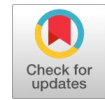# Performance Evaluation of Automated System over Manual System of PPM in Urban Development

Sapna Malik, Parul Sharma

*Abstract***:** *The role of Information and Communication Technology (ICT) improves the overall growth and economy of the country by implementing better services in smart city environment relating to the land and property. ICT implements proper management of properties through a single platform. Plot and Property Management (PPM) is a system which is made to improvise the manual system in urban areas. With the implementation of this system owner/allottees of the property can monitor the status of their application on internet. This system can reduce the rush in Estate Offices. This system brought transparency in the working of the current system. This system also increases the efficiency of the staff as compared to the earlier system.*

Keywords **:** *PPM, Smart City, ICT*

I. INTRODUCTION

Technology is the main asset in today's economy. For urban development, we are currently focusing on smart city project. For this reason, information processing is needed for fast retrieval as well as upgraded techniques of data mining[1]. Our choice of work is on property related matter. This is very critical issue for civilians because some of the children are moving in other countries and due to bad lifestyle and adulteration in food; immunities are getting low and average. Due to this there is high need to look and arrange properties in a very organized way. To reduce the stress on employees as well as civilians we are proposing a framework that serves as a centralized platform. This framework resolves the problem of senior citizens waiting in long queues and also the additional stress on the employees.

II. CHALLENGES IN SMART CITY FOR STATE OF HARYANA

- Collection of 18 Estates and 41 Urban Estates
- More than 3, 15,970 allotees all over the state.
- Client servicing of average of more than 300 people per day per estate office.
- Class 'A' Estate Office having more than 54,000 files.

- Staff strength of 16-20 per estate office.
- Scarcity of accounting personnel.
- Huge downtime for single application processing.
- Manual calculation of dues, taking more than 2-3 hours per file.
- Delay in due estimation causing huge financial losses.
- Delay in daily MIS reports.
- Reduced motivation in employees due to over burden of work.
- Inconsistency & mistakes in calculations of allottee's dues.

III. PROPOSED APPLICATION FOR PLOT AND PROPERTY MANAGEMENT

Plot and Property Management Application is an online system which takes care the online processing of about three lacs fifteen thousand properties in 18 estate offices across the Haryana state. The owner/allottee's have been given the user Id and password to view their record and transact online for various types of payments to be made to Urban Development Authority [2]. This application covers various activities such as allotment of plots, payments/ dues for plots, survey details of the plots, maintenance of certificates by their issue dates and so on[3].

IV. CHARACTERISTICS OF PPM

A. Dynamic Portal and Payment Gateway

- Transparency: The portal application was specifically designed to improve transparency, build accountability and improve service delivery mechanism of Haryana Urban Development Authority with its allottees across the state.
- Commitment: The application provides seamless interaction of allotees with the working of Department. The alottee is provided with a user name and password and can track the status of his application on net on the prescribed website.
- Easy Financial Transactions: Allottee can monitor all his property related payments through the website. The portal also enables the allottees to make online payment anywhere anytime. This payment is adjusted instantly in the property account of the allottee and a receipt to this effect is sent to the e-mail Id of the allottee.

- Better Information Dispersal: Publish information about the new schemes of Urban Development Authority. Allow online registration of users for the schemes of Urban Development Authority. Allow download of different kinds of application forms, challans and documents.
- Authentication: User ID and Password can be issued to the owner of the property so that they can see the all the details of their property online from anywhere anytime. Owner need not to come to the Estate Office to know their dues related to their property.

The following diagram in fig.(1) depicts how the information is processed in dynamic portal gateway.
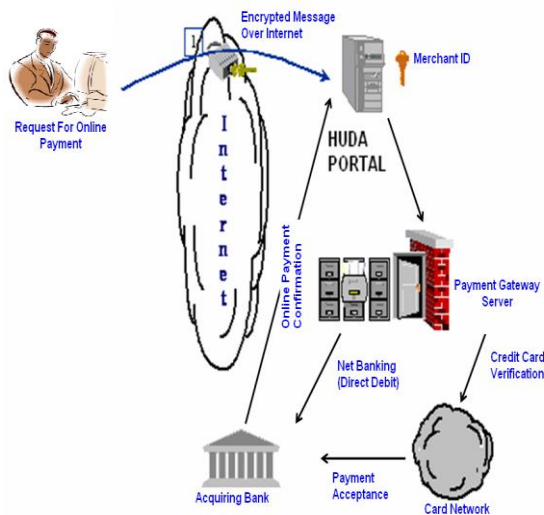

Fig. 1.Portal Gatway.

B. Grievance Handling System:

This system handles the problems which come in services provided to the customers by the system. It primarily covers the receipt and processing of complaints from citizens and consumers[4]. It includes actions taken on any issue raised by them to avail services more effectively. The whole process is explained in fig.(2).
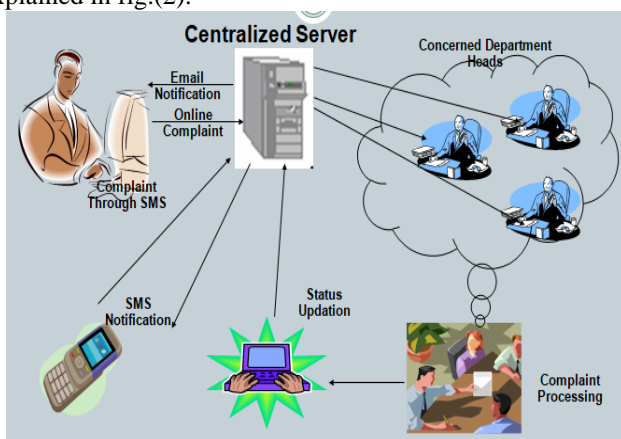

Fig. 2. Grevance Handling System.

C. Connectivity

The districts in Haryana are connected to one common centralized server and are backed up with another server. Data can be processed and independently work with the centralized server. No two districts of different zones in

Haryana is intermixed for information retrieval. Only centralized server will communicate with different district headquarters to send information. This enhances data consistency and backup feature will ensure data integrity. This is shown in fig.(3).
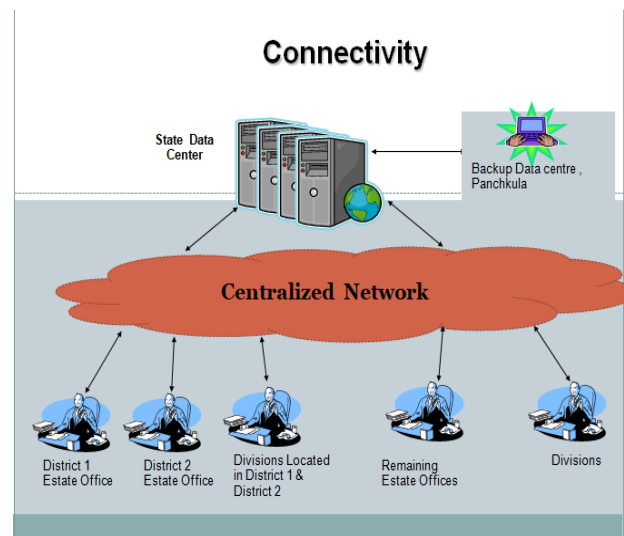

Fig. 3. Connectivity

V. PERFORMANCE METRICS FOR A SMART CITY ENVIRONMENT IN PPM

- Allottee account information:- Before this system allottee information was generated manually on request (2-3 hrs job) and complete process used to takes 15-20 days. But now after implementation of new system information is up to date.
- Application status tracking:- Before automation owner have to persue his/her application by self, but after automation all the status of all application can be checked online.
- Service Delivery: - Before automation there were 10-12 channels for clearance of one process. But now maximum of 5 Channels exist in the whole system process.
- Identification of Vacant Properties:- Before in the manual system there was lack of clarity / proper records on the vacant plots. But now all the Information can be obtained on the click of the button.
- Payment Receipts:- Before new system, single Bank at the premises of Estate Office and No Guarantee of attachment in the concerned File. But after new system online Payment Gateway / RTGS/NEFT with instant reflection in allottee's property account.

VI. RESULT AND DISCUSSION

There are number of parameters on which smart city application property plot management (PPM) is studied. We have concluded that some of key essential features which are required for smart city project enhancement. This saves a lot of time and fast processing of information and retrieval. This will benefit whole of the society.

Table- I: Key Features showing Events and the effects after implementation of ICT in PPM

EVENT	BEFORE AUTOMATION	AFTER AUTOMATION
Appointment	Owner had to visit the concerned Estate Office for depositing the documents within the specified time.	Owner can apply online and take appointment for biometric attendance and Verification of the Documents.
Delivery of Documents	Post approval letters were sent by-post which was full of corrupt practices and leads to delays & court cases.	Digitally signed approvals are sent through e-mails and in the property account of the owner.
Rate of Approvals	Earlier after the receipt of applications, scope of rejection of various applications remains like signature mismatch, incomplete payments and attachments etc. These all carries discretion and unfair practices.	Applications are accepted only after payments; attachments are in order followed by biometric authentication which rules out the scope for arbitrary rejections.
Business process re-engineering	There were 10-12 channels for clearance of one process.	Various redundant channels has been removed for quick delivery of services
Owner Account information	Generated manually on request (2-3 Hrs job) complete process takes 15-20 days and no mechanism for re-checking.	Online, up-to date and instant.
Revenue generation	Manual System was causing large revenue losses as it was nearly impossible to calculate the dues of each property manually	All default payments can be identified in one go and notices are generated automatically through PPM System.
Automatic outstanding dues notice generation	Manual and tedious process was with full of discretions.	Notices are generated automatically and sent through SMS and on the email ID of the owner.
Consistency in accounting procedures and calculation of dues	Lack of uniformity in calculation of owner dues and accounting procedures.	Uniform calculations and accounting procedures across all Estate Offices in the state.
Online Building Plan Approval	Error prone, complex , discretionary and time consuming processes. Inadequate visibility of proposal file movement/status and lack of transparency Inadequate citizen interface/ manual intervention in each process	Web enabled online process with defined workflows and timelines to grant approvals in 3 days for fresh and 5 days for revised building plans
Time Frame	No time frame was defined for the services to be delivered.	Fixed time frame is defined for the delivery of services and monitoring process is in place to track each default in the timely delivery process.

VII. FUTURE WORK & SCOPE

This PPM application is still progressing phase and is intended to do better automation of Gymkhana and Golf Clubs across the state. Further enhancement can be done by automation of Generation of Notices and Online Works Management Portal for instant monitoring of Engineering Works. We can also work on the framework of Inventory Management System within the PPM application. Development of Public Interface of FAS for users to track payments needs to be implemented to eliminate the role of middle man. Various Mortgage & De-mortgage decisions need to be executed to fair execution. Implementation of Human Resource Management system for online access to the employees and the management with various employees' details and Implementation of central file movement and tracking system is another feature that need to be encountered in further future.

REFERENCES

1. ASCI,Hydrabad,"Use of effective Urban Governance and Service delivery in India: A selection of cases",in collaboration with MoUD:GoI,2012.
2. Getting Smart with UrbanLiving:
3. http//WWW.businessinfocusmagzine.com/201smart-cities.
4. 100 Smart cities in India , Facilitating Implementation–Deloitte:
5. http://in-imo-smart-cities-in-india-noexp.pdf.
6. Anuj Tiwari,Dr. Kamal Jain, "3D City Model Enabled E-Governance For Sustainable Urbanization", 14th ESRI India User Conferenceid:UCP0024.11-12 Dec 2013.
7. Online course from edx on Smart Cities provided by ETH Zurich University.
8. Szczech-Pietkiewicz,E., "Poland's urban competitiveness in European context", The Polish Review, University of Illinois.

AUTHORS PROFILE

Sapna Malik: Assistant professor in Computer sc. Department in Govt. PG College For Women,Panchkula,Haryana, She has MCA, M.TECH, M.PHIL Degree in Computer Science. She is currently pursuing PHD from Chandigarh University. She has Published Book on Artificial Intelligence in 2019. She has published various research papers in research Journals. She is also a member of ACM Transactions.

Parul Sharma: Assistant Professor in Govt. PG College For Women,Panchkula,Haryana, She did her M.Tech in Computer Science Engineering from DIT University Dehradun. She is currently pursuing PHD in Computer Science Engineering from RIMT University. She has Published Book on Artificial Intelligence in 2019.She has published many research papers in various Journals. She has recently presented a paper in IEEE conference in Bali, Indonesia in Nov 2018.