



# **iJRASET**

International Journal For Research in  
Applied Science and Engineering Technology



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# **INTERNATIONAL JOURNAL FOR RESEARCH**

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

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**Volume: 8**

**Issue: III**

**Month of publication: March 2020**

**DOI:**

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# Hybrid Authentication System (using OTP and QR Code)

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**Abstract:** As we know internet users are drastically increasing across the world, high speed internet along with cheap tariffs has made it easy for the people to use various online services provided by online shopping sites, banks, school/colleges, utility bills, money payment transfers.

The existing systems are exposed to dangers of hacking methods like phishing and pharming, along with fear of snatching ID and password of the user, many techniques have been developed recently that help securing transactions over unsecured network, like mandatory use of auto generating passwords, but this technique is not much reliable for the end user.

To provide a more secure and reliable channel of transaction we propose to implement security on transactions by using both OTP (One Time Password) along with QR code (Quick Response Code). In this project we will use a powerful tool of encoding options in QR code and a simultaneous use of OTP based acknowledge system sent to the user's mobile for the final verification of transaction.

The presented system will be more useful and convenient for hand held devices than the desktop systems.

**Keywords:** QR codes, OTP

## I. INTRODUCTION

### A. Motivation

In a traditional system of signature mechanism, the user who applies a signature has control over the signature methodology used, but this does not hold true for electronic signatures here the user is dependable on the customer which cannot always be trusted, a malicious code or a hacker could change the data of the user which can be prevented by using OTP and QR code.

In any security system the main functionality of it is to control the accessibility of people to and from a protected areas, such as buildings, national borders or information systems. Studies conducted on human brain have revealed that it is better at recognising and recalling graphical patterns than text, computer security systems should also factor in this knowledge and be developed in such a way that they are easily accessible as well as easy to use. Current security systems suffer because they do not place importance to human factors in security.

An ideal security system is

- 1) Secure
- 2) Reliable
- 3) Reusable
- 4) Considers human factors.

A Password can be best described as a secret that is shared by the customer and the verifier, they are provided by the user on the request of the system, they are basically encrypted and stored on the server so that in an event of a hack the passwords list is not revealed. Passwords are the most common form of authentication processes implemented by every security system, but passwords have one great disadvantage where a strong password is hard to remember and a weak password is vulnerable to brute force attacks and dictionary attacks.

To avoid theft or hacks authentication systems are employed which can be broadly classified into three types:

- a) Token based
- b) Biometric based
- c) Knowledge based

Here for our study we will focus on knowledge based authentication system, this system is most widely used authentication technique which includes both text as well as picture based passwords.

### *B. Objective*

To provide a secure and reliable channel of transaction we propose to implement security on transactions by using both OTP ( One Time Password) along with QR code(Quick Response Code).

QR Code is a 2D matrix Bar Code in which information is stored in horizontal as well as vertical dimensions, they can hold a large amount of data in significantly smaller space and has faster response time and can also perform error-correction at higher speed.

QR Code is versatile and finds its application in various fields such as online banking system, attendance management, security applications such as cryptography and steganography. Secure authentication, is achieved using data-hiding algorithms with the embedded QR Code.

In today's world mobile phone have become an indispensable part of way of life, no longer only serving as a communication tool. Mobile phones became an indivisible companion for several users, serving way more than simply communication tools. In developing countries, the number of mobile users exceeds that of people

having bank accounts, low banking service penetration and large number of migrants helps in utilizing mobile phone as a tool for easy access to money for payment functions. Therefore, mobile payment might succeed in targeting customers far quickly in developing countries. There are lots of variables associated with Mobile Payments which we cover in our project.

### *C. Proposed System*

In our proposed system we will use OTP and QR code. A QR code consisting of a private key will be generated that will be shared between client and server, along with it an OTP will be encrypted inside this QR-code to be used for authentication purposes by an authorized user only.

## **II. CONCLUSION**

This project aims to implement all findings during the research process to all possible use of QR codes for authentication purpose to provide security.

In many places QR code is in commercial transactions

This paper concludes that there are so many possibilities for QR Code's use in different areas for authentication and to provide security and lot more are yet to be explored. In many countries, QR codes are used in most of the commercial, essentially, QR codes are most convenient way to add the virtual to the physical to provide useful context to the transaction.

They are easy to use and cheap technology to use making it ideal for use in various fields and across various applications. Money transactions which involve high security risks are made highly protected using QR code and OTP which makes authentication process easier.





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