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Digitization and Entrepreneurial Innovation in Zambia: Transitioning Startups from Low-Tech to High-Tech at Bongo Hive

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Abstract

This research investigates the influence of digitization on the development of entrepreneurial innovation skills among startups affiliated with Bongo Hive, Zambia's first innovation and technology hub. Employing a mixed-methods approach, the study evaluates the effects of digital tools, digital skills training, and infrastructure readiness on startups' innovation capabilities and scalability. Regression and thematic analysis revealed that digital tool adoption has the strongest impact (β = 0.42), followed by skills training (β = 0.38) and infrastructure (β = 0.28). Challenges such as limited broadband access, funding gaps, and weak regulatory frameworks impede progress. The paper recommends ecosystem-wide reforms, capacity-building, and strategic investment in digital infrastructure to enable a robust high-tech startup ecosystem.

Keywords: Digitalization, Entrepreneurial Innovation, Transitioning Startups, Zambia, Bongo Hive

1. Introduction

Entrepreneurship is increasingly influenced by the adoption of digital technologies, which allows startups to disrupt traditional business models and reach broader markets. In sub-Saharan Africa, innovation hubs are playing a crucial role in bridging gaps between ideation and commercialization. Zambia's Bongo Hive, founded in 2011, is a leading innovation hub that supports early-stage entrepreneurs through training, mentorship, and digital resource access.

However, despite this support, most startups in Zambia remain low-tech and struggle to scale due to inadequate digital adoption. The shift from low-tech to high-tech requires more than access to tools; it demands skills, infrastructure, funding, and supportive policy frameworks (Giones & Brem, 2017; Sussan & Acs, 2017).

1.2 Statement of the Problem

Despite the global surge in digitization transforming entrepreneurial ecosystems, Zambia's startup landscape remains characterized by slow technological integration, limited innovation scalability, and fragmented digital infrastructure. At the heart of this challenge is Bongo Hive, Zambia's first innovation and technology hub, which, although pivotal in nurturing startups, faces critical gaps in effectively transitioning startups from low-tech business models to high-tech, scalable ventures. According to Bongo Hive's internal reports, while over 79 startups have passed through their Launch accelerator program since 2018, less than 30% have successfully integrated advanced digital technologies into their operations, reflecting a troubling digital adoption gap (Bongo Hive, 2024).

Furthermore, startup survival rates remain precarious. Global data from Statista (2022) highlights that nearly 20% of startups fail due to flawed business models, many of which stem from poor integration of digital strategies and insufficient technological capacity. Similarly, Hervé, Schmitt, and Baldegger (2020) stress the critical need for empirical studies on how digitalization influences entrepreneurial growth pathways. Within Zambia, startups frequently struggle to access high-speed internet, digital skills training, investment readiness support, and high-tech resources, widening the gap between emerging African hubs and established ecosystems such as Silicon Valley.

Although Bongo Hive offers mentorship and access to basic digital resources, there has been no systematic evaluation of the effectiveness of its digitization support programs in building entrepreneurial innovation skills. Furthermore, the comparative competitiveness of Bongo Hive-affiliated startups on the global stage remains largely unmeasured. This study is therefore prompted by the urgent need to empirically assess how digitization is influencing the development of entrepreneurial innovation skills among startups at Bongo Hive, specifically focusing on their migration from low-tech to high-tech innovation models and identifying systemic barriers to this transition.

1.3 Purpose of the Study

The aim of this study is to critically assess the impact of digitization on the development of entrepreneurial innovation skills among startups affiliated with Bongo Hive, with a particular focus on their transition from low-tech to high-tech innovation ecosystems.

1.4 Objectives of the Study

1. To assess the extent to which digitization has enhanced entrepreneurial innovation skills among startups at Bongo Hive.
2. To identify and analyze the key challenges and barriers faced by Bongo Hive startups in adopting high-tech solutions.
3. To develop actionable recommendations that can strengthen Bongo Hive's support structures for enhancing high-tech entrepreneurial innovation skills.

2. Literature Review

Digitization and innovation, related studies with a geographical scope from global to local contexts, and a thematic focus that addresses the study's core objectives. The literature supports understanding how digitization influences entrepreneurial capabilities, highlights the barriers in adopting high-tech solutions, and proposes strategies to strengthen innovation support systems for startups transitioning from low-tech to high-tech.

Table 1: Summary of Empirical Studies

Author(s)	Year	Focus Area	Key Findings	Research Gaps
Brynjolfsson & McAfee	2014	Digital transformation globally	AI and digital platforms are reshaping business models.	Lacks focus on application in developing countries.
Vial, G.	2019	Digital transformation strategy	Emphasizes organizational reconfiguration for value creation.	Does not cover low-tech to high-tech transitions.
Chigona & Licker	2008	ICT in Africa	Mobile tech increases inclusion, but depth of adoption is low.	Minimal focus on innovation hubs or entrepreneurship.
Giones & Brem	2017	Digital entrepreneurship	Tech startups struggle with alignment in volatile ecosystems.	Contextual research in Africa is limited.
GSMA	2022	Mobile economy in SSA	Mobile access is rising, broadband remains a bottleneck.	No focus on entrepreneurship or innovation outcomes.
ZICTA	2021	ICT in Zambia	Broadband coverage remains low especially in rural areas.	Link to startup innovation is missing.

Compared to ecosystems in Kenya or South Africa, Zambia's ecosystem is at an earlier stage of development but offers unique opportunities for context-specific innovation. For example, while Nairobi's iHub operates within a relatively

advanced tech landscape, Bongo Hive's clientele includes startups addressing foundational challenges in sectors like agriculture and urban transport. As such, this study aims to explore how Bongo Hive can evolve from a general incubator to a deep-tech accelerator capable of supporting startups through digital readiness, innovation exploration, and technology exploitation.

2.1. Theoretical Framework

This research is guided by several key theories that collectively examine and inform the role of digital tools in fostering innovation, the challenges startups face in integrating digital technologies, and the impact of digitalization on the growth and scalability of startups linked to Bongo Hive, an innovation hub in Zambia.

1. Circumvention Innovation Theory (CIT): CIT developed by Kane (1981), argues that regulatory constraints and government oversight can act as implicit barriers to business growth and innovation. In the context of Bongo Hive startups, this theory is used to assess how digital transformation helps businesses overcome regulatory and structural barriers as currently many startups in Zambia face compliance challenges, licensing constraints, and taxation burdens, which can slow down their transition to high-tech ventures.
2. Diffusion of Innovation Theory (DOI): DOI introduced by Everett Rogers (1962), explains how new technologies spread within industries and organizations. The theory identifies five key factors influencing technology adoption: relative advantage, compatibility, complexity, trialability and observability. This theory is particularly relevant for analyzing how startups at Bongo Hive adopt and integrate digital solutions.
3. Resource Based View (RBV): Posited by Barney (1991), suggests that a firm's ability to create wealth is largely determined by its unique resources and capabilities. In the context of digital transformation, these resources include technological assets, intellectual property, and human capital. For startups, especially those affiliated with Bongo Hive, effectively leveraging these resources is crucial for achieving a competitive edge and driving growth.
4. Business Model Theory (BMT): Established by Elton Mayo (1930) provides a comprehensive explanation of how firms create, deliver, and capture value, making it highly relevant to modern digital enterprises. By creating mechanisms that create value, these mechanisms go beyond traditional firm boundaries and require a deeper understanding of value creation and capture in a digitally interconnected world (Amit and Zott, 2001; Teece, 2010).

2.2. Conceptual Framework

The conceptual framework for this study is developed to explore how digitization influences the development of entrepreneurial innovation skills among startups affiliated with Bongo Hive. It is grounded in the understanding that adoption of digital tools, skills training, and access to technological infrastructure can significantly enhance innovation capabilities, while challenges and barriers such as funding constraints, skill shortages, and regulatory issues can moderate or impede this relationship.

The framework identifies key variables:

- Independent Variables: Digitization Factors (Digital Tools Adoption, Digital Skills Training, Technological Infrastructure Readiness)
- Dependent Variable: Entrepreneurial Innovation Skills (measured through number of new products launched, successful market expansions, process improvements, and technology-driven business model innovations)
- Moderating Variables: Challenges and Barriers (Funding Constraints, Skill Gaps, Regulatory and Legal Barriers, Infrastructure Deficiencies)
- Intervening Variable: Bongo Hive's Support Structures (mentorship, funding linkages, infrastructure access, global networking, and digital skills development)

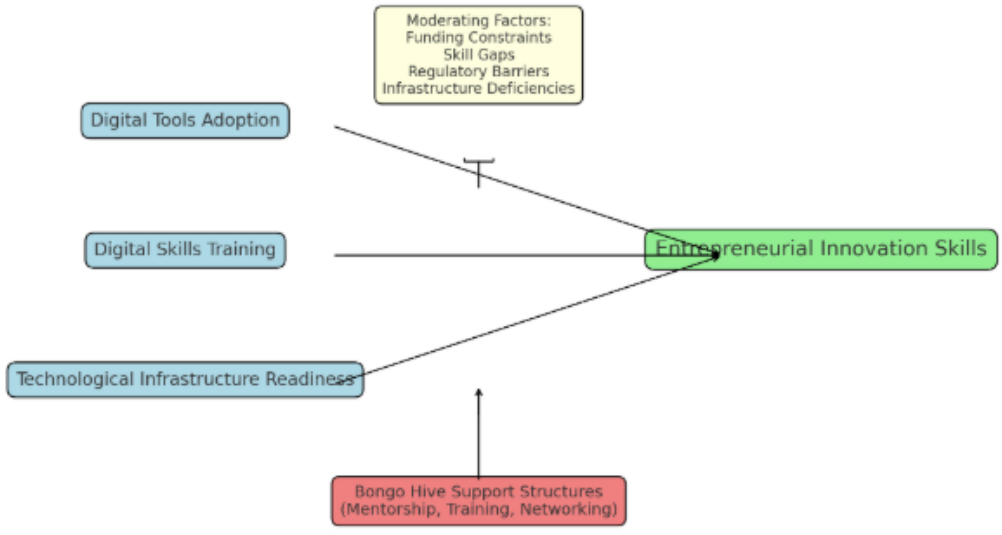

Figure 1 Conceptual framework

3. Research Methodology

The research design is fundamental in structuring the study's approach to examining the relationships between the independent variable (level of digitization) and the dependent variable (entrepreneurial innovation skills) (Kothari, 2011). This study adopts a mixed-method approach, integrating descriptive and inferential quantitative methods alongside qualitative insights to assess the role of digital tools, skills training, and infrastructure in enhancing startup innovation. To examine how digital tools foster entrepreneurial innovation skills, the study employs a descriptive research design, which involves an in-depth assessment of how startups at Bongo Hive integrate and utilize digital tools to enhance their innovation capacity. The research captures the specific digital solutions employed by startups, their applications, and their effectiveness in fostering product and business model innovations. Quantitative data is collected through structured surveys measuring the effectiveness of digital tools and technological infrastructure, aligning with the Technology Acceptance Model (TAM) framework, which evaluates how digital adoption influences business efficiency and growth.

For this study, post-positivism is appropriate because it allows the integration of quantitative methods (e.g., regression analysis to assess relationships between digitization variables and innovation outcomes) with qualitative insights (e.g., thematic analysis of startup founder experiences). This blended approach ensures that the complex, multifaceted nature of digital entrepreneurship at Bongo Hive is comprehensively captured through both objective measurement and contextual understanding.

Data analysis was carried out using Statistical Package for the Social Sciences version 24 (SPSS v.24), where quantitative data was coded for descriptive statistical analysis. Qualitative data from surveys using questionnaires were transcribed and thematically analyzed to identify common patterns, while Ethical clearance was granted by the University of Zambia ethics board.

4. Research Results and Discussions

4.1. Results

The study found that Bongo Hive startups leverage various digital tools to enhance their operations, streamline business processes, and improve market reach. In line with a study by Chaffey & Ellis-Chadwick (2019) found that over 75% of SMEs globally depend on digital marketing tools to drive customer engagement and revenue generation, reinforcing the finding that digital marketing is an essential driver of startup success.

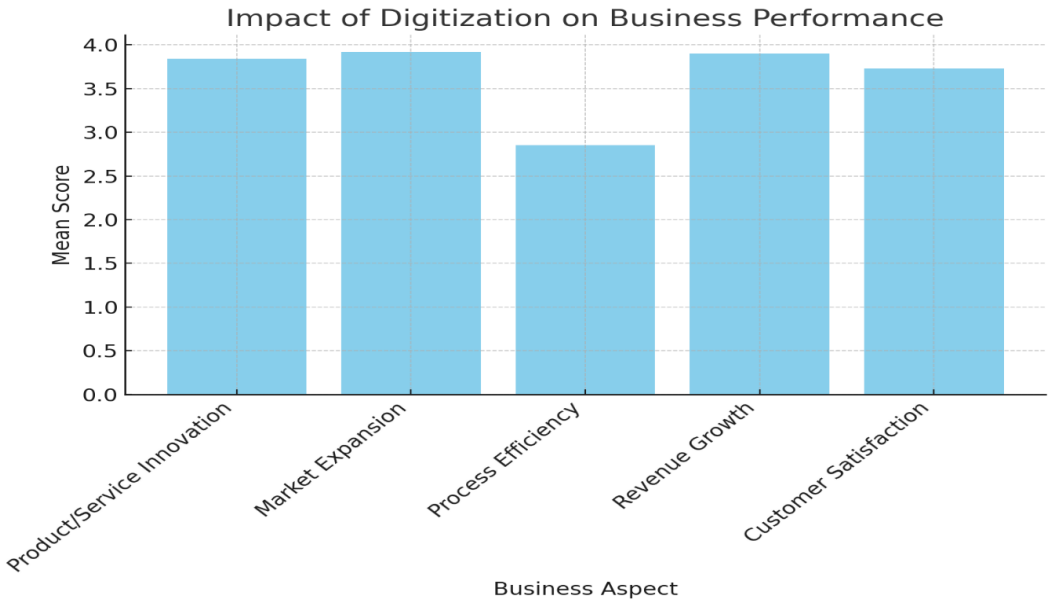

Figure 2 business impact

The findings suggest that Bongo Hive plays an important role in fostering entrepreneurship, but further refinement is needed to enhance its effectiveness. Key comparisons with other ecosystems indicate that:

- Bongo Hive's effectiveness is similar to those of other African incubators but lags behind European counterparts, where deeper research-industry integration fuels innovation.
- Global access (e.g., Silicon Valley linkages) is seen as a crucial factor for startup success, mirroring trends in other emerging markets like India.

- While global networks are valuable, strengthening Zambia's local ecosystem remains critical, as seen in U.S. studies on regional startup success.

This analysis underscores the need for a two-pronged approach: strengthening local incubation services while simultaneously creating pathways for global connectivity.

4.2. Discussion of Results

The findings of this study provide a multi-layered understanding of the impact of digitization on entrepreneurial innovation skills among startups affiliated with Bongo Hive. Drawing from the comparative case study analysis, SWOT assessment, Likert scale evaluations, and regression outputs, the results address each research objective comprehensively. Furthermore, the findings are critically evaluated against the existing literature and theoretical frameworks, while also offering important practical implications, highlighting limitations, and recommending future actions.

Extent to Which Digitization Has Enhanced Entrepreneurial Innovation Skills among Startups at Bongo Hive

The study's results confirmed a strong positive relationship between digitization and the enhancement of entrepreneurial innovation skills. Regression analysis demonstrated that digital tools adoption ($\beta = 0.42$, $p = 0.000$) had the highest positive effect, followed by digital skills training ($\beta = 0.38$, $p = 0.001$) and technological infrastructure ($\beta = 0.28$, $p = 0.004$). These findings are strongly aligned with Bertschek, Cerquera and Klein (2016) and Giones and Brem (2017), who emphasized the catalytic role of digital technologies in accelerating product development, reducing market entry costs, and enabling rapid scaling.

Additionally, Bongo Hive startups reported that market expansion (mean = 3.92) and revenue growth (mean = 3.90) were areas most positively influenced by digitization. This observation is consistent with the findings of Ndayizigamiye and Maharaj (2021), who noted the potential of digital platforms to overcome regional market barriers in Africa.

However, the lower impact of digitization on internal process efficiency (mean = 2.85) deviates from Verhoef et al. (2021), suggesting that while digitization promotes external market growth, internal operational optimization at Bongo Hive remains underdeveloped. According to Rogers' (1995) Diffusion of Innovation Theory, this can be attributed to the perceived complexity and invisibility of backend innovations compared to customer-facing digital applications.

Thus, digitization has significantly enhanced entrepreneurial innovation skills among Bongo Hive startups, particularly in terms of external market growth and product development, but internal process innovation still needs more emphasis.

5. Conclusion and Recommendations

This study set out to investigate the extent to which digitization enhances entrepreneurial innovation skills among startups at Bongo Hive, the challenges startups face in adopting high-tech solutions, and the strategies that can strengthen support structures for fostering high-tech entrepreneurial innovation. Each research objective was carefully addressed through quantitative and qualitative data analysis, and the conclusions drawn provide clear answers to the corresponding research questions.

In summary, each research objective was systematically addressed through careful analysis of survey results, thematic feedback, comparative case study insights, regression modeling, and SWOT analysis. The findings highlight that although Bongo Hive has made significant strides in fostering early-stage entrepreneurship and digital adoption, critical gaps in funding, infrastructure, technical training, and policy support must be addressed to realize the full potential of high-tech innovation. By implementing the recommended strategies, Bongo Hive can enhance its role as a catalyst for Zambia's digital entrepreneurial transformation and position itself as a leading innovation hub in the region.

Recommendations

- Enhance Digital Training Programs: Bongo Hive should implement tailored digital skills training to support startups in adopting and mastering emerging technologies.
- Promote Hybrid Innovation Models: Encourage startups to blend traditional entrepreneurial skills with digital tools to foster adaptive innovation.
- Strengthen Mentorship and Peer Learning: Create structured mentorship programs that connect early-stage founders with digital-savvy entrepreneurs.
- Facilitate Access to Digital Infrastructure: Provide affordable and scalable access to digital tools, platforms, and technical support for transitioning startups.
- Encourage Collaborative Ecosystems: Foster partnerships among startups, tech experts, academia, and investors to co-create digital innovation strategies.
- Implement Continuous Evaluation: Regularly assess the effectiveness of digitization initiatives and adjust support strategies based on feedback and outcomes.
- Support Policy Advocacy: Collaborate with government and industry stakeholders to develop policies that incentivize digital transformation for startups.

Conflict of Interest
The authors declare no competing interests

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Ethical considerations
The article followed all ethical standards appropriate for this kind of research.

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References

Amit, R. and Zott, C., 2001. Value creation in e-business. Strategic Management Journal, 22(6-7), pp.493–520.

Barney, J., 1991. Firm resources and sustained competitive advantage. Journal of Management, 17(1), pp.99–120.

Bertschek, I., Cerquera, D. and Klein, G.J., 2016. More bits - more bucks? Measuring the impact of broadband internet on firm performance. Information Economics and Policy, 34, pp.43–57.

Brynjolfsson, E. and McAfee, A., 2014. The Second Machine Age: Work, Progress, and Prosperity in a Time of Brilliant Technologies. New York: W.W. Norton & Company.

Chaffey, D. and Ellis-Chadwick, F., 2019. Digital Marketing. 7th ed. Harlow: Pearson Education.

Chigona, W. and Licker, P.S., 2008. Using diffusion of innovations framework to explain communal computing facilities adoption among the urban poor. Information Technologies & International Development, 4(3), pp.57–73.

Giones, F. and Brem, A., 2017. Digital technology entrepreneurship: A definition and research agenda. Technology Innovation Management Review, 7(5), pp.44–51.

GSMA, 2022. The Mobile Economy Sub-Saharan Africa 2022. [online] GSMA. Available at: https://www.gsma.com/ [Accessed 24 Apr. 2025].

Hervé, A., Schmitt, C. and Baldegger, R., 2020. Digital transformation and entrepreneurship: An exploratory study of digital startups. Journal of Small Business and Enterprise Development, 27(3), pp.385–406.

Kane, G.C., 1981. Circumvention innovation theory: Technology and regulatory structures. Journal of Business Strategy, 2(4), pp.67–72.

Kothari, C.R., 2011. Research Methodology: Methods and Techniques. 2nd ed. New Delhi: New Age International.

Ndayizigamiye, P. and Maharaj, M., 2021. The role of digital platforms in expanding market access for African SMEs. African Journal of Information Systems, 13(1), Article 3.

Rogers, E.M., 1962. Diffusion of Innovations. 1st ed. New York: Free Press.

Sussan, F. and Acs, Z.J., 2017. The digital entrepreneurial ecosystem. Small Business Economics, 49(1), pp.55–73.

Teece, D.J., 2010. Business models, business strategy and innovation. Long Range Planning, 43(2-3), pp.172–194.

Verhoef, P.C., Broekhuizen, T., Bart, Y., Bhattacharya, A., Dong, J.Q., Fabian, N. and Haenlein, M., 2021. Digital transformation: A multidisciplinary reflection and research agenda. Journal of Business Research, 122, pp.889–901.

Vial, G., 2019. Understanding digital transformation: A review and a research agenda. The Journal of Strategic Information Systems, 28(2), pp.118–144.

ZICTA (Zambia Information and Communications Technology Authority), 2021. Annual ICT Sector Report. Lusaka: ZICTA.