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CONSTRUCTION PAYMENT AUTOMATION THROUGH A BIM-BLOCKCHAIN (BIM-Bc) AND SMART CONTRACT FRAMEWORK.

RESEARCH REPORT

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A research report submitted to the Faculty of Engineering and Built Environment, University of the Witwatersrand, in the fulfilment of the requirements for the degree of Master of Science in Building: Project Management in Construction.

Cape Town

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DECLARATION

I declare that this Research Report is my own, unaided work. It is submitted in partial fulfilment of the degree of Bachelor of Science (Masters) in the field of Construction Project Management at the University of the Witwatersrand, Johannesburg.

It has not been submitted before for any degree or examination in any other university.



Michelle Matthews (1798041)

Signed on this 24th day of May 2021.

ABSTRACT

At the onset of a future that will inevitably be *"intelligent"* it is important to understand how innovation in technology and artificial intelligence may facilitate payments throughout the supply chain by integrating stakeholders, activities, and events throughout the project. Payments are the lifeblood of all construction projects together with a steady flow of funds (cash flow) throughout the project, which are essential for project success. Literature reveals that the construction industry is filled with disputes resulting from primary issues namely, late payments and the ambiguity of contractual terms.

The South African construction contract, facilitates payments, through its supply chain by enforcing obligations, terms, and conditions. Due to the fragmentation of the South African construction industry, the management of these manual payment processes is are more complexed and inherently difficult to manage. due to Moreover, payments (or lack thereof) are affected by factors such as lack of clarity in deliverables, specifications, responsibilities, and obligations between the contracting parties. This may lead to payment delays and even non-payment, straining relationships and breaking trust, which ultimately leads to disputes and long legal battles. This research investigates how innovation in technology between BIM, Blockchain and Smart Contracts can be infused into a single application or framework, to elevate the current problems associate with construction payments and disputes, but perhaps more importantly, to attain trust and transparency and to enhance collaboration in a complex, fluid, and highly complexed industry.

KEY WORDS: Smart contract, BIM, Blockchain, Automation, Payments.