ABSTRACT

The Automated Teller Machine (ATM) security system currently does not seem to guarantee a security system is well protected, because the security system on ATM machines still uses magnetic cards and static Personal Identification Number (PIN). This technology is felt to still have many lacks and lately, there have been many cases of mysterious customer money loss, in this research, a security system will be developed at the ATM machine.

Some of the steps that will be taken in the study which are changing the magnetic card with a smart card and changing the nature of the static PIN to be dynamic. These measures are felt to be able to improve the security system on ATM machines. In developing desktop applications this time using the Java programming language. And to designing an ATM machine using several components including the Raspberry Pi 3B, smart card, smart card reader/writer, keypad number, and monitor LCD. To developing this mobile-based application using a Flutter framework, Flutter is able to develop 2 operating system (OS) Android & iOS in a single codebase. The development of security systems in this study is packaged in the form of applications and utilizing technology from cloud computing.

This authentication system is strengthened by implementing 2-steps authentication and single-session authentication. From the results of 165 respondents stated that the hypothesis of the OTP security system implementation has a positive influence in reducing cyber crimes, improving security, and not reducing the sense of comfort. The result of QoS CSPRNG SHA1 MWC algorithm have a "very good" value with a test value of 16.48 ms transmission delay, 307.767 bit/s throughput, and 0% packet loss. CSPRNG SHA1 MWC becomes a good generator algorithm, where the range limit of the number of the figure is much narrower at 9.97%-10.03%. Mobile devices also have a "very good" value with a test value of 9.20705 ms delay, 2688.0006 bit/s throughput, and 0% packet loss. The average value of availability of 90.078% and reliability 99.962% in the system.

Keywords**:** *Security*, *Smart card*, *Prototype*, *Application*, *OTP PIN, ATM*.