# *ABSTRACT*

*The security system on Automated Teller Machines (ATM) are still vulnerable. They are prone to skimming fraud. This is because the ATMs are using the static magnetic card and Personal Identification Number ( PIN ) system. Skimming techniques still allow to copy of personal data through an ATM card and there have been many cases of mysterious customer money loss.*

*This research designs a system that used to boost the ATM machines security system. This system replaces magnetic card to smart card and changes the PIN from static to dynamic using One Time Password ( OTP ) technology which integrated with Raspberry Pi, smart card, and internet network as a bridge between the server and clients. The OTP PIN will use a random number generator ( RNG ) algorithm to produce a 6 digits single use PIN. The algorithm will be used are math random, PRNG, and Blum Blum Shub. The customers will receive the realtime OTP which sent through the Internet Banking or simple website.*

*Based on QoS measurements on the designed system, the three random number generators on the PRNG have better performance. There is difference 0.0984 on the transmission delay and 1.811 on the throughput. . On performance parameters the Blum-Blum Shub generator based on stochastic has an ideal balance compared to Math. Random and PRNG. The calculation of normalized cross correlation in the Blum-Blum Shub algorithm has a value of 0.0993 lower than PRNG and 0.0873 against Math.Random, so the Blum-Blum Shub algorithm is more feasible to use. The ATM machine prototype system was connected to the server which generated the OTP and customer authentication with packet loss values of 0 percentage. On the measurement of MOS in the parameters of speed, security and usage it has an average selection of 4.0 which means it falls into the "good" category.*

*Keywords : Raspberry Pi, smart card, OTP, ATM, RNG.*