

## **Data Analysis on the Customer e-Feedback and Dispatch to All Level of Hierarchical Structures**

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**Abstract:** A government or non-governmental organization give service to their customer. Each organization have different hierarch levels. Service satisfaction surveys have become an important tool for government planners as important in the perceived quality of service lead to great delivery of public service. When a customer gives feedback at a bottom level of organization, it is so difficult reach to higher official in time. This study argue that, Quick Response (QR) code open up the possibility of conducting public service satisfaction at lower cost and the way feedback is directly routed to the relevant party according to their hierarchical level and gate real time feedback using specific smart phone application.

**Key words:** Data analysis, e-Feedback, e-Government, QR code, possibility, service

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### **INTRODUCTION**

The rapid development of information technology became pervasive in our daily life. The number of smartphone users is forecast to grow from 2.1 billion in 2016 to around 2.5 billion in 2019 with smartphone penetration rates increase as well (Anonymous, 2017). This help to provide opportunity and possibility for both government or private organization and citizens or customers to forward easily their sentiment about the service they gained from those organization.

Improvements in the delivery of public services contribute greatly to good governance for the achievement of country development goals. Country program inspires public servants all over the world to work towards perfecting their approaches, methodologies, practices, systems and processes, in the delivery of public services (United Nations Publications, 2014).

For many years, e-Government has had an uneven and heterogeneous development. On one side, some agencies were heavily technological, offering online services while others-the majority-had weak technology and thus, poor online services were provided to citizens. The poor online services provided to citizen, they had to visit offices to access services, incurring sometimes high costs and a lot of time in the process on acquiring services (Anonymous, 2014).

While countries e-Government projects had individually achieved significant improvements in the quality of public services information systems became more complex as each government agency widened the

scope of delivery of public services, thus, creating many problems for the government both internally and externally. Citizens experienced inconvenience as the public services delivered to them is poor and they do not have a way to report to the whole-of-government. For instance with over 40 central government ministries and administrations, 246 local governments and thousands of public agencies, this presented a complex to the whole of government when citizens would like their feedback of public services may produce a great citizens satisfaction, then reduce complexity in terms of transparency, accountability, adaptability and compatibility in internal management as well as citizen services (United Nations Publications, 2014).

Public satisfaction surveys have become an important tool for government planners as improvements in the perceived quality of service lead to greater delivery of public service. As most customers carry their smartphones when visiting office, Quick Response (QR) codes open up the possibility of conducting public service satisfaction at a lower cost (Agrawal and Alvi, 2015). Analysis of QR codes with user sentiment applied to public satisfaction in government and highlighting their importance for enhancing transparency, accountability, adaptability and compatibility in whole-of-government level as well as citizen services. It also reduce the cost of data collect and processing to the existing by optimizing the data analyzing on central processing center.

According to the survey in different country both governmental and non-governmental organizations are no direct mechanize of providing sentiment to responsible

body in real-time, so, the existing system has the following limitation. There is no method to give e-Feedback for particular single office and can able to analyze on real time and visible to all level of the government. It takes much effort and time to have all feedback from all level of hierarch. There is no centralized system which serve as a common platform to a given country which allows to analysis each and every e-Feedback given by single service user from a particular office. The manual feedback system cannot effectively combat corruption among hierarch of managerial structure (those who change negative feedback to positive).

**Literature review:** Various papers have pointed to several categories of attributes that have a greater or lesser impact on customer satisfaction and analysis. The contribution of various authors in the field of feedback analysis and its domain and techniques and tools are proposed by many researchers some of them are discussed here. In this study, Guirao *et al.* (2015) developed the analysis of QR codes applied to customer satisfaction surveys in public transport and highlighted their importance in reducing the cost of data collection and processing.

Agrawal and Alvi (2015) mentioned that the need of analyzing the unstructured textual feedback for retrieving the customer's opinions about the particular products or services provide to him. By Yadav *et al.* (2017) feedback analysis can be piped lined with sentiment analysis to calculate the response of people likes and dislikes.

## MATERIALS AND METHODS

**Use of QR code and its features:** According to a joint technical committee of the International Organization for Standard (ISO) and the International Electrotechnical Commission (IEC) ISO/IEC 18004:2015 QR code is a matrix symbology. The symbols consist of an array of nominally square modules arranged in an overall square pattern including a unique finder pattern located at three corners of the symbol (in micro QR code symbols at a single corner) and intended to assist in easy location of its position, size and inclination. A wide range of sizes of symbol is provided for together with four levels of error correction. Module dimensions are user-specified to enable symbol production by a wide variety of techniques.

Typical features provided by QR code are; high capacity encoding of data, small printout size, Kanji and Kana capability, dirt and damage resistant, QR code has error correction capability, structured appending feature, and readable from any direction in 360° (Anonymous, 2017).

For many government agencies, QR codes are the wave of the future. Here are just a few of the many ways QR codes can improve the government or constituent experience, allowing citizens to scan a code and access desired information and or service. Among those service and or information are; automate networking, advertise and find a job, supercharge marketing efforts, streamline the process for building permits and zoning changes, open line of communication, especially in an emergency, make your tax payment with 2D bar codes (Anonymous, 2012).

**System architecture:** The proposed design of system designed to encourage the active participation of citizen in governmental organization. It is essential to advocates people what they feel about the service they gain from a single office.

In order to improve citizen/customer satisfaction and address their feedback, a new approach is designed where the unique identification of the office is taken as the key information. By using the office information that include the unique identification number of office, the system will allow government officers to monitor in real time feedback forwarded by citizen using their smartphone through a survey mobile application window at all level of the government. The back end data center will perform analytics algorithms over data set constitute by the feedback data from citizens.

The design will allow the user starting measure the public service satisfaction service immediately before leaving the office. As most citizen uses smartphone, the location based service integrated with the proposed mobile application would allowing location context awareness of the citizen satisfaction, then consider his feedback as an important information to improve public quality service and therefore let the hierarchically administrations to reduce complexity in terms of transparency, accountability, adaptability and compatibility in internal management as well as citizen services. As the real monitoring of the whole-of-government ID the main contribution, computation platform and framework for analyzing in real time feedback data set will be provided. The overall business model are illustrated in Fig. 1:

- Service user visit different governmental organization
- Service provider provide different service in different offices. This office have its own unique ID to identify the feedback given to that specific office
- Service user use specific smart phone application to forward his/her satisfaction by scanning unique office QR code and send e-Feedback to central server

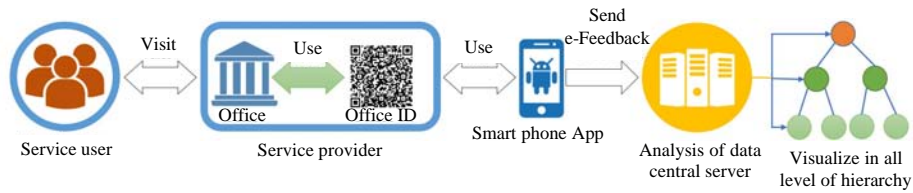


Fig. 1: Over all business model

Table 1: Office identification number structure

Category	Digits
First higher official of a given county	10
Second regine or state	20
Third local admin	30
Forth organization	40
Fifth organization office	50

- The central server accept data sent from proposed smart phone application and make analysis and show result to respective level of hierarchy

**Office identification number structure:** The total numbers stored in QR code as unique Identification Number (ID) are limited to 14 digits. This digits categorized in to 5 categories. QR code generate with this categories can able to represent all hierarchical level of a given country. So, each region prefix number followed by local administrative, organization and organization sub office. In each organization there are many office. Table 1 shows number structure in different level of hierarchy.

The QR code information is assumed to be locate indoor of the service provider office where the service user can scan it and starting apply his/her satisfaction level.

### RESULTS AND DISCUSSION

The proposed system will be implement based on Fig. 2 approach. We classified the feedback based on digital (electronic feedback) and manual (paper based feedback). The e-Feedback sub divided in to online (either through email, phone call to customer, online forms, etc.) and specific location (QR code assigned with unique office ID for the customer/citizen who visit office in person).

Customer/citizen have to have smartphone with specific proposed application to scan and select the level of satisfaction from a single organization office and send it. The proposed application will sent the office id with user level of feedback to the central server if, it was scanned from the correct QR code ID generated from proposed system.

The central server analyze the data received from each user and visualize as report in term of positive, negative and neutral. The visualize report can be accessible and visible to all level of hierarchy (Weerakkody *et al.*, 2016).

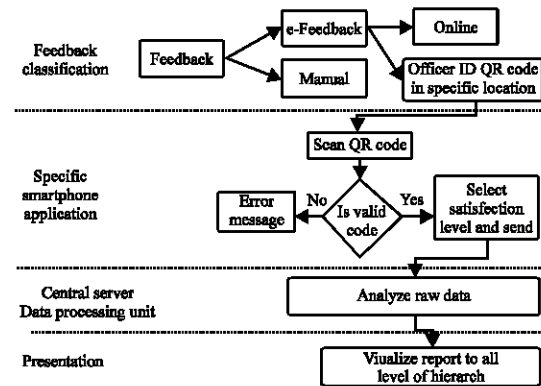


Fig. 2: Implementation approach

### CONCLUSION

Allow organization for corrective measurement to improve service delivery and to assess the efficiency and effectiveness of the service in a single office based on customer/citizen feedback. The system proposed system using QR code technology to send a way feedback is directly routed to the relevant party according to their hierarchical level and gate real time feedback using specific smart phone application.

The proposed system save time and cost on analysis of data and routing of feedback to all corresponding levels of officials. The proposed system allows to get feedback what they really feel at a particular time. In our future research, we will implement the proposed system.

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