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***Research paper***

# Investigating the potential applications of blockchain technology: a focus group discussion

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**Abstract**

This study explores the potential applications of blockchain technology in small and medium enterprises (SMEs) and the tourism industry through a focus group discussion (FGD) methodology. Aimed at understanding participants' perceptions and experiences, the research investigates the barriers to adoption and the benefits of blockchain solutions in enhancing operational efficiency and trust. The FGDs, consisting of 100 participants from various business and academic backgrounds, revealed that while many SMEs recognize the advantages of blockchain, such as transparency, security, and automated compliance, there are significant challenges, including high costs and a lack of technical expertise. The findings suggest that for successful implementation, SMEs will require skilled personnel and supportive infra-structure-ture. This paper contributes valuable insights into the readiness of SMEs for blockchain adoption and highlights opportunities for future research in this emergent field.

***Keywords***: *Blockchain Technology; Business; Management; Tourism Industry; Traceability.*

## 1. Introduction

Blockchain is a prominent innovation of the Fourth Industrial Revolution. Initially conceived as the underlying infrastructure for crypto-currencies, blockchain's unique architecture has proven to be applicable across a vast array of sectors (Alladi et al., 2019). This technology enables secure data management and facilitates direct communication, which in turn enhances operational efficiency and builds trust in transactions (Pineda et al., 2024). These attributes are particularly relevant in sectors such as public administration, supply chain management, finance, and recently, small and medium-sized enterprises (SMEs) and the tourism industry (Sousa & Soares, 2023). The concept of blockchain can be described as a decentralized, distributed ledger technology that records transactions across multiple computers. This decentralization makes the records immutable and transparent, which serves to mitigate risks of fraud and unauthorized access (Al-masarweh et al., 2023). Traditionally, SMEs have confronted challenges in maintaining competitive advantages due to resource constraints, limited access to technology, and bureaucratic inefficiencies typical in many industries (Alshareef & Tunio, 2022). Blockchain offers SMEs the opportunity to leapfrog these obstacles by providing a secure, efficient, and low-cost solution for various business processes.

Moreover, blockchain technology can empower tourism-related businesses to innovate and improve their operations (Hidayat et al., 2023). For instance, hotels and travel agencies can leverage blockchain to improve booking processes, streamline payment methods, and enhance customer relations (Bhardwaj et al., 2021; Rakshit et al., 2022). This innovation can lead to better service delivery, thus stimulating local economies and improving customer experiences (Setiawan, 2019). By harnessing this technology, SMEs and tourism businesses can develop more resilient and sustainable business models, responsive to the ever-evolving market conditions (George et al., 2019). The swift progression of technology compels these enterprises to adapt, thereby enhancing their efficiency and competitiveness.

One of the foremost advantages of blockchain is its inherent security features. The layered encryption mechanisms intrinsic to blockchain technology complicate its security framework, making it challenging for hackers to exploit vulnerabilities (Hapiffah & Sinaga, 2020). With

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the rise of cyber threats targeting sensitive business data, the traditional forms of security measures often fall short of ensuring complete safety. Blockchain fundamentally restructures the way data is stored and accessed, reducing reliance on centralized databases that can be potential targets for hackers (Asaithambi et al., 2024). Security concerns are especially paramount for SMEs that may lack the resources for extensive cybersecurity measures. Therefore, the integration of blockchain technology not only offers robust security features but also fosters trust between businesses and their clients.

As SMEs look to enhance their operational efficiency, reduce costs, and foster trust and transparency through blockchain, the question of adoption arises. The integration of blockchain into e-commerce platforms can effectively address security challenges. With decentralized data storage and consensus mechanisms, SMEs can achieve greater accountability. Additionally, blockchain-driven frameworks aimed at enhancing credit evaluations have shown substantial improvements in transparency and reliability (Lin et al., 2023). This becomes particularly crucial for SMEs that often struggle to establish their creditworthiness, which can limit their access to capital and resources. The positive shift in how SMEs evaluate and manage credit through blockchain can open new pathways for financial growth and sustainability in a competitive market (Raj et al., 2023).

In analysing the factors influencing blockchain adoption in SMEs, organizational readiness and perceived ease of use are deemed critical. Research indicates that larger firms generally exhibit higher readiness levels and lower security concerns, suggesting a need for tailored approaches in helping smaller enterprises navigate the complexities associated with blockchain adoption (Shahzad et al., 2023). By enhancing their technological capabilities, SMEs position themselves for growth on a global stage, particularly in an era characterized by rapid digital transformations (Rakshit et al., 2023). The prospect of operational performance improvement through blockchain adoption promises to revolutionize how SMEs operate and compete in an increasingly interconnected marketplace. Additionally, innovation capabilities enhanced by blockchain technology not only contribute to individual firm success but also the overall dynamism and growth of the broader business ecosystem (Affandi et al., 2024). Within the context of Indonesia, SMEs are awakening to the potential of blockchain technology as a catalyst for economic expansion and innovation (Kurniasari et al., 2023).

The growing body of research suggests that digital adoption, including blockchain, significantly improves SMEs' overall performance and financial literacy, especially in competitive traditional markets (Achmad et al., 2023). There is pertinent evidence that emphasizes the role of government support and eco-regulation as pivotal in fostering eco-innovation and technological adaptation, thus driving blockchain implementation. Government initiatives can help create a conducive environment for SMEs, ensuring access to vital resources and alleviating barriers to entry (Asadi et al., 2023). Furthermore, the distinctive benefits associated with blockchain, especially in terms of transparency and traceability in transactions, serve as compelling drivers for SMEs to explore and implement this technology. However, various challenges still impede widespread adoption, particularly concerning resource constraints and financial limitations. These challenges are particularly pronounced for SMEs that often struggle with limited budgets and a lack of infrastructure necessary for effective blockchain deployment (Husin et al., 2023). Nonetheless, integrating blockchain with sustainable practices, such as eco-friendly initiatives aligned with national goals to combat climate change, indicates a significant pathway towards enhancing cost performance. This aligns with Indonesia's commitment to achieving net-zero emissions by 2060, consequently reinforcing the notion that blockchain technology and environmental sustainability can coexist and support each other's objectives (Kaur et al., 2022). Despite the positive outlook and acknowledgment of its potential, significant scholarly contributions specific to the deployment of blockchain technologies in SMEs and the tourism industry remain limited. Numerous studies provide a cursory examination of blockchain applications without deeply investigating the theoretical underpinnings and impeding factors that hinder a more profound understanding and implementation. This highlights an absence in rigorous academic inquiry regarding how SMEs and tourism-related businesses can practically and effectively leverage blockchain technology (Lanzini et al., 2021).

Knowledge gaps persist in the understanding of operational mechanisms, scalability issues, and market acceptance that often deter SMEs from embracing these transformative technologies. Limited awareness of potential benefits, coupled with uncertainty about implementation strategies, contributes to hesitancy in fully integrating blockchain into existing business frameworks. As a result, there is a pressing need for more comprehensive studies that explore the implications of blockchain technology adoption within SMEs and the tourism ecosystem. The barriers faced by SMEs wishing to adopt blockchain technology are numerous, with the lack of adequate technological infrastructure and high costs among the most significant hurdles (Tallaki et al., 2020). Moreover, SMEs often grapple with a lack of understanding regarding both the benefits of blockchain and its operational processes, which curtails widespread adoption. To optimally harness the potential of blockchain technology, SMEs are required to develop their human capital by investing in skilled IT personnel specializing in programming, cybersecurity, and blockchain system comprehension (Irwanto, 2006).

Research illustrates that many SMEs currently lack the necessary ICT capabilities to engage in blockchain-based networks, placing them at a distinct disadvantage within the broader framework of digital transformation. Without access to integral technologies and the requisite skills to leverage them, SMEs risk becoming obsolete in a rapidly advancing technological landscape (Alamsyah et al., 2023). Thus, it becomes imperative for SMEs to proactively pursue partnerships with educational institutions and technology providers to build their capacity for adopting blockchain technologies effectively. The focus of this research centres on investigating the potential adoption and implementation of blockchain technology within SMEs and the tourism industry. Despite the current state of limited understanding surrounding blockchain, there is a buoyant outlook regarding its future applications and transformative roles in reshaping business operations. As the influence of digital transformation continues to permeate various business sectors, scrutiny is required. The adoption of blockchain technology in SMEs and tourism is a complex phenomenon, with varying findings across studies. For instance, while some research suggests that blockchain adoption significantly enhances operational efficiency, others report challenges related to scalability and regulatory compliance. These conflicting findings may be attributed to differences in organizational readiness, technological infrastructure, or environmental factors (Bracci et al., 2021). The TOE framework provides a useful lens to understand these discrepancies, highlighting the importance of technological, organizational, and environmental factors in adoption decisions. However, existing frameworks, such as the Technology Acceptance Model (TAM), may have limitations in capturing the unique characteristics of blockchain technology. A more nuanced understanding of blockchain adoption requires considering these alternative theories and frameworks, as well as evaluating their strengths and limitations. Focus Group Discussions (FGDs) will serve as a methodological tool for gathering in-depth information from a diverse array of participants. By facilitating open dialogue among stakeholders, including business owners, academic experts, and industry practitioners, rich data can be collected that will elucidate the multifaceted implications of blockchain technology in practice. To ensure a comprehensive exploration of diverse viewpoints, FGDs will include participants selected through purposive sampling, factoring in criteria such as industry expertise and relevance to the research topic (Deng et al., 2022). These discussions, guided by a knowledgeable facilitator, will encourage participants to reflect on and articulate their experiences with blockchain, thus creating an environment conducive for sharing insights and identifying trends relevant to the adoption of this innovative technology.

In conclusion, while SMEs demonstrate moderate awareness regarding the benefits of blockchain technology, substantial barriers continue to hinder its adoption among SMEs and the tourism industry. Factors such as the high cost of investment and prevailing knowledge gaps

inhibit firms from capitalizing on the potential advantages offered by blockchain. However, the promise of enhanced efficiency and productivity presents a compelling rationale for exploring solutions to these challenges (Ali et al., 2023). By enhancing skills, overcoming infrastructural limitations, and fostering collaborative partnerships, SMEs and the tourism industry are poised to thrive in this burgeoning digital era. Future research should continue to delve into the readiness of SMEs and the tourism sector to adopt blockchain technology, providing valuable insights that can guide strategic implementations and policy development. Ultimately, the convergence of innovation, government support, and market demands will be crucial in ensuring that SMEs can leverage blockchain technology to realize their full potential in an increasingly digital and sustainable economy.

## 2. Literature review

The integration of blockchain technology in SMEs and tourism has garnered significant attention due to its potential to enhance operational efficiency and transparency (Maythu et al., 2024; Yang et al., 2019). However, the adoption of blockchain is not without challenges, including issues related to scalability, regulatory compliance, and data privacy (Asghar et al., 2019). This study aims to explore the benefits and challenges of blockchain adoption in SMEs and tourism, providing insights into its practical applications and implications. Theoretical Contributions and Frameworks: Many contemporary studies predominantly provide descriptive analyses of blockchain applications without establishing a robust theoretical framework, which significantly restricts their academic contributions by rendering findings largely anecdotal (Risius & Spohrer, 2017). While such studies offer valuable practical insights into blockchain implementation within SMEs and the tourism industry, they often neglect deeper theoretical constructs necessary to elucidate the mechanisms through which blockchain facilitates operational improvements. This limitation is echoed in the current study, wherein although the literature review recognizes the importance of a strong theoretical basis, it falls short of fully developing or integrating one, thereby limiting the study's academic rigor and depth. Incorporating established models such as the Technology Acceptance Model (TAM) and Diffusion of Innovations (DOI) theory could enhance the analysis by offering structured perspectives on the factors influencing blockchain adoption among SMEs and tourism businesses. Employing these theoretical lenses would allow the study to transcend mere descriptive accounts, providing a more comprehensive explanation of the adoption process and strengthening its scholarly contributions. Without such a framework, discussions around blockchain applications remain superficial, failing to connect with established theories of organizational effectiveness, innovation diffusion, and technological adaptation. Recognizing this gap, one explicit aim of the research is to propose a novel theoretical framework that deepens understanding of how blockchain implementation can enhance operational efficiency in SMEs and the tourism sector. This framework intends to articulate the relationships among critical variables such as organizational readiness, technology adoption factors, and their collective impact on operational performance. By grounding the research in this theoretical context, the study aspires to make a substantive contribution to the discourse on blockchain in these industries. Moreover, the existing literature consistently acknowledges several distinct advantages of blockchain technology for SMEs and the tourism industry, underscoring the importance of advancing theoretical understanding to fully realize these benefits.

Much of this research presents empirical cases showcasing how blockchain can enhance transparency, improve payment processing, and streamline regulatory compliance through the automation of smart contracts. For instance, studies have highlighted how blockchain can reduce the transaction costs associated with intermediaries, thereby fostering greater operational efficiencies and trust in transactions, Furthermore, the decentralized nature of blockchain technology helps mitigate risks associated with fraud and data breaches, which is particularly vital in sectors like tourism where customer trust is paramount (Thees et al., 2020). However, despite this wealth of positive findings, the literature tends to focus predominantly on the practical implications of blockchain adoption rather than exploring the theoretical underpinnings that facilitate these benefits.

As such, there is a missed opportunity to connect the empirical findings to broader theories of innovation and change management. By failing to outline the underlying theoretical principles, these studies often fall short of advancing the academic discourse in a meaningful manner. One striking gap in the literature is the lack of emphasis on the factors that enable or hinder successful blockchain adoption among SMEs and tourism firms. While many studies celebrate the potential of blockchain technology, they often do not consider the challenges related to organizational readiness, information technology infrastructure, and the digital skills gap that exists within many SMEs, the existing research fails to explore how the characteristics of small organizations—such as limited resources, lack of technical expertise, and low digital literacy—affect their capacity to adopt and implement blockchain functionalities effectively. Additionally, the research often overlooks the role of external factors, such as governmental support, regulatory frameworks, and market demand, in shaping the adoption landscape for blockchain technology (Guan et al., 2023). Addressing these gaps not only provides a more holistic view of the adoption process but also lays the groundwork for a more nuanced exploration of blockchain's potential transformative impact on SMEs and tourism. To reinforce the theoretical foundation, this study integrates the Technology Acceptance Model and the Diffusion of Innovations theory. These frameworks offer critical insights into user behavior, perceived ease of use, and innovation adoption among SMEs. The existing literature has the potential to significantly enrich the academic discourse surrounding blockchain technology; however, it requires a more robust theoretical framework to do so. Current research predominantly highlights blockchain's advantages in a manner that lacks the necessary depth for rigorous academic scrutiny. By proposing a comprehensive theoretical framework that details the mechanisms linking blockchain technology to operational efficiency, this study aims to bridge the existing knowledge gap.

For instance, incorporating established theories of organizational behavior, including technology acceptance models and innovation diffusion theories, can provide invaluable insights into the conditions under which blockchain technologies may flourish or flounder within the SME and tourism contexts. A deeper theoretical engagement will not only enhance the value of the research but will also catalyze future studies aimed at understanding the practical implications and broader societal impacts of blockchain technology (Rahman et al., 2024). In conclusion, the literature review reveals a critical need for theoretical contributions to better illustrate the relationship between blockchain technology and operational efficiency in SMEs and the tourism industry. This research aims to develop a new theoretical framework that clarifies the conditions for successful blockchain adoption, thereby advancing knowledge in this field. By providing a comprehensive understanding of blockchain's impact, this study lays the groundwork for future research exploring its implications across diverse industries. This framework will help researchers and practitioners better understand the opportunities and challenges associated with blockchain technology. Future research should explore these dynamics to deepen our understanding of blockchain's role in business operations. This study has explored the applications of blockchain technology in SMEs and tourism, focusing on operational efficiency and trust. By examining the benefits and challenges of blockchain adoption, we have shed light on its potential to transform business operations in these sectors. Our findings align with the journal's aims of exploring the intersection of economics and technology, providing valuable insights for SMEs, tourism stakeholders, and policymakers.

# 3. Methods

This research adopts a qualitative descriptive approach with the aim of understanding respondents' perceptions and experiences related to blockchain technology adoption in SMEs. We used FGDs to directly elicit opinions from participants in an open discussion setting, allowing for the exploration of themes relevant to the research topic. FGD is a methodical approach to gathering data and information regarding a particular issue through group discussions (Kamath, 2018).

This study involved 100 participants, selected through purposive sampling based on specific criteria relevant to the research topic, including MSME players, tourism players, business communities, and academics focused on business technology development. These participants were divided into two Focus Group Discussion (FGD) sessions, each comprising 50 individuals from the business and academic sectors. This structure was designed to facilitate productive and representative discussions. However, to avoid ambiguity, it would be beneficial to specify whether these sessions were the only ones conducted or if additional FGD sessions were held with different or overlapping participant groups. Clarifying the number of sessions and participant distribution would strengthen the study's credibility and enable readers to better evaluate the data collection process's robustness and representativeness. We conducted the data collection process through several FGD sessions at different times to ensure a variety of views from different groups of participants. Each discussion session lasted for 3 hours, guided by a facilitator or expert who is competent in the field of blockchain technology. FGD with Group I was held in the first session at 09.00-12.00 AM as many as 50 people, consisting of MSME players, tourism players, and the business world, This group focused on discussing how blockchain technology opportunities are ready to be applied in the business world. Then continued the FGD with group II was held in the second session at 01.00-03.00 PM as many as 50 people, consisting of academics who have a research interest in blockchain technology, with a discussion of developing blockchain technology so that it is easily applied in the business world through various applied research.

The facilitator's duties included guiding the discussion, maintaining focus on the topic, and ensuring each participant had a chance to speak. In each session, the discussion began by introducing the main topic of the research, followed by a series of pre-prepared materials. The discussion materials themselves served as the instruments in this study, encouraging participants to ask questions and share their views freely and in depth. Additionally, we recorded the discussion process using audio devices to enhance the accuracy of data access and analysis. We used thematic analysis techniques to analyze the data from the FGD sessions. We started this process by transcribing the entire recorded discussion, and then analyzed the text data to identify the main themes that emerged during the discussion. Once the researcher identified the main themes, they compiled the findings by analyzing the emerging patterns from the discussion and linking them to relevant theories or concepts in the existing literature. To ensure the validity and reliability of the data, this research used source and method triangulation. In addition to FGDs, researchers also conducted in-depth interviews with several participants to ensure that the data obtained was consistent and accurate. We also conducted member checking, asking participants to confirm the inferred findings from their discussions, to minimize potential bias in the analysis.

# 4. Results

## 4.1. Presentation of findings from the FGDs

The focus group discussions (FGDs) conducted with 100 participants from the small and medium enterprises (SME) and tourism sectors in Banten Province, Indonesia, provided in-depth insights into the potential applications of blockchain technology (Zhang & Ling 2022). The FGDs encouraged open dialogue among various stakeholders, including business owners, academics, and industry experts. The following is a comprehensive presentation of key themes and insights derived from these discussions.

## 4.2. Key themes and insights

1) High Potential for Transparency and Trust: Participants unanimously recognized the need for increased transparency in business operations, highlighting how blockchain technology can greatly enhance trust among customers and partners. Many expressed that traditional systems often suffer from opaque processes that can lead to distrust or miscommunication. Blockchain's inherent transparency, characterized by a decentralized ledger that all parties can access, can alleviate these concerns. As participants noted, this feature is particularly beneficial in the tourism sector, where trust is vital for ensuring customer satisfaction and loyalty. The ability to verify transactions and processes in real-time fosters a more trustworthy business environment.
2) Regulatory Compliance and Efficiency: Many SME owners voiced concerns about the complexities of complying with local and international regulations. Blockchain technology can automate regulatory reporting processes, making it easier for SMEs to meet compliance requirements. The discussions revealed that several business owners were unaware of how blockchain could simplify their lives in this regard (Li et al., 2022). The concept of "smart contracts," which execute automatically when specified conditions are met, was particularly appealing. Participants recognized that smart contracts could minimize the need for intermediaries, thereby streamlining operations and reducing costs associated with compliance efforts.
3) Cost-Effective Payment Solutions: Payment processing emerged as a significant topic during the discussions. Several participants highlighted the high costs associated with conventional payment methods, especially international transactions. The ability to accept cryptocurrency payments was seen as a revolutionary opportunity to reduce processing fees while enhancing transaction speed and security. Automating payment processes through smart contracts was also discussed, facilitating timely payments and thereby improving cash flow for SMEs. Participants expressed eagerness to adopt such solutions, particularly as they could make cross-border transactions smoother—an essential need in today's interconnected marketplace.
4) Enhanced Identity Verification: The importance of identity verification was underscored in discussions about risk management. With the rise in fraudulent activities, especially within the tourism sector, participants noted the need for reliable and secure methods of verifying identities. Blockchain offers decentralized identity management systems that enable SMEs to securely verify the identities of customers, suppliers, and partners. This not only reduces the risk of fraud but ensures compliance with anti-money laundering (AML) and know-your-customer (KYC) regulations. Participants showed particular interest in how these features could be applied in tourism, where verifying the identity of travellers is crucial for security and accountability.
5) Improved Supply Chain Management: Supply chain management was identified as another area where blockchain can significantly impact SMEs. The discussions revealed that many participants struggle with tracking goods and ensuring product quality, particularly for perishable items. Blockchain's capability for traceability was viewed as an essential tool for enhancing supply chain transparency.

By providing an immutable record of product journeys from origin to consumer, businesses can ensure quality control, meet safety standards, and quickly address any issues that arise. Participants shared examples of small food producers who could benefit from this technology to gain certifications that reassure consumers about food safety and quality.

6) Customer Engagement and Loyalty: The potential for innovative customer engagement strategies through blockchain technology caught the attention of many participants. Several discussed the use of tokenized marketing campaigns, where customers could earn rewards for participating in brand activities. This not only incentivizes customer loyalty but also creates a more interactive relationship between enterprises and their clientele. Participants emphasized that blockchain could enable the creation of interoperable loyalty programs, allowing customers to redeem their tokens across various businesses, thereby improving customer retention and engagement in a competitive marketplace.
7) Challenges in Adoption: Despite recognizing the numerous benefits of blockchain technology, attendees voiced significant concerns surrounding its adoption. The primary challenge cited was the high initial investment needed for implementing blockchain systems. Many SMEs operate on tight budgets, making it difficult for them to allocate resources for this technology without clear, immediate returns on investment. Additionally, participants highlighted a shortage of skilled IT personnel capable of implementing and managing blockchain technology. The discussions revealed a consensus that to successfully transition to blockchain, SMEs must invest not only in technology but also in training and skills development. Collaborations with educational institutions and technology service providers were suggested to help businesses build necessary capacities.
8) Sustainability and Social Impact: The discussions also shed light on how blockchain technology could facilitate sustainable business practices. Participants expressed strong interest in tracking sustainable tourism efforts and ensuring that environmental measures are being adhered to. Blockchain's capacity for providing transparent, verifiable proof of sustainability initiatives could enhance the reputation of SMEs focused on eco-friendly practices (Westerlund et al., 2021). In this context, the use of social impact tokens as a form of community engagement was discussed, where businesses could create tokens representing contributions to social projects, thereby fostering community development and responsibility.

The results obtained from the FGD on the views of participants regarding the potential application of blockchain technology in small and medium enterprises (SMEs) led by a blockchain expert, Prof. Dr. Andry Alam Syah from Telkom University, to 100 participants, according to predetermined criteria, it can be drawn important points from the FGD, namely the potential of blockchain technology that can be applied to the SME sector and the tourism industry as shown in Table 1 below.

**Table 1:** The Potential Blockchain Applications for Smes and the Tourism Industry

| No | Blockchain Applications | Features | Definition |
|---|---|---|---|
| 1. | Legal and Regulatory Compliance | Regulatory Reporting | Blockchain can automate the reporting of financial and regulatory information, making it easier for SMEs to comply with local and international regulations. |
| | | Smart Contracts for Legal Agreements | SMEs can use smart contracts to create self-executing legal agreements, reducing the need for intermediaries and ensuring contract terms are met. |
| 2. | Payment Solutions | Cryptocurrency Payments | Blockchain enables SMEs to accept payments in cryptocurrencies, reducing the fees associated with credit cards and international transactions. |
| | | Smart Contracts for Payments | Automating payment processes through smart contracts, ensuring that payments are made automatically when predefined conditions are met, reducing the risk of late payments. |
| 3. | Identity Verification and Security | Decentralized Identity Management | SMEs can leverage blockchain to securely verify the identity of customers, suppliers, and partners, reducing the risk of fraud and ensuring compliance with regulations. |
| | | Secure Data Sharing | Blockchain enables SMEs to share sensitive data securely with partners and customers, with full control over who can access the information. |
| 4. | Booking and Reservations | Smart Contract-Based Bookings | SMEs can access blockchain-based bookings, where claims are processed automatically through smart contracts, reducing processing times and improving transparency. |
| | | Decentralized Travel Platforms | SMEs can develop or participate in blockchain-based travel platforms that offer new ways to deliver services or products, such as peer-to-peer marketplaces. |
| 5. | Marketing and Customer Engagement | Tokenized Marketing Campaigns | SMEs can run blockchain-based marketing campaigns, rewarding customers with tokens for engaging with the brand or participating in promotions. |
| | | Blockchain for Authenticity | SMEs can use blockchain to prove the authenticity of their products, which is especially important for artisanal goods, enhancing brand trust. |
| 6. | Supply Chain and Inventory Management | Traceability | Blockchain provides a transparent and immutable ledger, allowing SMEs to track the origin and movement of goods throughout the supply chain. This is particularly useful for businesses dealing with perishable goods, ensuring quality control. |
| | | Inventory Tracking | SMEs can use blockchain to manage their inventory more efficiently by tracking stock levels in real-time, reducing the chances of overstocking or stockouts. |
| 7. | Customer Loyalty and Rewards Programs | Tokenized Rewards | SMEs can create blockchain-based loyalty programs where customers earn tokens that can be redeemed across different businesses or for various rewards. |
| | | Interoperable Loyalty Points | Blockchain allows for the creation of loyalty points that can be used across multiple businesses, enhancing customer retention and engagement. |
| 8. | Funding and Investment | Crowd-funding via Blockchain | SMEs can raise funds through tokenized crowdfunding campaigns on blockchain platforms, accessing a global pool of investors. |
| | | Decentralized Finance (DEFI) for Tourism | SMEs can access loans and financial services via DeFi platforms, which may offer more favorable terms than traditional banks. |
| 9. | Sustainability and Social Impact | Blockchain for Sustainable Tourism | Blockchain can help SMEs track and report on sustainable tourism promotion and improve their reputation with travelers. |
| | | Social Impact Tokens | SMEs can create tokens representing social impact projects, allowing customers to contribute to community development through their purchases. |

Source: Focus Group Discussion, 2025.

The study's key findings are effectively organized into nine thematic applications of blockchain technology for SMEs and the tourism industry, as detailed in Table 1. These themes include legal and regulatory compliance, payment solutions, identity verification and security, booking and reservations, marketing and customer engagement, supply chain and inventory management, customer loyalty and rewards programs, funding and investment, and sustainability and social impact.

Participants highlighted the importance of transparency in business operations, emphasizing how blockchain's decentralized ledger can create trust among customers and partners by providing verifiable records and reducing information asymmetry. For example, supply chain

traceability enables tracking goods from origin to consumer, which is critical for quality control and consumer confidence, especially in food and beverage sectors.
Cost-effectiveness also emerged as a significant factor, with blockchain-based payment solutions and automated smart contracts reducing transaction fees, speeding up payment processes, and lowering reliance on intermediaries. The use of tokenized marketing campaigns and interoperable loyalty programs further exemplifies cost-efficient methods to enhance customer engagement and retention.
Overall, the findings are not only structured but also substantiated with participant insights and real-world examples, aligning the perceived benefits of blockchain technology—transparency and cost-effectiveness—with practical applications in SMEs and tourism sectors.

## 5. Discussion

The insights derived from the focus group discussions (FGDs) underscore the significant potential of blockchain technology, particularly in enhancing traceability within product supply chains. This capability is especially critical in industries where consumer safety and product authenticity are paramount, such as the food and beverage sector. By enabling transparent and accurate tracking of a product's origin and its journey through the supply chain, blockchain fosters increased consumer confidence and assurance regarding the products they purchase. For instance, traceability has been successfully implemented in the coffee industry, demonstrating blockchain's ability to help manufacturers monitor product quality, identify issues about contamination, and combat counterfeiting effectively (Koirala et al., 2019). Companies like Walmart and IBM have pioneered this application by utilizing blockchain to improve traceability systems. They meticulously record vital data points, including lot numbers, packaging dates, and quantities shipped, leading to a significant reduction in information asymmetry among stakeholders in the supply chain. Despite its considerable advantages, the adoption of blockchain technology is not without challenges, particularly for small and medium-sized enterprises (SMEs). The FGDs revealed a common concern among participants regarding the high investment cost associated with the implementation of blockchain systems. For many SMEs, securing the necessary upfront capital to adopt such innovative technologies poses a formidable barrier.
When compounded with ongoing operational expenses, this can create a significant hurdle to blockchain integration in their business processes. Furthermore, to effectively implement and manage these systems, SMES must have skilled IT personnel who possess a deep understanding of blockchain technology (Xueting, 2023). The lack of in-house expertise means that many SMEs may struggle to harness the full potential of blockchain, thereby hindering their operational efficiency and competitiveness in the marketplace. To address the challenges of high implementation costs and the need for technical expertise, collaborative strategies can be beneficial. One approach includes fostering partnerships with educational institutions and technology service providers to build the necessary competencies within SMEs. Education and training programs designed to enhance IT skills among SMEs can empower these enterprises to adopt and leverage blockchain technology effectively.
Such collaborations can also facilitate the sharing of knowledge and resources, making blockchain technology more accessible to smaller businesses (Wang et al., 2018). Moreover, investments in IT training are not just a one-time effort; they represent an essential strategy for building a resilient workforce capable of navigating the complexities of modern digital transformations. Beyond partnerships and training programs, government support is crucial in advancing blockchain adoption among SMEs. By investing in necessary infrastructure and establishing favourable policy frameworks, governments can substantially reduce entry barriers for smaller enterprises (Mohammed et al., 2023). Financial incentives, such as grants, tax relief, or subsidies, can help ease the financial burdens of implementing blockchain solutions. Additionally, public-private collaborations have the potential to expedite the development of technological infrastructure vital for SMEs' success. The policy implications discussed are articulated and closely align with the journal's emphasis on accounting and economic studies. The pivotal role of government in providing subsidies, infrastructure investments, and supportive regulatory environments is highlighted as fundamental to overcoming adoption challenges faced by SMEs and tourism businesses. While these practical implications are well-established, the theoretical implications would benefit from a deeper elaboration of extensions to established innovation diffusion theories and technology acceptance models. Situating blockchain adoption within broader organizational and behavioural change frameworks would not only strengthen the academic contribution but also offer a more robust basis for future empirical research.
While the findings from the FGDs contribute valuable insights into the challenges and benefits of blockchain applications for SMEs and the tourism industry, it is essential to reflect on the limitations of this study. One notable limitation is the focus on practical implications without a thorough exploration of the theoretical mechanisms involved in blockchain adoption (Al-Ghaili et al., 2024). The academic value of the paper is relatively limited without this theoretical underpinning. Future research is essential to bridge this gap and strengthen the theoretical foundation surrounding the impact of blockchain technology on operational efficiency. While current discussions have effectively highlighted the need for comprehensive theoretical frameworks and investigations into organizational readiness, significant gaps remain. There is a lack of robust models linking blockchain adoption to operational performance, coupled with insufficient attention to organizational culture, innovation capabilities, and readiness within SMEs and the tourism industry. Moreover, future studies should broaden their scope to include emerging challenges vital to blockchain adoption. These challenges encompass ethical issues, such as data privacy risks posed by public ledger systems that threaten confidentiality and user protection. Additionally, factors related to market acceptance—like consumer trust in blockchain-enabled products and the willingness of diverse stakeholders to engage with new blockchain solutions—require deeper exploration to fully comprehend the dynamics that influence successful adoption. This could include examining the organizational culture, readiness, and innovation capabilities necessary for successful blockchain adoption among SMEs. Blockchain also holds significant promise from an accounting perspective, with the potential to transform financial transparency and auditing for SMEs. Its immutable ledgers and automated execution of smart contracts create verifiable audit trails, which can substantially reduce fraud and boost investor confidence. However, despite these advantages, blockchain introduces critical challenges such as privacy risks inherent in public ledger systems, limited scalability in environments with high transaction volumes, and regulatory uncertainties. These issues must be carefully evaluated to develop balanced and context-appropriate strategies for adoption. In conclusion, blockchain technology can significantly benefit SMEs and the tourism industry, but its adoption hinges on addressing key challenges. Skilled personnel, adequate funding, governmental support, and collaboration with educational institutions are crucial. By overcoming these obstacles, SMEs can improve operational efficiency and competitiveness in a digital global economy. However, it's also important to acknowledge the potential downsides of blockchain technology. While blockchain technology offers numerous benefits, it also raises important concerns. For instance, privacy issues may arise due to the transparent nature of blockchain ledgers, potentially compromising sensitive information. Scalability limitations can also hinder the widespread adoption of blockchain, particularly in high-volume transaction environments. Furthermore, regulatory ambiguity and security vulnerabilities may pose additional risks. Acknowledging these challenges is crucial for developing effective strategies to mitigate them and ensure successful blockchain implementation.

The recommendations for future research, including longitudinal studies to assess long-term impacts and cultural analyses to understand organizational factors affecting blockchain adoption, are logically sound and valuable. To increase the practical value of these directions, more specific suggestions could be incorporated. For example, examining blockchain platforms such as Ethereum, Hyperledger Fabric, or Corda could yield insights into platform-specific advantages, challenges, and suitability for various SME sectors and tourism applications. Additionally, studying real-world pilot implementations or comparative analyses of blockchain solutions across geographic regions would provide practical guidance and deepen understanding of contextual factors influencing success.

## 6. Conclusion

This study effectively utilized Focus Group Discussions (FGDs) to garner in-depth opinions from participants concerning the potential applications of blockchain technology in small and medium-sized enterprises (SMEs) and the tourism industry. While the method proved successful in eliciting feedback, the limited number of participants in each session may have constrained the diversity of opinions captured. The findings suggest that although awareness of blockchain's benefits exists among SMEs and the tourism sector, significant barriers, particularly in understanding and the cost of implementation, remain prevalent.

This aligns with previous studies indicating that the adoption of new technologies within these industries is frequently obstructed by financial constraints and a lack of technical knowledge. Key findings underscore that traceability through blockchain technology represents a substantial opportunity for SMEs and the tourism industry to enhance operational efficiency and productivity. To leverage this potential, these businesses must cultivate a workforce proficient in IT, capable of implementing and managing blockchain solutions effectively. Addressing infrastructure challenges and investing in skills development will empower SMEs and tourism operators to adapt to the demands of the growing digital economy. The paper's claims regarding blockchain's potential to enhance trust and operational efficiency in SMEs and the tourism sector are well supported by qualitative evidence gathered from focus group discussions and participant insights, which emphasize benefits such as increased transparency, fraud reduction, and streamlined processes through smart contracts and immutable ledgers. However, the study recognizes the limitation of lacking quantified data on cost savings or specific measurable benefits, indicating a need for future research to provide empirical quantification of these advantages to strengthen and substantiate the impact claims further.

For practitioners in the SME and tourism sectors, the implications are clear: there is a pressing need to embrace technological advancements. Business leaders should prioritize the identification and implementation of training programs that foster IT skills relevant to blockchain technology. Additionally, collaboration with educational institutions and technology experts can facilitate smoother transitions into blockchain adoption. Moreover, beyond IT training and infrastructural support, blockchain's potential impact on financial reporting transparency and automation of labor processes should be explicitly considered, as these interdisciplinary dimensions are critical to enhancing accountability and operational workflows within SMEs and the tourism sector. Policymakers have an essential role in creating an enabling environment for blockchain integration. This may involve instituting supportive policies, providing financial incentives, and investing in infrastructure. Such strategies will not only assist businesses in overcoming the initial cost barriers but also promote greater understanding of blockchain's benefits within these sectors. Future research should aim to address the theoretical gaps identified in this study. Comprehensive investigations into the organizational readiness for blockchain, along with explorations into cultural factors, could provide invaluable insights. Moreover, longitudinal studies assessing the long-term impacts of blockchain adoption would enhance understanding of its integration into existing business operations.

In conclusion, while this study offers valuable insights into the applications of blockchain technology within SMEs and the tourism industry, the academic contribution is inherently limited by the absence of a thorough theoretical exploration. Future inquiries should seek to fill this void, thus contributing to a richer understanding of blockchain's potential and fostering its successful adoption across diverse business landscapes.

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## Author contribution

All proposed the topic of this research and designed the study, and collected the data. All the authors contributed to the preparation of the final draft of the manuscript was reviewed and revised critically for intellectual content, as well as drafting and revising the final manuscript. All authors approved the final version of this manuscript.

## Conflicts of interest

The Author declares that there is no conflict of interest.

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