



Office of Research, Impact and Postgraduate Studies

presents an **Oral Defence** titled

Exploring Blockchain Technology to Secure Digital Payment Systems

by **Mr Afraaz Mohammed**

Technology is evolving at a rapid rate; computer resources are becoming more affordable which contributes to driving digital transformation. Cyberspace facilitates the interconnection of users, devices and applications. The financial sector utilises this digitisation to offer favourable products and services to their customers. Digital payments allow customers to transfer funds to merchants in exchange for goods and services. Malicious users are prowling cyberspace in search of vulnerabilities to exploit. Therefore, it is of paramount importance that the confidentiality of digital payment systems is preserved and its integrity remains intact.

Blockchain is a peer-to-peer, distributed ledger technology that is safeguarded using cryptography. This research explored the use of blockchain technology to secure digital systems. A prototype was designed and programmed in a virtual environment and transactions using different payment methods were simulated. Cryptographic techniques such as hashing and digital signatures were used to secure the confidentiality and integrity of payment authorisation data. A series of digital payment fraud scenarios were executed against the prototype. The results suggested that these attacks which targeted payment transaction data were mitigated with the use of blockchain technology.

Cyber-attacks on digital payment systems impact customers, merchants and banks as it potentially results in financial loss, data theft, legal consequences and reputational harm. It is therefore imperative that effective security mechanisms are implemented to protect these systems. The purpose of this research is to contribute to raising awareness of using blockchain technology for security and privacy, educating financial institutions, customers and merchants on the importance of good cybersecurity practices when using digital payment systems and contribute to the development of solutions for securing digital payment transactions.



Mr AFRAAZ MOHAMMED holds a degree in Electrical and Computer Engineering majoring in Communication Systems from the University of the West Indies and a Master of Science in Cybersecurity from The University of Trinidad and Tobago.

His work experience includes fifteen (15) years in the field of telecommunications, computer systems and information technology delivering solutions to customers throughout the Caribbean and Latin America. His responsibilities include pre-sales, design, implementation and break/fix technical support for wireless, server, network infrastructure, charging systems, billing and reconciliation software platforms.

During this time, he achieved technical certifications from Microsoft, CISCO, Juniper, Ericsson and ISC2. Throughout his career, security has always been paramount, ensuring that the physical devices and software applications are configured and tested to detect and be safeguarded from nefarious and fraudulent activities.

Thursday 28th November, 2024 at 10:00 a.m.

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