JETIR.ORG ISSN: 2349-5162 | ESTD Year : 2014 | Monthly Issue
JOURNAL OF EMERGING TECHNOLOGIES AND INNOVATIVE RESEARCH (JETIR)
An International Scholarly Open Access, Peer-reviewed, Refereed Journal

A Hybrid Android Application for E-Governance

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Abstract: The Public Works Department (PWD), Public Health Engineering (PHE), Power Development Department (PDD), and other federal agencies' online complaint registration systems are down. The severity of the issue is frequently unknown using offline methods. They are even notifying government institutions about some of the challenges that resulted in manual letter drafting at a particular time using fictitious information. This paper is related to an online-portal android-based app. In the paper, a method (Android application) is proposed for receiving citizen complaints. Both the people and the government would be expecting 24-hour service. This programme mimics the features of the online portal-based complaint reporting system and is based on an android UI interface framework. This application provides an accessible portal for everyday people to register his/her complaints and attach an image as proof, or he/she will get new agreements from the government bodies like PDD, PHE, PWD, etc. Also, users can give his/her feedback to different departments, as said. This android app uses technologies Android Studio Gradle, Java, and phpMyAdmin.

***IndexTerms* - Android UI, Complaints, E-governance, Web Portal.**

I. INTRODUCTION

This modern android app provides the facilities for everyday people to send their complaints and feedback to the government departments like PHE, PDD, and PWD. Suppose a user has some issue in the PWD department, like blocking off-road. In that case, he can click an image and send it to the particular department with the place's name and the problem's description. In the backend, the queries are sent to the department database, where the department's employee reads the situation, sends the feedback as soon as possible, and sends a team to solve the problem. The primary purpose of this project is that people will find almost every government department's portal in the same place, so they don't need to search anywhere else for the portal sites. This modern android app provides a tool that everyday people can send their problems to the department linked to that problem. This app contains not only the issues tab but also a regular user can do other stuff with this app, like if he/she needs a new connection, then he first has to agree with that department, so he has to go to the particular department. But by using this app, he can get a new connection from home, and he can also get some other benefits like time-saving. The goal of this project is to provide the required departmental information. Additionally, in addition to giving details about several agencies, it allows users to report any social or environmental problems. Many people deal with the issues in their immediate environment without voicing their complaints. The leading causes are the current department's mindset and the need for a solid structured strategy. We seek to address this issue by developing a user-friendly web application where users can quickly make a complaint while lounging at home because there is no such precise field for doing so online. People used to write an official letter and mail it, then wait for a response, which consumed a lot of time and resources without any assurance that it would resolve the issue. Thanks to this programme, the user will have access to all significant and small sectoral facts, which is another advantage.

Users of this app have the option to submit complaints. The public and the government would both anticipate round-the-clock assistance. In 2015, the first comprehensive analysis of China's e-government portals revealed that these portals had some shortcomings in terms of transactional simplicity, convenience, lack of prompt updates, content accuracy, and inactive interactive responses, all of which contributed to reduced use of government portals (www.gov.cn, 2015). Therefore, it is vital to investigate the elements that affect the use intention of Chinese government websites to design measures to boost utilization rates. The government idea, government portal service specifications, psychological perspective, user characteristics, and external environment are predictors of the intention to utilize government portals continuously. The desire to continue using a product is directly influenced by psychological perception and user attributes, whereas the other three predictors only have indirect impacts. Additionally, the developed theoretical model has been successful in elucidating the primary aspects supporting the desire to continue using government portals [1]. Educational Institutions (EI) must employ efficient information management solutions in light of society's increasing internationalization and globalization. Technologies that enable effective and efficient information management are being integrated by EIs at an exponential rate, increasing their competitiveness. The World Wide Web (WWW), in particular web portals or websites, is crucial to the information flow between instructors and students and helps to facilitate teaching and learning. Additionally, all higher education professionals (teaching and nonteaching) understand the value of this kind of instrument for collaboration and information exchange across various EIs. An institution's information applications and resources are all consolidated on one website through a web portal. Therefore, a well-implemented online site is a secret to being competitive in higher education [2].

The IT team that has been building the state site for Puebla for the past ten years embraced the notion that a government portal's goal is to serve residents' demands. They see the internet as a platform for communication between the public (people, corporations,

etc.) and the executive branch. The IT team was able to continuously develop the portal with the aid of this style of thinking. The Puebla State Government Portal improved from 23rd to 2nd in a national rating in less than three years [3].

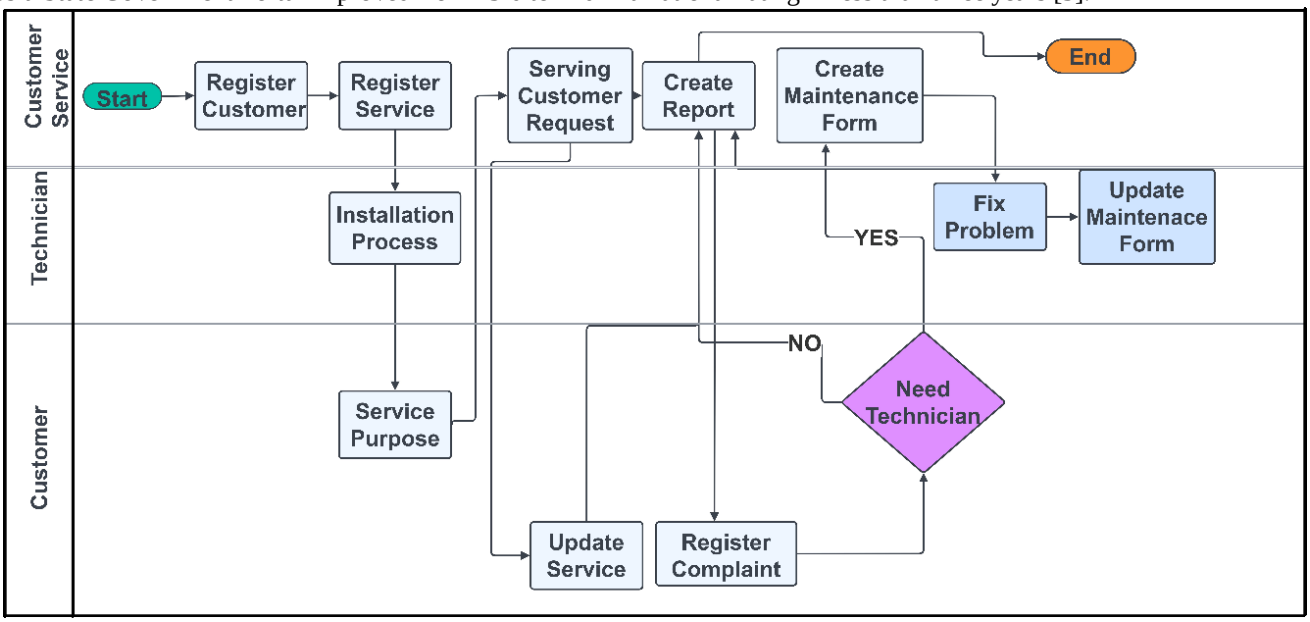

Figure 1(a) Existing Business Procedures [8]

In Figure-1 Consumer support is now unable to serve every customer. Customer service is responsible for handling most processes, and they must be available round-the-clock to serve both customer and technical requests. In figure 1, customer service's registration of the customer was the first step in the procedure. The next technician will do the installation procedure at the client's address when all registration has been recorded. As long as the client is still using the services, customer service must assist them whether they call, email, or come into the office with complaints, inquiries, requests to change services, requests to open new services, and many other things. If customer service cannot afford to answer the question, they will forward it to the staff at the next level.

II. Literature Review

I have examined a number of publications that are relevant to our issue in order to develop our thoughts and approach for handling complaints using an Android app. The description of those papers are as follows:

In paper [4], Tejaswita et al. say that the application's motto is "providing access to all inhabitants of the country to register a complaint," therefore, users can upload photos of the civic issue in addition to filing complaints about a variety of topics. The time frame specified in the citizen's charter must be followed to resolve the complaints. If this does not occur, the complaint will be escalated to higher levels after the specified time. After settling a complaint, officials must post pictures of the fixed problem to the application and notify the user that the complaint was resolved. Following that, people can express their opinions by leaving comments.

In paper [5], Arpit et al. argue that the Indian government developed the National E-Governance Plan (NeGP) to promote the electronic delivery of services to citizens. The program has primarily proven successful, establishing over one hundred thousand Common Service Centres (CSCs) and implementing over a hundred thousand electronic services. This demonstrates unambiguously that, in contrast to other nations, our successive governments have been unable to capitalise on the information technology revolution. Despite being a newcomer to these technologies, India much outperformed it. However, the equation for digital development has changed with the inception of the Digital India programme. If properly supported and successfully executed, this strategy, together with the planned eGov3.0 framework, would be a kind of game changer and will propel India into a leadership position in e-governance among the top 30 countries in the globe. Through Biometric Attendance systems, Inter-University WANs, electronic file transfer, paperless offices, etc., the Government of India has been aggressively pushing and upgrading electronic delivery of services.

In paper [6], Paul et al. argue that as a result of electronic or e-government, the conventional government began utilizing modern information and communication technology (ICT) in their governance process. It seeks to offer its stakeholders effective and efficient services through a single window. It demands that the e-Govt become an integrated government. A seamless eGovt will result from all the government agencies in a nation cooperating as a single entity to produce an integrated response to stakeholders. From spreading the digitalized data of each government department to combining these information silos and offering services under a single window, it is progressing through various maturity phases. The e-Govt Interoperability clearly shows that the ultimate step involves a frictionless interchange of information across governmental departments.

In paper [7], Sheng et al. argue that since China's e-government project was put into action in 2000, the development of Chinese government portal websites has advanced quickly: as of December 31, 2005, there were 23,752 of them (CNNIC, 2006). At the same time, government organisations at all levels are no remain content with government-portal websites serving only as e- government images. They expect to see them evolve into useful websites with valuable features. Therefore, to meet this requirement, it is crucial to improve the quality of government portal sites. Doing so can raise customer satisfaction, government portal sites' visitation rates can rise, and e-government projects can progress smoothly and healthily.

In paper [8], Cadeline et al. argue that in a company today, customer service employees sit in front of the officer that takes complaints, problems, and questions from clients in person or over the phone while standing in front of the desk to serve clients. When a problem arises, customer care employees need to find a speedy solution and a way to address the issue that consumers are complaining about. Customer support workers must be skilled in various manual tasks and malfunction problems. Transferring all the information and issues into one support centre is difficult. The high quality of customer service is crucial for the company, so many businesses try establishing a helpdesk system to support it. A survey revealed that 70% of customer dissatisfaction is not related

to the quality of a product or service but rather how the client is treated. A helpdesk system is a popular technology that many businesses utilize. It uses the internet and other modern tools. A web-based intelligent help desk support environment called Web Hot Line was created and developed by Schubert Foo et al. to support the customer service centre of a large multinational corporation in the electronics industry. Wang et al. conducted another study and created I Help, an intelligent online helpdesk system, to automatically find problems and solution patterns from previous customers. Furthermore, Fazira Shafie et al. created a facilities management helpdesk application for higher education in Malaysia as part of their project. A helpdesk can be utilized by a wide range of businesses and institutions, and we will create one for a services company using this chance.

In paper [9], Ajenget et al. argue that social media has become a successful platform for businesses to engage with their clients due to the evolution of human communication and information exchange in the digital age. Users frequently use social media to express gratitude for or dissatisfaction with the goods or services they utilise. The content of products and services, whether about contentment or discontentment, written by social media users, can be viewed by thousands or even millions of people worldwide, which will indirectly damage the image of a business. Social media is used by government- and privately-owned businesses to engage with clients about their services or products. Government water drinking firms in the public sector utilise social media to share information about their goods and services. Companies that provide drinking water also use social media as a channel for client concerns.

Xiao et al. [10] proposed and tested a research model using information derived from a sample of 630 Chinese citizens who utilise e-government Web portals. According to their research, the effectiveness of a web portal's services on users' adoption and retention intentions varies depending on the user demographic. In conclusion, the research presents evidence in citizen's continued intent to use electronic government by looking at the e-government website portal from a service standpoint quality and level of service. The information quality of a web portal operationalizes the service quality, dependability, functionality, security, and privacy protection elements, as well as timeliness of the online portal. The research's conclusion adds to the IT adoption literature by providing examples from the e-government online portal usage by citizens in that context. It offers proof of individual e-government service acceptance and use via an e-government web site and creates connections between web portal services quality and consumer acceptance as influenced by service level provided.

Jon et al. [11] researched the government portals and found that the creation of almost every state's online site is in its early phases. Most state web portals offer information and access to a small number of administrative functions. However, most outlets need more integration to provide sophisticated transaction capabilities. Additionally, they discover that the state's strategic IT strategy and the degree to which it has embraced e-government-friendly regulations are crucial components in creating a high-functioning state web portal. A web portal acts as the integrated entrance to a state gov website, giving users a single point of contact for the delivery of online services. Although portals incorporate state e-service, they can increase public access to the government, lower service processing expenses, and let state agencies deliver better services. The difficulty, however, is in figuring out the most effective technique to upgrade a simple website into a high-performing online gateway.

Using data from network monitoring, Huimin et al. proposed PANDA, a user complaint prediction system for mobile access networks [12]. PANDA can correlate user complaints to network performance indicators, alarm reports, and other data in a data-driven way and anticipate complaint events in a precise geographic area within a certain time range. Complaint burst events account up just 0.3% of all collected events in the dataset used for PANDA's testing, which came from a prominent Chinese mobile network. The findings show that our recommended strategy can correctly forecast 30% of occurrences in complaint bursts three hours in advance. A comparable level of QoE improvement will be attained if all detected complaint events can be prevented beforehand by carrying out the necessary network maintenance.

According to study [13] by Patel et al., India's population is its most significant issue, which exacerbates other severe issues, including water logging, water leakage, street light difficulties, channel problems, pothole on the road problems, rubbish, etc. Our application will enable us to estimate the cost required for a specific pothole. One of the main issues is that the government needs to know how much money is required before viewing the pothole. Utilizing Java and XML, the All-India Grievance Redressal App was created (eXtensible Mark-up Language). Complaints in this app are divided into two categories: Complaint Type and Complaint Sub-Type, where complaints are grouped into many complaint kinds such Solid Waste Management, Drainage, Storm Water Drain, Road and Traffic, Factories, Licensing, Water Supplies, and many more. The additional categorization of a certain complaint type is known as a complaint sub-type. The complaints will also be sorted according to location.

A framework is a module that can be reused; it defines the architecture of applications and incorporates them as a collection of abstract classes that function together. In paper [14], Liu et al. say that the application framework specifies how programmes in a particular area should be structured. Google introduced Android, an open-source operating system built on the Linux kernel. Mobile phone operating systems are more reliant on hardware, power, storage, and other factors than PC operating systems. Layers make up Android's architecture.

In paper [15], A.A Hassan says that the government is trying to engage with the citizens with the help of electronic means. By this, there will be convenient delivery of services, improved communication, and reduced cost, and the E-government system promise many other benefits. The use of ICTs and notably the Internet, as a medium to make a better government is how egovernment is defined. Sadly, much e-government research has concentrated on the demand side and how e-government solutions affect public entities. The demand side of e-government has been the focus of this study to close that gap. Every day, citizens must communicate their issues with the government, including water/sewerage, power, and street parking. The local government is also where citizens go to get their credentials, building permits, register, and subdivide land parcels all crucial tasks under its purview.

In paper [16], Kazi et al. said that with the growing population of India, the complaints and grievances from ordinary citizen is also increasing. The grievances resolution mechanism is an essential part of the government. But India follows the traditional lodging system that registers the complaints in the files. The primary objective of this application is to provide a system where submitting complaints is made more straightforward, participatory, and user-friendly, making the grievance-handling process effective and precise. Our approach is more geared toward young people because, as we all know, they are more attached to their cell phones. The user can upload complaints in the form of texts and photographs in the system I've suggested. The authority will get these complaints in their sorted shape. The registered user can view the issues reported by residents of their neighbourhood or another neighborhood. There are modules where people can work voluntarily with the government-offered programmes; these facilities are in the "Serve

India module." Many citizens in our country want to work for the country, and they also try to train ordinary people in rural areas who don't know the facilities provided by the government.

In paper [17], Sneha et al. proposed a mechanism for farmers to sell their goods directly to the consumers without middleman intervention. This will increase the profit of farmers. They argue that creating a site will allow farmers to market their goods nationwide. The platform makes it simple for farmers to register and sell their goods. The web gateway gives the farmers a direct line to the customers, allowing them to make more money than usual, eliminating the intermediaries' involvement. The site helps farmers understand their overall sales, profits from goods sold, and the client's wants. Overall, this would provide the farmer with a clear understanding of the client's requirements and how to grow only the necessary products and make the investments required. To assist farmers in making more money, the max-prior algorithm assigns the customers with the highest requirements. Additionally, it helps farmers sell their products more quickly. The farmers profit more from this gateway, boosting the national economy.

In paper [18], Jayprakash et al. successfully showed the design of an Android app that uses Google Firebase to maintain citizen complaints in a secure real-time database. An application like this will be beneficial to govern the cities correctly in large nations like India, where the cities are developing quicker day by day. It will also minimize the workload of promptly registering complaints in offices and aid those in need—people's active involvement in maintaining their cities' cleanliness, orderliness, and quality of life. The "Digital India" and "Smart City Campaign" will benefit from this app, and those who have filed complaints may now track their progress in real-time. It will increase openness in how public agencies like municipal corporations, Nagar Palikas, and Gram Panchayats operate to combat corruption. Government and citizen communication will improve due to citizen feedback on government work.

In paper [19], Aravindhan et al. proposed a framework for student grievance support to handle the complaint and seek resolution. The web application creates a venue for the students to report issues that arise in their day-to-day activities. Students can submit their grievances to the Grievance Redressals Committee through the web application. In light of the situation's sensitivity, the Committee will send any legitimate concerns to the Institute or Department. The Department or Institute will take action and update the status, which the students can view. They also noted that the suggested approach would give pupils transparency, which can be used to incorporate solutions for the students. This idea proposes a system for resolving student complaints that may be used to address problems in a number of different areas. Students have the option of viewing the status of any open or closed grievances. This approach therefore paves the road for the educational institution to increase its quality.

In paper [20], Javier et al. have offered a fresh approach based on ISO 19157 for assessing the quality of open data metadata. Applying ISO 19157's quality guidelines can have several advantages. It is a quality model with nearly 20 years of practical experience. Compared to other models (such as ISO 8000), this model has more quality components, which gives it more application flexibility. It also provides a wide range of immediately applicable standard measurements, and it is feasible to define new measures in response to changing needs. Additionally, they have shown how the DQV language may effectively describe the outcomes of quality evaluation. Although the structure of quality components and DQV ideas may not quite match, similar methodological methods like MQA are increasingly using this terminology. The hierarchy of ISO 19157 quality categories and quality element types can be modelled as DQV categories and dimensions, ISO 19157 measures can be expressed as DQV metrics, and the instances of ISO 19157 quality elements and their associated results can be expressed as DQV measurements. As a result, they have demonstrated how ISO 19157 concepts can be expressed in the DQV vocabulary.

In paper [21], Yadong et al. recommended designing an NGECP with many individuals, businesses, and administrative divisions. Any person or group can have their customized portal on the NGECP. Its four components are specific ontology, dependable supply, intelligent demand, and smart cyberspace. A large-scale, open-styled, self-organized, ecologically intelligent network, the decentralized NGECP connects and engages with all its participants. Instead of using a conventional third-party platform, an NGECP user can complete the demand recognition, supply release, matching, transaction, and credit evaluation within his or her personalized portal. Any person or group in the actual world has a reliable ontology of NGECP. This is made up of details and actions taken from the actual world. Through words, photos, VR (Virtual Reality), AR (Augmented Reality), and real-time interaction, the ontology may effectively display the subject's physical traits, knowledge, and reminiscence information.

In paper [22], Ingrid et al. suggested a framework for e-Local Govt. They contended that the created framework boosts the effectiveness of interacting with residents and businesses and leads to more successful local governments. However, more sector-specific research is required to cover all the necessary bases—first, a financial and economic assessment of the transformation process. Second, the broader impact on society as it relates to the rise in citizen satisfaction. The third step is the adoption of legislation draughts to permit the expanded use of information technology.

In paper [23], Saud et al. assert that many programmes created using ICT-based e-governance in recent years keep essential data on government servers. By utilising the applications offered by the government of a smart city, individuals are permitted access to the data necessary for the efficient operation of E-governance. User authentication is essential in these circumstances to prevent unauthorised access to the data (applications) provided by the government. To solve this problem, a plan has been put out that would require users who seek to access government data to register on the government's server and obtain the necessary access credentials.

Reference No.	Technology	Application	Focused Area	Evaluation Parameters	Experiment Setup/
[4]	Mobile technology.	For government like EB, PWD	Filing a grievance on a public problem.	Analysis of complaints.	Data Set
[5]	-	Information and Communication Technology tools (ICT)	SMART		Analysis of complaints.
[6]	SOA.	Promote interoperability and	E-SERVICES	-	Analysis of Performance.

		prevent effort duplication.			
[7]	EA.	Improve the Webpages for government portals.	e-Government	Service Providers, Stakeholders.	Chinese, Indian, and American E-Government Indices in Comparison.
[8]	SERVQUAL model.	Complaints, client satisfaction, and self-help solutions.	Chinese government portal website.	Gender, age, education	E-Government Indexes for China, India, and the USA in Relation.
[9]	Interview method of data collection.	Social networks.	Good customer support	Internet access troubleshooting, Line telephone number troubleshooting,	E-government interoperability in India.
[10]	Text mining.	E-government.	Government-owned drinking water companies.	TV cable troubleshooting,	Factor analysis of website service quality.
[11]	ECT, ISCM	Public access to the government.	Quality service.	Count of TypeComplaint.	Complaint Static Report
[12]	Comprehensive content analysis	Complaint prediction.	e-service	Water Bill, Murky water, Pipes leakage, Disturbance reports feedback, water flow disturbance information.	
[13]	Machine Learning pipeline.	Estimate cost required of particular pothole	Complaint management.	Information acquisition, Information exchange,	Results of Customer Complaint Clustering
[14]	Java, XML	To develop applications on android platform	Grievance readdress application	Transaction, Gender, Age.	Sample distribution (by user type, gender, and age)
[15]		Cost-saving measures, effective and efficient methods of service delivery, and convenient service delivery.	Android applications	openness, customization, usability, and transparency	Fifty US state web portals
[16]	Android	Free service for efficient communication.	e-government	Feature time windows, Target time windows, Re-sampling ratio	Chinese Mobile Network.
[17]	GeoICT	Increased profit due to buyer and farmer transparency.	e-grievance	Water leakage, Waterlogging, Pothole on the road	
[18]	MapReduce Algorithm	Neglect the barrier between government organisation and pubic	Agriculture	MusicMainActivity, MusicPlayerService, MusicInfoManager, User	MATLAB
[19]	max-prior algorithm	Racial harassment,	Grievance management	Population, gender, age, income	Music player
[20]	AES, Google map API, Google firebase	Metadata quality evaluation.	Grievance Redressor System for students.	Meri sadak, EPFO grievance register, Jansunwai	Correlation results at the district level
[21]	PHP, MySQL.	E-commerce transactions may be made safer, more transparent, and more engaging.	Open data portals	Price, types of products	Ratings of existing E-grievance applications.
[22]	ISO 19157	Enables uniform service descriptions and completely digital communication.	E-commerce	Different departments.	Price Comparison Between the Traditional and Max-Prior Method
[23]	MQA	Citizens have a significant advantage.	e-Governance	Student name, category, complaint.	Digital India scheme in 2015.

[24]	NGECP	Reducing corruption.	Smart cities and E-governance	Availability, credibility, accuracy	Add Complaint in Web Portal.
[25]	EDRMS	Tries to get a better e-government framework	E-governance	Location, Quantity, Sales volume, Commodity price, Commodity credit, Supplier credit, Relevance	Limiting quality in per cent
[26]	AVISPA	Provide a thorough knowledge of how alignment affects company success.	E-governance	Internal, external, technical, legal, financial	Demand matrix
[27]	FGLS and PTR	E-participation makes it simpler for citizens to access procedures.	IT Governance	Cost in bits	Increase in the volume of correspondence transmitted digitally via EDRMS.
28]	-	A system for securing data from social networks	E-Participation	Cultural, economic and political.	Storage and Communication cost comparison
[29]	ERBV	Improve the user experience.		Countries	Sample number and its proportion of two intervals of threshold values.
[30]	Synthesis Method	Smart City	Social network	Operational effectiveness, performance, and market growth	UN e-government survey 2010

E-government and crime are related, according to several cross-national studies. In paper [24], Shaowen et al. claim that scholars and anti-corruption organisations have recently underlined the value of e-government in the fight against corruption. By using local government data as evidence to look at the effects of e-government on corruption, this study adds to another potential but untapped topic of inquiry as opposed to this well-established one. This study uses longitudinal data from 29 Chinese provinces from 2006 to 2015 to show how the development and depth of e-government are advantageous to reducing corruption from the standpoint of local-level government.

In paper [25], Mubasher et al. focus on how technology reshapes the interactions and relationships between enterprises, governments, and individuals. We purposefully adopted the word "e-governance" in this study rather than "e-government" because we are more interested in the transformation process that uses technology's potential in activities like decision-making than just digitizing governmental services. Recently, e-government attracted much attention in its creation and used in the digital era, when people's expectations have correspondingly grown. This is because there is a growing need to close the gaps between citizen expectations and government offers. To keep up, governments must seek better decision-making strategies and more precise ideas for the future of their nations.

The coordination of internal and external IT governance is a crucial topic of research in the field of IT outsourcing and is the focus of paper [26] by Jihun et al. This study gives a thorough evaluation of the effect of alignment on business performance from the ERBV perspective. This is accomplished by examining the specific performance impacts of internal and outside IT governance alignments. While hierarchy-based alignment boosts corporate operational efficiency and market-based alignment maximises market expansion, network-based alignment encourages the highest innovation capability. This research advises practitioners on the selection of outsourcing alignments by performing a detailed investigation of the effects of various alignments on exporting results.

In paper [27], Alex et al. think that Citizens' views are now taken into ever-greater regard. Many government administrations nowadays have established public involvement procedures as an additional input needed to decide on many elements of governance. Initiatives for electronic participation make it simpler for citizens to access these procedures. Due to the great variety of theoretical concepts and the multidisciplinary character of the efforts, many of which have been formed ad hoc, there currently needs to be a clear and approved field definition. To provide a conceptual framework for e-Participation components, this study evaluates the current literature on e-Participation through a thorough mapping of the research work conducted in the period 2000–2019, as well as some previous pertinent ideas in the field. This review analyses the data and groups them into a theoretical e-Participation framework called e-Pfw. The findings demonstrate the wide range of conceptualizations across writers (25 per cent on average) in identifying e-participation tools, areas, and levels and the nearly complete absence of critical concepts like trust, security, or transparency. We also discovered a lack of systems development (13.3%) that would support and enable the application of advanced theories.

In paper [28], Yan et al. argue that the issue of data privacy has drawn attention due to the widespread usage of online social networks (OSNs) a great deal of interest from the general population as well as the scholarly community to overcome this issue they presented AutoZone, a private OSN's system architecture. With this architecture, zone designers may work together to regulate and uphold the privacy of the zone's contents. On top of the AutoZone architecture, they suggest an effective access control system that minimizes essential management costs for subscribers through public permissions. Additionally, its layout makes it possible to quickly delegate and revoke access permissions. A centralised management server that oversees user activity and assists with key management and distribution are unnecessary.

In paper [29], Ashwini et al. say that Android is a cutting-edge operating system that utilizes the Linux Kernel as its foundation. It is an essential platform for building mobile apps using much software that Google Android SDK provides. Java language code is used in the creation of Android mobile application development. This application has many features as it gives information about the department and includes information about staff, students, etc. in our app, the same will happen. There will be a department in the department. There will be essential features like sending the query, calls, requests for new connections, etc. With the development of

mobile applications, one may now quickly and efficiently obtain crucial information by using single-touch applications that provide thorough and precise information. This programme offers access to college data, including details on the faculty, students, departmental events, academic calendar, placement data, and more.

III. Proposed Methodology

In this application there are three components, which are

· Client (User)
· Server (Admin)
· Employee

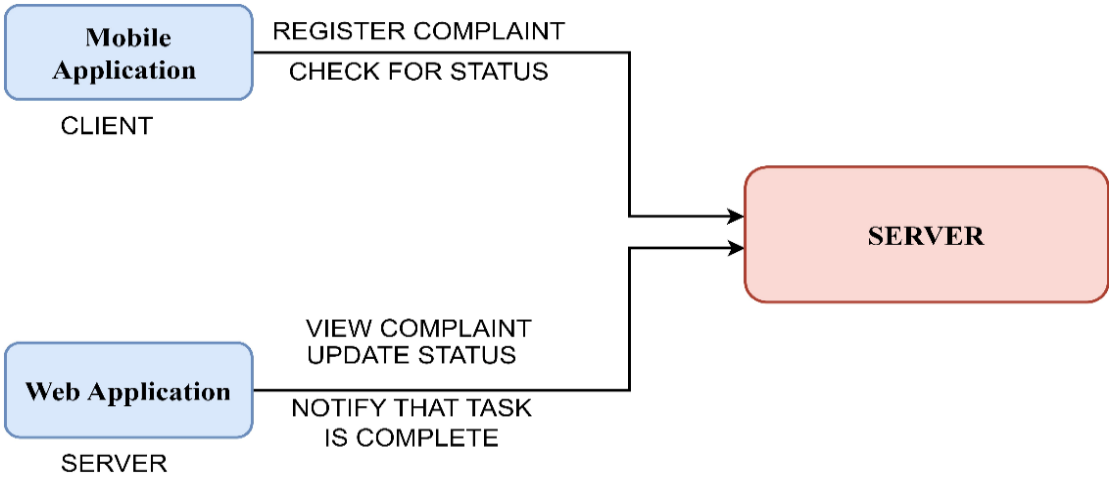

Figure 2 Proposed Architecture [4]

1. Client (User): The client is an essential component of the program. Without it, the app is entirely useless. It is also the primary user of GUI. Once a client has a problem, he will upload a photo using an Android phone application, add a comment, and transmit the issue to the department that is responsible for the issue. However, to do that, the user must first register for the program before being able to view the status of the complaint. After the problem with the complaint has been handled, he will receive a notification or message via admin.

2. Server (Admin): This is the Administrator or System Head. He can verify the user because he has full access to the system. He informs the user and the employee. By giving the assignment to employees and closing the complaint, he can update the status of the filed complaint. He can also delete the user and the request.

3. Employee: Once a user has submitted a complaint, it is received by the administrator, who then informs the employee, who is in charge of resolving the issue. After the employee (worker) has addressed the problem, he must upload the rectified issue's photo to the server by clicking on it.

3 Experimental Setup

The implementation stage requires careful planning, investigation of the present framework and its implementation constraints, development of transitional procedures, and evaluation of transitional methods. The prototype model is converted into a usable system during the project's execution stage. Therefore, this phase will determine if a new system is successful and whether its users trust its capability to perform correctly.

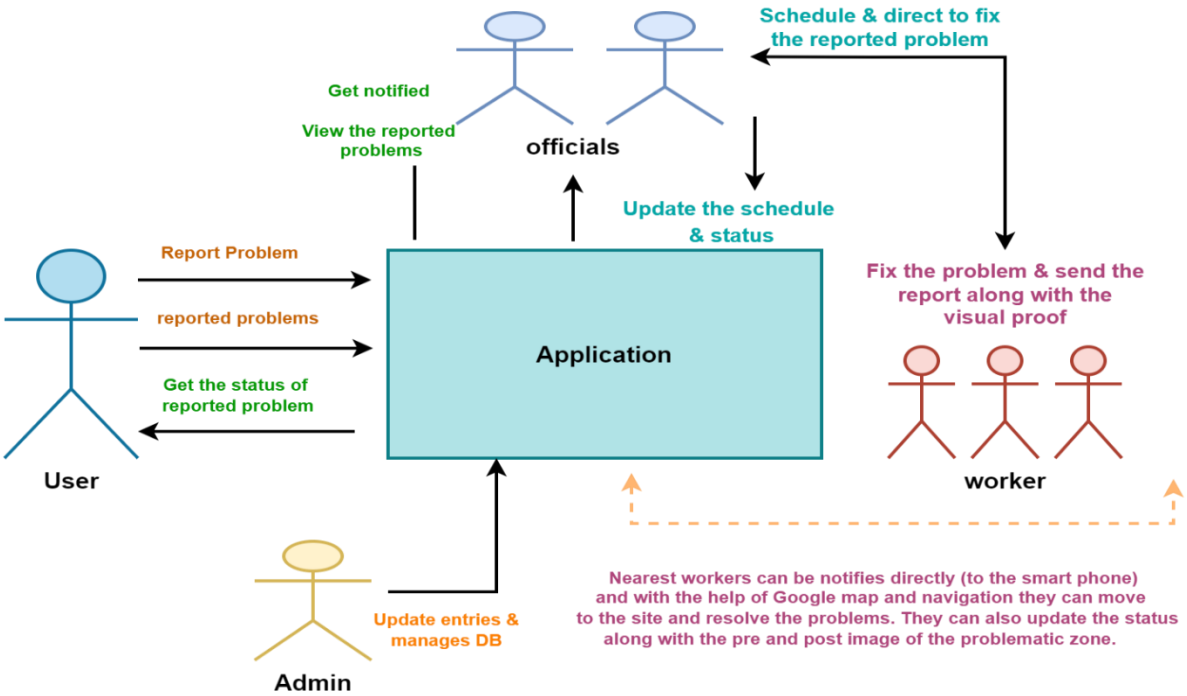

Figure 3 Work flow of proposed system [4]

3.1 User Registration through web portal

Through the web portal or an android app, users may register. It will create an OTP number to verify a legitimate user, letting the admin know that the user has been verified. The three required fields are Name, Address, and Phone number. Users can file a complaint following registration.

3.2 Registration of user and register complaint

Users with Android Smartphone's can register. The user must activate his GPS while registering a complaint to trace the position and choose the appropriate category. This category's options include traffic management, potholes, rubbish collection, and water outages. Then he may select the problem's severity, including alternatives like minor, medium, or severe. After that, he can look for updates.

There are five main components to the administrator's website. These include the following features:

1. Validate User.
2. Check for the Complaints.
3. Assign the worker.
4. Complain with Management & Update status.
5. Notify the user and workers.

3.3 Hardware Requirement:

Android 2.3 and later mobile OS systems are compatible with the application. It runs without issues on computers with 2GB of RAM or more. Any 2G, 3G, or Wi-Fi network connection can be used with the app. Mobile device processors should run at 600 MHz or higher. The mobile devices must have cameras at least two megapixels in size and GPS enabled.

3.3 Software Requirement:

- Android Studio Gradle.
- Java Runtime Environment
- JDK
- PhpMyAdmin

4 Data Flow

If the user logs in successfully to the app, the user will be able to avail of all the features of the app, but if the user is not able to log in, he has different methods to login into the app. User can make a new account through the registration form; in some cases, if the user already has an account, but he/she forget the login credentials for those, other options are also available such as forget password; the user has to provide his phone number and then an OTP is sent for verification that this is an authenticated user who forgets his password, once the OTP is sent into the user has to enter the correct OTP send on to the number and the new prompt will appear where he/she can set his new password. Once the user is successfully logged in to the app, then he can avail all the features of the app. The main components inside the app are the menu bar and different departments like PDD, PHE, etc.

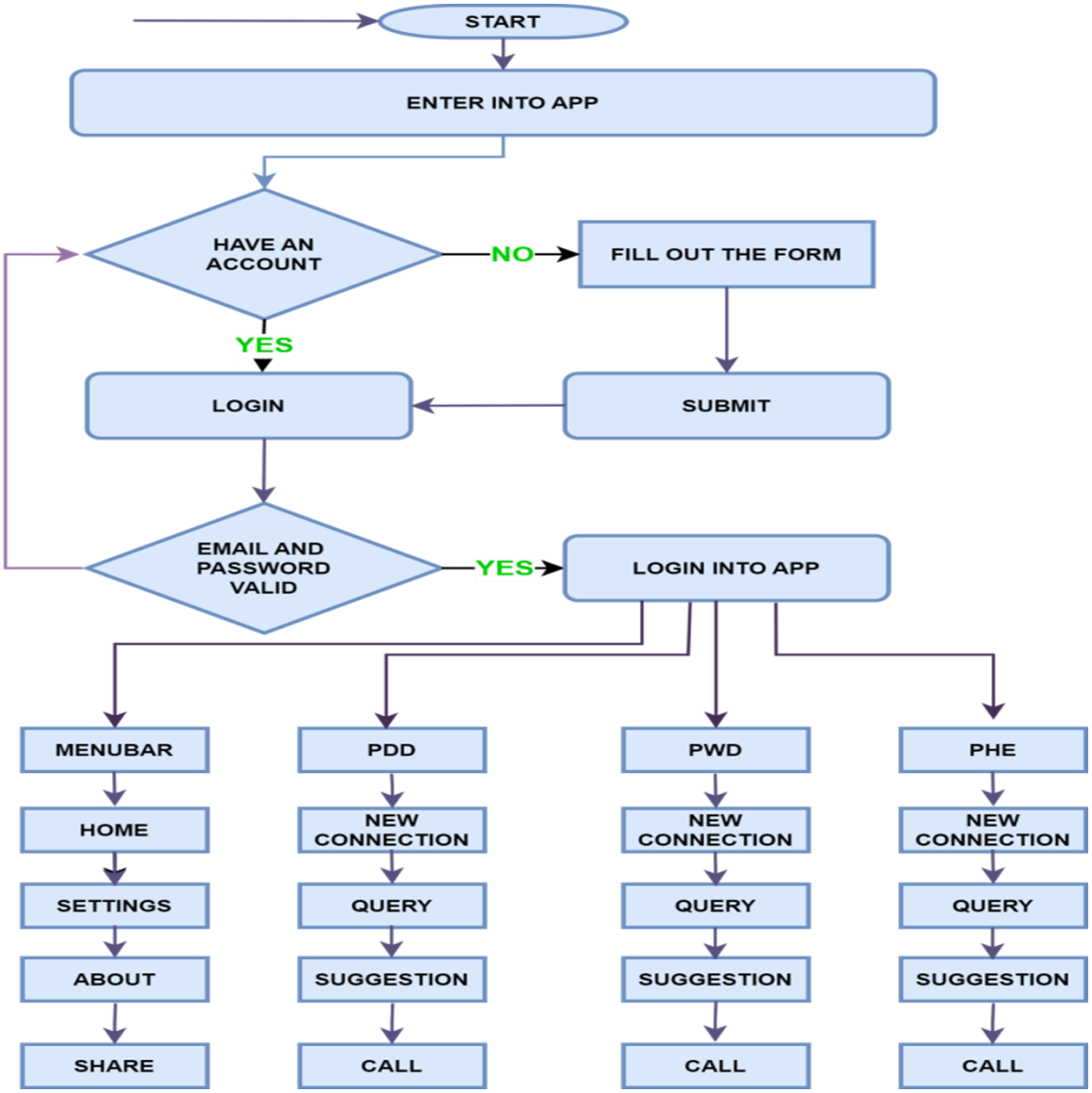

Figure 4 Flow chart of proposed system.

1. Menu bar: In this module, there will be home, settings, about, and share.
2. Home: if the user clicks on the home button he will be in the main menu of the app.
3. Share: By sharing, users can share the app on different platforms through Bluetooth, WhatsApp, etc.
4. About: About will provide information about the app.
5. Settings: Settings will provide the basic settings like dark mode, light mode, logout, etc.

In the department module, the user will be able to get new connections, send the query, send suggestions, and also can call the different departments.

1. Get new connection: In the module get a new connection the citizen will be able to get a new connection by filling out the form and the fee if there is any. In this module, the user has to fill out the form and has to provide the information which is necessary for getting a new connection

2. Query: In this module, the citizen will be able to send complaints, and also this module will be used to send the photo related to the query. The citizen can send the photo by capturing it from the camera of the mobile phone or can send the photo from the device's memory.

3. Suggestions: In this module, the user will be able to send the suggestions that he/she thinks should be applied to the system.

4. Call: In this module, the citizen can directly call the department and discuss the problem.

5. Feedback: After an employee has answered an inquiry, the general public may provide a score. After the employee has responded to the inquiry, they may view the complaint's photo in the updates. He can apply his satisfied score after viewing that snapshot.

IV. Conclusion

In this paper, the design of an Android application for demonstration is presented that uses a safe Realtime Database called phpMyAdmin to store citizen complaints. Additionally, I provided a user-friendly interface for the public, using technologies like XML, Android Studio, and Grade. An application like this will be beneficial to correctly govern the cities in large nations like India, where the cities are developing quicker daily. It will also minimize the workload of promptly registering complaints in offices and aid those in need. The "Digital India" and "Innovative Technology Mission" will benefit from this app, and those who have filed complaints may now track their progress in real-time. It would increase openness in how public agencies like PHE, PDD, and PWD operate, lowering corruption. Government and citizen communication will improve due to citizen feedback on government work. Organizing complaints is easy due to this application; monitor and take action. The goal of creating this mobile application is to make communities better places to live in.

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