Perencanaan Bisnis Strategis untuk Sistem Informasi untuk Meningkatkan Layanan Kesehatan Masyarakat

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Abstrak —— **Sistem manajemen strategis sangat penting untuk mempertahankan profitabilitas dan mencapai target pendapatan melalui solusi inovatif yang menggantikan layanan berbasis teknologi konvensional. Penelitian ini bertujuan untuk meningkatkan layanan kesehatan masyarakat dengan meningkatkan lingkungan rumah sakit, sehingga meningkatkan kinerja dan keunggulan kompetitif. Terlepas dari peran penting manajemen strategis, ada kesenjangan yang signifikan dalam mengoptimalkan subsistem rumah sakit, khususnya sistem informasi (IS). Penelitian ini menggunakan pendekatan deskriptif kualitatif, menggabungkan analisis strategi bisnis IS, analisis lingkungan internal dan eksternal, analisis SWOT, dan analisis grid strategis McFarlan. Data dikumpulkan melalui pengamatan, wawancara terstruktur dengan kepemimpinan rumah sakit, dan tinjauan dokumentasi. Temuan menunjukkan bahwa strategis merencanakan secara signifikan manajemen AIDS dalam pengambilan keputusan kebijakan, terus meningkat adalah aplikasi untuk memenuhi kebutuhan di masa depan. Studi ini menyoroti pentingnya perencanaan strategis IS dalam meningkatkan kualitas layanan rumah sakit dan efisiensi operasional, memastikan daya saing yang berkelanjutan dan meningkatkan hasil kesehatan masyarakat.**

Kata kunci —— **Analisis McFarlan Strategic Grid; Layanan Kesehatan Publik; Strategi Sistem Informasi**

Strategic Business Planning for Information Systems to Improve Public Health Services

Abstract — Strategic management systems are essential for maintaining profitability and achieving revenue targets through innovative solutions that replace conventional technology-based services. This study aims to enhance public health services by improving hospital environments, thereby boosting performance and competitive advantage. Despite the critical role of strategic management, a significant gap exists in optimizing hospital subsystems, particularly information systems (IS). This research employs a qualitative descriptive approach, incorporating IS business strategy analysis, internal and external environment analysis, SWOT analysis, and the McFarlan Strategic Grid analysis. Data were collected through observations, structured interviews with hospital leadership, and documentation review. Findings indicate that strategic IS planning significantly aids management in policy decision-making, continuously improving IS applications to meet future needs. This study highlights the importance of IS strategic planning in enhancing hospital service quality and operational efficiency, ensuring sustained competitiveness and improved public health outcomes.

Keywords— Information Systems Strategy; McFarlan Strategic Grid; Public Health Services

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I. INTRODUCTION

The management information system business strategy produces the identification of application mappings that aim to support organizations in managing business plans. Business strategy planning involves several concepts, procedures, and tools designed in information systems to increase organizational efficiency and effectiveness by meeting the information needs to create a competitive advantage. [1][2]. A strategic business plan is a road map that can achieve success in facing competitiveness so that business opportunities are more effective in the future [3]. At this time, information technology systems have developed from time to time with increasingly sophisticated improvements, such as information systems in hospitals. The hospital is an institution in the health sector that provides services to the community in full by providing several benefits in the health sector with treatment facilities that empower various educated and trained medical personnel in dealing with and dealing with medical problems for the recovery and maintenance of good health [4]. However, information technology must also support information systems in management.

The importance of solving this problem lies in the potential benefits that a well-integrated and strategically planned information system can bring. These benefits include improved patient care through better data management, enhanced decision-making capabilities, and more efficient use of resources. Furthermore, a robust information system can help the hospital meet regulatory requirements, enhance patient satisfaction, and improve overall service quality [5]. Health service providers must be able to keep up with the growing demands of society by providing good services [6]. In this case, increasing competitiveness in developing information systems will help companies gain resources, capabilities and serve the community. Competition in hospitals is getting tougher, making strategic planning for the hospital management business significant to survive and thrive in a constantly changing environment [7]. The hospital information technology system is used as a tool that can develop and create innovative systems, products, and services for the continuity of processes in the hospital [8]. In improving quality services for the community, quality services are needed to help business processes run effectively and efficiently [9].

To address this problem, this research employs a qualitative descriptive approach, integrating methods such as IS business strategy analysis, internal and external environment analysis, SWOT analysis, and the McFarlan Strategic Grid analysis on IS applications. The chosen methodologies are well-suited to the specific characteristics of the problems faced by Sidoarjo Hospital. They provide a comprehensive framework for understanding the internal and external factors influencing the hospital's operations and for developing strategic plans that align information systems with the hospital's goals. Data were collected through detailed observations, structured interviews with hospital leadership, and comprehensive documentation review. These methods ensured an authentic representation of the hospital's operations and provided valuable insights into the challenges and opportunities within the hospital environment. The findings from this study indicate that strategic IS planning significantly aids management in making informed policy decisions. These decisions are crucial for continuously evaluating and improving IS applications to better meet future needs. The research underscores the critical role of IS strategic planning in hospital management, highlighting its impact on enhancing service quality and operational efficiency. By systematically mapping and optimizing IS applications, Sidoarjo Hospital can better navigate the dynamic healthcare landscape, ensuring sustained competitiveness and improved public health outcomes. This study contributes to the broader understanding of how strategic MIS planning can be effectively applied in healthcare settings, providing a model that other hospitals can emulate to achieve similar improvements. The research yielded several benefits obtained by compiling a strategic plan from a predetermined business information system. This plan produces a portfolio of applications that meet the needs of the hospital business by making a positive contribution from medical record information. The information is generated by optimal software, human resources, and environmental support as a general purpose in the system [10]. From the current information technology system in the era of digital technology, service is a positive impact from a technological advance that is expected to be able to answer problems that occur in the health sector by paying attention to service quality.

The use of information systems and good health information technology is a fundamental factor determining the size of a country's income in improving public health services, with the advantage of implementing information systems that can improve quality, time efficiency, and costs in health data in hospitals. The importance of implementing information systems in health services in hospitals aims to make health services superior and provide benefits for management in hospitals [11]. The literature used as a reference in the preparation of this study was searched through database sites with the implementation of information systems formed to support hospital health service providers. A health information system is a system on a computer that can integrate and process all streams of business processes in the form of a coordinated network and fast, precise, and accurate administrative procedures to obtain information [12]. This study uses a literature review and existing references with secondary data collection as supporting data for researchers. From the results of the research that has been carried out, the information system at the hospital is needed to facilitate access to quality services and has a comparative advantage. According to research [12], strategic planning in information systems can be carried out with the company's vision and mission being able to compete with other businesses. In facing this competition, accurate data and information are needed to achieve a competitive advantage for a company. The analysis was conducted

by determining internal and external factors using the Ward and Peppard analysis approach, SWOT analysis, and McFarlan Strategy Grid method so that this research produces a more precise portfolio of applications in future information systems. Research-based on [13] says that advances in the health sector encourage hospitals to improve the quality of patient care by making the right quality decisions. The increasing use of information technology can make it easier for people to reach health services. Information systems and information technology are helpful in various fields, so many companies compete to get the latest information systems and information technology to gain a competitive advantage from significant revenue increases.

Based on the results of several previous studies, only some researchers convey information system strategic planning in hospitals, so this research can be studied to identify the implementation and needs of information systems to improve public health services by internal and external environmental conditions in hospitals. In this case, the existing performance can develop for the better. Thus, the purpose of this study can be used as a reference in preparing an information system strategic plan based on information development by the organization's strategic plan, as well as the vision and mission of the Hospital in Sidoarjo. The strategy planning used is the McFarlan Strategic Grid approach with the method of analyzing information system business strategies, internal and external environmental analysis, and the final stage is the application in the hospital.

II. RESEARCH METHOD

This study uses several analyses with a qualitative descriptive method approach to increase the excellence of hospital health services. The qualitative descriptive method is an original method that does not change or manipulate the results of company data observations to achieve research objectives [14]. The research framework depicted in Figure 1 illustrates the structured approach taken to enhance the excellence of hospital health services through a qualitative descriptive method. This method is designed to ensure that the observational data collected from the hospital remains authentic and unmanipulated, thereby achieving the research objectives with integrity. The framework begins with a comprehensive data collection phase, which includes three primary techniques: observation, interviews, and documentation. These techniques are essential for gathering accurate and reliable data from the hospital environment. Observation involves directly examining the hospital's operations, workflows, and patient interactions to gather real-time data on the current state of the hospital's health services. Interviews are conducted with key stakeholders, such as the head of departments and the hospital director. These structured interviews provide in-depth insights into the hospital's business processes, strategic goals, and operational challenges [15]. Documentation involves collecting and analyzing existing data files and records, which serve as references for strategic planning and provide historical context to the current operational state.

Following data collection, the framework progresses to analyzing the current environmental context of the hospital. This analysis is divided into two main categories: internal and external environment analysis. Internal Environment Analysis focuses on the hospital's internal capabilities, resources, and processes related to information systems. This includes evaluating the existing information system infrastructure, technology usage, and staff competencies. External Environment Analysis assesses the external factors that impact the hospital, such as community health needs, regulatory requirements, and accreditation standards. This analysis helps in understanding the hospital's position in the broader healthcare landscape and its competitive standing. With a clear understanding of the internal and external environments, the next step involves formulating an Information Systems (IS) business strategy. This strategy aims to align the hospital's information systems with its overarching business goals, ensuring that the IS supports and enhances the hospital's strategic objectives.

The framework then incorporates a SWOT (Strengths, Weaknesses, Opportunities, Threats) analysis. This analysis identifies the hospital's internal strengths and weaknesses, as well as external opportunities and threats. The SWOT analysis is crucial for understanding the hospital's strategic position and identifying areas for improvement and potential growth. Central to this framework are the Internal Factor Analysis Summary (IFAS) and External Factor Analysis Summary (EFAS). These analyses provide a systematic approach to evaluating the internal and external factors influencing the hospital, thereby informing strategic planning and decision-making processes. The purpose of the IFAS is to assess the internal strengths and weaknesses of the hospital's operations and information systems. This analysis is crucial for identifying areas where the hospital can leverage its resources and capabilities to achieve strategic objectives. The data collection phase for IFAS involves multiple techniques to ensure a comprehensive understanding of the internal environment. These techniques include direct observation, structured interviews, and documentation review. Direct observation allows researchers to gather real-time data on the hospital's operational workflows and the utilization of information systems. Structured interviews with key internal stakeholders, such as department heads, IT staff, and hospital administrators, provide valuable insights into the internal processes, resource utilization, and operational challenges. Documentation review involves analyzing internal records, such as performance reports, IT infrastructure documentation, and employee feedback forms, to gather historical and contextual data. The variables considered in the IFAS include resource availability, operational efficiency, staff competency, and financial health. Resource availability encompasses the adequacy of medical equipment, IT infrastructure, and human resources. Operational efficiency examines the effectiveness

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of internal processes, including patient management systems, information flow, and administrative procedures. Staff competency assesses the skill levels and training of hospital personnel, particularly in the use of information systems. Financial health evaluates the hospital's internal financial resources, budgeting practices, and cost management. Each variable in the IFAS is assigned a weight based on its importance to the hospital's internal operations. For instance, operational efficiency might be weighted more heavily if the hospital experiences significant delays in patient processing. Variables are then rated on a scale (e.g., 1 to 5), where 1 indicates poor performance and 5 indicates excellent performance. These ratings are derived from interview responses and performance data analysis, providing a quantitative measure of each variable's current state.

The EFAS aims to evaluate the external opportunities and threats that impact the hospital. This analysis is essential for understanding the external environment and how it influences the hospital's strategic position. Similar to IFAS, data collection for EFAS involves observation, interviews, and documentation review. Observations focus on external factors such as patient demographics, community health trends, and competitor analysis. Structured interviews with external stakeholders, including patients, community health workers, and regulatory bodies, offer insights into external perceptions, regulatory requirements, and community health needs. Documentation review includes analyzing external reports, such as health department publications, accreditation standards, and market analysis reports, to gather relevant external data. The variables considered in the EFAS include the regulatory environment, market trends, competitive landscape, and community health needs. The regulatory environment examines current healthcare regulations, accreditation requirements, and compliance standards. Market trends analyze healthcare demand, patient preferences, and emerging technologies in healthcare. The competitive landscape assesses competing hospitals, their services, and market positioning. Community health needs evaluate prevalent health issues in the community, patient satisfaction levels, and public health initiatives. Each variable in the EFAS is assigned a weight based on its potential impact on the hospital. For example, regulatory compliance might carry significant weight if new regulations are being introduced. Variables are rated on a scale (e.g., 1 to 5), where 1 indicates a significant threat or poor leverage of an opportunity, and 5 indicates excellent leverage or minimal threat. These ratings are informed by interview responses and external data analysis, providing a quantitative assessment of each variable's impact. The IFAS and EFAS analyses are integral to the overall research framework, providing a foundation for strategic planning. The initial data collection through observation, interviews, and documentation informs both IFAS and EFAS. The structured interviews with internal stakeholders (e.g., department heads, IT staff) and external stakeholders (e.g., patients, regulatory bodies) are critical in identifying and understanding the variables involved. The internal environment analysis (IFAS) and external environment analysis (EFAS) are conducted concurrently, offering a comprehensive view of the hospital's strategic position. The results from these analyses populate the SWOT matrix, identifying key strengths, weaknesses, opportunities, and threats. This information feeds into the McFarlan Strategic Grid Analysis, which categorizes the hospital's information system applications based on their strategic importance and contribution to the hospital's success. Building on the insights from the SWOT analysis, the framework employs McFarlan's Strategic Grid Analysis. This analysis categorizes the hospital's information system applications based on their strategic importance and contribution to the hospital's success. The strategic grid helps in prioritizing IS projects and investments, ensuring that critical applications receive the necessary attention and resources. The final stage of the framework involves developing an IS application portfolio. This portfolio is a comprehensive collection of the hospital's information system applications, categorized based on their strategic value and operational impact. The portfolio serves as a strategic planning tool, guiding the hospital in managing its IS resources effectively and ensuring that the information systems are aligned with the hospital's long-term goals.
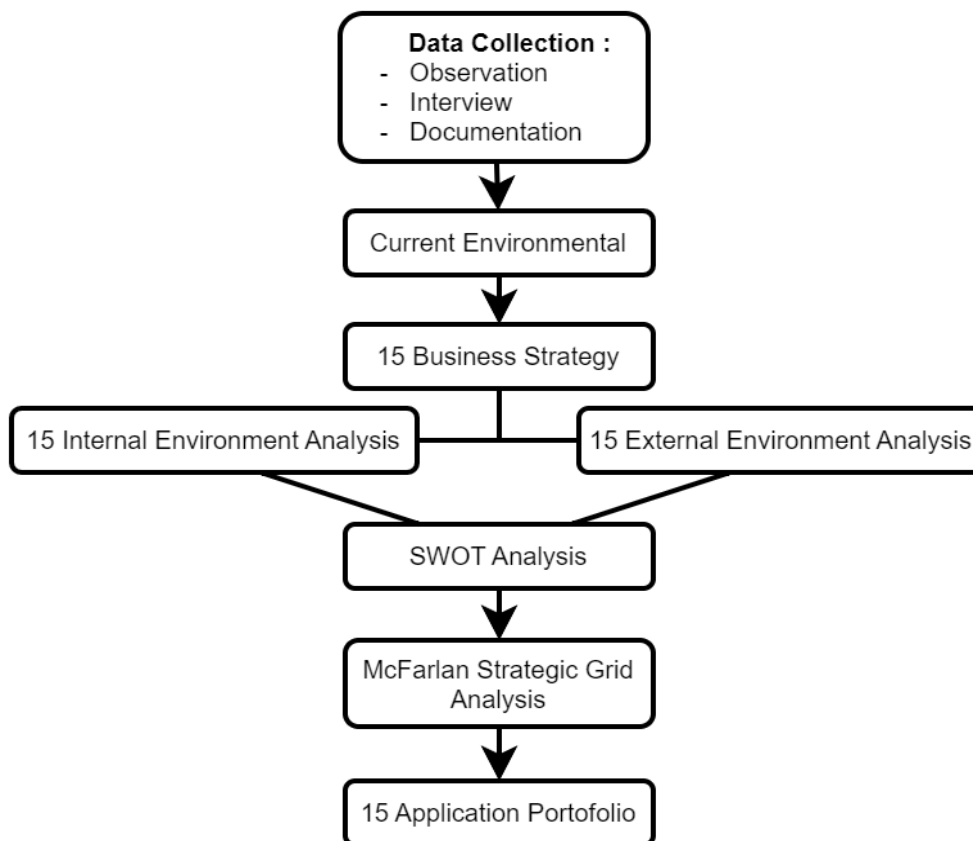
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Figure 1. Research Framework

III. RESULT AND DISCUSSION

The following is the analysis results carried out through observation and interviews from the hospital. This analysis can be used as a suggestion for developing the hospital in the future and as a plan for hospital needs in a strategy to support this system. Thus, the results obtained can be used as a sustainability factor in improving public health services in the surrounding environment and the community with application mapping.

A. *IS Business Strategy Analysis*

This analysis can be seen in the vision and mission that the management has set by preparing a strategic plan (renstra). 2019 An integrated information system with several features that are still not connected to partners at the hospital. Therefore, the hospital is trying to improve the main SIMRS named Khanza. The presence of the existing Khanza SIMRS has increased the service so that it is more optimal because the data that has been input can be directly connected to all parties in the hospital and can be used for other data needs. The results of the IS business strategy analysis can be seen in Table 1.

TABLE 1.
ANALYSIS OF IS BUSINESS STRATEGY

CODE	IS Business Strategy Analysis
SB1	In keeping with the times, the Hospital seeks to increase its potential in service capacity to the community in Sidoarjo City so that it becomes the hospital of choice for the community in the health sector that is professional and oriented towards customer satisfaction through directed, measurable, and

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	sustainable planning.
SB2	Hospitals in Sidoarjo have complete health services, prioritizing efforts to heal and maintain individual health, which is carried out in harmony and integrated with efforts to improve information technology-based hospital management information systems.
SB3	It complemented facilities and infrastructure according to the standards of medium-type private hospitals. It provided services according to the strategic plan that the hospital has made to achieve business success and realize the organization's vision and mission.

From the results of the IS business strategy analysis, it can be concluded that hospital services need information systems and information technology to improve services so that hospitals can develop according to technological advances currently widely used by the community to complement existing needs. Therefore, the information system must continually improve so that partners in the Hospital are well integrated.

B. *IS Internal Environment Analysis*

In preparing the strategic plan, SI reviews from various aspects based on the condition of the existing hospital with an analysis technique for the internal state of the SI business environment. Regarding infrastructure service standards, Sidoarjo Hospital facilities and infrastructure were built to facilitate existing services at the hospital so that the data presented is more integrated and transparent and always updates integrated applications for the success of the business environment both internally and externally. These applications can meet the needs of IS, as in Table 2.

TABLE 2.
HOSPITAL APPLICATIONS

Aplication	Analysis
Khanza Lite	The main application of the Hospital Management Information System is to manage and integrate hospital service data in all units connected to the hospital to support the effectiveness of existing services in the hospital.
Zahir	An information System application is an integrated financial management (accounting) used to manage hospital finances based on efficiency, economy, effectiveness, transparency, accountability, and auditability principles.
Vclaim	The application is used to make insurance and BPJS claims by verifying patients and BPJS participants online.
Aspak	Application of hospital infrastructure and medical devices. This application has data about hospital medical devices, such as oxygen cylinders, wheelchairs, ultrasound machines, and other medical test kits.

C. *IS/IT External Environment Analysis*

Hospitals in Sidoarjo are private hospitals with adequate facilities to provide public health services for the community. However, based on the results of an analysis of the condition of the external SI environment, the hospital is still in the process of supporting the existing accreditation. Progress and competition in the current health industry often encourage hospitals to strive to improve the quality of health services so that people also feel the impact of the services provided. Analysis of the external environment at Sidoarjo Hospital has two strategic factors that can influence the continuity of the service process: opportunity factors and threat factors, which can be observed in the SWOT analysis.

Based on the analysis of the external environment of Sidoarjo Hospital, it can be obtained that the hospital has environmental conditions that support the process of running an information system in achieving benefits in supporting hospital accreditation, which has yet to earn the desired results. However, the hospital consistently implements it in improving strategic planning to become one of the hospitals that can provide excellent and sophisticated public health services.

D. *SWOT Analysis*

External and internal analysis results obtained strategic factors that can improve the hospital's sustainability. For example, strategic factors seeking to increase opportunities or avoid existing threats can be analyzed using the SWOT method. In the early stages of determining future needs at the hospital, it can be done by calculating IFAS and EFAS in a

SWOT analysis. The following is a calculation table from IFAS and EFAS at a hospital in Sidoarjo which can be seen in Table 3.

TABLE 3.
SCORE IFAS AND EFAS

Variable	Weight	Rating	Weight Score
Strength			
The process of administration without a down payment	0.05	2	0.10
Complete medical equipment	0.25	4	1.00
A complete number of specialist doctors	0.25	4	1.00
Extensive development area	0.15	4	0.60
An increasing number of medical staff	0.15	3	0.45
Amount			**3.15**
Weakness			
Unstructured marketing	0.10	1	0.10
Not yet customer-focused	0.15	2	0.30
The level of resource capability is unevenly distributed	0.05	1	0.05
Superior products have yet to be developed optimally	0.05	1	0.05
Public knowledge about safe patients still needs to be	0.15	1	0.15
Amount			**0.65**
Opportunity			
Under the organization of the minister of health	0.25	3	0.75
Lots of private companies	0.15	2	0.30
There is a consortium in the hospital	0.05	2	0.10
The location of the hospital is quite strategic	0.20	3	0.60
Collaboration with educational institutions	0.12	2	0.24
Amount			**1.99**
Threat			
They are increasing the number and quality of competitors	0.15	3	0.45
Increased risk of customer demands	0.15	2	0.30
The tracking process with the entry of foreign workers	0.05	3	0.15
Strict implementation of laws and regulations	0.10	3	0.30
Same tax rate	0.05	1	0.05
Amount			**1.25**

Table 3 above shows that the total Strength score is 3.15 and the total Weakness score is 0.65. Then from the results of calculating the score between the strength and weakness scores, the results for the IFAS score are obtained by reducing the total strength score by the total weakness score, namely an IFAS score of 2.50. Meanwhile, for the EFAS score, it is known that the whole opportunity score is 1.99 and the threat score is 1.25. From the results of obtaining the opportunity and threat scores with a total reduction, the EFAS value is 0.74. So the IFAS and EFAS values calculation can be observed in the SWOT matrix below.
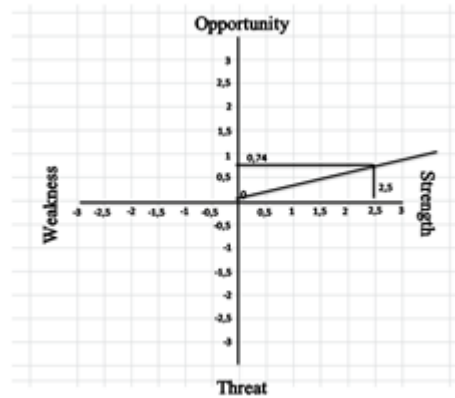
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Figure 2. SWOT Analysis Matrix

The results in the figure 2 explain that the Hospital is at a point between the Opportunity and Strength axes, namely in quadrant 1, which means the Hospital is advised to carry out a progressive strategy by utilizing internal strengths in the Hospital, which will benefit from external opportunities to achieve the goals of business growth. In quadrant 1 point SO, the value of IFAS is 2.50 and the EFAS value is 0.74. Based on the OS strategy, table 3 can be obtained, which contains the OS strategy of Strengths (ST) and Opportunities (OP), as follows:

TABLE 4.
HOSPITAL OS STRATEGY

Analysis SWOT

Strength	Weakness	Opportunity	SO Strategy	WO Strategy
1. Adequate services with tools that are pretty complete and better integrated. 2. The strategic location of the hospital is in the city center.	1. Human resources still need to be better integrated. 2. Some features in hospital applications still need to be better integrated.	1. Obtain support from the health office for performance in the hospital's business strategy to achieve goals. 2. Increase in the number of new medical personnel.	1. Train employees and medical personnel to improve the quality standards of hospital health services. 2. We are optimizing services efficiently to attract customer interest in using health-based services. online.	1. Develop strategic planning with information systems for hospital health services..

Based on the table 4, the SWOT analysis calculation table produces IFAS and EFAS, which are in a favorable condition with opportunities and strengths for the company and marketing strategy owned by the Hospital in taking advantage of current opportunities. The results of previous research with recent research, the use of information systems and good health information technology is an essential factor in determining the size of a country's income in improving public health services with the advantage of implementing information systems that can improve quality, time efficiency and costs in data health in the Hospital. The importance of implementing health services in hospitals aims to make health services superior and provide benefits for management in hospitals [11].

E. *McFarlan Strategy Grid Analysis*

Based on the analysis carried out by researchers according to the research framework, the results of strategic planning on information systems that play a role in hospital business processes are obtained. Then the application mapping was carried out using the McFarlan strategic grid analysis technique on the current SI application in the Hospital. The menu classification will be in the form of question sheets which are then distributed to the Hospital. Furthermore, the results of

these questions were processed and analyzed. The following are the results of mapping applications to hospitals which can be seen in table 5.

TABLE 5
IS GROUPING

Strategic	High Potential
• IS Presence • IS Laboratory • IS Radiology • IS Quality • IS Administrasi • IS Intensive Care • IS Management	• IS Outpatient/Inpatient Care • BPJS Bridging
Key Operational	**Support**
• IS Medical Records • IS Registration • IS Nutrition • IS Libraries • IS Maternity	• SI Inventory • IS Poly Queue • IS K3RS • IS Nursing • Bridging Vclaim • IS Cashier Service • IS Pharmacy • IS IPSRS • IS Surgery • IS ER/ER

From the results of the table 5, it is categorized based on the quadrant mapping as follows:

a. The first strategic quadrant is the application of business strategies that can survive to face strategic competition.
b. The second quadrant is a high potential, namely applications that influence creating opportunities to gain relevant benefits, both for business strategy directly and indirectly, and significantly impact improving hospital business performance.
c. The third quadrant is key operational, namely applications that provide potential in creating, strengthening, and making hospitals successful.
d. The fourth quadrant is supported, namely applications that support and increase efficiency and effectiveness to achieve business goals and strategies in hospitals with the impact that can make hospital services superior in business competition.

Based on the research analysis results, the existing applications in the hospital have a significant influence as support for hospital health service activities. From the results of mapping applications that meet the hospital's needs, it can be used as a basis for developing information systems and technology by various health parties. It can become the application of information in health services for the community and the surrounding environment. Management information systems can be described as an activity to manage data by implementing the system into a strategy for achieving business goals [9].

F. *Information Systems Play A Role In Increasing The Need For Public Health Services In Hospitals*

Based on the research that has been carried out by applying internal and external IS environmental analysis, it results that information systems are essential for the hospital's sustainability in managing the goals that have been set. In maintaining and increasing demand, several hospitals implement information systems to support competitiveness in various businesses to achieve future success [16]. The development of information systems is proliferating, in which there is support from information technology to support business success. Information systems in hospitals are referred to as hospital management information systems whose processes and integration are in the form of a network using a computer system. In increasing competitiveness, information systems develop implementation strategies to support business operations [10]. A plan will help the organization acquire capabilities, resources and be able to serve society better.

The benefits of strategic planning in developing a long-term perspective on the public sector can predict an increase in performance. Strategic planning in information systems must occur regularly and not be implemented during a business crisis so that future strategic plans can avoid problems [17]. Realizing business plans in increasing needs, information systems play a role as a support for the ongoing process of identifying strategic plans by explaining various techniques and frameworks in processing them to achieve goals such as a need for improving public health services [18].This can be an innovation in applying information systems and technology that opens up new business opportunities.

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To improve public health, the quality of hospital services must continually be improved so that access to facilities is not disrupted. The facilities and infrastructure used also need to be checked so that there are no obstacles during the service process, and the service staff must comply with the hospital's SOP. Good service is contained in an effective and efficient management information system in following the expectations of society, both internally and externally [6].

G. *Information System Planning In Providing Added Value To Increase Competitive Advantage In Hospitals*

The rapid progress of information systems affects changes in how business processes are managed. Preparing an excellent strategic plan will contribute to the hospital in running a business based on information systems and information technology [14]. In today's business world, competition is very tight, which ultimately establishes a system to innovate by creating all techniques to maintain customers and market share. The strategic role of information systems must be able to compete to provide added value in obtaining a competitive advantage [19]. Effective management information systems are critical in creating a competitive advantage for businesses to face competition in the hospital environment [20]. To create excellence, we need a framework that can strive for long-term growth. This framework is a strategic plan for a hospital information system integrated with resource management and will produce accurate information for connected parties. Effective use of frameworks in information systems requires understanding management, organization, and information technology that can form plans [21].

According to data recorded at a hospital in Sidoarjo [22], an asset increase occurred in 2017-2021, with the final acquisition of assets of a 35% increase from the previous year. From the results of increasing existing assets, the role of information technology systems in managing hospital services in the digital world has significantly influenced management to compete in business strategies to achieve competitive advantage (figure 3).
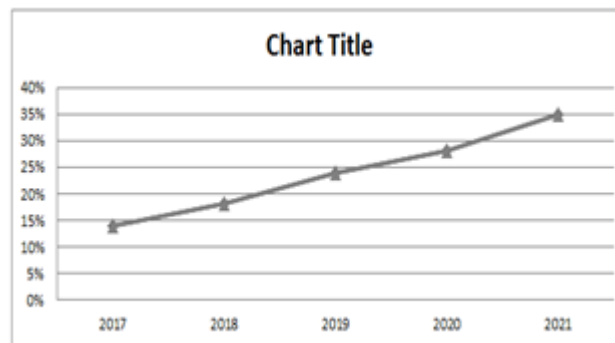

Figure 3. Research Framework

From the existing data results, 2021 is data with business value mainly obtained in digital-based services. The business strategy implemented uses information systems and technology that has a significant influence as support for hospital health service activities to achieve business goals. Based on the research analysis that results in application mapping, where the mapping results influence the success of the hospital in achieving business goals according to McFarlan Strategic Grid analysis, the results of the application mapping are by the needs of the hospital, which can be used as a basis for the development of information systems and information technology in the future by various health parties and can be the application of information in health services for the community and the surrounding environment. Thus, information systems play a significant role in the hospital sector, supporting competitive advantage and adding value to public health services need.

Several studies have explored the strategic planning of information systems (IS) in healthcare organizations, employing various methodologies and frameworks to address similar problems. One prominent method is the Ward and Peppard Model, which has been widely adopted due to its comprehensive approach to IS strategic planning. A study by Septiana et al. applied the Ward and Peppard Model to build an IS strategic plan for healthcare organizations. This model involves analyzing the internal and external environments of the organization using tools like SWOT, PEST, and Value Chain Analysis [23]. The study highlighted the importance of aligning IS strategies with business strategies to ensure that the information systems support the organization's goals and enhance its competitive advantage. Another study by Andry et al. combined the Ward and Peppard approach with the Anita Cassidy method to improve business and technology alignment [24]. This combination aimed to address the misalignment of technology with business processes, which often results in inefficiencies and data duplication. The study produced a roadmap and application portfolio tailored to the needs of the organization, ensuring that the technology supports the business strategy effectively . In a different approach, Pasa et al.

explored the use of the McFarlan Strategic Grid to classify applications based on their strategic importance and operational necessity [1]. This method helped prioritize application development and ensure that resources were allocated to projects that offered the highest strategic value. Despite the advancements in IS strategic planning, several gaps remain. One significant issue is the integration of systems across different departments within healthcare organizations. Many studies have pointed out that even with strategic planning, achieving seamless integration and real-time data sharing remains a challenge. This gap is critical as it affects the efficiency of hospital operations and the quality of patient care.

Furthermore, the rapid pace of technological advancement poses a continuous challenge for healthcare organizations to keep their IS infrastructure up-to-date. The need for ongoing evaluation and adaptation of IS strategies to incorporate emerging technologies like artificial intelligence and big data analytics is often overlooked. This oversight can lead to systems that quickly become outdated and unable to meet the evolving needs of the organization. Previous research has provided valuable insights into the strategic planning of IS in healthcare. The study by Septiana et al. emphasized the importance of a balanced approach that considers both the technical and managerial aspects of IS planning [10]. Their use of the Balance Scorecard IT for evaluating IS performance ensures that the systems contribute to the corporate strategy, user satisfaction, operational excellence, and future readiness. Additionally, the combination of Ward and Peppard with Anita Cassidy's method, as demonstrated by Andry et al., offers a more detailed and practical framework for aligning business goals with technological capabilities. This approach not only identifies immediate application needs but also provides a long-term roadmap for technology development, ensuring that the IS infrastructure evolves in line with business objectives [23].

This paper makes a significant contribution by applying a comprehensive qualitative descriptive method to develop a strategic information system (IS) framework specifically for improving public health services at Sidoarjo Hospital. Unlike previous studies that often focus on generic strategic planning models, this research integrates several established analytical tools, including the McFarlan Strategic Grid, SWOT analysis, Internal Factor Analysis Summary (IFAS), and External Factor Analysis Summary (EFAS). These methodologies are meticulously tailored to the unique operational context of a hospital, addressing both internal capabilities and external environmental factors. By systematically mapping IS applications based on their strategic importance, the study provides a nuanced approach that aligns technological infrastructure with the hospital's strategic objectives. This alignment ensures that IS investments contribute to operational efficiency, enhanced service quality, and sustained competitive advantage in the dynamic healthcare landscape. While this study offers a significant contribution to the strategic planning of information systems in hospital settings, several potential threats to the validity of its findings must be considered to provide a balanced understanding of its impact and applicability. Firstly, the generalizability of the study's results is limited by the fact that the research is conducted within a single hospital setting. The specific operational context and strategic priorities of Sidoarjo Hospital may not be entirely representative of other healthcare institutions. Different hospitals may have varying resource constraints, technological infrastructures, and patient demographics, which could influence the applicability of the proposed strategic framework. To enhance the robustness and external validity of the findings, future research should consider involving a larger sample size that includes multiple hospitals with diverse characteristics. Moreover, the qualitative nature of the study introduces an inherent degree of subjectivity in data collection and interpretation. Structured interviews, observations, and documentation reviews, while providing rich and detailed insights, can be influenced by the researchers' perspectives and biases. The interpretations of qualitative data are often subjective, which might affect the objectivity and reliability of the findings. Implementing strategies such as triangulation, where multiple data sources and methods are used to validate findings, could help mitigate this issue and enhance the credibility of the results.

The dynamic nature of healthcare environments also poses a significant threat to the long-term applicability of the study's contributions. Healthcare regulations, technologies, and patient needs are continually evolving, necessitating regular updates and adaptations to strategic plans. The strategic framework developed in this study, while effective at the time of implementation, may require ongoing modifications to remain relevant and effective in the face of these changes. Future research should incorporate mechanisms for continuous evaluation and adaptation of strategic plans to ensure their sustainability and relevance over time. Integration and interoperability issues present another challenge. While the study emphasizes the importance of integrated information systems, achieving seamless interoperability among different systems and departments within a hospital is often fraught with technical and organizational difficulties. Variations in data standards, legacy systems, and departmental silos can hinder the smooth integration of information systems, affecting the overall efficiency and effectiveness of the proposed strategic framework. Addressing these integration challenges requires a comprehensive approach that includes technical solutions, process reengineering, and change management strategies. Lastly, the context-specific nature of the study may limit its external validity. The strategic framework and findings are heavily dependent on the specific internal and external environments of Sidoarjo Hospital. Factors such as local healthcare policies, community health needs, and hospital-specific operational workflows play a critical role in shaping the outcomes of the study. Therefore, applying the same framework universally across diverse healthcare settings may be challenging

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without substantial modifications to account for these contextual differences. Future studies should explore the adaptability of the framework in various healthcare contexts to develop more universally applicable strategic planning models.

IV. CONCLUSION

This study has successfully achieved its primary objective of enhancing public health services by improving hospital environments through strategic information systems (IS) planning. The research integrates several analytical tools, including the McFarlan Strategic Grid, SWOT Analysis, Internal Factor Analysis Summary (IFAS), and External Factor Analysis Summary (EFAS), to provide a comprehensive framework for strategic planning in the context of hospital operations. The integration of these tools has allowed for a thorough assessment of both internal and external factors impacting the hospital. By doing so, the study has identified key strengths, weaknesses, opportunities, and threats, enabling hospital management to make informed decisions that align with their strategic goals. This approach has proven effective in improving decision-making processes, operational efficiency, and service quality. One of the significant findings of this research is the critical role of strategic IS planning in hospital management. The strategic use of information systems has been shown to aid in policy decision-making, continuously improving IS applications to meet future needs. This proactive approach ensures that the hospital remains competitive and can adapt to the dynamic healthcare landscape. The study also highlights the importance of a well-integrated information system in enhancing the overall performance of hospital services. The findings indicate that strategic IS planning significantly contributes to operational efficiency by optimizing resource allocation and streamlining processes. This, in turn, leads to better patient care, improved data management, and enhanced decision-making capabilities. Furthermore, the research underscores the potential for improved public health outcomes through strategic IS planning. By ensuring that information systems are aligned with the hosapital's strategic objectives, the hospital can provide higher quality services, achieve greater patient satisfaction, and meet regulatory requirements more effectively. The strategic planning framework developed in this study serves as a model that other hospitals can emulate to achieve similar improvements. The findings demonstrate that strategic IS planning is essential for enhancing hospital service quality, operational efficiency, and competitiveness. This study contributes to a broader understanding of how strategic MIS planning can be effectively applied in healthcare settings, offering valuable insights for hospital management and policymakers.

This research, though comprehensive, has several limitations. Firstly, it is based on a single case study of Sidoarjo Hospital, limiting the generalizability of the findings. Future research should include a broader sample of hospitals to enhance applicability. Secondly, the qualitative approach introduces subjectivity in data collection and interpretation, which may affect the reliability of the findings. Implementing triangulation with multiple data sources can mitigate this issue. The dynamic nature of the healthcare sector necessitates regular updates to strategic plans. Continuous changes in regulations, technologies, and patient needs require ongoing evaluation and adaptation of strategic plans to ensure their relevance over time. Integration and interoperability of different systems within a hospital pose technical and organizational challenges. Addressing these requires technical solutions, process reengineering, and change management strategies. The study also highlights a limitation concerning the completeness of data on human resources at Sidoarjo Hospital. Some systems have experienced a decline in function, leading to underutilization of certain features. Future research should aim to gather more effective data to inform IS and technology strategies. Future research should explore the broader application of this model across different healthcare institutions, incorporating emerging technologies like AI and big data analytics. Engaging stakeholders, including hospital management, IT staff, healthcare providers, and patients, is essential for developing comprehensive IS strategies that address diverse needs.

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