated parts that support each other creating environmental sustainability and future opportunities for business (Makgamatha 2025).

Another dimension influenced by IKS is stakeholder engagement. Mika et al. (2022:449) assert that traditional knowledge often holds techniques for resource management and conservation that align with current environmental global concerns. Acknowledging and integrating local community IKS into a local business ecosystem not only supports cultural knowledge preservation, but also holds tremendous potential for enhancing business sustainability and fostering sustainable development, ethical corporate conduct and mutually beneficial collaborations with Indigenous communities (Colbourne 2017:93). An SME's strategic integration of relevant IK signifies a commitment to community cultural respect as a social responsibility. Beyond mere compliance with a nation's ethical standards, actively engaging with IK demonstrates a genuine appreciation for local cultures with regard to ethical business conduct. This enhances the company's reputation and positions it favourably with the local community.

There are many challenges associated with the adoption and implementation of IKS practices in an entrepreneurial business ecosystem (Colbourne 2017:93), one of them being the existing negative beliefs about the practicality and profitability of adopting IKS in business. Contrary to these beliefs, the applicability of IKS in commercial settings can vary depending on aspects such as industry type, location and other cultural considerations (Arjona-García et al. 2021:3; Lehane 2016:11). It is worth noting that the use of an IKS in business practice is not primarily about massification but about the thoughtful and culturally sensitive incorporation of the traditional knowledge of local communities to enhance business practices and sustainability (Olden & Moahi 2012).

Arguments for and against incorporating indigenous knowledge system in a commercial setting

Researchers believe that integrating IKS into a commercial context can greatly improve corporate sustainability. For instance, Pophiwa and Saidi (2022:3) recently reported that, because an IKS places a high value on the interdependence of ecological, cultural and social systems, its holistic perspective

can motivate SMEs to adopt more responsible strategies that consider not only economic outcomes, but also the health of the environment and local communities. It is also proposed that, through the adoption of an IKS, companies may enhance their social and environmental impact and help to create a more sustainable and responsible corporate landscape, as IKS provides a wealth of information about local ecosystems, including detailed understandings of plant and animal behaviour, soil health and weather patterns (Asakitikpi 2020; Colbourne 2017; Mahomoodally 2013). If well utilised, this knowledge would enable more effective and sustainable resource management in industries such as agriculture, forestry and healthcare.

Even small firms (i.e. SMEs) that apply IKS may embrace environmentally friendly harvesting techniques while simultaneously conserving biodiversity. For example, Indigenous communities have maintained healthy forests for decades, as their expertise in sustainable harvesting, the conservation of sacred sites and traditional land-use patterns helps implement sustainable forest management practices (Nyahunda & Tirivangasi 2022:1063). Akinnagbe and Irohibe (2014:411) suggest that an entire positive industry effect can be gained from integrating IKS into business, as it promotes ecological balance, reduces deforestation and improves the long-term health of forest ecosystems (Hambati 2022:35). This benefits both the environment and the local community. In Indigenous communities, healthcare providers rely heavily on ancestral knowledge of medicinal plants and traditional medicines because they have been used successfully for generations. Small and medium enterprises that collaborate with Indigenous communities can gain significant knowledge about the qualities and sustainable harvesting of these plants (OECD 2019). A collaboration strategy preserves IKS principles in the community and its businesses, while encouraging the ethical and sustainable procurement of natural components with the preservation of biodiversity. When implemented properly, integrating IKS into business operations can significantly increase business sustainability, especially in the agricultural and healthcare sectors (Li et al. 2023).

Kugara et al. (2022) highlight that attaining sustainability in SMEs is a critical and growing part of modern business practices. Small and medium enterprises, which usually have few resources, recognise the necessity of incorporating sustainability into their operations, reflecting a broader cultural shift towards responsible business behaviour (Cheteni & Umejesi 2023:2). In the case of SMEs, achieving a level of sustainability entails a multifaceted approach that simultaneously tackles environmental, social and economic business challenges. To lessen their environmental impact, SMEs are increasingly adopting eco-friendly technologies and procedures, which include energy-saving methods, waste-reduction programmes and the implementation of circular-economy ideas (Castellani & Fassio 2019). The optimisation of resource consumption by an SME becomes a top goal not only for environmental stewardship, but also for financial effectiveness. Social sustainability in SMEs also means promoting fair and ethical work practices. This entails placing a high priority on employee well-being, promoting inclusiveness and diversity in the workplace and developing a positive workplace culture.

Collins et al. (2017:39) suggest that, as both consumers and investors value sustainability in assessing who to spend their money with, SMEs that align their operations with ethical and environmental principles stand to gain a larger market share and a competitive advantage. The integration of sustainability into SMEs is a dynamic process that necessitates a comprehensive strategic plan. In agreement, Cheteni and Umejesi (2023:5) affirm that such a strategy requires striking a careful balance between environmental conscience, social responsibility and economic feasibility. As SMEs evolve, those that actively embrace and implement sustainable practices not only contribute to a more sustainable future, but also position themselves for long-term success in a business landscape increasingly defined by ethical and environmental considerations (Cheteni & Umejesi 2023:3).

Although the use of IKS in business may result in many positive outcomes, there are concerns regarding the lack of official documentation and standardisation of a global acknowledgement of IKS, which poses a major limitation to the integration of IKS in commercial contexts (Balogun & Kalusopa 2021:177). Because IK is frequently transmitted from generation to generation through the oral tradition, it is criticised because historical information may differ from person to person or group to group. This fluctuation might be problematic in a commercial setting in which consistency and accuracy are essential (Plockey 2014:22). Subsequently, SMEs may find it challenging to use IKS consistently across various processes without defined practices and documentation, which could result in operational inefficiencies and uncertainty. Critics also raise concerns about possible conflicts and the exploitation of IK when incorporating IKS into company operations. Occasionally, in the process of business integration, traditional knowledge is used without the appropriate permission, acknowledgment or benefit-sharing with Indigenous groups (Plockey 2014:48). Mukuka (2010:48) notes that the adoption of IKS in a business environment (or otherwise) can lead to ethical and legal concerns, such as intellectual property rights and a lack of cultural sensitivity. Such issues can result in disagreements that harm the connections between corporations and Indigenous communities.

Ubisi, Kolanisi and Jiri (2019:55) claim that IKS integration into some businesses is not necessarily helpful because modern scientific understanding and technical breakthroughs have surpassed ancient techniques. The belief is that relying on IKS in these situations may stifle innovation and competition. Small and medium enterprises may prefer new procedures and technologies over old practices, resulting in a decreased use of IKS in the commercial domain. Those who oppose IKS integration argue that not all components of IK are commercially viable or consistent with modern market demands. Some Indigenous procedures may be less efficient and more

inaccurate, expensive or labour intensive than modern equivalents (Ubisi et al. 2019:54). These economic concerns present hurdles for SMEs seeking to preserve competitiveness and profitability, possibly leading them to choose more cost-effective and efficient alternatives. Resistance to the implementation of IKS might also come from within commercial groups. Internal stakeholders might regard the incorporation of IK as cumbersome, necessitating more time, resources and efforts to adapt to these traditional practices. Overcoming this reluctance demands a cultural transformation inside the business that recognises the importance of IKS alongside current methods and technologies (Breidlid 2009:142).

Ubuntu, frugal innovation and strategic actions all play a role in the layered investigation into sustainable business practices (Agnihotri 2015:405). Ubuntu, a profoundly entrenched African ideology, emphasises the connectedness and interdependence of individuals in a society. It promotes collective consciousness, creating an environment in which community well-being is intimately linked to individual success. This ideology has the potential to affect company strategy by encouraging inclusive decision-making processes, stakeholder participation and a sense of shared responsibility for long-term outcomes (Erasmus, Strydom & Rudansky-Kloppers 2019:11). Inversely, frugal innovation embodies the ideas of maximising productivity while minimising resources, as well as economically providing value. In line with the principles of Ubuntu, frugal innovation encourages companies to take deliberate steps that make sustainability, affordability and accessibility a top priority.

Strategic efforts should include the rigorous and intentional integration of frugal innovation and Ubuntu into operational plans, as this supports the value of IKS. The strategy may also include collaborative efforts that incorporate a variety of stakeholders and exemplify the Ubuntu philosophy of shared responsibility. Nzimakwe (2014:34) contends that strategic activities should primarily emphasise the value that should be provided for both individual enterprises and the greater community, fostering a symbiotic relationship between resource efficiency, social interconnectedness and economic success.

This study explores how Tshivenda IKS intersect with existing literature on IKS in business. It also explores the convergence of Ubuntu, frugal innovation and strategic action, offering insights for SMEs to navigate global challenges using traditional wisdom from IKS. The research focuses on the value of Tshivenda IKS in business, addressing the gap in the literature on this cultural perspective.

Research methods and design

The study's research approach was qualitative in nature, allowing the participants to openly provide in-depth insights based on their SME business and IKS experiences and expertise. This research design received ethical approval before proceeding to participant data collection.

Data collection methods

A Delphi research design was used. The objective of using the Delphi technique in this study was to reach a consensus regarding the propositions that underpin IKS as an influence in its role in sustainable business practices. According to Barrios et al. (2021), the Delphi technique is effective for gathering collective perspectives from experts when there is a lack of clear evidence on a topic or phenomenon. The Delphi technique involves administering questionnaires to experts in multiple rounds before reaching consensus (Geist 2010; Martin & Frick 1998; Warner 2017:2). Relevant literature was first accessed and reviewed to derive statements (propositions) of influences that support the application of an IKS system in business strategic planning. These (the original) propositions were presented in the first Delphi round. Scholars Roggema (2016:2) and Vargas-Bianchi (2020:2) describe propositions as declarative true-or-false statements about a concept or empirical phenomenon. Such propositions, which indicate the possibility of links between various concepts, are used to generate insights in qualitative research. Participants were invited to participate selected for their subject matter knowledge. Written informed consent was obtained from each participant of the study. Throughout the Delphi process, the researchers carefully assessed the panel members' feedback and incorporated it into subsequent rounds until the experts reached consensus on each proposition (Warner 2017:2). The propositions were posed to Delphi participants to gather their expert opinion on the role and significance of sustainable business practices within SMEs. The proposition's meaning was reworded by the researcher using constructive feedback received from the participants and the new proposition was included in the subsequent round. The output of the previous round became the input for the next round. Only propositions where all panel members agreed were not sent on into subsequent rounds. Consensus was determined by acquiring 100% agreement on each proposition. The wording of a relationship as described by each proposition was reached on all propositions after round 3. Three rounds of the Delphi technique were performed, consistent with Thangaratinam and Redman's (2005:120) recommendations that three rounds must generally be administered in the Delphi technique for it to be regarded as valid. The Delphi process recommended by Habibi, Sarafrazi and Izadyar (2014:9) was applied.

Table 1 presents the propositions derived from a comprehensive literature review on the role of IKS in business and SME business in attaining triple-bottom-line sustainability. Key elements identified in the reviewed literature considered essential by past research to create a knowledge resource such as an IKS-based business ecosystem were used to construct the first propositions for round one of the Delphi (Table 1).

The researcher purposively chose a panel of seven experts in IKS, SME African business and business sustainability. Members of local traditional leaders' bodies are knowledgeable about local traditional practices and could provide rich details relating to historically accumulated Tshivenda IKS and so were invited to participate in the study. This allowed the

researcher to have a better understanding of the IK and cultural practices of the Tshivenda-speaking people. A traditional leader was purposively selected using the criteria that he was from the Tshivenda community, recognised for his Tshivenda IKS knowledge by peers and had been invited to be part of a traditional Tshivenda IKS body for more than 2 years. The SME African business panellist was a Tshivenda person who had a successful SME operating within the Tshivenda community. Table 2 contains details about the composition of the panel.

Ethical considerations

The study received ethical clearance from the University of Johannesburg Ethics Committee on 05 November 2018 (under clearance code 2018BM40). A gatekeeper (a senior member of the Tshivenda community) was asked to share the researcher's interest in accessing and speaking to Tshivenda-speaking SME owners and local traditional leaders. A gatekeeper (a senior member of the Tshivenda community) was asked to share the researcher's interest in accessing and speaking to Tshivenda-speaking SME owners and local traditional leaders. The researcher's contact details were shared with those who indicated participation interest. Upon contacting the researcher, confirmation of participant understanding of the research was established in terms of anonymity in reporting and the option to opt out at any point. Upon affirmation, an interview date was scheduled. The researcher's contact details were shared with those who indicated participation interest. Upon contacting the researcher, confirmation of participant understanding of the research was established in terms of anonymity in reporting and the option to opt out at any point. Upon affirmation, an interview date was scheduled. As traditional leaders agreed to participate as expert opinions on Tshivenda IKS, all final propositions were scrutinised by them at each round to ensure the correctness of what the propositions portrayed of Tshivenda culture within IK. Moreover, Lincoln and Guba's (1985) criteria of trustworthiness (*credibility* through exploratory research, *dependability* with a clear process, *confirmability* with supporting secondary research and *transferability* for future research) were adhered to.

TABLE 1: Round 1 proposition drawn from the literature reviewed.

Concept with supporting authors	Interrogated first proposition
Sustainability from business strategy Balogun and Kalusopa (2021:179)	Proposition 1 (P1): Sustainable business practice is important in ensuring SME viability. Proposition 2 (P2): Planning for sustainability is a necessary part of an SME business strategy.
IKS Li et al. (2023), Nyahunda and Tirivangasi (2022:1063) Olden & Moahi (2012:543)	Proposition 3 (P3): IKS has a positive role to play in an SME business environment. Proposition 4 (P4): Using existing IKS and adding new knowledge to indigenous knowledge systems is important for business and SME sustainability. Proposition 5 (P5): Influential people in an indigenous community can have a positive influence on the value contained within an IKS. Proposition 6 (P6): The Tshivenda IKS can have a positive effect on the business practices adopted in SMEs.
IKS, Ubuntu, frugal innovation, and strategic actions Agnihotri (2015:405), Nzimakwe (2014:34)	Proposition 7 (P7): Tshivenda IKS are positively enhanced by Ubuntu (networking and knowledge sharing by communities in Africa). Proposition 8 (P8): Ubuntu can have a positive effect on contemporary strategic decision-making by SME management. Proposition 9 (P9): Frugal innovation (using available input resources with minimum waste) as practised in IKS has a positive effect on business development in terms of sustainability.

Note: Please see the full reference list of the article, Manyaga, B., Thomas, P. & Goldman, G., 2026, 'Leveraging ecosystems to integrate Tshivenda indigenous knowledge systems for small and medium enterprise sustainability', *Acta Commercii* 26(1), a1586. https://doi.org/10.4102/ac.v26i1.1586 for more information.

SME, small and medium enterprise; IKS, indigenous knowledge system.

TABLE 2: Delphi panel members: Expertise distribution.

Expertise	Count of panel member	Participant ID
African SME sustainability academic experts	2	A1 (African SME sustainability academic expert), A2 (African SME sustainability academic expert)
African IKS academic experts	2	A3 (African IKS academic expert), A4 (African IKS academic expert)
Tshivenda IKS expert	1	A5 (Tshivenda IKS expert)
African SME using Tshivenda IKS	1	A6 (African SME using Tshivenda IKS)
African SME academic expert	1	A7 (African SME academic expert)
Total	**7**	-

SME, small and medium enterprise; IKS, indigenous knowledge system.

Results

Nine initial propositions (as shown in Table 1) were given to each of the seven panellists, and they were asked to provide justifications for their inputs on the wording and meaning. For each proposition, if consensus was not reached, the content of the proposition was modified and carried forward to a subsequent Delphi round, until all panellists agreed. If consensus was reached on a particular proposition, it was accepted and not sent into subsequent rounds. Thus, an integrated opinion and final consensus on nine conceptual influences was determined.

Delphi Round 1 findings and discussion

Under the concept sustainability and its importance in business strategy, two propositions (P1 and P2) were presented to the panel.

Proposition 1 (P1), 'Sustainable business practice is important in ensuring SME viability', was posed to the panel. All of the panel members disagreed with this proposition for various reasons. Some of the reasons stated linked the daily operations of a business to sustainability, as seen in this panellist's input:

> 'I disagree with this statement because for the business to survive long-term, the business and/or its management therefore has to ensure that the operational aspects of the business promote business longevity.' (A2, African SME sustainability academic expert)

The role that people play in the interaction between nature and business was also emphasised, as was the significance of a natural environment for SMEs' survival. Panellist A2 mentioned the three sustainable pillars – the three Ps: (1) profit, (2) people and (3) planet (the environment).

In addition, Panellist A5 (Tshivenda IKS expert) stated that SMEs ought to implement the three Ps, as an SME that neglects the requirement of putting environmental-management strategies into practice endangers the environment and its natural resources, which could influence the SME's ability to remain sustainable in future, owing to the scarcity of natural resources. Regarding sustainability in very small enterprises, all panel participants agreed that the size of the business is immaterial, since every effort counts and makes a difference, urging SMEs to engage in sustainable business practices. Consensus on the wording of this proposition was not reached in Round 1.

Proposition 2 (P2) stated 'Planning for sustainability is a necessary part of an SME business strategy'. Panellist A2, Panellist A5 and Panellist A7 agreed with the statement but expressed concerns about the lack of strategic planning in SMEs often reported in the literature. Panellist A7 stated:

> 'Many studies have indeed displayed that SMEs often do not have strategic plans in place. As such, it makes it rather challenging for SMEs to include sustainability in their business.' (A7, African SME academic expert)

This proposition achieved consensus from all panel members in the first round and was therefore accepted with no revisions. Under P2, the panellists highlighted the significance of planning for sustainability in SMEs, citing planning as a key management activity essential to putting sustainable business strategies into effect.

Four propositions (P3, P4, P5 and P6) with related statements were developed under the concept IKS.

Proposition 3 (P3) stated 'IKS has a positive role to play in an SME business environment'. Panellist A4, Panellist A5 and Panellist A6 noted that IKS are continually evolving but businesses must be concerned with providing the goods that customers want, so this statement was too broad with regard to serving customers. Panellist A4 stated:

> 'I agree because a lot of the small-scale businesses (especially in the agriculture system) comes from knowledge that has been passed on from generation to generation, influencing individual world views and behaviour but the products have to serve current customers' needs.' (A4, African IKS academic expert)

Panellist A6 supported this:

> 'I agree because it is important to know all facets of the market within which the business is planning to operate. The information gathered by studying the area, how people live (survive), may be useful to run a successful business in that area and that needs to be adapted in IKS from generation to generation – what the customer expects of IKS practices.' (A6, African SME using Tshivenda IKS)

Proposition 3 (P3) needed re-evaluating and was therefore carried forward into Round 2, using the panel's feedback to adapt the statement.

Proposition 4 (P4) proposed that there is an important connection between existing IKS and adding new knowledge to IKS for business and SME sustainability. All of the panel members agreed that constant knowledge-sharing of IKS may be leveraged to sustain business through centuries. Furthermore, ties established between IKS and the three sustainability pillars are clear, as IKS encourages the efficient use of resources and care of the natural environment in which business must function. Panellist A7 suggested that there is a link between IKS and corporate sustainability, as evidenced in the following quote:

> 'Indigenous groups are known to have traditional practices that promotes the preservation of resources, mostly natural resources. In light of this, taking into consideration that business sustainability is centred around People, Profit and Planet, I believe that the preservation of resources through IKS practices in the business can influence business sustainability positively.' (A7, African SME academic expert)

Consensus was reached and P4 was therefore accepted in Round 1.

Proposition 5 (P5) explored the way in which influential people in an Indigenous community can have a positive influence on the value contained in an IKS. For P5, Panellist A3, Panellist A5 and Panellist A6 emphasised the importance of staying abreast of new IKS developments, as can be seen in this supporting quote from Panellist A6:

> 'The business environment is forever changing and an organisation that does not change will fail in the near future. IKS needs to be updated and improved to be relevant in contemporary times.' (A6, African SME using Tshivenda IKS)

Panellist A5 stated:

> 'It is the people within that community who are the knowledge holders and the owners of the intellectual property not just an "influential person" and the very same people are the same ones who use the Indigenous Knowledge and therefore assist a business acquire IKS from any member of the local community ... The Tshivenda people are focused on the importance around protecting the natural environment, providing learning opportunities but also learning from the natural environment and being philosophical about social and economic practices within the natural environment. Therefore, if there is a clear focus on sustainability practices through IKS from anyone – if he or she supports IKS as a tool to leverage aspects such as economic, social and governance – this is key to any business and its ability to remain sustainable.' (A5, Tshivenda IKS expert)

Panellist A7 added a note stating:

> 'IKS practices should carefully evaluate all three pillars of business sustainability and have a strategy applied intentionally aimed at achieving all pillars. This is to avoid the possibility of an adverse relationship considering that IKS does not heavily appreciate the "profit" and profitability pillar, by being only concerned with the people and the environment aspect.' (A7, African SME academic expert)

Panellist A4 stated:

> 'It is not always the most influential individual in a community that achieves initial success though IKS application; however, if

> the success grows the individual could become an influencer and someone of stature within a community based on business success.' (A4, African IKS academic expert)

The panel agreed that there must be internal knowledge about Tshivenda IKS practices in the business, together with an understanding of applying this in business protocols. This means allowing that person to strategically advocate the integration of IKS business operations. The panel emphasised that the level of management status, which can automatically confer individual power and influence, is not always an important component in the context of IKS application. As a result, all seven panellists agreed that there was a need to further clarify the qualifying requirements for 'people of influence'.

Consensus could not be reached on wording the statement. P5 needed to be adapted with this feedback and was therefore carried forward to Round 2.

In studying P6, all panel members agreed that the Tshivenda IKS can have a positive effect on the business practices adopted in SMEs. The rationale for this was that IKS include practices that concentrate on people and the environment, applied by the people who 'own' the IKS. The panellists justified their position through quotes such as the following:

> 'I think there is a lot that businesses can learn from IKS concerning sustainability, more so looking at the people and planet aspects of sustainability.' (A6, African SME using Tshivenda IKS)

> 'Most of the brilliant concepts and ideas came from the people who own the IKS, moderating and enhancing it to keep up with the times by these peoples' constant use thereof so Tshivenda IKS should be implementable in the current business world.' (A5, Tshivenda IKS expert)

Panellist A2 stated that businesses, including SMEs, should be mindful of their environmental effect, leveraging emerging IKS to support and improve sustainability efforts.

Proposition 6 (P6) was accepted without revision.

The next group of propositions (P7, P8 and P9) related to IKS, Ubuntu, frugal innovation and strategic actions.

Proposition 7 (P7), 'The Tshivenda Indigenous Knowledge Systems are positively enhanced by Ubuntu (networking and knowledge sharing by communities in Africa)', was introduced to the panel. The panellists agreed that there is a favourable relationship between Tshivenda IKS and Ubuntu, as supported by the following quotes:

> 'Ubuntu encompasses inclusivity of all hence I agree that there is a positive relationship between Tshivenda IKS and Ubuntu. Management in SMEs can and should be encouraged to promote the spirit of Ubuntu, this should also be reflected in the manner in which they manage the business itself. Tshivenda IKS can be instrumental in establishing Ubuntu principles in the business. For example: In Tshivenda there is a saying that states "munwe muthihi a u tusi mathuthu," which means that "one finger does not pick up grains".' (A7, African SME academic expert)

> 'Ubuntu is a concept that is very deep entrenched within the Indigenous African cultures of sharing and looking out for one another relevant to IKS.' (A5, Tshivenda IKS expert)

The panellists all stressed that Ubuntu is a generic concept shared by many African tribes, including the Tshivenda-speaking population. They also agreed that Ubuntu is based on virtues, values and practices to which one should aspire, such as respect, sharing and kindness. Consensus was reached in Round 1 that the wording of this statement P7 was acceptable and relevant.

Proposition 8 (P8) discussed Ubuntu and its impact on management and strategic decision-making. The statement 'Ubuntu plays an important role in contemporary strategic decision-making within SMEs' was presented to the panel. The panellists all felt that links existed between Tshivenda IKS, Ubuntu and sustainability, as Ubuntu values help to promote business sustainability. Panellist A2 stated:

> 'The spirit of Ubuntu unites people, makes them respect each other, care for each other and coexist.' (A2, African SME sustainability academic expert)

Panellist A6 stated:

> 'Ubuntu encompasses humanity and compassion, and before any business decision is made, one needs to the think of the manner in which the message will be relayed and by doing that, the Ubuntu element has to be included as supporting IKS.' (A6, African SME using Tshivenda IKS)

The panellists shared their comments on the relationship between Ubuntu and morally sound strategic choices, with the assertion that Ubuntu principles encourage ethical judgement while one makes strategic business decisions, highlighting the significance of Ubuntu in the process of making strategy. Notably, despite largely agreeing with the other panellists, Panellist A5 underlined that Ubuntu practices are deeply ingrained in personal character. Thus, while Ubuntu ideals are an essential component of IKS, an

TABLE 3: Final, agreed-upon propositions.

Final proposition code	Proposition final statement
P1	SME business practice should value people, profit and planet as essential sustainability pillars for its long-term survival.
P2	Planning for sustainability is a necessary part of an SME business strategy.
P3	The use of IKS demonstrates SMEs understanding and appreciation of customers as one variable of the market environment.
P4	Using existing IKS and adding new knowledge to indigenous knowledge systems is important for business and SME sustainability.
P5	Successful application of Tshivenda and African IKS necessitates collaboration among individuals within an African and Tshivenda-owned SME.
P6	P6: The Tshivenda IKS can have a positive effect on the business practices adopted in SMEs
P7	Tshivenda IKS are positively enhanced by Ubuntu networking and knowledge sharing by communities in Africa
P8	Ubuntu principles should be embedded into Tshivenda, African-owned SMEs.
P9	Frugal innovation using available input resources with minimum waste as practised in IKS has a positive effect on business development in terms of sustainability.

SME, small and medium enterprise; IKS, indigenous knowledge system.

individual's character determines how much of an impact they have on a business's strategic objectives, operations and policies. The wording for P8 was not agreed upon in Round 1.

The final proposition (P9) of the first Delphi round focused on the notion that frugal innovation (using available input resources with minimum waste), as practised in IKS, has a positive effect on business development with regard to sustainability. The panel unanimously agreed and endorsed the statement, as seen in the statement by Panellist A1 summing this up:

> 'Contemporary management speaks of innovation in terms of effectively and efficiently using resources as one of the drivers of sustainability because a process must be cost-effective (frugal) and therefore business growth will be faster.' (A1, African SME sustainability academic expert)

Proposition 9 (P9) was therefore accepted as is in Round 1.

In summary, in Round 1, five statements for influences required in establishing a conceptual Tshivenda IKS ecosystem were agreed upon: P2, P4, P6, P7 and P9 (see Table 3).

Delphi Round 2 findings and discussion

The four propositions for which consensus was not reached in Round 1 (P1, P3, P5 and P8) were adjusted, based on the panellists' comments from Round 1. The restructured propositions were distributed to the panel members to review, as Round 2.

Based on input from the panel, a revised version of P1 was created for Round 2, clearly highlighting the three pillars of sustainability: (1) people, (2) profit and (3) planet (the environment). P1 was restated as: 'SME business practice should value people, profit and planet as essential sustainability pillars for its long-term survival'. This revised P1 was then presented to the panel members, and a consensus was reached that this statement was acceptable, as demonstrated by these samples of the feedback:

> 'People, profit and planet are interdependent ingredients in establishing business long-term survival.' (A2, African SME sustainability academic expert)

> 'The three aspects mentioned are the essence of sustainable business practices and when these are valued in the business practices, they enhance the longevity of the business.' (A7, African SME academic expert)

By the end of the second round, P1 was accepted by all of the panellists as reflecting the individual sustainability pillars for SME success.

The emphasis of P3 was changed in Round 2 to include the market environment (customer). The panel was given the revised P3 statement, 'The use of IKS demonstrates SMEs' understanding and appreciation of their market environment'. Panellist A1 supported the revised statement:

> 'I agree because it is important to know all facets of the market within which the business is planning to operate.' (A1, African SME sustainability academic expert)

Panellist A6, however, made a cautionary note, stating:

> 'The market environment encompasses intermediaries and suppliers who might not reside in the same community as well as local communities making an argument that other stakeholders within the market environment might not be motivated to adopt the local community's IKS.' (A6, African SME using Tshivenda IKS)

A lack of consensus on the wording of P3 arose from differing perspectives on the meaning of the 'market environment'. Some saw the customer as part of the three-tiered business environment (micro, market and macro-environments), while others focused on the market as being only the immediate consumer base. This conflicting interpretation hampered agreement on the P3 during this round, so the proposition went forward to Delphi Round 3.

From the Round 1 feedback, P5 was adapted to: 'SMEs must designate an individual as a champion of IKS application within the business'. The revised P5 generated varying responses, and there was no consensus on the proposition content during this round. A panellist who agreed with the proposition provided the following justification:

> 'It is important to have individuals whose main focus is IKS within the business but is this the role of only one person or all in the business to consider daily?' (A4, African IKS academic expert)

Panellist A3 stated:

> 'I do not agree with this statement [*P5*] because IKS belongs to a community and thus, requires collaborative effort in terms of application even in the business environment. The selection of one individual as a champion of IKS in a workplace may be perceived as unjust. Instead, the SME owner must instil IKS application during the establishment of the organisational culture, as such, the use of IKS becomes embedded in the culture of the business and everyone becomes a champion of IKS in their own rights. This collaborative effort of IKS application may be more effective as opposed to one individual attempting to drive the application of IKS.' (A3, African IKS academic expert)

Owing to the disagreement on the wording for P5 in Round 2, the proposition was carried forward to Round 3.

The revised P8 statement in Round 2 read: 'Ubuntu principles should be embedded into SME business policies that provide guidelines for strategic decision-making'. The panellists' responses interrogated how integrating Ubuntu – which is based on personal character – can be embedded in policies that have an impact on strategic decision-making. All of the panellists felt that this was not possible, summed up by Panellist A6:

> 'Given that the statement refers to SME businesses one has to consider the cultural background of the owner of the SME. The cultural background of the owner will determine if Ubuntu principles works or not and can be incorporated into the SMEs policies, decision making and planning. Where the cultural

> background of the SME owner is non-African then Ubuntu might not work due to a different focus, approach and way of life being followed. For SMEs that appl[*y*] IKS and are of African descent then yes, Ubuntu will most definitely enhance the SME from a governance perspective and will be beneficial to the SME.'

As consensus on the wording for P8 was not reached in Round 2, the proposition was carried forward to Round 3.

In summary, in Round 2, consensus was reached only for P1 (see Table 3).

Delphi Round 3 findings and discussion

Proposition 3 (P3), P5 and P8 were again revised, based on the Round 2 feedback, and distributed to the panel members, as Round 3.

Proposition 3 (P3) was revised to: 'The use of IKS demonstrates SMEs' understanding and appreciation of customers as one variable of the market environment'. The panellists emphasised the importance of knowing customers as a market variable, which influences product and service demand and profitability. Panellist A5 summed it up succinctly, as follows:

> 'It is from the people for the people.' (A5, Tshivenda IKS expert)

All of the panellists agreed on P3 in Round 3.

Proposition 5 (P5) was modified to eliminate references implying that individuals should be IKS champions in their workplaces. The revised proposition stated 'Application of IKS in SMEs is achievable through collaboration between internal stakeholders'. In Round 3, Panellist A5 stated:

> 'Successful application of Tshivenda and African IKS necessitates collaboration among individuals within an African and Tshivenda-owned SME.' (A5, Tshivenda IKS expert)

The panellists supported the emphasis on collaboration and the notion that IKS is not individually owned and, as such, collaboration symbolises inclusivity, fostering positive engagements between an SME and all types of stakeholders. Panellist A6 stated:

> 'A collaborative effort will demonstrate inclusivity, and the members of the community might find it easier to engage with the business.' (A6, African SME using Tshivenda IKS)

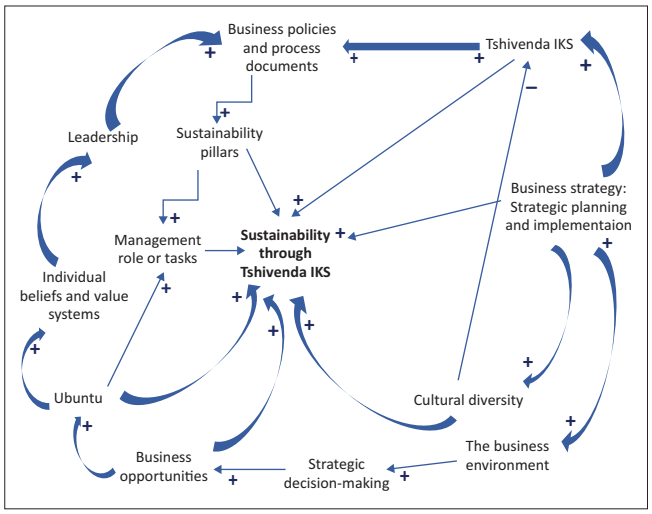
The panel reached consensus on P5 in Round 3.

Proposition 8 (P8) was adjusted to state: 'Ubuntu principles should be embedded into Tshivenda, African-owned SMEs'. All of the panellists agreed that the statement now showed how SMEs may have to have a historical cultural understanding of an IKS as Tshivenda to be able to apply it in their business to add value. Panellist A7 stated:

> 'The cultural background of the owner will likely determine the extent to which IKS principles work or not.' (A7, African SME academic expert)

Proposition 8 (P8) was accepted in Round 3. This was therefore the final Delphi round, as the panellists had reached consensus on all nine propositions set forth for this study.

Table 3 provides a summary of the final, accepted propositions and, for each, the round in which consensus was reached.



IKS, indigenous knowledge system.

FIGURE 1: Causal loop diagram.

Discussion

The conceptualised relationship between Tshivenda indigenous knowledge system and a small and medium enterprise's sustainability

The findings from the Delphi technique informed the formulation of the causal loop diagram (Figure 1), which showcases how the Delphi propositions interact with one another. The causal loop diagram is a conceptual presentation, based on Delphi findings, of how the Delphi propositions interact with each other. A '+' indicates how the nine final propositions will positively drive the ability of an SME to be sustainable if they are used together in a business ecosystem. The causal loop emphasises the integration of various concepts highlighted by reviewed secondary research and underpinning the propositions. Business sustainability is placed centrally in the figure supporting the answer to the research question by identifying with the causal loop, essential elements of an IKS ecosystem in the promotion of SMEs' sustainable business practices. To achieve sustainability, businesses need to cultivate collaboration as espoused by Ubuntu as a caveat for an IKS bounded ecosystem. A business's adoption of Ubuntu principles greatly encourages knowledge sharing consequentially influencing improvements in strategy. Individuals who do not prescribe to the principles of Ubuntu erode IKS's value placed in sharing knowledge creating diminishing of insight into future strategy creation. Figure 1 highlights that an SME business needs to constantly consider the business environment in terms of sharing community knowledge resources as new community established knowledge changes the practices of IKS which in turn has a direct impact on

strategic business decisions. This leads to SME sustainability between the business environment and the business strategy adopted within an IKS-based business ecosystem.

The Delphi further found that the incorporation of Tshivenda IKS should be driven by the business strategy. As such, practices of Tshivenda IKS should promote planned strategy and supported by business policies and processes. SME owners as business leaders were found to play a significant role in establishing policies and processes that promote sustainability in the workplace.

The Delphi findings illustrate connected principles, with sustainability through IKS at the centre, because all proposition statements focused on improving business sustainability in SMEs through Tshivenda IKS. Collaboration was found to be essential for achieving sustainability. The findings further indicate that SMEs may achieve sustainability by implementing a variety of IKS-informed activities in their business operations, starting with planning. Ultimately, the adoption of a comprehensive business strategy that places IKS at the centre of operational planning was found to be a critical component. Strategic planning and implementation are regarded as key elements for establishing sustainable business practices among SMEs. Above all, SMEs should ensure that their business strategies are responsive to environmental changes, with more focus on the external environment, which encompasses both the market and general environments. Many external environmental variables in contexts in which IKS apply, such as the local community, customers and the natural environment, require SMEs to assess environmental conditions continually in order to adapt and remain sustainable throughout business operations.

In addition, leadership should take cognisance of the business environment because such changes have a direct impact on operational activities and SMEs' strategic decisions. As IKS evolve over time, SMEs should take note of the local community's adoption and use of IKS and make the necessary adjustments to their policies and procedures to ensure that their offerings, collaborative efforts and decision-making remain aligned with the community's current needs. It is worth noting that individuals' personalities and perceptions of Ubuntu influence how they execute their management responsibilities, particularly the organising, controlling, planning, negotiating and directing of tasks.

The findings of this study have significant implications within a transdisciplinary framework, particularly for SMEs aiming to integrate IKS into sustainable business practices. A primary implication is the transformation of leadership roles in SMEs, in which owners and leaders become both cultural stewards and business strategists. Integrating IKS into the business ecosystem, including decision-making processes, shifts the traditional approach to leadership by placing equal emphasis on cultural values, such as Ubuntu, and sustainability as core organisational principles. This encourages leaders to adopt inclusive, community-oriented approaches that honour local knowledge, fostering agile business cultures that respect and acknowledge IKS. Through this lens, the intersection of business and tacit knowledge management promotes a business ecosystem in which decision-making and product development align with cultural norms and environmental values. Integrating cultural insights allows SMEs to develop unique products that reflect community identity and values, giving them a competitive advantage in the global market.

Recommendations

Recognition of a constantly evolving knowledge repository derived from shared community experiences as in the Tshivenda IKS allows SMEs to leverage IKS to implement sustainable business practices, leading to the optimal use of natural resources and establishing organisational strategies that promote long-term ecological resilience. The research provided insight into the significance of integrating Tshivenda IKS into SME operations for business sustainability purposes. The Tshivenda IKS ecosystem of this research pertains to business attaining sustainability in the use of natural resources in the specific geographic areas that Tshivenda people are found both today and historically. The research has shown that Tshivenda hold the knowledge within their IKS in high status as it has proven itself over centuries in successful business practice for agricultural, forestry and healthcare.

Establishing a conceptual business ecosystem that embraces IKS integration requires business leaders to be deliberate in their approach, beginning with acknowledging and understanding the IKS practised by the local communities, which are often the business's primary customer base. In addition, it is argued that the responsibility to integrate IKS lies with leadership, typically the SME owner, who is also responsible for establishing the organisational culture. When viewed from a leadership perspective, all aspects of the business ecosystem, including people, processes, products, partners and technology, would benefit from decision-making informed by IKS.

The long-term success of SMEs depends on the alignment of organisational strategy, leadership philosophies and cultural norms. This study demonstrates how Ubuntu values and frugal innovation support IKS principles and support more successful business decision-making through community involvement in IKS evolution. The present study emphasises businesses' shared accountability for how each implements IKS practices, and it recommends adopting Ubuntu values into policy while being sensitive to the diversity within the workplace. Overall, the study provides useful and practical guidance for SMEs who wish to integrate IKS into their business operations while achieving sustainability. The following are the study's specific recommendations:

- In their strategic planning activities, SMEs should prioritise the integration of IKS into their core business strategy, particularly when planning for sustainability, with a primary focus on people, planet and profit.

- Small and medium business enterprises (SMEs) owners assume a leadership role and thus play a significant role in shaping sustainability efforts. For this reason, they should demonstrate a commitment to implementing strategy, establishing and fostering a culture that values sustainability in decision-making. In addition, leadership should actively advocate IKS knowledge-sharing and IKS adoption in daily organisational operations, while promoting inclusivity and respecting cultural differences.
- Small and medium business enterprises (SMEs) should consider IKS-driven product development, in which IKS experts are involved in the development of products that incorporate values, practices and artefacts of the local community. This will result in the creation of unique products that are relatable to the local market, aid the preservation of local communities' IKS and create competitive advantage for the business in the global market.
- Small and medium business enterprises (SMEs) should continually assess the impact and effectiveness of IKS integration on business sustainability efforts. To achieve this, key performance indicators can be developed as metrics for both measurement and ensuring alignment with strategic objectives and organisational sustainability goals.

Conclusion

Importantly, this article introduces the role of a specific IKS – that of Tshivenda people – to the body of existing knowledge about IKS. The research showed that Tshivenda IKS indeed fit into established theory on IKS in business but, through the insights of Tshivenda people in this study, the knowledge on the role of Tshivenda IKS in business has been substantially expanded.

Adopting IKS is not merely a strategic requirement for SMEs; it is a commitment to long-term success, cultural integration and ecological resilience. Small and medium business enterprises (SMEs) may create a business ecosystem that benefits from IKS integration by coordinating corporate strategy, leadership philosophies and cultural norms. The study's suggestions emphasise the necessity of prioritising IKS in strategic planning, leadership commitment, IKS-driven product creation and ongoing evaluation. In addition to keeping their businesses sustainable, SMEs have an opportunity to preserve IKS practised by Indigenous communities and gain a competitive advantage in the global economy.

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This article is based on data from a larger study. A related article focusing on the vulnerability of SMEs to environmental changes mean that they face several obstacles that impede their business sustainability efforts, often resulting in their demise. This research provides insights to help SMEs thrive amidst challenging environmental conditions by application of historic Tshivenda IKS principles has been published in *The Southern African Journal of Entrepreneurship and Small Business Management*, 16(1), 882. (Manyaga et al. 2024). The present article addresses a distinct research question, focusing on how indigenous African communities, who possess deep knowledge of local environments, can contribute valuable insights to resource management, conservation and ethical business models through the adoption of their IKS in support of SME sustainability.

Competing interests

The author, Geoff Goldman, serves as the Editor-in-Chief for the *Acta Commercii* journal. The authors, Geoff Goldman, Bridget Manyaga and Peta Thomas, have no other competing interests to declare.

CRediT authorship contribution

Bridget Manyaga: Conceptualisation, Data curation, Formal analysis, Investigation, Methodology, Writing – original draft. Peta Thomas: Conceptualisation, Methodology, Supervision, Writing – review & editing. Geoff Goldman: Conceptualisation, Methodology, Supervision, Writing – review & editing. All authors reviewed the article, contributed to the discussion of results, approved the final version for submission and publication and take responsibility for the integrity of its findings.

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