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Innovation and Technology in Medicinal Cannabis and Hemp Value Chains: Opportunities and Perception Challenges for SME Development in Botswana

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Abstract

Botswana has not yet begun the process of legalizing medicinal cannabis and industrial hemp production, but it has the potential to do so which would create opportunities while also posing significant regulatory, financial, and technological challenges. As of now, there is no formal market and all the current activities are conducted through informal structures, including traditional societies such as healers, Rastafari communities, and unregistered trading groups. Lack of regulatory frameworks and formally established market structures pose a barrier to SMEs and this calls for technological advancements to enable formalization and inclusive participation in the economy. This study aims to determine how the application of emerging technologies such as AI smart farming and blockchain technology in the supply chain can help in the growth of the industry while at the same time addressing issues of regulation and perception. A more detailed economic impact analysis has been incorporated to provide insights into potential revenue generation and job creation in Botswana. A mixed methods approach is used in this study where structured surveys are used in conjunction with multiple linear regression analysis to assess the SMEs' market entry potential. The results of the study show that legal framework, technology use, public's perception, and funding availability are important determinants of the SMEs' participation in this industry. Comparison of case studies of South Africa, Lesotho, and Ghana offers lessons on policy models that Botswana should adopt in its industry framework. These findings shed light on the importance of having well-defined policy regulations, SME and startup funding opportunities, and technological tools to encourage the growth of the industry. The study aims to add to the existing literature on entrepreneurship, digital transformation, and economic diversification in Africa

and offers a framework for Botswana to build a sustainable, technology-enabled medicinal cannabis and hemp industry.

Keywords

Industrial Hemp, Medicinal Cannabis, SME Development, Technological Innovation, Botswana Economy, Regulatory Framework, Blockchain, Smart Farming

1. Introduction

Medicinal cannabis and industrial hemp industries have recently experienced significant changes due to expanding legalization and commercialization worldwide. As several countries attempt to establish new economic opportunities, Botswana has yet to progress past policy discussion and market feasibility evaluation stages. All medical cannabis activities currently function outside the legal system because there is no established market for medicinal cannabis while traditional healers and informal growers operate through illicit channels. Public attitude remains a major challenge because cannabis has historically been linked to criminalization and black-market activities. The absence of market structures, clear regulatory guidelines and small to medium-sized enterprise (SME) engagement frameworks embodies Botswana's main challenge in creating a formal cannabis and hemp industry. The potential economic advantages of cannabis legalization include higher tax revenues along with better pharmaceutical research possibilities and farming opportunities for small-scale farmers. This paper discusses how technological innovations can enable the shift toward an organized market through improved compliance, market transparency and SME competitiveness. The paper further explores the anticipated socio-economic impacts of cannabis legalization, including employment generation, export potential, and revenue contributions.

General Background

Botswana's economy has been built on mining, tourism and agriculture, with barely enough evidence of diversification to new industries. Diamonds have been the main driver of Botswana's GDP, providing more than 80 per cent of export revenues and as much as 35 per cent of its GDP in the early 2000s. Recently, the diamond revenues have dropped by 30% between 2018 and 2022 due to a decline in global demand. On the other hand, agriculture has a growth rate of 2% to the Botswana's GDP while 30% of the population is engaged in agriculture, this shows that there is low productivity and minimal exploration of production of high value crops such as medicinal cannabis.

The discussions around the legalization of medicinal cannabis and industrial hemp around the world have gained momentum in recent years, particularly as some countries in the region such as South Africa and Lesotho have established regulatory frameworks to support the industry. Lesotho, for instance, became the

first African nation to legalize cannabis for medicinal use in 2017, and by 2021, the industry had attracted over $200 million in foreign investment. Similarly, South Africa has developed a commercial licensing system, with projections indicating a cannabis industry worth over $1.9 billion by 2026. Botswana, however, remains cautious, primarily due to historical stigmatization, regulatory uncertainty, and a lack of public awareness regarding the economic and medical benefits of cannabis. The medicinal cannabis sector can be regarded as one of the most promising areas in terms of economic growth and job creation, especially for small and medium-sized enterprises. According to the latest findings, the global medicinal cannabis sales totaled $26 billion in 2021 and are projected to reach $60 billion by 2030. It is estimated that in Botswana, a well-regulated cannabis industry could generate an estimated BWP 2.5 billion in annual revenue across cultivation, processing and distribution sectors within the first five years of legalization, and create about 15,000 direct and indirect jobs.

However, it is only when cannabis is brought into the formal economy that several barriers to its integration can be overcome, including regulatory barriers, financial barriers, and societal skepticism. The other important factor that will influence the growth of Botswana's cannabis industry is the capacity to develop a stable, a systematic, and a technological value chain that meets the international standards. With the help of technologies such as AI for optimized yield in farming, Blockchain for product tracking, and Digital market places for supply chain efficiency, Botswana can develop a competitive and legally compliant medicinal cannabis industry. At present, it can be seen from the global trends that countries with well-regulated cannabis industries have benefited from increased exports, pharmaceutical research and sustainable agricultural growth. In addition, through the adoption of a knowledge based approach that includes smart farming, blockchain for supply chain tracking and digital market places, Botswana can develop a competitive and inclusive cannabis economy. This study is conducted to explore these aspects and to gain more insights on how Botswana can graduate from cannabis trade networks to a formal and beneficial sector.

2. Literature Review

Over the past two decades, the global cannabis industry has evolved significantly with many countries adopting regulatory frameworks to facilitate medicinal and industrial use. The increasing recognition of cannabis-derived products for therapeutic applications has led to an increase in legalization efforts worldwide, creating economic opportunities for new market entrants, particularly small and medium-sized enterprises (SMEs) (Wartenberg et al., 2021). Studies in this area highlight that a well-regulated and structured cannabis industry can contribute to employment creation, tax revenues, and advancements in medical research (Dills, 2021). However, in developing economies such as Botswana, several barriers persist, including, legalization constraints and societal perceptions which continue to hinder the formalization of the industry. This section reviews global trends in me-

dicinal cannabis and industrial hemp, regulatory challenges in emerging markets, and the role of technology in transforming value chains to support SME development (Samanta et al., 2024).

2.1. The Global Landscape of Medicinal Cannabis and Hemp

The medicinal cannabis and hemp industries are expanding as more countries put in place regulatory structures to harness the economic and medical potential of the commodities. The medicinal use of cannabis has been legalized following studies that show it is effective in managing conditions like chronic pain, epilepsy, and multiple sclerosis (Farrelly et al., 2023). Canada and Germany for instance have put in place well-defined regulatory structures that address research, cultivation and distribution of the product in a comprehensive and strict manner to guarantee product safety and market stability (Aletraris, Graves, & Ndung'u, 2023).

In Africa, countries such as South Africa, Lesotho, and Ghana have taken significant steps towards formalizing their cannabis industries. For example, South Africa formalized the use of cannabis in 2018 and has put in place a commercial licensing system that allows for the participation of SMEs (Thetsane, 2024). On the other hand, Lesotho was the first country on the continent to legalize medicinal cannabis in 2017 and by the year 2021, it had attracted more than $200 million in foreign investment (Thetsane, 2024). In the case of Ghana, the country has put in place a regulatory system that is pro-public health but at the same time permits some level of industry regulation (Amissah, 2023). These case studies are good benchmarks on how Botswana can go about developing a more organized cannabis industry based on the experience of these pioneers.

2.2. Challenges in Emerging Markets

Despite the growing global acceptance, expansion of medicinal cannabis and hemp industry's challenges remain, particularly in emerging markets. Inadequacy of regulatory frameworks, absence of funding opportunities and resistance from society pose major challenges to the industry's growth according to (Sevigny, Greathouse, & Medhin, 2023). However, some countries have been able to create cannabis industries but most countries struggle with the challenge of how to meet the economic requirements to develop cannabis production and use without harming public health and running afoul of international trade rules. To effectively steer its way through these challenges, Botswana will need to adopt a model that guarantees economic inclusivity, technological integration and regulatory transparency when establishing its medicinal cannabis industry.

Furthermore, SMEs face significant challenges with regards to access to capital in the cannabis industry. In those nations in which medicinal cannabis has been legalized, high levels of compliance costs, licensing fees, and banking restrictions have prevented small businesses from being able to gain access to the market (Farrelly et al., 2023). For example, in Lesotho, while the industry has attracted foreign investment, many local entrepreneurs are unable to get funding because of restric-

tive loan policies and lack of collateral. In the same way, in South Africa, concerns about monopolization have been raised as large corporations have taken over the sector while small scale farmers have struggled to get cultivation licenses (Amissah, 2023). Moreover, lack of technical knowledge and information exchange has hindered industry growth in many emerging markets. While North America and Europe rely heavily on universities and research institutions to drive cannabis research and innovation, many African countries have limited academic and institutional infrastructure to support sustainable industry growth (Sevigny, Greathouse, & Medhin, 2023). To successfully integrate medicinal cannabis into its economy, Botswana will need to address these regulatory, financial, and technical barriers to support the growth of a competitive and inclusive industry.

2.3. Innovation and Technology in Cannabis and Hemp Value Chains

The growth efficiency and compliance regulation of the medicinal cannabis and hemp industries has been enhanced by the role of innovation and technology (Lyu, Rao, Wang, & Qi, 2021). Technologies such as AI smart farming, blockchain supply chain management and digital market access platforms have changed cultivation, processing and distribution methods in regulated markets (Malabadi et al., 2023). These technologies have also addressed product traceability, standardization and security risks which are important for both regulatory compliance and consumer confidence (Farrelly et al., 2023).

It is recognized that innovation and technology play a crucial role in enhancing efficiency, compliance and market access in the medicinal cannabis and hemp value chains. Through the use of smart farming, AI technology has enhanced the cultivation by monitoring soil composition, moisture and nutrient levels in real time. These advancements lead to increased yields, resource wastage is reduced, and sustainability is improved and this is especially advantageous to SMEs operating under conditions of limited resources. Successful implementation of smart farming techniques has been noted in countries such as Canada and the Netherlands to standardize cultivation and ensure product quality under strict regulatory standards (Farrelly et al., 2023). Given Botswana's semi-arid climate, it would be beneficial to use AI-driven irrigation systems and climate controlled greenhouses to optimize production and reduce environmental pressures.

As well, South Africa has also started the use of blockchain technology in its cannabis supply chain to enhance the transparency of the supply chain as well as strengthen the security of the sale from seed to sale. Thus, blockchain technology can help Botswana to strengthen its regulatory framework, increase consumers' confidence and reduce the incidence of trade illegal practices. Moreover, digital platforms have enabled market accessibility for SMEs in relation to consumers, investors and international markets. Trade processes have been simplified, entry barriers reduced and compliance tracking enhanced for cannabis enterprises as a result of the proliferation of e-commerce solutions, mobile applications and

online regulatory portals (Wang et al., 2020). Digital trade platforms have helped to direct local cultivators in emerging cannabis markets like Lesotho to global pharmaceutical companies and therefore enable the commercialization of cannabis products efficiently. It is therefore possible to suggest that similar models could be used in Botswana to create a structured, technology driven market that includes SMEs and where compliance mechanisms are seamlessly embedded in digital regulatory frameworks.

The adoption of technology in the cannabis industry remains a challenge especially for developing countries. Lack of not only technical skills, but high capital costs also that come with adoption make it difficult for SMEs to integrate new technologies in their production processes. Overcoming these challenges will necessitate Botswana to engage research institutions, technology providers and industry experts. Incentives from the government, capacity building, and setting up of cannabis research centers could help enhance the adoption of technology and support growth in the industry. Through implementation of these strategic measures Botswana can emerge as a leader in cannabis innovation and so guarantee that its nascent industry remains viable, sustainable and in sync with international standards.

3. Methodology

This study uses a mixed methods research design to provide an in depth analysis of the role of innovation and technology in the development of the Botswana medicinal cannabis and hemp industry. It combines both qualitative and quantitative research methods to analyze regulatory challenges, SME market entry potential, and technological adoption.

The qualitative component includes structured interviews and focus group discussions with policymakers, industry experts, SME owners, and representatives of regulatory agencies. This aspect gives deeper understanding of the perceptions, opportunities and constraints of the emerging cannabis sector in Botswana. Thematic analysis of the interviews is then used to identify key themes and frequent challenges within the industry. The quantitative component includes structured surveys done to SMEs, investors and entrepreneurs in the agricultural and pharmaceutical sectors in Botswana. The survey collects quantitative data on aspects such as regulatory clarity, public perception, financial accessibility, and the willingness to adopt new technologies. Multiple linear regression modelling is used to analyze the relationship between these variables and the SMEs market entry potential.

The study combines both quantitative trends and contextual insights by using a mixed-methods approach. The design enables triangulation of findings for improving the validity and reliability of the conclusions drawn. The research is further enhanced by case studies from South Africa, Lesotho and Ghana which provide comparative insights into successful regulatory models and industry frameworks that could be relevant to Botswana.

The application of mixed-methods research in this context is supported by studies such as Boehnke et al. (2022), who utilized this approach to analyze cannabis use routines for chronic pain management, demonstrating its effectiveness in capturing comprehensive data within the cannabis industry.

3.1. Data Collection Methods

To guarantee a holistic evaluation of Botswana's medicinal cannabis and hemp industry, both primary and secondary data sources are employed. The data includes both primary sources which are gathered through structured surveys, interviews, and focus group discussions from key stakeholders and secondary sources which are acquired from academic journals, government reports and industry publications. SMEs, entrepreneurs, investors and policymakers in the agricultural, medical and regulatory sectors are the target of the structured surveys. The survey instrument contains both closed and open-ended questions to gather quantitative data on market readiness, technological adoption, and financial accessibility. The sampling method used is a purposive and stratified random sampling methods which ensures that the sample represents different industry stakeholders and geographic regions of Botswana.

Purposive sampling, as described by Etikan, Musa, & Alkassim (2016), allows researchers to intentionally select participants based on specific characteristics relevant to the study, ensuring richer and more targeted data collection.

To gain qualitative insights, the study utilized interviews and focus group discussions with key participants, such as government officials, industry experts, indigenous groups and business leaders to understand industry challenges and opportunities. These sessions were focused on the perceptions of regulation, market constraints and technological feasibility to gain a detailed understanding of the stakeholder's points of view. Secondary data sources include policy documents, economic reports, and global case studies on cannabis industry frameworks, which are also analyzed to complement the primary data. The comparison of case studies in South Africa, Lesotho and Ghana offer context to how different approaches to regulation and technology have impacted success and SME participation in the industry. Applying these methods for data collection will enable the study to capture both the quantitative metrics and qualitative insights that will give a comprehensive analysis of the potential of Botswana for the medicinal cannabis and hemp industry.

3.2. Research Participant Selection

To make sure that the sample was representative, purposive and stratified random sampling methods were used to select participants for the qualitative and quantitative data of this research. Purposive sampling ensures that participants are chosen based on specific characteristics relevant to the research objectives, while stratified random sampling enhances representation across different stakeholder groups (Etikan et al., 2016). With a total of 200 respondents, they were chosen

based on their direct association or plans to engage with the cannabis industry. The survey was both quantitative in the form of closed-ended questions on market readiness, regulatory clarity, financial accessibility, and technological adoption, as well as qualitative in the form of open-ended questions. For the qualitative approach, semi-structured interviews and focus group discussions were conducted among 30 key stakeholders, including government officials, industry experts, owners of SMEs, and business leaders. Qualitative methods help explore participants' perceptions, attitudes, and experiences in greater depth (Creswell & Poth, 2018). The participants were chosen based on their expertise in agricultural and technological entrepreneurship and their role in cannabis policy formulation. The discussions focused on industry challenges, regulatory concerns, and market entry opportunities.

3.3. Multiple Linear Regression Model

Using a multiple linear regression model, this study examines the factors influencing SME participation in Botswana's medicinal cannabis and hemp industry. The dependent variable is defined as SME Market Entry Potential and Multiple linear regression is widely used in economic and business research to model relationships between a dependent variable and multiple independent variables (Wooldridge, 2019). The independent variables include, Regulatory Clarity, Technological Adoption, Public Perception and Financial Accessibility. The model is formulated as follows:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \varepsilon$$

where:

Y = SME Market Entry Potential (dependent variable)

β_0 = Intercept

β_1, β_2, β_3, β_4 = Coefficients representing the influence of each independent variable

X_1 = Regulatory Clarity (measures the transparency and consistency of licensing and compliance requirements)

X_2 = Technological Adoption (captures the extent to which SMEs integrate AI-driven farming, blockchain, and digital solutions into their operations)

X_3 = Public Perception (assesses societal attitudes towards cannabis legalization and its impact on market demand)

X_4 = Financial Accessibility (evaluates SME access to credit, investment, and financial support mechanisms)

ε = Error term (captures unexplained variability in SME Market Entry Potential)

The regression model has been applied in the form of Ordinary Least Squares (OLS), which is a standard approach for estimating the parameters of multiple linear regression models in economic and business research (Gujarati & Porter, 2020). In this case it is used to investigate the relationship to investigate the relationship between the impact of various factors on the SME market entry. The

findings of the analysis can be used by policymakers and industry stakeholders to improve the regulatory frameworks, financial incentives, and technological initiatives that can support the entry of SMEs in the medicinal cannabis and hemp industry in Botswana (**Appendices**).

3.4. Data Analysis

Both quantitative and qualitative methods are used to analyze the collected data in order to generate insights concerning the medicinal cannabis and hemp industry in Botswana. Descriptive statistics, correlation analysis, and multiple linear regression modeling are statistical techniques used in quantitative analysis to determine the relationship between SME market entry potential and the independent variables, regulatory clarity, technological adoption, public perception, and financial accessibility. These techniques are widely applied in business and economic research to identify patterns and relationships within structured data (Wooldridge, 2019).

The study uses descriptive statistics which include means, standard deviations and frequency distributions of the survey responses to understand the perceptions and readiness of various stakeholders towards SME participation in the cannabis sector. Descriptive statistics play a crucial role in summarizing survey data, making it easier to interpret trends and distributions (Gujarati & Porter, 2020). It also uses correlation analysis to check the strength of relationships between the key variables to make sure that there is no multi-collinearity in the regression model. This paper further employs multiple linear regression modeling to quantify the impact of each independent variable on the dependent variable, SME market entry potential. Regression analysis helps estimate the extent to which independent factors contribute to variations in the dependent variable, making it a valuable tool in economic and policy research (Stock & Watson, 2020). The coefficients provide insights into the most influential factors affecting SME market entry, while p-values and R-squared values are used to assess the statistical significance and explanatory power of the model.

4. Discussions and Findings

The study's results offer a detailed comprehension of the factors that affect the participation of SMEs in the medicinal cannabis and hemp industry in Botswana. The discussion is arranged according to the main variables of the model, which are regulatory clarity, technological adoption, public perception, and financial accessibility. The findings are based on structured surveys, focus group discussions, and secondary data analysis.

4.1. Descriptive Statistics and Market Readiness

Table 1 presents a summary of responses from SMEs, investors, and regulatory stakeholders on their perceptions of the industry's market readiness.

Table 1. Descriptive statistics and market readiness.

Variable	Mean	Std. Dev	Response Rate (%)
Regulatory Clarity	3.8	0.97	85%
Technological Adoption	3.4	1.10	79%
Public Perception	3.1	1.23	82%
Financial Accessibility	2.7	1.08	76%

The results show that regulatory clarity has a moderate high score (M = 3.8, SD = 0.97) which indicates that the respondents are aware of some level of policy framework but there is a significant lack of it in implementation. The level of technological adoption is found to be moderate (M = 3.4, SD = 1.10) which shows that although there is a part of the SMEs that is willing to incorporate new technologies, there are still factors like costs and skills limitations. The public perception is slightly lower at M = 3.1, SD = 1.23, which shows that there is still negative perception and social prejudices, while financial accessibility has the lowest score of M = 2.7, SD = 1.08 which is in line with the funding problems that SMEs encounter.

4.2. Multiple Linear Regression Analysis

A multiple linear regression analysis was conducted to determine the impact of regulatory clarity, technological adoption, public perception, and financial accessibility on SME market entry potential. The results are presented in Table 2.

Table 2. Regression model summary.

Variable	Coefficient (β)	Std. Error	t-Value	p-Value
Regulatory Clarity	0.35	0.12	2.91	0.004**
Technological Adoption	0.27	0.10	2.70	0.008**
Public Perception	0.22	0.14	1.57	0.118
Financial Accessibility	0.41	0.11	3.72	0.001**
R-squared	**0.67**			

The model indicates an R^2 value of 0.67, suggesting that 67% of the variance in SME market entry potential can be explained by the independent variables. Financial accessibility (β = 0.41, $p = 0.001$) has the most significant impact, followed by regulatory clarity (β = 0.35, $p = 0.004$) and technological adoption (β = 0.27, $p = 0.008$). Public perception ($p = 0.118$) does not significantly impact SME market entry, indicating that while it is an important factor, regulatory and financial barriers remain more influential.

4.3. Qualitative Findings from Interviews and Focus Groups

The themes identified through qualitative discussions are consistent with the

quantitative findings: 1) Regulatory Bottlenecks: Participants mentioned that the licensing procedure may be complicated, and there may be issues of long bureaucratic processes and high expenses related to compliance as observed in other countries like South Africa. 2) Technological Constraints: Small and medium-sized enterprises showed enthusiasm toward smart farming and blockchain applications but identified obstacles in obtaining technical education and infrastructure. SMES anticipated challenges in securing initial funding and likely high operating expenses that could prevent them from participating in the industry. 3) Financial Limitations: The majority of respondents identified that there may be absence of startup funding and high operating costs, which maybe significant barriers to market entry in the industry. 4) Public Awareness and Stigma: Although public perception is changing, cannabis is still plagued by incorrect information, which may affect investment and demand patterns.

4.4. Comparative Insights from Regional Case Studies

With respect to SME support and regulatory structuring, Botswana can learn from the experiences of South Africa, Lesotho and Ghana. The licensing framework of Lesotho, where foreign investment is linked with local SME incentives can be pointed out as a reference for Botswana to encourage sustainable industry participation. Also, In South Africa, blockchain technology enhances transparency by tracking cannabis production from seed to sale, thereby preventing illegal activities and ensuring compliance with regulatory requirements. For Botswana, blockchain can serve as a tool for regulatory oversight, increasing consumer trust and reducing market inefficiencies. Although technology presents both opportunities and challenges, with key barriers include high capital costs, lack of technical expertise, and regulatory uncertainties. To overcome these challenges, Botswana should establish research collaborations with academic institutions and technology firms to facilitate knowledge transfer. Moreover, government incentives and financial support schemes for SMEs could encourage investment in smart farming and digital supply chain solutions.

5. Conclusion

This study examined the potential for SME participation in Botswana's medicinal cannabis and hemp industry, emphasizing the roles of regulatory clarity, technological adoption, public perception, and financial accessibility. The findings reveal that while regulatory frameworks are moderately structured, gaps in implementation hinder industry growth. Financial accessibility remains the most significant barrier for SMEs, while technological adoption presents both opportunities and challenges. Public perception, though evolving, continues to influence market readiness and policy decisions.

The results from the multiple linear regression analysis confirmed that financial accessibility, regulatory clarity, and technological adoption significantly impact SME market entry potential, with public perception playing a lesser but still rele-

vant role. Qualitative insights from focus groups and stakeholder interviews highlighted regulatory bottlenecks, financial constraints, and the need for increased public awareness campaigns to facilitate market acceptance. Drawing from regional case studies in South Africa, Lesotho, and Ghana, it is evident that successful medicinal cannabis industries are built upon clear regulatory frameworks, foreign and local investment incentives, and advanced technological integration. Botswana can adopt similar strategies while tailoring policies to fit its socio-economic and cultural context.

6. Recommendations

It is therefore important for Botswana when considering the legalization of medicinal cannabis to have a very solid regulatory framework that does not leave the licensing process and the licensing itself in uncertainty and, to some extent, avoid or at least minimize bureaucratic delays. The policymakers should do more feasibility studies and pilot projects to evaluate the effects of the legalization of such commodities on the economy and society before total implementation. To address the financial constraints, public private partnerships and targeted government grants should be offered to support the participation of SMEs. Incentives for local entrepreneurs and foreign stakeholders should be provided to support reasonable industry development. Public education and awareness campaigns should be given priority to change people's perceptions, remove the stigma, and increase the acceptance of medicinal cannabis as a new business sector. It is also recommended that capacity building programs be put in place to enhance the knowledge of SMEs on issues of compliance, quality control, and market access. Thus, through the implementation of these recommendations in the process of legalization, Botswana can create a well-defined and sustainable medicinal cannabis industry that would support the country's economic diversification without jeopardizing public health and safety.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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Appendices

Appendix 1

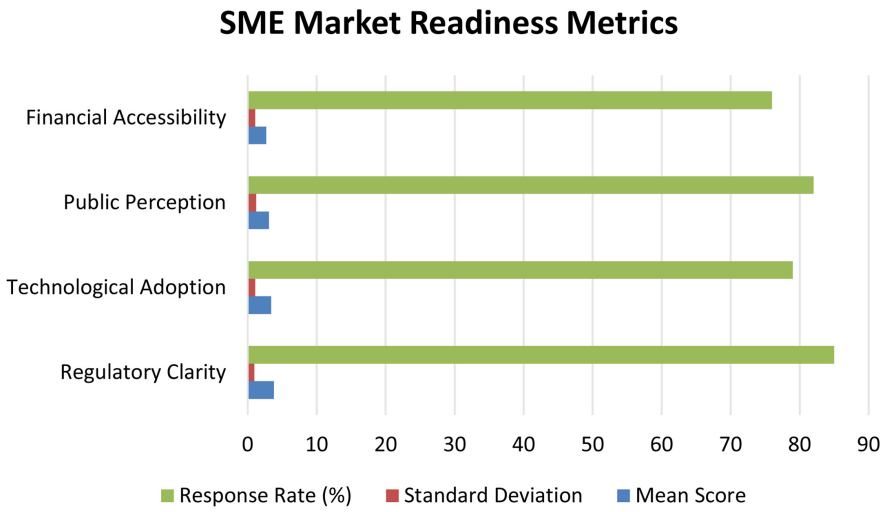

Figure A1. Botswana SME market readiness metrics.

Appendix 2

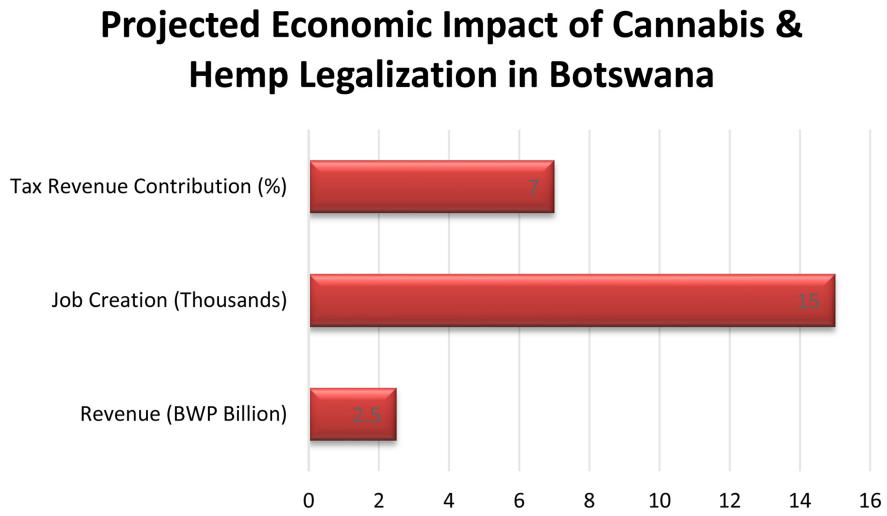

Figure A2. Projected economic impact of cannabis & hemp legalisation in Botswana.