

# ENHANCEMENT MODEL FOR HOSPITAL QUALITY SERVICE WITH CONSIDERATION OF INTEGRATING PATIENTS HEALTH INSURANCE TO UTILIZE FINTECH

Fauzi Arif Lubis<sup>1</sup>, Nurlaila<sup>2</sup>, Ismail Husein<sup>3</sup>, Susilawati<sup>4</sup>, Muhammad Lathief Ilhamy Nasution<sup>5</sup>, \*\*Marischa Elveny<sup>6</sup>, Afnaria<sup>7</sup>, Nurlama Siregar<sup>8</sup>

<sup>1</sup>Universitas Islam Negeri Sumatera Utara, Medan, Indonesia

<sup>2</sup>Universitas Islam Negeri Sumatera Utara, Medan, Indonesia

<sup>3</sup>Universitas Islam Negeri Sumatera Utara, Medan, Indonesia

<sup>4</sup>Universitas Islam Negeri Sumatera Utara, Medan, Indonesia

<sup>5</sup>Universitas Islam Negeri Sumatera Utara, Medan, Indonesia

<sup>6\*</sup>Faculty of Computer Science and Technology Information, Universitas Sumatera Utara. Medan. Indonesia.

<sup>7</sup>Universitas Islam Sumatera Utara, Medan, Indonesia

<sup>8</sup>Politeknik Kesehatan Kementerian Kesehatan Medan

## ABSTRACT

Enhanced the service model is one solution in the quality of service, especially in hospitals. One form of service that is proposed in this case is by utilizing financial technology to answer these solutions. Medical records can be measured and recorded properly by integrating data in metrics. The needs of patients using Health Insurance are easier to handle patients. The model that we apply uses a logistic regression model approach to handling patients using Fintech data Metrics. BPJ and general insurance patient data ranges from the last 3 years and have medical records that often use insurance 85% to 98%. Integration for patients and data integration obstacles so far can be answered. Development of quality integration management through a cross-service platform approach to obtain data, of course, will involve various regulators and stakeholders.

**Keywords:** Star-Up, Hospital Service Model, Patients Health Insurance, Manage Service. Optimization

### Correspondance:

Marischa Elveny

Faculty of Computer Science and Technology Information,

Universitas Sumatera Utara.

Medan. Indonesia.

Email id : marischaelveny@usu.ac.id

## INTRODUCTION

To improve service quality and attractiveness to stakeholders along with patient involvement and consumer loyalty while lowering health care costs, the company aims to define consumers who have health insurance from both the government and the private sector, here we offer and develop a mobile platform-based application program interface, and by answering the needs of the hospital as a solution. The Payment Digital Technology has become a significant for huge data information examination, past its conventional use in infection therapy [1]. For instance, it tends to be utilized to drive dynamic in general wellbeing programs [2], distinguish hazard factors for irresistible infections [3], empower progression of care between clinical foundations [4], improve medical services quality, encourage clinical examination [5], upgrade epidemiological observation and revealing, uphold clinical choices [6], etc. This features the developing acknowledgment of the gigantic estimation information and the expanding desires for its utilization. Tolerant clinical records are grouped in a solitary Provider association or wellbeing framework, with the unpredictability of guaranteeing Health protection against access conventions making it hard for patients and families to get and move records over various Providers. Likewise, each electronic wellbeing record framework stores information in an unexpected way, so it isn't clear who is recording what, where, and when. This results in data collected from participants in care settings including not only patients for whom data is available, but also caregivers, pharmacists, nurses, nursing homes, rehabilitation facilities, and social networks dedicated to their care. Old software systems with in-house interoperability confidential data were limited to different clinical, research, managerial, and budgetary

frameworks. Clinical and social information coming about because of home and work environments are missing, and significant wellbeing patterns that patients seldom take.

## METHODOLOGY

In this study, information sharing and transparency give significant outcomes to persistent patient consideration and driving development out in the open and private wellbeing establishments. Although stakeholders realizing the potential benefits of Fintech data integration developing slowly. Absence of advancement perplexes a lot and our exploration plans to clarify issue. Through meetings, we discover the stream Situation of information division in the nature of administration to protection clients.

### 2.1 Quality of Service Key stakeholders include:

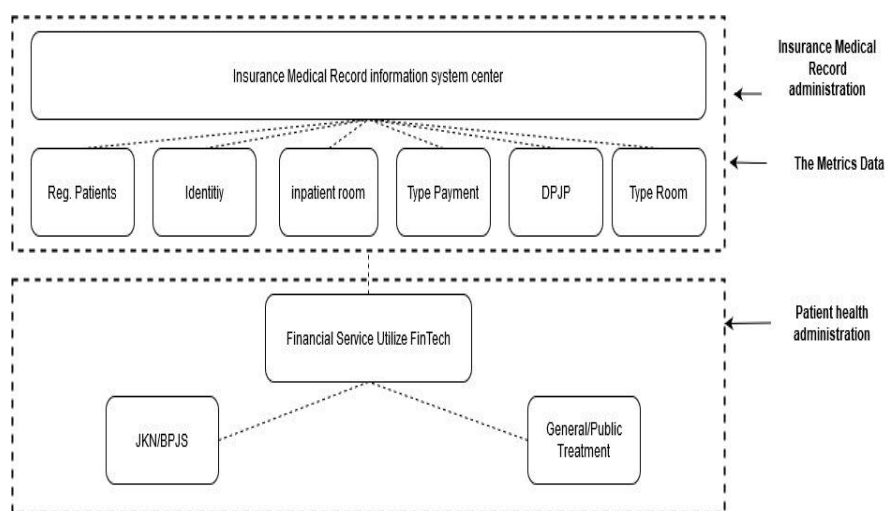
- Patients get medical care given by Fintech specialist organizations. They pay protection charges, co-installments, and deductibles, just as through and through costs for wellbeing administrations. Alongside the Provider, patients contribute information to electronic wellbeing records, albeit quiet information and conduct data about clinical record signs, essentialness, diet, physical action, and cigarette utilize and more can be introduced on the portable application stage.
- DPJP (Provider doctors, nurses, and clinic staff) They document money related cases with Payers, getting repaid charges for billable administrations performed. This is known as the charge model for administrations. Suppliers are major clinical patrons and clients of electronic clinical records. Private professionals work for themselves or as a feature of a gathering of Providers. These Provider Groups are frequently rather

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- than emergency clinics, medical services frameworks, and merchants to offer particular types of assistance (clinical imaging, careful focuses, exceptional consideration).
- c) A payer is an insurance entity that replaces the Provider for covered health services. In Indonesia, around 77% of payers are privately owned businesses, including business insurance agencies and self-guaranteed organizations, while around 23% are government establishments and projects, such as BPJS / IKS. 12 About 23% of health insurance funds flow from a company, and 77% from the Ministry of Health program of the Republic of Indonesia.
  - d) Private Insurers go to great lengths to keep the ratio of medical losses (the rupiah percentage of premiums paid by patients that Payers, thus, spend on medical services - the definition itself reveals to you something about Payers' mentality toward leaving behind charges rupiah for persistent consideration.) Low to build gainfulness, decrease expenses, and increment market intensity. The primary target of the administration is to give admittance to the consideration required for residents who might be impeded from a salary, age, or inability viewpoint while controlling expenses. The low clinical misfortune proportion is to a great extent because of a

more advantageous patient populace and sufficient admittance to preventive consideration.

- e) E-Metrics Health Record Medical System is a secure clinical data storage and pathway management / clinical flow system that combines health care information from emotionally supportive networks, for example, lab, radiology, clinical imaging and drug store, and supports electronic access and correspondence between Providers to encourage giving consideration. The MHRM (Metrics Health Record Medical) system also supports data used for direct clinical consideration use, for example, charging, quality administration, result announcing, asset arranging, and general wellbeing illness observation and detailing.
- f) Drug and Biotechnology Companies create drugs, computerized items, and administrations that are utilized to see the improvement of patient history beginning from determination, fix, relief, treatment, and anticipation of ailment.
- g) Pharmacy integration is responsible for the supply of drugs, and fulfillment of medicines and medication prescribed by digital service providers. This entity now also serves as a medical satellite clinic for further treatment needs. Fintech applications are also being carried out during the outpatient period in general.



**Figure 1. The Collection of hospital Metrics Data Center**

### IMPLEMENTATION MODEL

The goal of the Fintech-based Health insurance model is for data metrics that is universally accessed by patients, flows freely, and is safe, moving between Patients, Providers, and electronic health records. Under the model, the smart contract permits this data in the cloud and allows direct, encrypted patient access on behalf of the patient to anyone, anytime, anywhere whether in care settings such as the emergency room or at home. The unique global identifier will be permanently linked to the patient's standalone health record containing diagnosis, medication, laboratory data as well as critical patient-generated data on nutrition, exercise, vital signs and demographic information that will continue to evolve.

#### 3.1. The Achieved Model

Models are typically fit by the greatest probability, utilizing the restrictive probability of  $G$  given  $X$ . Since  $P_r(G|X)$

totally indicates the restrictive dissemination, the multinomial dispersion is proper. The log-probability for  $N$  perceptions is:

$$\delta(\theta)^n = \sum_{i=1}^n \log P_{g_i(x_i; \theta)},$$

Where  $P_k(x_i; \theta) = p_r(G = k | X = x_i; \theta)$

We talk about in detail the second-class case, since the computations revamp altogether. It is profitable to code's the second-class  $g_i$  through a 0/1 reaction  $y_i$ , where  $y_i = 1$  when  $g_i = 1$ , and  $y_i = 0$  when  $g_i = 2$ . Let  $p_1(x; \theta) = p(x; \theta)$ , also,  $p_2(x; \theta) = 1 - p(x; \theta)$ . The log-probability can be composed.

$$\begin{aligned} \delta(\beta) &= \sum_{i=1}^n \{y_i \log p(x_i; \beta) \\ &\quad + (1 - y_i) \log (1 - P(x_i; \beta))\}, \\ &= \sum_{i=1}^n \{\beta^T x_i - \log (1 + e^{\beta^T x_i})\}, \end{aligned}$$

Here-  $\beta = \{\beta_0, \beta_1\}$ , we expect that the vector of information sources  $x_i$  incorporates the steady term 1 to oblige the block.

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To amplify the log-probability, we set its subordinates to zero. These scores conditions are:

$$\frac{\partial^2 \delta}{\partial \beta \partial \beta^T} = - \sum_{i=1}^n x_i x_i P(x_i; \beta) (1 - P(x_i; \beta)),$$

It is advantageous to compose the score and Hessian in grid documentation. Let  $y$  signifies the vector of  $Y_i$  esteems,  $X$  the  $N \times (p + 1)$  grid of  $x_i$  esteems,  $p$  the vector of fitted probabilities with it component  $p(x_i; \beta)$  and  $W$  a  $N \times N$  corner to corner framework of loads with it askew component  $p(x_i; \beta)(1 - p(x_i; \beta))$ .

$$z = X\beta + W^{-1}(y - p),$$

It appears to be that  $\beta = 0$  is a decent beginning an incentive for the iterative method, in spite of the fact that union is never ensured. Regularly the calculation does join, since the log-probability is curved, however, overshooting can happen. In the uncommon cases that the log-probability diminishes, step size dividing will ensure union.

### RESULTS AND DISCUSSION

This Fintech application serves to increase patient awareness about primary health good and bad trends. Data transfer, managed by smart contracts and patient independent health

records, allows physicians, clinical staff, family, friends, and caregivers to access patient information in a safe, controlled, and secure manner on an auditable basis, the patient informs the patient's overall health and builds a patient-centered community for ongoing support.

**Table 1. Distribution of Customer Health Insurance Customer Metrics Data**

Table 1, We obtained data from the last 3 years, patient referral activities based on data from Health insurance users consisting of BPJS patients and general patients. We obtained this data to conduct trials in our application with the aim of facilitating an efficient service model to achieve quality management activities for waiters in hospitals. Not only that, medical records are also one of the considerations in making decisions by looking at patient history as shown in Figure 2 below:

REG	Patient Name	Identity	Type Payment	Inpatient room	Type Room	DPJP
020215201700000001002	SASKYA AMANDA PUTRI	01/01/2008 00:00	JKN	ICU	ICU-Anak	Aridamuriany D. Lubis dr. SpA
020715201700000002001	HJ KARTINI PINEM	10/09/1948 00:00	JKN	HCU - IGD	HCU-IGD	Yosia Ginting, Dr. SpPD-KPTI
020301201700000003001	SUYATI	01/01/1945 00:00	General	CVCU *	CVCU	Isfanuddin N. Kaoy, Dr. SpJP(K)
020301201700000004001	SYAMSIR LIZA	24/12/1963 00:00	JKN	Rawat Inap Kardiovaskuler LT.4	Kamar III - 4.01	Isfanuddin N. Kaoy, Dr. SpJP(K)
020201201700000005002	MARENDOSIREGAR	10/03/1960 00:00	JKN	Rindu A - P. Dalam Pria	Kamar-I-2	Yosia Ginting, Dr. SpPD-KPTI
020202201700000006001	EVA RIANI GIRSANG	18/05/1980 00:00	JKN	Rindu A - P. Dalam Wanita	Kamar-III-3	Yosia Ginting, Dr. SpPD-KPTI
020105201700000007001	BAYI NY. LOLITAWATI	28/12/2016 00:00	JKN	Rindu B - Perinatologi	Perinatologi	Emil Azlin, Dr. SpA
020102201700000008001	MUHAMMAD AZZAM	13/06/2013 00:00	JKN	HDU Anak**	HDU Anak	Yazid Dimiyati, Dr. SpA
020117201700000009001	JELLY AZISKA RAMADHANI	30/06/2016 00:00	JKN	Rindu B - Bedah Onkologi	Kamar-I-3	Erjan Fikri, Dr. SpB, SpBA
020118201700000013001	RISANDI IHZA FADILLAH	31/12/1999 00:00	JKN	RB II B - Bedah Plastik Karto	Kamar-II-5 (Wanita)	Chairiandi Siregar, Dr. SpOT
020101201700000010001	FAUZIAH	14/02/1996 00:00	General	Rindu B - Obgyn	Kamar-III-2	Iman Helmi, Dr. SpOG
020402201700000011001	ENDAH	10/02/1959 00:00	JKN	ICU	ICU-Pasca Bedah	Edwin Saleh Siregar, dr, SpB
020201201700000012001	DARMAN	01/07/1941 00:00	JKN	Rindu A - P. Dalam Pria	Kamar-III-3	Henny Syahrini, Dr. SpPD
020215201700000014001	FERDIANSYAH SINAGA	26/11/2004 00:00	General	Rindu A - Bedah-Syaraf	Kamar-III-4	Sabri, MKed, Sp.Bs

Figure 2. To guarantee Individualized Control and Transparency of patient information, patients ought to be plainly educated about the advantages of utilizing FinTech clients and the dangers in question in dealing with their information and the conceivable more extensive utilization of them. Patients would then be

able to choose whether their Data Metrics ought to be gathered and made accessible for enormous scope information ventures. When the underlying choices are made, patients hold the option to alter their perspective with no trouble. At present, patients have no influence over the utilization of their information and their

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desires are not considered by any stretch of the imagination.

**Table 2. Integrating Patient Data Utilized FinTech Service**

	Patient Data			Platform as A Service			
	Data Hosting	Blockchain Enable	IoT Enable	Data Integration	Massively Scalable	HIPAA Compliant	API/SDK
InsuranceHealth	v	v	v	v	v	v	v
Legacy recam medical	v			v	v		
Patientory	v						
Sweatcoin							
Etheal	v	v					
BurstIQ	v		v				
Accenture	v	v	v				
HealthHeart	v	v					
MedicalChain	v						
Human API	v			v		v	v
Simply Vital	v	v				v	
Hearthy	v	v					v
CoralHealth	v	v				v	

### CONCLUSION

The research results have the value of service quality by utilizing financial technology and the trend of Star-up through the stages towards sharing data metrics and disclosure of facilities in the health care sector. In this study, based on the above discussion about segmentation, the process of Health Integration for patients and barriers to data integration so far can be answered, the development of quality integration management through a platform approach across various services to obtain data, this will certainly involve various regulators and stakeholders. Not only that, innovative institutional arrangements will be needed to improve the quality of services that need to be improved for the support of all parties as long as the service is excellent. As a problem-solving model in promoting insurance services.

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