

# QR Code Tracker to Magnify Business Intelligence in Real Estate Marketing Deployed with Cloud Computing with SMs

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DOI: 10.5281/zenodo.7271075

## ABSTRACT

QR codes aren't really a brand-new idea. This box and cylinder embedded technology by Denis Wave was initially used as a means of tracking. Businesses across all industries, on the other hand, are coming up with creative and useful applications for them. (July 16, 2021, De Grayer) digital advertising, marketing, and interacting with affiliated audiences are among the most popular. In an otherwise saturated business, using QR codes for your real estate information might help you stand out. It may especially assist you in increasing prospect engagement and generating more leads. A QR code is a handy, very adaptable graphic that can be scanned and used in a variety of ways. It makes it simple to provide consumers more information than can fit on a single sheet of paper. It also shows how to effectively transfer offline conversations Online, whether by phone, email, text, or a website.

Various organizations have begun to employ two-dimensional bar codes, also called QR (quick response) code, to encode information, like that URLs that can be recited by devices, arithmetical tablets, and other electronic devices in recent years. In this codes might be used to elicit a customer response or a certain activity. Their major advantage is that they relieve smartphone users of the tiresome effort of inputting and searching for information.

Henceforth fluctuation in prices with old and upcoming can be store with this code for comparison easily which will be a great assist for price predictors. Instead of textual this graphical representation easily accessed via mobile aperture rather than a special textual readers. Landing maps of various societies store with in this QR code to understand the development and exact status of the development in societies with implementation of this QR code, less interaction with the paper work for flyers, brochures and hardcore but personal devices may access these codes via one scan and detect of web page automatically. Even quickly share in groups and at personal devices.

Consequently, if QR code generated at WhatsApp for direct contact to designated generate message at user side. Engraved QR codes at the files with various dynamic colors at the files of lands data to maintain and fetching back the prescribed data increase the access of information and ensures the corruption free liabilities maintaining separate databases with SQL injections and subcategories the data for the clients and administrative to rehearse at advance.

**Keywords:** Embedded Technology, Tracking Affiliated Audience, Encode Information, URLs, Arithmetical Tablets, Predictors, Aperture, Implementation, QR Codes, Marketing, Fetch, Access, Corruption.

**Cite as:** Amrah Maqbool (2022). QR Code Tracker to Magnify Business Intelligence in Real Estate Marketing Deployed with Cloud Computing with SMs. *LC International Journal of STEM* (ISSN: 2708-7123), 3(3), 12–26. <https://doi.org/10.5281/zenodo.7271075>

## INTRODUCTION

QR codes aren't really a brand-new idea. This box and cylinder embedded technology by Denis Wave was initially used as a means of tracking. Businesses across all industries, on the other hand, are coming up with creative and useful applications for them. (July 16, 2021, De Grayer) digital advertising, marketing, and interacting with affiliated audiences are among the most popular. In an otherwise saturated business, using QR codes for your real estate information might help you stand out. It may especially assist you in increasing prospect engagement and generating more leads. A QR code is a handy, very adaptable graphic that can be scanned and used in a variety of ways. It makes it simple to provide consumers more information than can fit on a single sheet of paper. It also shows how to effectively transfer offline conversations Online, whether by phone, email, text, or a website.

Various organizations have begun to employ two-dimensional bar codes, also called QR (quick response) code, to encode information, like that URLs that can be recited by devices, arithmetical tablets, and other electronic devices in recent years. In this codes might be used to elicit a customer response or a certain activity. Their major advantage is that they relieve smartphone users of the tiresome effort of inputting and searching for information.

Henceforth fluctuation in prices with old and upcoming can be store with this code for comparison easily which will be a great assist for price predictors. Instead of textual this graphical representation easily accessed via mobile aperture rather than a special textual readers. Landing maps of various societies store with in this QR code to understand the development and exact. With implementation of this QR code no need to interact with the paper work for flyers, brochures and hardcore but personal devices may access these codes via one scan and detect of web page. Even quickly share in groups and in personal.

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wing user intent toward technology taking and approval is critical to considerate QR code advertising achievement. In order for an innovative technology to be adopted, it must be viewed as beneficial and simple to use. Researchers in the fields of business and communiqué have long been interested in the undercurrents of technological taking.

QR codes are interactive technologies that may be used in conjunction with social media and entertaining on the internet. Entertaining videos, for example, can be connected to QR codes that the user can portion with their friends. Random prizes can be integrated in a video game application and unlocked by players using QR codes. The interactive elements of QR codes that link users, according to Shin, Jung, and Change, have a substantial favorable influence on purpose to use. This conclusion suggests that QR codes are viewed not just as a means of business, but also as a common forum for people to access.

### Methodology of QR Tracker in Real Estate

Thanks to online QR code generators, creating your own QR code(s) is surprisingly straightforward. The nicest thing is that they're almost always free to use.

Most online QR code producers just need you to input your email address, choose the sort of destination for your code (such as a website, phone number, or SMS), and then enter the data for the destination (such as the specific URL, number or SMS message).

Some allow you to change the color or form of the QR code to make it seem different.

Shopify, QR Code Monkey, and QR Code Generator all have free QR code generators that we enjoy.

Appreciation to whatsapp (social media app) creates QR codes automatically by just one click which can be shared at any platform with person name. These whatsapp generated QR codes privately detect by whatsapp. Other than WR codes which are created on outsourced applications/ web denied to detect with error generated as “ unknown QR code detected” with null output at user end.



Fig 2: Contact Sharing for Data and Information

### Static and Dynamic QR codes:

Another thing to consider when developing a QR code is whether you want it to be static or dynamic. The destination of a static QR code cannot be changed. That is, if you generate a static QR code that links to your website, you won't be able to update it to link to your Instagram account.

You may change the destination of a dynamic QR code. This is useful if you don't want thousands of separate QR codes for each new listing or real estate landing page, for example. Many dynamic QR code generators also include analytics, which may be quite useful when attempting to figure out how potential leads engage with your codes.

QR Code Management and UQR are two examples of dynamic QR code generators that charge a monthly subscription. The QR Code Generator delivers free dynamic QR codes if you have a Google account.

### QR Codes On for Sale Signs



**Fig 3: Sign in process for Data Information Real Estate**

The ultimate purpose of QR codes is to create a seamless link between the real and digital worlds. They provide consumers with a method to access more information without having to ask for it or look for it. As a result, a yard 'For Sale' sign is a great place to start experimenting with QR codes in your real estate firm.

When someone sees the sign and is interested in knowing more, they usually take down the name of the real estate agent or firm and remember to check it up online when they get home (May 2, 2020 by Sam radial). The difficult thing is remembering. People have a tendency to forget. Every individual who forgets is a prospective lead that has been lost.

Make use of QR codes. If the for Sale sign included a visible QR code, an inquisitive visitor could scan it to get information on the house right then and there, without having to go home and Google it. Customize available plots file availability information sharing via one card with QR code affix attached on business card maximize the sharing and leads and rectified the paper dumb sharing things. "Once recorded and unlimited information sharing".



**Fig 4: Sharing customized information with client**

### Website & Landing Page Develop

A destination for your QR code will be required. For the QR code, we propose a specific landing page. So, if you have separate property landing pages, send your QR code to each one. If you don't have a landing page builder, Easy Agent Pro has a helpful post that breaks down the top landing page builders for real estate. Ownership of property/ file and assets by trustworthy contracts can be share confidential information easily without any prior acknowledgement. Regular reports on status of banking and financial transactions easily held without human services. Machine sharing in reverse engineering adopted to maximize the successful models.

### Website Analytics

This is, without a doubt, one of the most crucial parts of this marketing strategy. Beyond simple statistics, you'll need a mechanism to track folks who use your QR code. You must the information in order to send retargeting advertisements to QR code users. Add Google Analytics to your site if you haven't already. To begin tracking all users of your QR codes, you'll need this tool. Leaps and bounds easily caught including rebates tracking in Real Estate for Marketing which owns marketize quota.



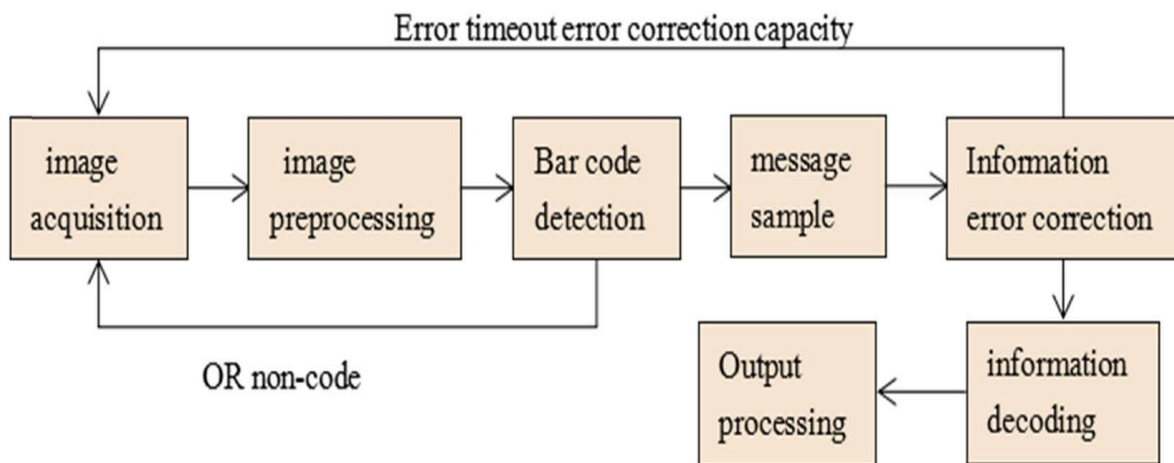
**Fig 5: Tracking and unified Rebate Rates for Realtors/ Dealers**



## Experiments and Results

### Investigation of QR code gratitude process:

Because the info in the QR code is warehoused in a matrix, it is classified as a medium two-dimensional barcode, which is made up of conventional analytical graphics modules like circles, squares, and hexagons. The furthestmost easy and effective way to deliver information via camera is through graphics. Though, using camera-based interpretation approaches to extract information from a QR code picture can result in uneven lighting and image distortion, which will result in the QR code image being incorrectly interpreted or information being lost.

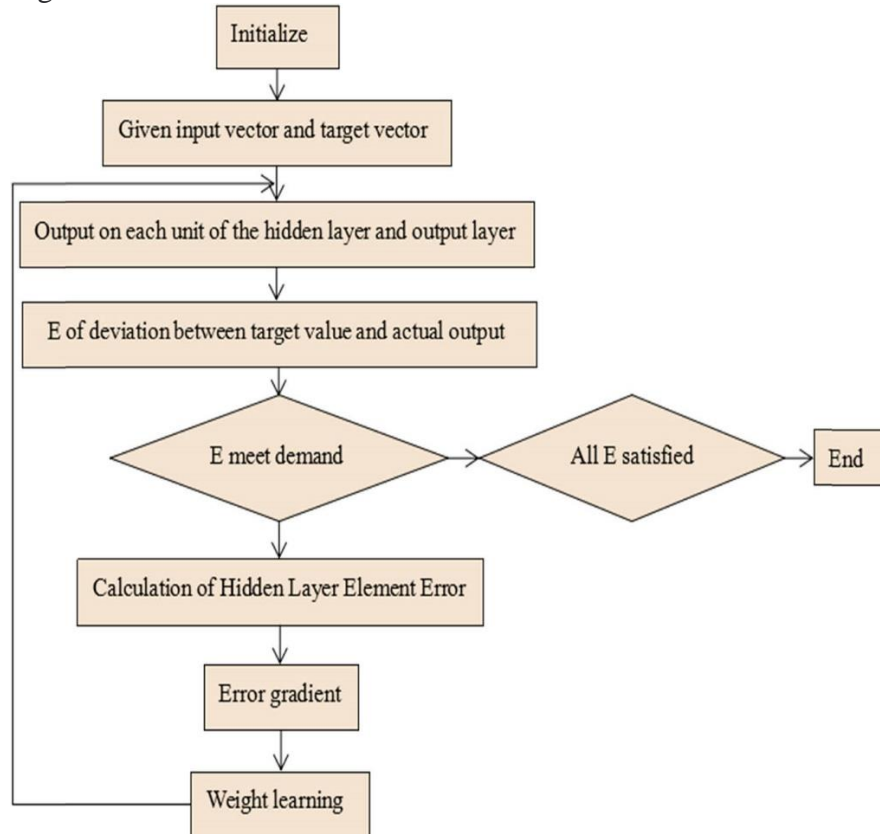


**Fig 6: Data Recognize process steps:**

### Algorithm flow for Client & Server:

1. Initialization: During the network initialization phase, a sequence of parameters in the neural network are produced at random.
2. Determine the neural network's learning sample, the sample's expected output, and the specified excitation function.
3. Understand how to use the neural network to calculate the real output.
4. The joining weight and inception between separately nodes are rectified based on the global and local errors of each layer.
5. For learning, endure to enter examples and repeat the above-mentioned actions. The learning process is completed after the mistake satisfies the conditions.
6. Whenever damaged/ corrupted QR code detected exception will be thrown at backend with outcome, Generate new QR code.
7. For bulk of information a unique QR code will be generated at developer side to keep it safe at server side.

The definite algorithm flow chart is shown:



**Fig 7: Algorithm's based data analysis in QR**

### Experimental data group:

The experimental results are Show

Table 1: Results of Data

Description	Processing Of Data Samples	Illegible	read	Rate of Literacy (%)	Literacy rate Increased (%)
Direct interpretation	300	209	91	69.7	0
Projected algorithm dispensation	300	251	49	83.7	14

The analysis rate of QR image codes increases by 14% after dispensation by the scheme algorithm described in this research, and the processed pictures are not documented by current reading software, demonstrating the efficacy of the method provided in this paper. Security and application aspects in additional fields may be investigated in future study [35, 36, 37, 38, and 39]. Issues with image improvements, as well as robustness, may be examined in greater depth for QR codes, just as they do for photos.

## Objective

Applications in Real Estate:

Consider where a potential consumer is most likely to scan a QR code for information when deciding where to place it for the most impact on your business.

The following are some of the greatest places to put your QR code:

- yard signs
- postcards
- property flyers

**Potential customers are most likely to scan these three sites. They'll be curious to find out more about the property. In addition, a QR code may be obtained in the following locations:**

- Business cards
- Clients events
- Open house signs
- Educational seminars
- Meeting plans
- Payment schedules
- Customized Real Estate Own
- Customized Real Estate Rebate
- MLS creation with pre Foreclosure Process to increase business revenues

## How to successfully create a QR Code

A few items are required to get started with QR codes as a business practice:

- QR code producer
- Analytics Develop on your websites
- Website & landing page manufacturer.
- With 3 lines of code to import QR code package

## QR Code Generator

This is the tool you'll need to create the QR code. You can just Google "QR code generator" and a slew of websites will do it for you for free. Here's a list of three free QR code generators to get you started quickly:

- <https://www.qr-code-generator.com/>
- <https://www.qrcode-monkey.com/>
- <https://www.beaconstac.com/qr-code-generator>
- <https://apps.apple.com/pk/app/qr-code-reader/id1200318119>

Therefore Landing website gives option to users/ developers/ engineers and stakeholders to generate QR code at front end to generate with customized information by right click with rapid access. Application which generate QR codes keep the history of generated QR codes embedded information in order to increase the visibility to developer in development track.



## LITERATURE REVIEW

### Background Theory

#### Previous Studies

This sub-chapter describes relevant, comprehensive and updated past studies (Scopus/WoS), related to the topic, as well as summarizes the past studies of what seems to be consensus, settled, and what remains a puzzle that support the research.

#### Conceptual Framework (optional)

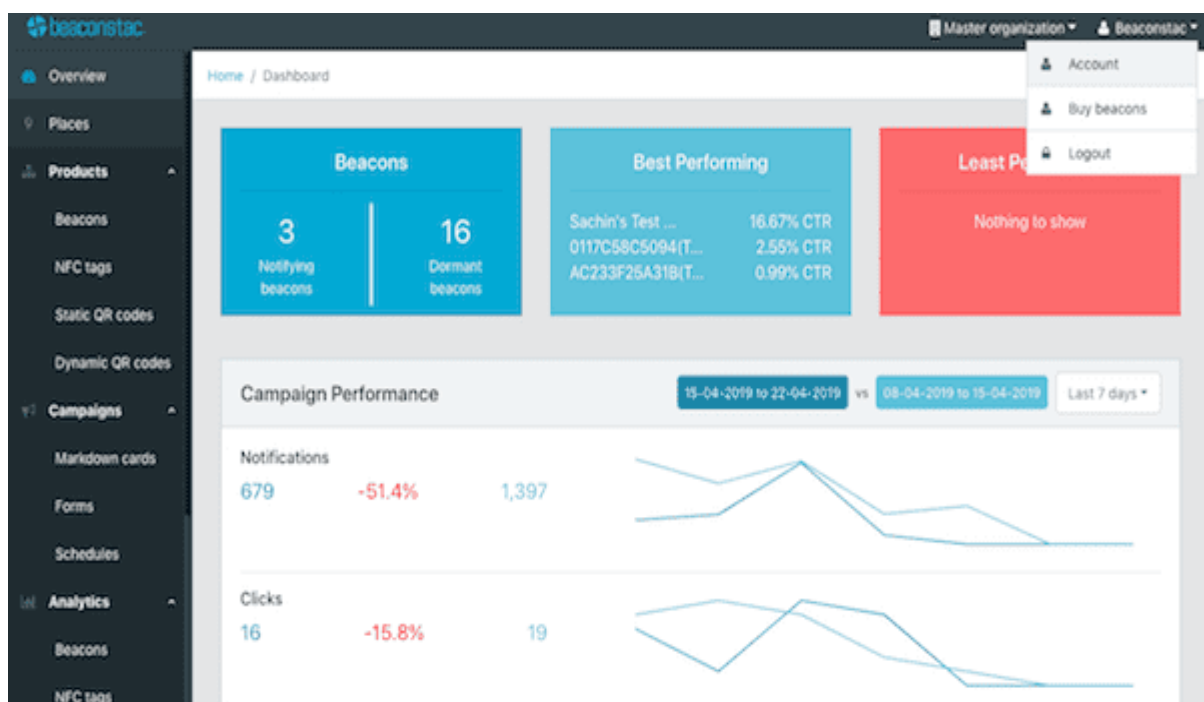
This section consists of illustration and description of the conceptual framework to answer the research questions.

## METHODOLOGY

### Data

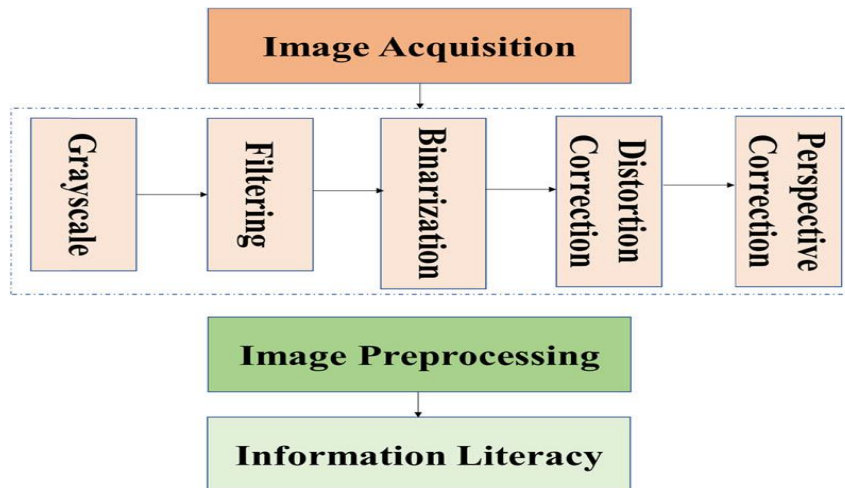
#### Experimental data group:

To produce the QR sample picture set in this Research section, the QR code image is first busy using the mobile phone camera meaning, and then the normal QR code image is exposed to distortion reproduction. The following diagram depicts the experiment's steps:



**Fig 8: Analysis of Data Conventional**

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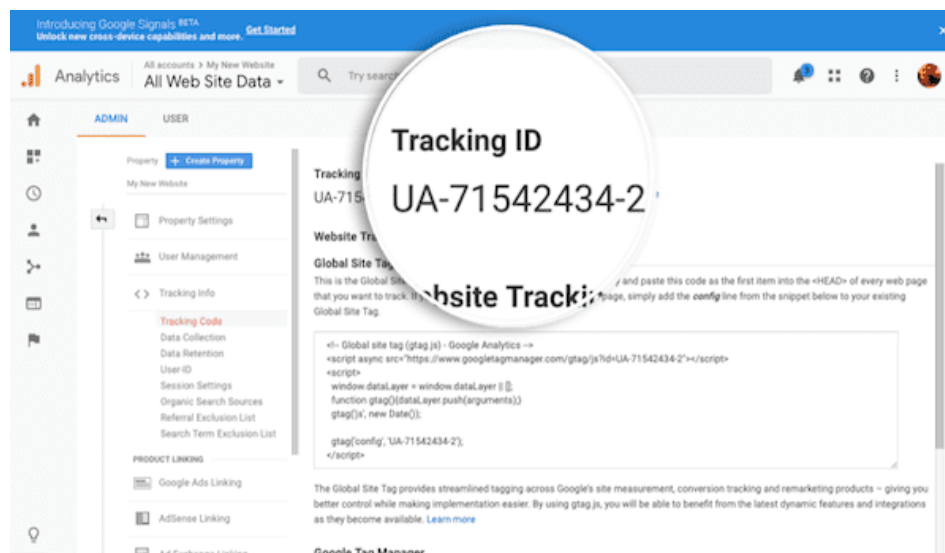


**Fig 9: Data Segments collection**

Create Real Estate Property for clients:

- STEP 1: Generate a Google Analytics account and log in.
- STEP 2: In your Analytics description, create a property.
- Go to Admin and create a new property from the drop-down menu.

When you're finished, click 'Get Tracking ID.'



**Fig 10: Fetching the Unique ID from Platform**

- STEP 3: In your Beaconstac account, paste the Google Analytics code.
- Select 'Account'.

- On the Beaconstac control panel,
- Click on own Account Domains.
- You'll notice metrics like these on your Google Admin panel.
- Click 'Save' after entering your Tracking ID under GA Code.

Analysis of new results:

The following procedures were taken to validate the efficiency of the algorithm described in this article:

- Choosing numerous QR code pictures and reading the information with QR code reading software on a mobile phone.
- This technique does an investigation of the statistical credit rate for a QR code picture that cannot be recite.
- Reading the produced picture with QR code reading software on a mobile phone and analyzing the statistical appreciation rate.

### Model Development

The goal of this study was to figure out what characteristics influenced consumer populations' adoption of QR codes. We also discovered that persons with more technological gadgets were more likely to use QR codes. Surprisingly, QR code usage has no statistically significant association with current electronic device expertise or perceived benefits.

The presence of electronic devices (other than smartphones) projected that QR codes will be used more often. One of the most powerful indications of curiosity and familiarity with new technologies is the electronic possession component of buyer innovativeness. Another surprising discovery is the lack of correlation between current gadget possession and QR code usage. Millennials, contrary to popular assumption, are more inclined to buy rather than rent a home. With the shifting demographics of our customers, we need to change how we communicate with them. Using QR codes, some of the greatest real estate firms have nailed it.

### Method

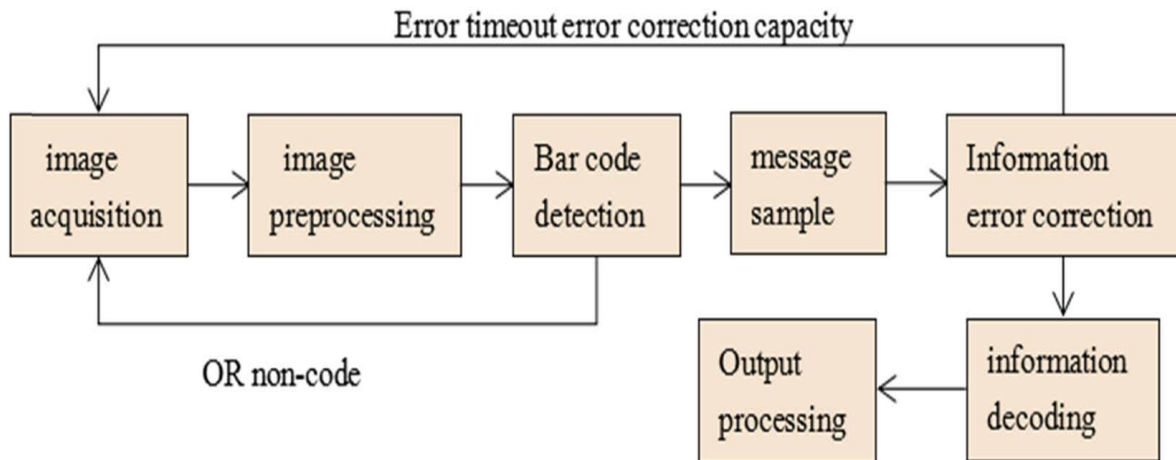
This section consists of explanation of the method(s) used, and why it is (they are) used. Why not other methods. Refer to the original references of the inventor of the method first, then refer to others, such as journals and/or international textbook.

## DATA ANALYSIS AND RESULTS

### Results

#### Investigation of QR code gratitude process:

Because the info in the QR code is warehoused in a matrix, it is classified as a medium two-dimensional barcode, which is made up of conventional analytical graphics modules like circles, squares, and hexagons. The furthestmost easy and effective way to deliver information via camera is through graphics. Though, using camera-based interpretation approaches to extract information from a QR code picture can result in uneven lighting and image distortion, which will result in the QR code image being incorrectly interpreted or information being lost.



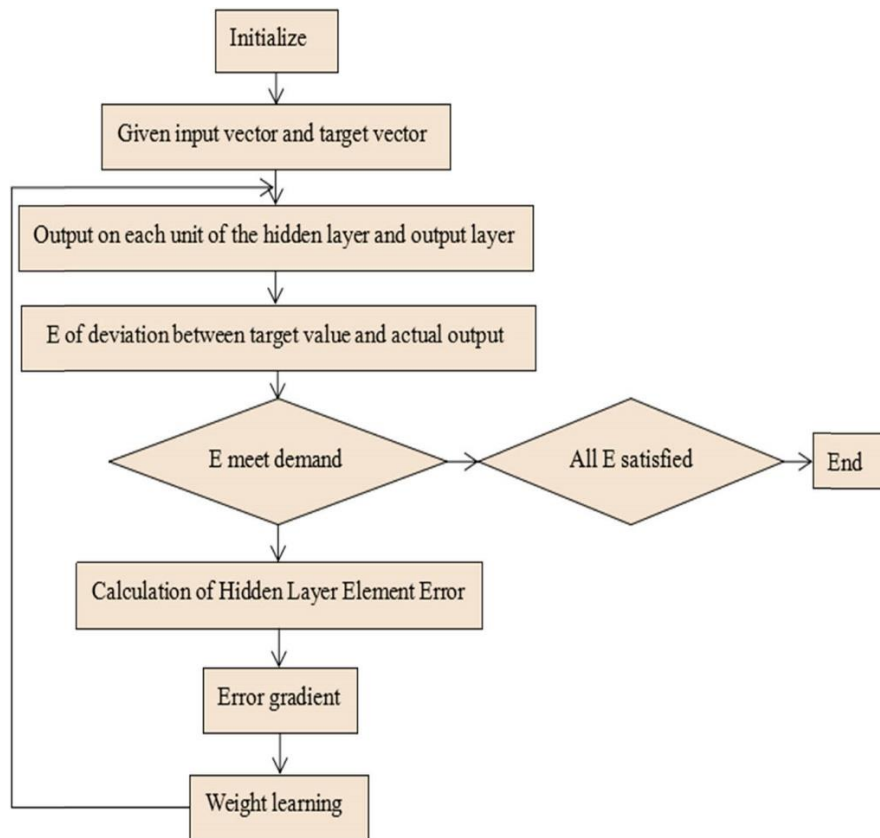
**Fig 11: Data Recognize process steps**

### Robustness Test

#### Algorithm flow for Client & Server:

8. Initialization: During the network initialization phase, a sequence of parameters in the neural network are produced at random.
9. Determine the neural network's learning sample, the sample's expected output, and the specified excitation function.
10. Understand how to use the neural network to calculate the real output.
11. The joining weight and inception between separately nodes are rectified based on the global and local errors of each layer.
12. For learning, endure to enter examples and repeat the above-mentioned actions. The learning process is completed after the mistake satisfies the conditions.
13. Whenever damaged/ corrupted QR code detected exception will be thrown at backend with outcome, Generate new QR code.
14. For bulk of information a unique QR code will be generated at developer side to keep it safe at server side.

The definite algorithm flow chart is shown:



**Fig 12: Algorithm's based data analysis in QR**

This section consists of presentation of all the results in tables, graphs, etc. and the description of those numbers and figures.

### Analysis

This section consists of critical discussion on the findings, explanation of the novelty of the results of the study, justifications of the results, and discussions how do the results differ or equate to other related studies.



## CONCLUSION AND RECOMMENDATIONS

### Conclusion

The detection of QR codes that are more harshly deformed, particularly those published on wrinkle-prone material. In this instance, the QR code detection rate is extremely low or non-existent. The usage of QR codes in trademarks will undoubtedly become a big development trend, since they are a fantastic two-dimensional code. As a consequence, improving the QR code's recognition accuracy in particular situations is critical, and improving the recognition rate can also help to expand the use of QR codes.

According to the study, 50% of buyers locate their houses on the internet, and 79 percent of purchasers get thorough information about properties for sale on the internet. Digital marketing and real estate technologies are becoming increasingly important to real estate brokers and realtors. Real estate QR codes have shown to be an effective catalyst for merging technology and other marketing activities. Realtors are increasingly incorporating QR Codes into their marketing efforts in order to increase client involvement.

### Recommendation

The goal of this study was to figure out what characteristics influenced consumer populations' adoption of QR codes. We also discovered that persons with more technological gadgets were more likely to use QR codes. Surprisingly, QR code usage has no statistically significant association with current electronic device expertise or perceived benefits.

The presence of electronic devices (other than smartphones) projected that QR codes will be used more often. One of the most powerful indications of curiosity and familiarity with new technologies is the electronic possession component of buyer innovativeness. Another surprising discovery is the lack of correlation between current gadget possession and QR code usage. Millennials, contrary to popular assumption, are more inclined to buy rather than rent a home. With the shifting demographics of our customers, we need to change how we communicate with them. Using QR codes, some of the greatest real estate firms have nailed it.

## ACKNOWLEDGMENT

Should be brief, mention people directly involved with the research project (i.e. advisors, sponsors, funding agencies, colleagues, technicians or statistical helper who have supported your work).

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