iJRASET
International Journal For Research in Applied Science and Engineering Technology



INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Volume: 10 **Issue:** VII **Month of publication:** July 2022

DOI: https://doi.org/10.22214/ijraset.2022.45359

www.ijraset.com

Call: 08813907089 | E-mail ID: ijraset@gmail.com

International Journal for Research in Applied Science & Engineering Technology (IJRASET)
ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 7.538
Volume 10 Issue VII July 2022- Available at www.ijraset.com

Automated System for Managing Hospital Data Using RPA

Rachana H R[1], Ramyashree[2], Rachith R Poojary[3], Shrushti S Shetty[4], Prof. Ashwin Kumar M[5]
[1, 2, 3, 4, 5]*Department of Computer Science & Engineering*, Mangalore Institute of Technology & Engineering

Abstract: ***Healthcare systems contain multiple difficult tasks and strict regulations that require a considerable amount of resource allocation which causes high cost of operation, slower process and inefficiency. Healthcare professionals can address these problems by using the strength of automation and RPA thereby patient satisfaction can be improved. QR codes are fast becoming the go-to method for many organizations and businesses around the world. The reason complex management systems are using QR codes to manage their businesses better is that QR codes can help organize the overwhelming data gathered from customer and, on the other hand, give out information to users where it is due. Hospitals are some of the most challenging and complex organizations to manage and maintain. There are many variables to consider when running a hospital, such as patients, doctors, staff, drugs, labs. Automating the existing manual process of admission through computer software and hardware is the aim of hospital management system which enables faster access and manipulation of the valuable information through QR code.***

Keywords: RPA, QR code, Healthcare systems, Hospital, Information

I. INTRODUCTION

Hospitals are a business model in which the service provided is the maintenance of human health, directly interfering in people's lives. Like every modern company, medical service providers are facing the task of always making their organization – as well as all internal processes efficient and cost-effective. In healthcare, however, these challenges are tied to strict requirements. The quality of patient care must always be optimally guaranteed and if possible, even improved. Thus, automation offers a solution to this. So, here are some of the main reasons why automation is essential than ever in healthcare industries.

Robotic Process Automation (RPA) happens when hardware or software automates basic operations. Healthcare systems contain a series of onerous tasks that result in increased operational costs and slower processes. In the hospital or healthcare industry, physicians are spending more time in managing data than in solving problems of patients. Automating data management is only the solution to save time and effort of healthcare professionals. RPA handles tasks such as scheduling, booking treatments, and managing dues by automatically sending invoices. Hence, healthcare professionals can concentrate on addressing problems of patients thereby RPA speeds up health care system and increases its efficiency, even increases patient's satisfaction.

A Japanese bar code developer, Denso Wave developed a two-dimensional scannable QR (Quick Response) code in 1994. QR code generators that on scanning provide information to the scanner are used to generate these codes. QR Codes for sanatorium and healthcare enterprise can show extraordinarily advisable to each sufferer and healthcare carriers in phrases of speaking and offering treatment, it permits hospitals to streamline and leverage the affected person administration system. It can assist hospitals deal with patients higher and limit administrative burden. You can additionally enhance the time effectively and fee related with every affected person by means of supplying geared up and immediate information.

Healthcare specifically in the advanced world is characterized by means of quickly growing use of facts science in affected person care, growing documentation, billing, and management. Rise of fitness statistics technological know-how international is growing the effective of fitness carrier delivery, lowering clinical errors, enhancing satisfactory of care and imparting higher records for sufferers and medical practitioner. The normal motive of the facts management function is to obtain, manage, and use data to beautify health care and scientific services, performance, governance and control and assist processes. The importance of healthcare to human beings and governments and its growing costs to the monetary device have contributed to the emergence of healthcare as an essential area of research for college kids in business enterprise and distinctive disciplines. Information structures (IS) have a good buy to offer in coping with healthcare charges and in improving the super of care. In the healthcare affects the super of human lives and function within side the society. Healthcare errors have critical outcomes that may have an effect on capacity to perform social and efficient endeavour.

©IJRASET: All Rights are Reserved

Recent reviews spotlight the gravity of detrimental activities in hospitals and the risks such activities pose to people and the public. Healthcare statistics structures have modified the healthcare enterprise substantially during the last decade in addition to the previous few years (Abraham & Jungles). The forces of opposition and improvements in healthcare era are pushing hospitals to comply with the fashion. Paperless healthcare structures have emerge as inevitable and any healthcare institute that doesn't comply with this fashion will fall in the back of the relaxation of the enterprise.

With the ever increasing queues at hospitals and increasing number of patients, it is very difficult for the receptionists to handle the crowd. With the busy stressful lifestyle of the people, maintaining each hospital report paper may seem bit difficult. Manual filling of the admission form at hospital will also a tedious and time consuming task to the patient guardians. Doing the same task repeatedly may cause irritation to the staff members. Thus we can use an automation and digitization in hospitals to reduce these problems.

II. LITERATURE SURVEY

QR code technology in a surgery is described as a technique increases the accuracy, efficiency, safety in surgeries and also the outcomes. Surgeries using QR technique[1] is conducted and accuracy, feasibility were estimated. Total of 40 surgeries were done using QR codes in surgical time-out and survey conducted to evaluate based on Likert scale and yes or no questions. In the first (baseline) survey of 53, results strongly agreed that current time-out process is efficient, easy to use and provides clear information, even though some felt for more improvements in the current time-out process. Thirty-seven out 40 QR scanned successfully giving 100% accuracy and 3 were failed because of excessive curvature or wrinkling of QR code label on the body. Again, a survey based on QR code assisted process for 33 surgeons was done and this time 74% preferred QR system over current time-out process. The patient information needed for time-out process is sent by the QR code accurately and it is now preferred to use by the surgeons during current process.

Electronic patient information leaflet had several positive aspects people still prefers paper based information. A survey which included questionnaires[2] based on current usage of the patient information leaflet and reading the patient information leaflet electronically was done. This survey tried to provide great understanding regarding views and preferences. The questionnaire included gist of what patient information leaflet means, participants some personal data and 6 questions. Survey is given to the people visiting the pharmacy for medication. They needed 384 answers to answer the main question and they collected 400 responses. Also, some face-to-face or telephonic interviews were conducted and they were recorded with respondent's permission and were transcribed. Then the analyses of questionnaires were analyzed using SPSS software and using qualitative description method. Quick Response Code, offer clean get right of entry to to the affected person information whilst affected person visits, it saves lots of time, paperwork, and guide attempt with the aid of using recording the information electronically, and offering accessibility[3] from everywhere withinside the world. Orthodontics is a uniqueness of dentistry that offers with the diagnosis, prevention, and correction of abnormal tooth and jaws, and misaligned chew patterns. Various home equipment are used to accurate the dental irregularities and distinct retainers are used to hold the carried out correction. To triumph over the trouble of attempting to find facts and preserving it. Here Shakil – Karteek technique to store affected person information, radiographic interpretation, and remedy plan coded, scanned at the solid and the equipment which may be examine the use of a QR scanner.

QR Code Identity Tag machine for Turkish healthcare which helps in easy get entry to to indispensable clinical data like, customary affected person information, which includes name, address, and emergency contact, are displayed. To minimize public healthcare fees and enhance the excellent of public healthcare, it is essential to reduce remedy errors, enhance affected person safety, and enlarge the accuracy[4] of scientific procedures. Automatic affected person authentication structures can positively have an effect on these elements and beautify get admission to to and transport of public healthcare services. For this study, we designed a QR Code Identity Tag device to combine into the Turkish healthcare system. This machine affords QR code-based clinical identification indicators and an in-hospital affected person identification system. Every member of the scientific device is assigned a special QR Code Tag; to facilitate clinical identification alerts, the QR Code Identity Tag can be worn as a bracelet or necklace or carried as an ID card. Patients have to usually possess the QR Code Identity bracelets inside health facility grounds. These QR code bracelets hyperlink to the QR Code Identity website, the place targeted facts is stored; a smartphone or standalone QR code scanner can be used to scan the code. The layout of this gadget approves approved personnel (e.g., paramedics, firefighters, or police) to get admission to extra certain affected person records than the common smartphone user: emergency provider specialists are licensed to get entry to affected person scientific histories to enhance the accuracy of clinical treatment. In Istanbul, we examined the self-designed device with 174 participants. To analyze the QR Code Identity Tag system's usability, the contributors accomplished the System Usability Scale questionnaire after the usage of the system.

Hospital control structures provide the advantages of simplified operations, advanced administration, manipulate, advanced affected person care, tight fee manipulate and extended profitability. Powerful, bendy and clean to use, HMS is designed to deliver actual advantages to hospitals. What's more, it is subsidized with the aid of using stable and dependable support. The "Hospital Management System" mission is primarily based totally on database, object-orientated and community technologies. Since we maintain information in lots of regions in our database, we use MY SQL software program that's one of the satisfactory and simplest software program to shop our information. This mission makes use of JAVA because the front-stop software program, that's object-orientated programming and is associated with MY SQL. The health facility control gadget is designed to fulfill the precise desires of huge and medium-sized hospitals[5] across the world. All required modules and features are specifically advanced in keeping with your requirements. This bundle has been extensively frequent with the aid of using clients in India and overseas. Not handiest did they prevent doing it, they have been very satisfied and preferred it. The complete utility is net primarily based totally and constructed on a 3-tier structure, in the usage of the state-of-the-art technologies. The app's reliable database makes it more user-friendly and extensible. The packaging is very personal and can be modified according to customer needs and requirements.A long-time period take a look at of the hospital's capabilities and its unique desires offers it a superb shape factor, each technically and usable. It covers all required modules from affected person registration, scientific information, physicians, wards, administration, business, affected person appointments, invoice payment, file modification, discharge information and more. The human frame is a totally complicated and complex shape containing tens of thousands and thousands of capabilities. All those complex capabilities had been understood through guy him, element-through-element their studies and experiments. As technology and generation progressed, medication have become a vital a part of the studies. Gradually, scientific technology have become a wholly new department of technology. As of today, the Health Sector contains of scientific establishments i.e., Hospital, studies and improvement establishments and scientific colleges. Thus, the Health area goals at presenting the exceptional scientific centers to the not unusual place guy.

Hospital management is always a stressful and challenging one. Hospital administrators need to deal with various activities in the hospital like patient registration, patient care, doctor’s appointment and many other such things. The whole functioning of the hospital makes it good or bad. People remembers it only on the basis of the quality of treatment, patient attention and treatment cost. Doctors and nurses cannot solely manage a hospital. It needs a professional touch for the smoother functioning of a hospital. The recent technologies have resulted in the invention of new software systems which helps in the easier management of the hospitals.

Some of the challenges that are faced by the hospitals which is a hindrance to an efficient management are Manage staff, Medical data handling, Patient data handling and Lab report management. These challenges can be surpassed by means of implementing automation in hospitals.

III.METHODOLOGY

In the proposed system first we have automated admission process of the patient by using OCR technique to scan details in the Aadhar card and this information is stored in the system. Same details are added to the database and mapped with card having unique QR code when patient admits to the hospital for the first time. Every reports of the patient are stored in the Database and can be accessed using card provided to the patients whenever required. Using OCR technique, details in the lab report is retrieved and stored in the database.

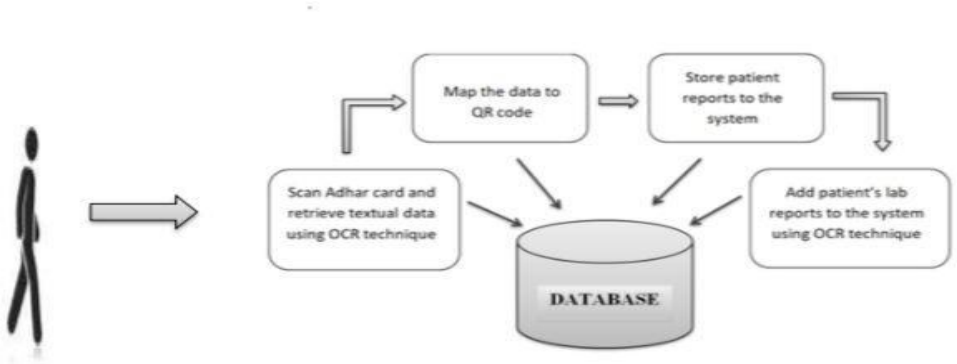


Fig.1 Block Diagram of the Proposed System

ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 7.538
Volume 10 Issue VII July 2022- Available at www.ijraset.com

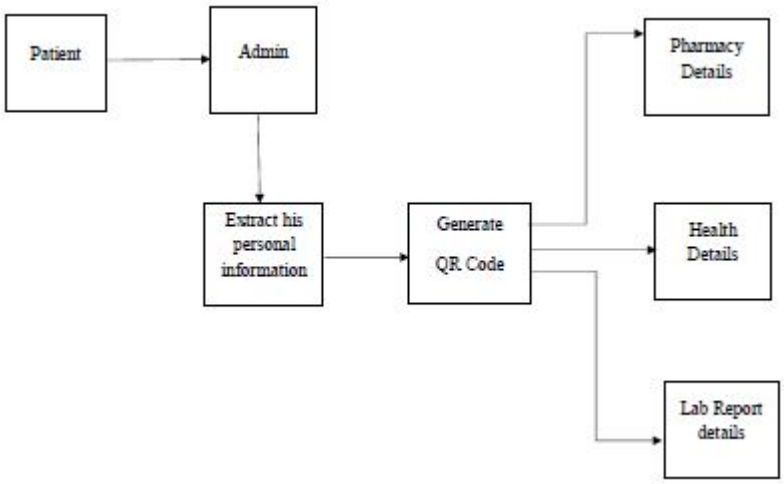


Fig.2

Fig. 2 shows detailed description of how Patient gives his information to the admin and a QR code is generated where all the health detail will be stored.

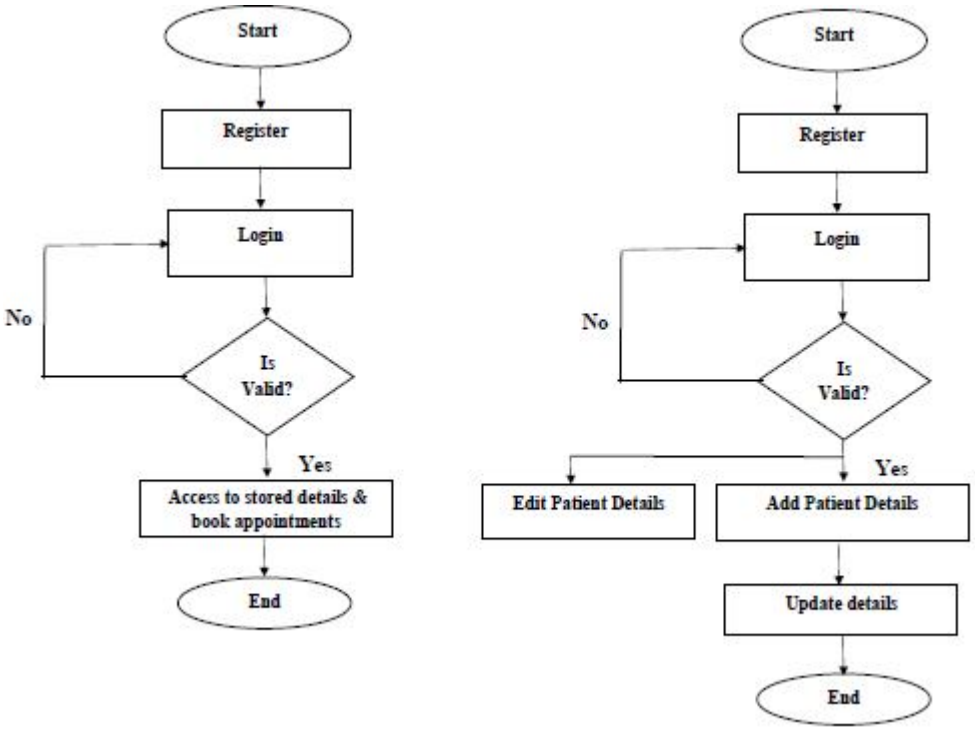


Fig.3 Flowchart

IV. IMPLEMENTATION

The proposed system for Hospital Management which has three modules: Admin module, Pharmacy module and Lab report module. If the patient visits the hospital for the first time, then he has to register his name at the reception counter. According to his problem appointment of particular specialist can be taken. The name of all the patients will display on the digital display screen which is placed outside of all the department. For display the name of patients this system use queue technique to display the name one by one.

©IJRASET: All Rights are Reserved | SJ Impact Factor 7.538 | ISRA Journal Impact Factor 7.894 |

In this Employee first will register and login in employee module then register name of patients and give initial treatment to patients if there is any emergency then they send patients to specialist according to their problem otherwise they generate bill with prescription. In emergency condition patients may be admitted to ward or ICU that process handle by sister for that sister has to register and login with username and password. In this module there is a searching option to see the actual status of each room, according to that bed is allotted to particular patients. This module also manages medication of patients according to doctor's prescription. It also handles proper diet of patients. In doctor module doctor has to register and login. This module contains specification of doctor. In this doctors can update patients report. Admin module contain admin registration and admin login. It also contains user creation, manage information and user deletion.

Here, web-based technology provides many online services in almost all fields. Almost everything can be done online, which helps reduce workload, cost, and hassle. This paper describes the idea of such a web-based platform that brings many medical/hospital procedures online by using web network technology, which is very important to realize the function of online medical management. This helps manage patients, manage physician schedules, and maintain patient records that are accessible throughout the hospital. Store, manage, communicate, analyze and update patient data online. By implementing this web-based application using custom application programming, we can accomplish many tasks that are often time-consuming and inconvenient.

V. RESULTS

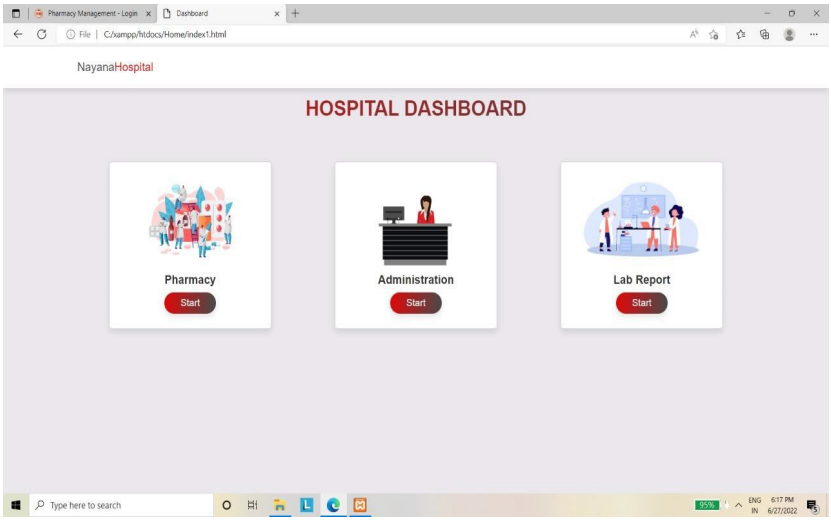


Fig.4: Hospital Dashboard Page

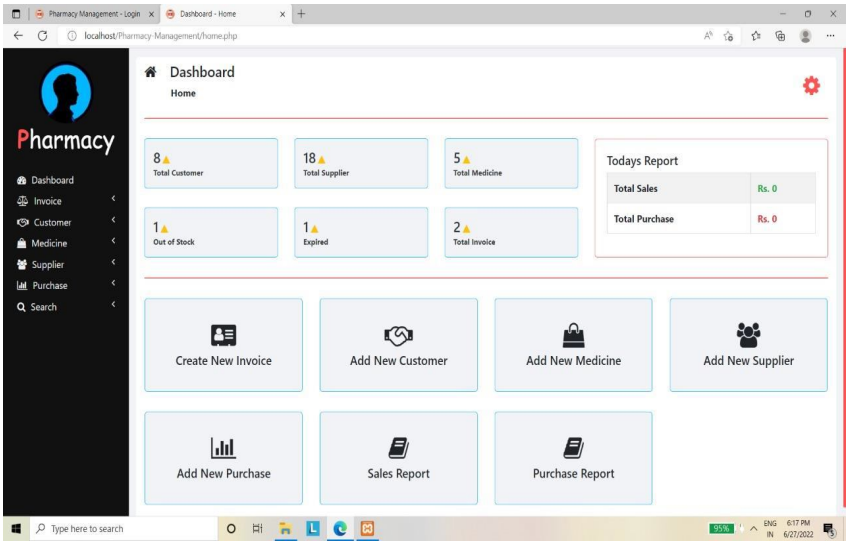


Fig.5: Pharmacy Dashboard Page

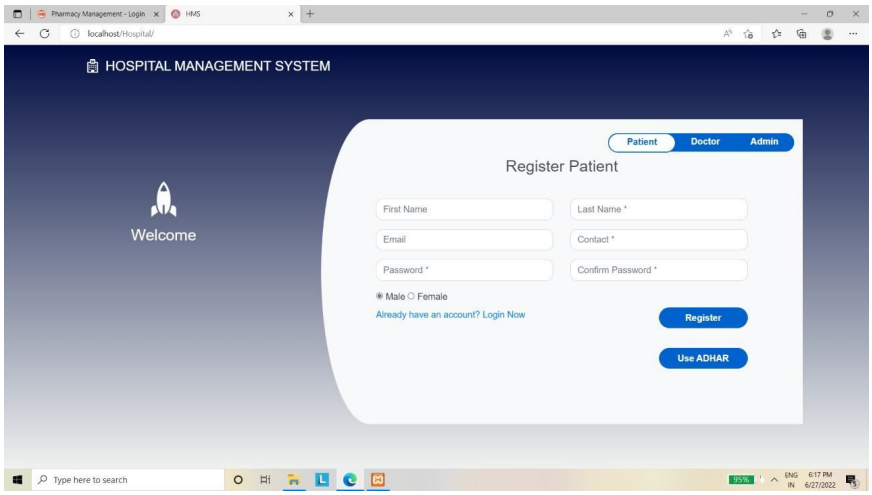


Fig 6: Patient registration page

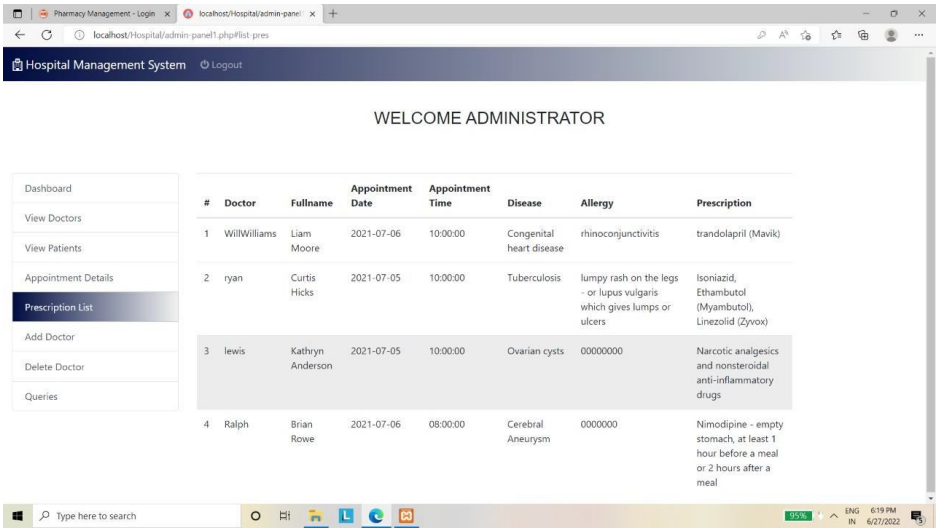


Fig.7: Patients List Page

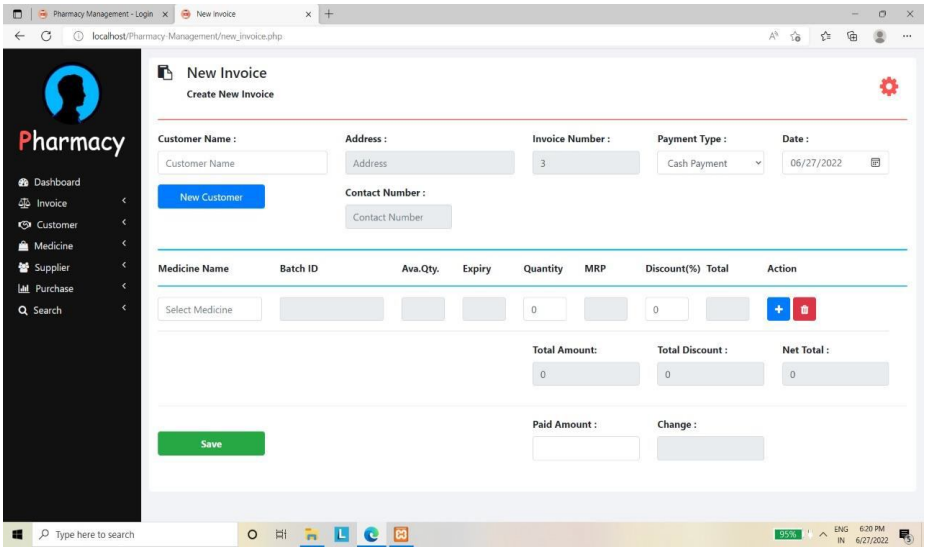


Fig.8: Pharmacy Data Page

VI. CONCLUSION

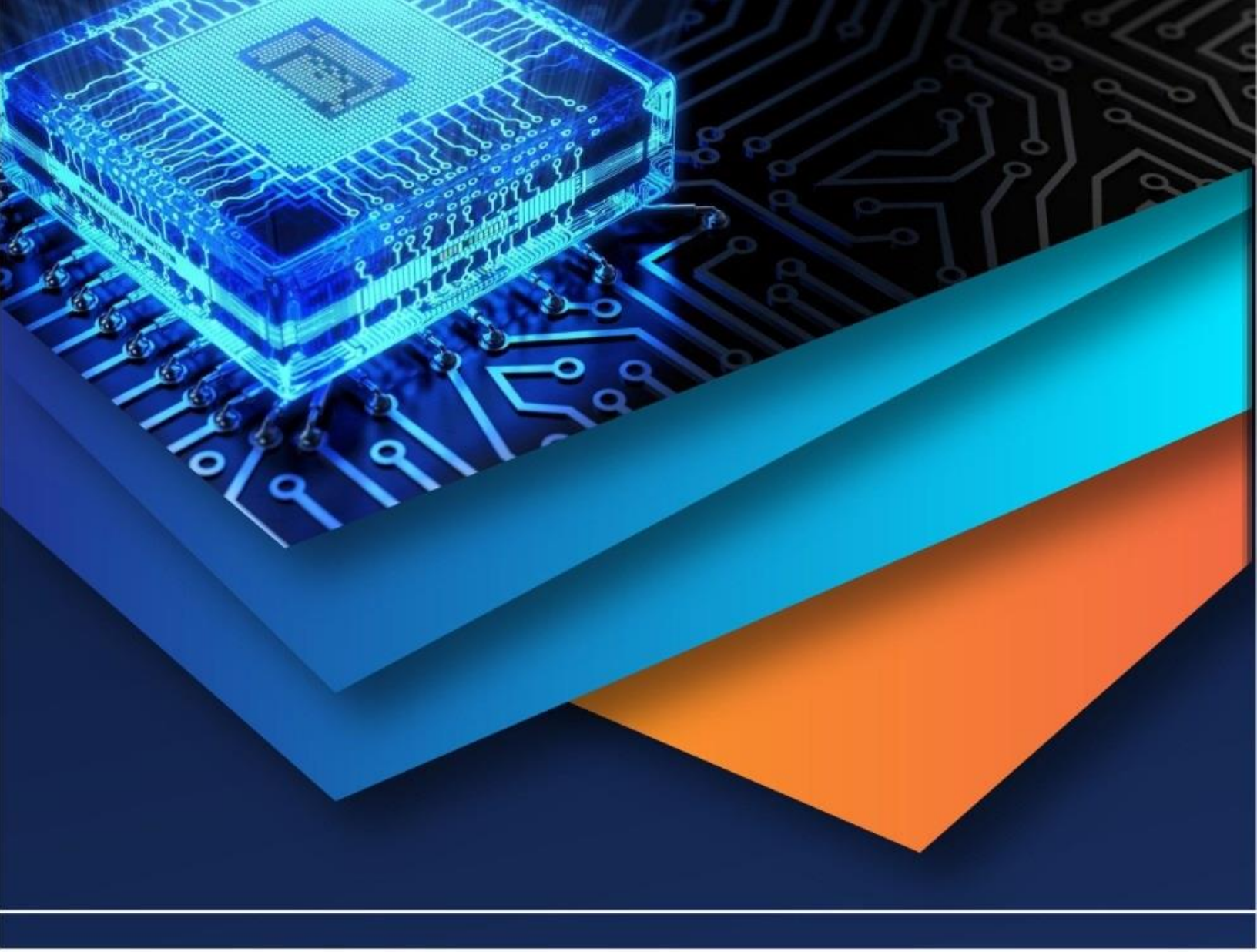
Implementing RPA in a hospital will make patient,Doctors, management easier, more efficient as it will be consuming less time. It helps patients and doctors to access old records and reports instantly, as medical histories and reports will be present in the system. The patient don't need to carry all reports, X-rays and MRIs etc. First time patient data is collected during registration, in future no need to fill out form as details will be present in database and it will be updated by the concerned authority like Doctor, nurse and pharmacists. So in emergency if the patient has already visited then need not register once again which in return will save time and life. Doctors can view patient details,old prescriptions can be checked and new can be updated with one click and sent to pharmacists. This will save a time as the pharmacist will come to know in advance what medicines should be kept ready. The communication between the doctor and the patient is improved as the patient can get help online in emergency. Overall by automating hospital using RPA a lot of manual work, time and cost is reduced.

.

REFERENCES

[1] Jennifer L.Dixon MD, William Roy Smythe MD, Lara S.MomsenRN, Daniel Jupiter PhD, Harry T.Papaconstantinou , "Quick Response codes for surgical safety: a prospective pilot study", The Journal of Surgical Research: Clinical and Laboratory Investigation, vol 184, issue 1, 2013.
[2] Anna-Lena Nilsson, "Patients' views on electronic patient information leaflets", DOI:10.18549/ PharmPract. 2016.
[3] Moidin Shakil, Karteek Durbakula, Maji Jose, "Quick response codes in Orthodontics", Journal of Indian orthodontic society https://doi.org/10.4103/0301-5742.158647.
[4] Vassilya Uzun,Sami Bilgin "Evaluation and implementation of QR Code Identity Tag system for Healthcare in Turkey", Springerplus, Article number: 1454 (2016).
[5] Digvijay H. Gadhari, Yadnyesh P. Kadam, Prof. Parineeta Suman, "Hospital Management System",(IJREAM) ISSN : 2494-9150 Vol-01, Issue 11, FEB 2016.

©IJRASET: All Rights are Reserved | SJ Impact Factor 7.538 | ISRA Journal Impact Factor 7.894 |



10.22214/IJRASET

45.98

IMPACT FACTOR: 7.129

IMPACT FACTOR: 7.429

INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Call : 08813907089 (24*7 Support on Whatsapp)