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E- CHEQUE- A NEW TREND in PAPERLESS PAYMENT

Gurjot Kaur[#1] Ruchi Sikka[*2] Ranjit Kaur[#3]

[#1]Assistant Professor, Department of Computer Science, Khalsa College for Women, Ludhiana, Punjab, India
[#1]email: gurjotsidhu192@gmail.com

[*2]Assistant Professor, Department of Computer Science, Khalsa College for Women, Ludhiana, Punjab, India
[*2]email:sikkaruchi81@gmail.com

[#3]Assistant Professor, Department of Computer Science, Khalsa College for Women, Ludhiana, Punjab, India
[#3]email: ranjit75135@gmail.com

Abstract: Recent years have seen a tremendous increase in e-commerce transactions. The success of e-commerce relies on developing adequate payment technologies. One such technology is e-Cheque. An e-Cheque is an electronic document which substitutes the paper check for online transactions. Digital signatures (based on public key cryptography) replace handwritten signatures. The e-Cheque is compatible with interactive web transactions or with email and does not depend on real-time interactions or on third party authorizations. It is designed to work with paper cheque practices and systems, with minimum impact on payers, payees, banks and the financial system.

Keywords: E-Commerce, E-Cheque, Need, Cryptography, Digital Signature, Payer, Payee

I. INTRODUCTION

An electronic check, also referred to as an e-check, is a form of payment made via the internet, or other data network, designed to perform the same function as a conventional paper check. Since the check is in an electronic format, it can be processed in fewer steps. Additionally, it has more security features than standard paper checks including authentication, public key cryptography, digital signatures and encryption, among others.An electronic version or representation of a paper cheque. The account holder writes an e-check (or e-cheque) using a computer or other type of electronic device and transmits the e-cheque to the payee electronically. Like paper cheques, e-checks are signed by the payer and endorsed by the payee. Rather than handwritten or machine-stamped signatures, however, e-checks are affixed with digital signatures, using a combination of smart cards and digital certificates. The payee deposits the e-check, receives credit, and the payee's bank clears the e-check to the paying bank.

The paying bank validates the e-check and then charges the cheque writer's account for the cheque. The minimum security requirements supported by the e-Cheque system are as follows:

A. Confidentiality: keeping information (e.g. e-mail message, payment order, etc) secret.

B. Authentication: knowing and verifying the origin and/or destination of information.

C. Integrity: verifying that the data hasn't been tampered with.

D. Non-repudiation: knowing that the data, once sent cannot be retracted or denied.

II. NEED of E-CHEQUES

1. The ability to conduct bank transactions, yet are safe enough to use on the Internet.
2. E-Cheques contain unlimited, but controlled, information capability.

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3. E- cheques reduce fraud losses for all parties.
4. Automatic verification of content and validity.
5. Traditional checking features such as stop payments and easy reconciliation.

BENEFITS of E-CHEQUES

1. E-Cheques are well suited for clearing micro payments. Conventional cryptography of e-cheques makes them easier to process than systems based on public key cryptography.
2. They can serve corporate markets. Firms can use them in more cost-effective manner.
3. They create float and the availability of float is an important requirement of Commerce.

IV. ADVANTAGES of E-CHEQUES

1. The conversion is absolutely electronic and the process includes electronic scanning to money transfer. So, there is very less amount of human intervention in this process which results in reduced processing fee.
2. Conversion is very easy and all it requires is scanning of physical cheque and all the details would be read.
3. The laws and regulations related to e-cheques are absolutely similar to that of paper ones and those of electronic money transfers. This makes this method a secured and safe one.
4. While the software employed for this system are highly advanced and leading ones, it also results in lesser usage of physical resources that are consumed for transfers of paper cheques to make funds transfers.
5. Since Electronic cheques use conventional encryption than Public and private keys as in e-Cash, Electronic cheques are much faster.

V. DISADVANTAGES of E -CHEQUES

1. E-cheques can be processed and accessed using specific equipments that ask for investments from financial institutions who offer this system. The investment would directly depend on the size of institution.
2. The concept of maintaining a database of spent notes is very expensive.
3. Accessing Database of spent notes is also very time consuming.
4. Since the transactions are dependent on networking, any fault in it will delay the transfer. This means that for successful

transfer to take place, the system has to be working all the time.

5. Currency fluctuation is another issue related to e-Cash.

VI. E-CHEQUE SECURITY

1. The payer is required to pass through Two Factor Authentication (2FA) before issuing an e-Cheque.
2. The e-Cheque issuance record kept by the paying bank provides an additional channel for the bank to verify the e-Cheques.
3. Adoption of Public Key Infrastructure (PKI) technology in the digital signature of e-Cheque prevents e-Cheque tampering Centralized presentment checking mechanism avoids multiple deposits of e-Cheques.
4. The payer may consider encrypting an e-Cheque before delivery to further improve security.

VII. To ISSUE an E-CHEQUE

I. Before issuance of e-Cheque

1. Sign up for the e-Cheque service through your Internet banking account and apply for a digital certificate for the purpose of e-Cheque signing.
2. Obtain the payee's agreement and the latest email address for receiving e-Cheques.
3. Some paying banks may offer to apply, renew and keep custody of the digital certificate on behalf of the payers. The application and renewal can be completed online in a short period of time.

II. Issuance of e-Cheque

1. Log onto your Internet banking account.

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2. Select e-Cheque Issuance service.
3. Input the payee name, cheque date and cheque amount in figures.
4. The bank will generate the e-Cheque with the digital signature based on the payer's given instruction.
5. Download and send the e-Cheque to the payee through electronic means (e.g. by email).Some paying banks may send a SMS notification to the registered mobile

number of the payer after an e-Cheque is issued.

III. Deposit of e-Cheque through your bank

1. Log onto your Internet banking account.
2. Select e-Cheque Deposit service.
3. Choose the deposit account and upload the e-Cheques that you have received.

The deposit procedures of different banks may vary.

IV. Deposit of e-Cheque through the e-Cheque Drop Box service

1. Log onto the e-Cheque Drop Box servicethroughitswebsite http://www.echeque.hkicl.com.hk or mobile application.
2. Register the bank and bank account number for the e-Cheque deposit.
3. Upload the e-Cheque.
4. Select from the pull down list for the bank and bank account number for the e-Cheque deposit.
5. Assuming that the bank-in information is correct, click "Proceed" button followed by "Confirm" button to complete the e-Cheque deposit.
6. A notification email will be sent to the user's registered email address. The user can also enquire the e-Cheque status through the "Presentment Enquiry" function of the e-Cheque Drop Box service.

VIII. WORKING of E-CHEQUES

E-Cheques work the same way as the paper cheque. E-Cheques are defined using FSML (Financial servicesmarkup language) which allows for addition and deletion of document blocks, signing, co-signing etc. Signatures are accompanied by bank issued certificates which tie the signer's key to a bank account. The E-Cheque is compatible with interactive web transactions or with email and does not depend on real time interactions or on third party authorizations. It is designed to work with paper cheque practices and systems with minimum impact on payers, payees, banks and the financial system.

1. Buyer (payer) and Seller(Payee) can be individual, businesses or financial institution such as banks.E-Cheques are transferred directly from the payer to the payee so that the timing and the purpose of the payment are clear to the payee.
2. After selecting goods, buyer writes an e-cheque by structuring an electronic document with the information legally required to be in a cheque and digitally sign it and then transfer it to the seller server.
3. The seller receives the e-cheque over email or web and transfer e cheques to the sellers bank for verification of digital signature, write out a deposit and digitally signs it.
4. The payee's bank verifies the payer's and payee's digital signatures, and then forwards the cheque for clearing and settlement.
5. The payer's bank verifies the payer's digital signature and debits the payer's account.

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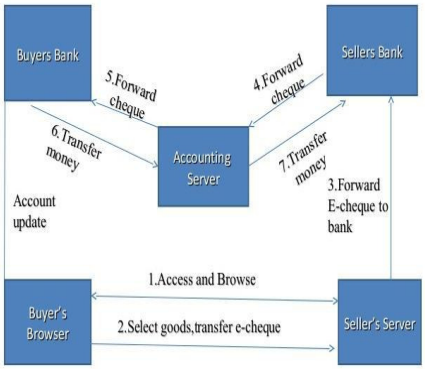

Fig1: Working of E- Cheques

IX. PAYER PROCESS

1. To send a cheque, the client simply fills out an e-cheque. The system allows clients to define common payees in order to spend e-cheques creation process.

3. When the cheque has been written it can be easily transferred from the payer to the payee over a secure e-cheque channel.his secure channel will be established between the payer and the payee before the transaction begins.

4. The e-cheque is automatically signed by the user using his private key based on RSA algorithm and SHA-128. This ensures the authenticity and the integrity of the e-cheque.

X. PAYEE PROCESS

1. When the payee receives the e-cheque he can open and view it using the e-cheque system.

2. In order to deposit cheque, the payee simply connects to the bank and uploads the e-cheque to his bank account.

3. Once the bank receives the e-cheque, it will decrypt it using the e-cheque system.

4. After clearing (i.e. verifying both the cheque signature and account balance) with the payer's bank, the payee's account will be credited accordingly.

XI. CONCLUSION

E-Cheques will lead the way to an Electronic Commerce environment for businesses and consumers. The banks are providing the leadership and banks are controlling the process. The banks are evolving the payments mechanism. E-Cheques will succeed because E-Chequesmeet real business needs and is based on the paper check – the most popular non-cash payment choice, and a core competency of banks.The electronic cheques are modeled on paper checks, except that they are initiated electronically. They use digital signatures for signing and endorsing and require the use of digital certificates to authenticate the payer, the payer's bank and bank account. They are delivered either by direct transmission using telephone lines or by public networks such as the Internet.The Indian law appears to be strong on the other legal aspects of defining the presentation of truncated cheques and the protection for the collecting and paying bankers. It may one day be possible for payees to accept cheques just as credit cards and debit cards are accepted today. Even point-of-sale terminals – now being used for other applications - may possibly be image-enabled, so that truncated cheques may be viewed.Another drawback of this concept is that due regard has not been given to those customers who are not conversant with the online transactions of the cheques. The provision has been introduced to bring convenience to the customers and faster working of the banking system.It is therefore suggested that, some kind of training program should

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also be conducted so that every kind of customer is able to take maximum advantage of any such development so that it appeals to the masses as a whole.

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BIOGRAPHY

Ms. Gurjot Kaur[*1]

Qualification:

- Bachelor of Computer Applications under PU, Chandigarh
- Masters of Science –Information Technology, PU Chandigarh

Designation: Assistant Professor,

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Department of Computer Science,
Khalsa College for Women, Ludhiana
Publications:05
Areas of interest: Computer Graphics, AI, Multimedia, Web Technology

Mrs. Ruchi Sikka[#2]
Qualification:

- Masters of Computer Applications under LPU, Phagwara, Punjab

Designation: Assistant Professor,
Department of Computer Science,
Khalsa College for Women, Ludhiana
Publications:10
Areas of interest: AI, Neural Networks, Multimedia, Web Technology

Ms. Ranjit Kaur[#3]
Qualification:

- Bachelor of Computer Applications under PU, Chandigarh
- Masters of Computer Applications under PAU, Ludhiana, Punjab

Designation: Assistant Professor,
Department of Computer Science,
Khalsa College for Women, Ludhiana
Publications:07
Areas of interest: Cloud Computing,Web Technology, Digital Marketing, AI