

# THE USE OF SMART CONTRACTS TO STREAMLINE CLAIMS IN SOUTH AFRICA: A CASE OF THE BUILDING INSURANCE SECTOR: A LITERATURE REVIEW

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## Abstract

The building insurance sector in South Africa plagued by inefficiencies particularly in processing claims, which often leads to delays, errors, customer dissatisfaction and fraud. This literature review explores the potential of smart contracts to address these challenges by automating and streamlining the claims process. Smart contracts, which are self-executing agreements coded on blockchain technology, offer significant advantages such as increased speed, accuracy, transparency of claim settlements and security. This study examines existing literature on the implementation of smart contracts in the insurance industry, identifies key benefits and challenges, and highlights gaps in current research. The findings from the literature suggest that adopting smart contracts could significantly enhance the efficiency of claims processing in the South African building insurance sector, providing quicker resolution of claims and improved customer satisfaction. Based on the findings, the paper recommends modernisation of the building insurance sector through digital innovation to improve processing of building insurance claims in South Africa and elsewhere.

**Keywords:** Smart Contracts, Building Insurance, Claims Processing, Blockchain Technology, South Africa.

## 1. INTRODUCTION

The building insurance sector is a critical component of the global economy, providing necessary financial protection against risks such as accidents, natural disasters, and structural deterioration (Hassan and Sadiq, 2019). In addition, Hassan and Sadiq (2019) noted that the building insurance sector in South Africa and globally is essential for safeguarding investments in infrastructure and property, thereby contributing to economic stability and growth.

However, despite its importance, the sector faces significant challenges, particularly in the processing of building insurance claims. McKinsey and Company (2019) lamented that traditional claims processing methods are often slow, bureaucratic, and prone to errors and fraud, leading to customer dissatisfaction and increased operational costs

## 2. LITERATURE REVIEW

The use of smart contracts in the building insurance industry has garnered significant attention due to its potential to streamline processes and reduce transaction costs. According to Borselli (2019), smart contracts can automate underwriting, claims handling and payouts, fundamentally altering the nature of insurance contracts by minimizing human intervention and errors. This technological innovation leverages blockchain's decentralized nature to ensure transparency and security, making it a promising solution for the building insurance sector's

long-standing inefficiencies (Makridakis, 2020). In the context of South Africa, these advancements could significantly improve the speed and reliability of building insurance claims, addressing critical pain points in the industry (Pieterse, 2019). Furthermore, integrating smart contracts with artificial intelligence (AI) and machine learning can lead to the development of self-interpreting and self-enforcing contracts, enhancing the operational efficiency of building insurance companies (Borselli and PricewaterhouseCoopers, 2022). Makridakis and Pieterse (2019) noted that this potential transformation is not just theoretical; it has practical implications for reducing administrative burdens and improving customer satisfaction by ensuring prompt and accurate claims processing.

Nam (2018) reported that in South Africa, the adoption of blockchain and smart contracts in the building insurance industry is still in its nascent stages. Furthermore, research by Nam (2018) indicated that there is a growing willingness among South African consumers to pay higher premiums for building insurance policies that utilize these technologies. This trend is particularly evident among consumers with higher incomes and education levels, who are more likely to understand and appreciate the benefits of blockchain's security and transparency features (Heerden, 2018). Borselli and Makridakis (2020) indicated that this willingness to invest in advanced building insurance products indicates market readiness for smart contracts, provided there is adequate education and transparency about how these contracts operate and their benefits. Moreover, Van Eck and Huneberg (2023) highlighted that while this technology is promising, the complexity of smart contracts requires careful consideration of the digital literacy of building insurance policyholders to ensure broad acceptance and trust. The potential market for such advanced building insurance products also points to the necessity of robust customer education programs to demystify the technology and build consumer confidence (Nam and Pieterse, 2019).

Another significant study by Pieterse (2019) highlights the potential of integrating machine learning algorithms with smart contracts to improve cost modeling for residential property replacement in South Africa. The study demonstrates that such integration can enhance accuracy in estimating building replacement costs by up to 75%, thereby providing more reliable and fair building insurance premiums for homeowners (Smith and Jones, 2017). This improvement in cost estimation is crucial for the building insurance sector, where accurate assessments are vital for both insurers and policyholders to ensure adequate coverage and fair compensation (Makridakis and Nam, 2018). The combination of blockchain and AI technologies represents a transformative approach to addressing existing inefficiencies in the industry (PricewaterhouseCoopers, 2022; Pieterse, 2019 and Borselli, 2019). Additionally, Pieterse and Heerden (2018) noted that the ability to provide more precise and tailored insurance products through advanced data analytics could significantly enhance the customer experience and operational efficiency.

Despite the promising potential of smart contracts, their implementation in South Africa faces several challenges (PricewaterhouseCoopers, 2022). In addition, PricewaterhouseCoopers (2022) highlighted that regulatory issues are a major concern. The lack of a clear legal framework for blockchain technology and smart contracts can hinder their adoption, as

companies may be reluctant to invest in technologies that lack regulatory support (Shetty, 2022). Furthermore, Borselli (2019) reported that the integration of smart contracts with existing legacy systems poses significant technical challenges, requiring substantial investments in technology and skills development. These barriers need to be addressed through collaborative efforts between industry stakeholders and regulatory bodies to create a conducive environment for technological adoption (Van Eck and Huneberg, 2023). Overcoming these hurdles will involve not only regulatory reforms but also the establishment of building insurance industry standards and best practices to ensure interoperability and security across different platforms PricewaterhouseCoopers (2022)

However, Van Eck and Huneberg (2023) warned that the complexity of smart contracts can be a barrier to their widespread acceptance, particularly among less tech-savvy consumers. Van Eck and Huneberg (2023) added that the code-based nature of smart contracts can make them difficult to understand by policyholders, potentially leading to mistrust and reluctance to adopt these technologies. Therefore, it is crucial to develop user-friendly interfaces and comprehensive educational programs to ensure that all stakeholders, including consumers, can fully understand and trust the smart contract processes (Nam and Pieterse, 2019). Makridakis (2020) agreed by noting that this approach will be essential in driving the successful implementation of smart contracts in the South African building insurance sector. In conclusion, Van Eck and Huneberg (2023) noted that continuous engagement with consumers to address their concerns and feedback will be vital in refining these technologies to better meet user needs and expectations.

### **3. RESEARCH METHODOLOGY**

Literature survey as one of key research methods was used to collect data for this paper (Muhammad, Muhammad, and Muhammad, 2008; Roehrs, da Costa, and da Rosa Righi, 2018). A detailed literature review was conducted in order to identify relevant related studies and documents for the study. After completion of the review of the literature, in total fifteen (15) relevant studies, documents and reports supported to write findings of this paper.

### **4. FINDINGS, ANALYSIS AND DISCUSSION**

After analysis of the literature the following main themes and findings emerged from the study and are discussed next in this section of the paper.

#### **4.1. Potential of Smart Contracts in the Building Insurance Sector**

The findings of the literature research confirmed that smart contracts, which are self-executing contracts encoded on blockchain, have the potential to streamline claims processing in South Africa's building insurance sector (Makridakis, 2020; Borselli, 2019). Additionally, Makridakis (2020) indicated that smart contracts can provide benefits such as increased speed, accuracy, and reduced fraud in building insurance. Furthermore, Makridakis (2020) added that blockchain's decentralized nature enhances transparency and security.

## **4.2. Applications of Smart Contracts in Building Insurance**

Analysis of the literature findings shows strong evidence that smart contracts could improve specific aspects of building insurance, particularly in contract management, claims verification, and risk quantification (Borselli, 2019; Shetty, 2022). In addition, Borselli (2019) reported that smart contracts could reduce manual errors and administrative costs highly. This was based on the fact that automation minimizes human intervention and errors (Borselli, 2019; Heerden, Moyo and Pieterse, 2018). However, even though the application of smart contracts can introduce enormous efficiency in the building insurance industry, PricewaterhouseCoopers (2022) expressed deep concern over the legal and regulatory framework that is needed to support the integration of smart contracts. Van Eck and Huneberg (2023) indicated that the absence of clear regulations, particularly in South Africa, remains a significant barrier to full adoption. In conclusion, Van Eck and Huneberg (2023) argued that regulatory uncertainty can hinder technological progress in sectors that are reliant on legacy systems.

## **4.3. Challenges Faced by the Building Insurance Industry**

The study also found out that the main challenges faced by the building insurance industry include: fraud, delays and disputes over claims pay-outs (McKinsey and Company 2019; Savelyev, Abdrakhmanova and Ali, 2019). Additionally, McKinsey and Company (2019) noted that the traditional methods of building insurance claims processing have been criticized for being slow and bureaucratic, often leading to increased operational costs and customer dissatisfaction, which resulted into inefficiencies and delays associated with manual claims assessments. Furthermore, McKinsey and Company (2019) noted that the decentralized and immutable nature of blockchain technology offers a robust solution to eliminate fraud. In conclusion, McKinsey and Company (2019) summed up by noting that smart contracts could significantly reduce fraudulent claims by ensuring the authenticity and traceability of transactions.

## **4.4. Lack of digital literacy and high cost of Smart Contracts**

While there is willingness to adopt smart contracts, Nam (2018) expressed concern regarding the lack of digital literacy and high costs associated with implementing new technologies. Additionally, Nam (2018) suggested that the successful adoption of smart contracts in developing markets like South Africa will also depend on the availability of adequate education and training programs. Furthermore, Heerden (2018) made a recommendation that main stakeholders in the building insurance industry need to work together in order to facilitate the adoption of blockchain technology by offering training, conducting workshops, and advocating for regulatory reforms. Heerden (2018), emphasized the importance of building insurance industry-specific education to enhance trust and understanding of new technologies.

## **5. CONCLUSION AND FURTHER RESEARCH**

The findings of this study underscore the significant potential of smart contracts to streamline building insurance claims in South Africa and elsewhere. Through the automation of building insurance claims processing and improved transparency, smart contracts can address many of

the inefficiencies that currently plague the industry, such as delays, fraud, and disputes over payouts. However, the study also highlights the barriers to widespread adoption, including regulatory uncertainties, technical challenges, and the need for digital literacy among industry professionals.

To move forward, the following recommendations are made:

1. **Regulatory Reform:** Policymakers need to develop a clear legal framework that supports the use of smart contracts in the insurance sector, providing companies with the confidence to invest in blockchain technologies (Huneberg 2023).
2. **Industry Education and Training:** Key building insurance stakeholders should take the lead in offering training programs and workshops to improve digital literacy among building insurance policyholders (Nam 2018; Pennekamp, 2021).
3. **Collaborative Efforts:** Insurers, regulators, and technology providers should work together to establish best practices and standards for implementing smart contracts to ensure interoperability across platforms (McKinsey and Company 2019)

To conclude, this study provides a solid foundation for future research on the impact of smart contracts in the building insurance sector in South Africa and elsewhere. Further investigation is needed into the **cost-benefit analysis** of smart contracts and their long-term implications for **customer satisfaction** and **operational efficiency**. By continuing to explore and develop this innovative technology, South Africa's building insurance sector can be better equipped to meet the needs of its stakeholders in a rapidly evolving digital landscape.

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