

Research on Medical Registration Service System Based on Service Design Concept

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Abstract:

From the perspective of service design, this paper investigates and analyzes the current operation mode and future development trend of medical service system. By investigating the needs of medical services of patients and analyzing them, the medical registration system is connected with artificial intelligence and information technology platform. In combination, a medical registration system scheme based on service design and centered on user experience is proposed. This paper focuses on the design of the medical registration service system, and uses the field research method to study the registration process of medical institutions. It is found that there are a lot of problems in the traditional medical registration method, which seriously affects the medical experience of patients and the medical efficiency of medical institutions. According to these questions, the entire medical registration process can be optimized and innovative, and more scientific and feasible solutions and new reference suggestions can be proposed.

Keywords:

Medical, Registration, Service Design, User Experience, Artificial, Intelligence

1. Introduction

People's demands for medical treatment have brought some new development opportunities to the medical industry. The traditional medical treatment process is too complicated, and there are a lot of problems that plague people's lives, which seriously affect people's medical experience and the efficiency of medical institutions. This makes the research of medical service system a hot topic, and how to make the traditional medical treatment process gradually rely on the Internet, artificial intelligence and big data to provide patients with a better medical experience, has become the design focus.

The continuous development of the Internet and artificial intelligence, the use of the Internet and artificial intelligence to optimize and innovate the medical service system has become the development trend of the medical industry. The hospital does not lack service terminals and mobile devices, but the overall process design and interface interaction design are not perfect. With the rapid development of the times, users have not only focused on the terminal products themselves, but have paid more attention to

the emotional experience brought by the entire system service. In order to effectively solve these problems, a medical registration service system based on service design is designed. According to the individual needs of patients, such as the condition, time, etc. they choose to seek medical treatment with their own registration, and provide advice to patients for medical treatment, effectively and rationally allocate resources and improve reducing medical efficiency, reducing waste of resources and time also reduces labor costs. [1,2,3,4].

2. Service Design Research

2.1. The Concept of Service Design

Service design is to provide some kind of service activity from the perspective of the user. To put it simply, design thinking is also a multidisciplinary design area designed to improve the user experience, improve the service experience and quality of service. It emphasizes making services more useful, usable, and easy to use [5], integrating people with the environment, behavior, etc. And will People-oriented "runs through the entire design. Nowadays, more and more fields are changing the design from "centered on the product itself" to "centered on the user experience". This requires a focus on service design, but the service design is a multidisciplinary intersection. In the field of complexity, there is no systematic and comprehensive explanation of the understanding and analysis of service design. There are five basic principles for service design: user-centered, co-creation, orderly execution, perceptibility, and integrity. Designing based on these five points will result in more efficient and humane conclusions.

2.2. The Meaning of Service Design

Nowadays, the service industry has occupied a large proportion of the national economy and has shown a growth momentum. More and more enterprises are beginning to put their core strengths into technology, and leaving a large proportion of services in order to enhance their corporate image. Changes in the form of business operations have brought tremendous opportunities to the service industry. Providing high-quality personalized services to users has become a competitive point between enterprises, thus giving service design an important meaning.

As a service industry in the society, the medical industry is the vitality of medical institutions. Strengthening the design centered on user experience, providing consumers with quality medical services and improving user satisfaction is the most important goal of medical institutions. For consumers, a good user experience is the most direct basis for judging a service activity. Users feel all the feelings before, during, and after using the medical device or system, including emotions, preferences, cognitive impressions, and physiology. And psychological reactions are intuitive or intrinsic manifestations of good and bad service design. Medical institutions lack awareness of the importance of service design. Existing medical service facilities are still at a relatively basic stage and can no longer meet current users. The various needs, so the design improvement of medical service facilities is particularly important. [6,7,8].

3. Results and Discussion

3.1. Current Status of Mobile Terminal Application in Medical Registration Service System

Terminals and mobile applications of the medical registration service system are mainly connected to the network through mobile devices such as terminal devices and mobile phones, and are carried out in a smart way with big data. By completing online registration and consultation, the registration time is shortened and medical treatment is improved, thus bringing convenience to patients and medical institutions. Nowadays, the medical system provides rapid development of providing medical services to users through the Internet. Internet medical has changed the traditional medical registration process in a formal way, which greatly improved the efficiency of medical treatment [9]. [Figure 1]

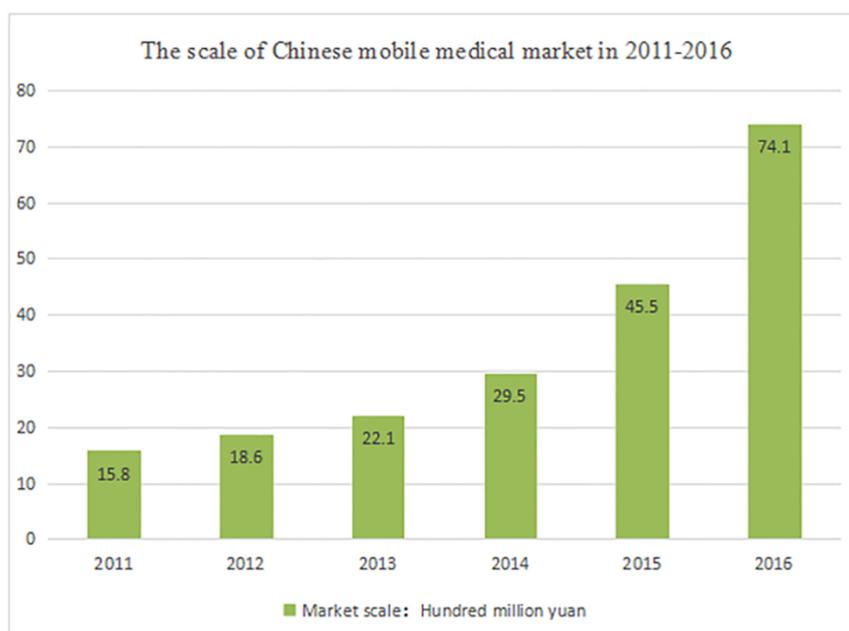


Figure 1. The scale of Chinese mobile medical market in 2011-2016.

(Source: Prospective Industry Research Institute "Mobile Medical Industry Report")

As shown in the chart above, the penetration rate of mobile medical care is also constantly improving. According to the data, the scale of China's mobile medical market has reached 10.35 billion yuan in 2016, and there is a strong trend to continue to rise. [10]

3.2. Medical Registration Process

The medical registration service system is an intelligent system content of the artificial intelligence system in the field of hospital service systems. It plays an important role in improving the service efficiency of medical institutions and meeting the medical needs of patients. It can simplify the steps for patients to seek medical treatment and shorten the time for medical treatment.

The entire medical registration process is a very standardized process step in the medical system. The entire process involves the patient's personal information entry and referral services. There are a lot of problems in the whole registration process, and there are places where the user needs to perform iteration and optimization,

whether it is the terminal or the mobile terminal. Use this process to analyze and find new design points [Figure 2].

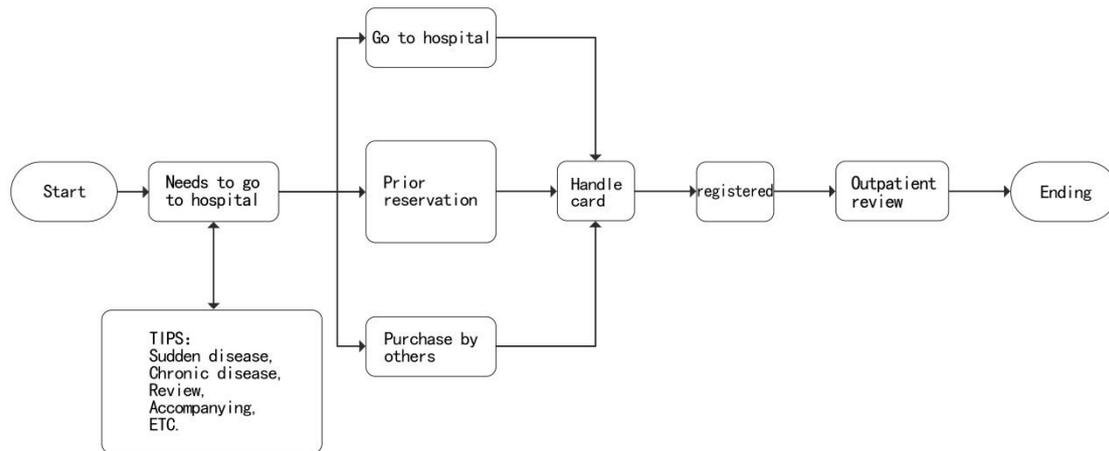


Figure 2. Medical registration process.

The picture shows the hospital registration process in several hospitals.

3.3. Medical Registration Process and Functional Requirements Analysis

Based on the theoretical guidance of service design and system design, combined with the investigation and research of the current medical registration process, the hospital's registration process can be subdivided. The current registration process can include the following links:

Complete the name system to fill in the information-terminal or manual registration - registration completed to go to the clinic to wait for medical treatment.

According to the sequence of the registration process, this article sorts out the links and corresponding problems that users need to go through the process of registering for medical treatment. This analyzes the needs of users in the entire registration process to design the entire registered service system to improve this process.

There are many problems in patients going to the hospital for medical treatment, such as forgetting to carry medical insurance cards, ID cards and other necessary documents; waiting for too long and temporarily leaving to miss the time of medical treatment. The time and energy that each of these problems are wasted together, greatly reducing the efficiency of medical treatment. It takes nearly a whole day for a doctor to get medical treatment, even if it is only a minor illness. From the above point of view, the patient will have a great negative emotion when faced with a problem in the entire registration process. Therefore, good service design brings a user experience and can give users a more comfortable psychological state. [11]

4. Design and Implementation of Medical Registration Service System

4.1. Information Architecture Module

Information architecture refers to the development of an information architecture system in the system, which integrates existing information and information to be entered in the future to meet user needs. The established information architecture can

reflect the corresponding system function structure, thus making the system function more comprehensive design.

The basic information structure in the system, including hospital outpatient information, doctor and expert information, day shift information, registered quota display, etc. Patients who come to see a doctor can choose to register based on this information. The information module can also automatically record the patient's medical record every time, and the corresponding individual case and test data can be viewed by logging in through the personal account. [12] [Figure 3]

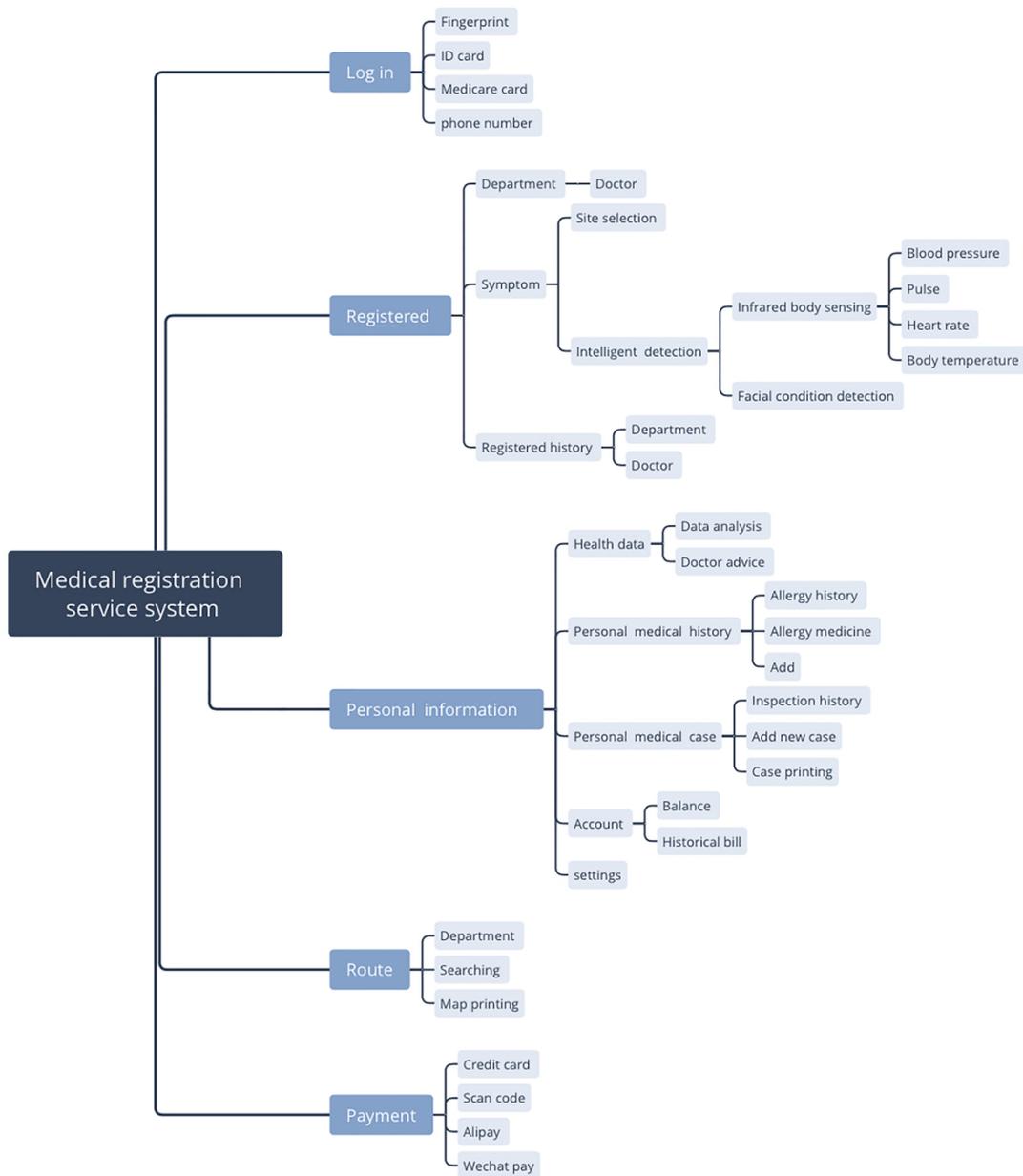


Figure 3. System information architecture.

As shown in the Figure 3, the information architecture content is added to the system function.

4.2. Information Management Module

The information management module has technical support for the entire medical registration service system, which can realize office automation, provide an effective way to process system data, and perform calculation and generation of files; establish communication, help collaborative work, and realize communication between users and systems. Information sharing; transaction processing, collecting and storing transaction information and controlling some aspects of the transaction process; execution capability, converting system data into information, providing in-system information to users in a receivable form; decision support system, through statistical information Analysis to help managers make decisions. [12]

4.3. Task Level Page Design

The task hierarchy of the entire product pays more attention to the user experience in service design, and the operation is maximized and simplified, aiming to provide users with a more intuitive and easy to operate service system.

The task level is divided into user registration and registration, selection for intelligent detection (including selecting precise parts, placing the wrist to the sensing area and voice input), and the user to input the information step by step (including the machine will automatically perform infrared sensing, etc.). After the intelligent detection, the corresponding medical advice, etc., to provide users with more convenient medical guidance, help users to register more quickly and accurately, reducing waiting time. Correspondingly, after the registration is completed, there will be a real-time guidance route to lead the user to find the corresponding inspection department.

The task level page was designed and structured according to the process.

4.4. Implementation and Simulation

Patients can choose their preferred login method, including fingerprint login, APP scan login account login and ID scan login. After login, according to the information displayed in the system, you can do medical consultation and make corresponding registration. You can choose to perform intelligent detection or view your personal electronic medical record. If you choose to enter the intelligent detection function, you will enter the intelligent detection page. First, select the uncomfortable part, then select the subdivided part to narrow the terminal judgment range. Then the patient will select the part after the corresponding part. The terminal has a detection details page, and places the hand in the terminal sensing area according to the page prompt of the terminal, and then performs necessary detection, such as detecting blood pressure, heart rate, etc., the infrared camera on the terminal machine detects the person's various items during the process of placing the wrist. Physical fitness for further detailed testing, and then the voice input is performed, and the background system performs screening and judgment according to the internal big data. After a series of tests, the corresponding data check result is obtained, and the data result information shows the test data and gives the diagnosis opinion and the pre-diagnosis result, thereby recommending the most suitable one. Doctors (at this time, the system will make intelligent recommendations based on the doctor's level, current queue number, and waiting time). Similarly, patients can choose the doctor they want to choose or directly make an appointment. The system visualizes the medical information, and can more intuitively understand the real-time registration queue to complete the registration according to their own needs. [13,14].

5. Conclusions

With the advent of big data and intelligent era, the Internet of Everything and the Reality of All Things can be realized, and people's lives are more convenient. Based on the service design concept, this paper conducts an in-depth study on the process of medical registration, analyzes its implementability, and initially simulates a human-machine two-way interactive medical registration system process. It is of great significance to optimize the user experience of the enterprise and improve the efficiency of patients' medical treatment. It also satisfies people's growing demand for medical treatment from the perspective of humanization, and has guiding and reference value for the development of the future medical industry.

Conflicts of Interest

The authors declare that there is no conflict of interest regarding the publication of this article.

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