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Determinant factors of hospital service quality and patient satisfaction: Hospital logistics management approach

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Abstract

This study aims to examine the effect of private hospital logistics factors on treatment satisfaction and specialist patient satisfaction. This study has five construction dimensions of hospital logistics, namely physical accessibility, waiting time, consultation time, hospital hotel services, and administrative procedures. Quantitative explanatory studies with 297 sample size were carried out to achieve the research objectives by examining the relationship between the independent and dependent variables through online data collection questionnaires, tabulations and hypothesis analysis with SEM PLS analysis tools. This study shows significant results for all hypotheses which imply the importance of optimizing hospital logistics performance, especially in terms of the five constructs in improving service quality and patient satisfaction. Optimizing hospital logistics elements in private hospital specialist patient care is a challenge that is not easy because it requires strategic planning and proper resource management. The role of various parties, especially hospital managers and Indonesian health system policy makers, in paying attention to the operational flow of hospital logistics, especially private hospitals, in order to strengthen the private hospital service system in providing health services while running the hospital business.

Introduction

Good health services are now a necessity for the community to obtain health facilities that follow the health problems of everyone. Improving the quality of health services through strengthening facilities and the quality of health services needs to be pursued in encouraging universal health targets in a vision of achieving the Sustainable Development Goals (SDGs) the third point of access to quality and equitable health services (Habibie et al., 2017). Currently, there are various health service facilities in Indonesia, both government-owned and private with primary level (Puskesmas/Joint Clinics/Private Practices), government-owned and private hospitals. However, the hospital is a priority choice for the community, especially those who want specialist services for health problems. Moreover, Indonesia is currently experiencing an epidemiological transition toward lifestyle diseases, especially catastrophic diseases such as hypertension, cardiovascular disease, GERD, and diabetes (Abdullah et al., 2016; Giena et al., 2018; Nur, 2018; Pengpid & Peltzer, 2017).

Current business talks highlight the promising prospects of the health industry, especially hospitals with specialist doctor services. This is supported by several indicators, such as budget support and commitment from the government, population demographics, the epidemiological transition, the still high number of Covid-19 cases, the lack of penetration of the health industry, and the potential for growth of the digital health ecosystem (Marques et al., 2013). It is just that currently the number of specialist doctors with the need for specialized services is not balanced. The latest data from the Ministry of Health of the Republic of Indonesia is that there are only 41 thousand specialist doctors. This makes one Indonesian specialist ideal to serve 35 patients in a hospital (Meliala et al., 2013). The growth of the hospital business performance, especially privately-owned 75%-80%, depends on the services of specialist doctors and their accompanying actions (Inpatient, Pharmacy, Supportive Examination, Medical Equipment and Medical Care). So that the readiness of the hospital

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supply chain, especially the logistics management of specialist health services, needs to be considered as a lever for quality care and patient satisfaction. Because the expertise of specialist doctors must also be supported by the readiness of medical care supporting equipment.

Hospital logistics is a series of operational design, planning and implementation in purchasing, inventory management and replenishment of goods and control of service activities in the provision of general and specialist patient health services (Moons et al., 2019). Logistics is run based on a logistics cycle in the hospital, and this must be orderly or neatly arranged. This cycle must be executed properly. The hospital warehouse itself is a small part of the hospital, and a separate division from the pharmacy installation, which is used to meet a need. The warehouse is used to carry out the distribution process of drugs and medical devices to the Pharmacy division until they are delivered to patients either through the action room, outpatient pharmacy or inpatient division. Hospital warehouse related to the selection, planning, selection and purchase of drugs and medical devices. Drugs that have arrived in the warehouse as well as distribution and supply of drugs directly (Castro et al., 2020). When making plans, you must go through a selection process to ensure the optimization of medicines and medical devices used to serve patients. The relationship of a logistics system can be interpreted as the relationship between space and time (Kriegel et al., 2013).

Logistics systems are related to the rules that exist in logistics management which have cycles. Hospitals also have a logistics cycle, this cycle must be maintained so that the logistics management is equally strong, and everything must always run efficiently, balanced, harmoniously, and in harmony. Logistics management in a hospital is the most important aspect of a hospital. The availability of medical devices and medicines is the most important demand in health services that should be noticed and monitored by the hospital. Hospital logistics management is related to the existing stages and interrelated with each other so that it can be controlled properly and can function optimally.

Currently, many hospitals face logistical overload situations, especially in the distribution of drugs and medical devices which lengthen the queue of patients even in receiving specialist care. Whereas the level of urgency for treating specialist patients is quite high and some require medical devices or prescribed drugs as soon as possible (Qian et al., 2021). Poor logistics management will cause various problems, such as difficulty in matching supply and demand, long waiting lists, lack of support for integrated services, uncertainty in patient care, poorly coordinated patient examination appointments, and will ultimately lead to waste and poor results both to the negative image of hospitals and specialist doctors (Jawab et al., 2018). Private hospitals are very concerned about business image because independent financial management makes them must maintain an image for increasing business growth. Private hospitals are very concerned with the quality of service, some of them even have premium facilities, almost like five-star hotels.

Several previous studies describe logistical factors in patient satisfaction and show a significant effect (Cui et al., 2020; Frichi et al., 2020; Geberu et al., 2019; Quintana et al., 2006; Schoenfelder et al., 2011; Wudu, 2021). However, there are no further studies that explain the logistic factors in influencing the quality of specialist medical services and patient satisfaction in a more comprehensive manner. The lack of comprehensive evidence on which to base health system regulation prompted this study to examine the effect of private hospital logistics factors on treatment satisfaction and specialist patient satisfaction. This study offers a comprehensive understanding and positive implications of hospital management in determining the logistics decisions of specialist care private hospitals.

Literature Review and Hypotheses Development

Hospital Concept

Based on the Regulation of the Minister of Health No. 58 of 2014 concerning Hospitals, hospitals are health service institutions that provide complete individual health services that provide inpatient, outpatient, and emergency services. Plenary Health Services are health services that

include promotive, preventive, curative, and rehabilitative health services. Hospitals have the task of providing complete individual health services (Handayani et al., 2015).

To carry out this task, the hospital has the following functions (Law of the Republic of Indonesia Number 44 of 2009 concerning Hospitals): a. Provision of medical treatment and health recovery services following hospital service standards; b. Maintenance and improvement of individual health through complete second and third-level health services according to medical needs; c. Organizing education and training of human resources in the context of increasing capacity in the provision of health services; and d. Organizing research and development as well as screening technology in the health sector in the context of improving health services by taking into account the ethics of science in the health sector (Nugraheni et al., 2021).

Hospital Logistics Management

Logistics management is defined as a strategic management process for the movement and storage of goods, spare parts, and finished goods from suppliers, between company facilities and to customers (García Márquez et al., 2015). The French Association of Supply Chain and Logistics (ASLOG) defined Hospital Logistics (HL) as the management of the flow of patients, products, materials, services, and the related information to ensure quality and safety at a defined level of performance and efficiency, from the provider to the patient and, as appropriate, to the destination (Frichi et al., 2020). The goal of logistics management is to deliver finished goods and various materials in the right quantities at the right time, in a usable condition, to the location where they are needed, and at the lowest total cost. Logistics management provides time and place utility. Such usability is an important aspect of the institution's operations (Lucchese et al., 2020).

In managing logistics, several management functions make up a cycle of logistics activities. Success in managing logistics is determined by activities in the management of the logistics function. Hospital logistics management functions, namely planning and determining requirements, budgeting functions, procurement functions, storage and distribution of medical supplies functions, maintenance functions, elimination functions, control functions, hospital information management, waste management, health nutrition logistics affairs, etc (Karim, 2015; Lapierre & Ruiz, 2007).

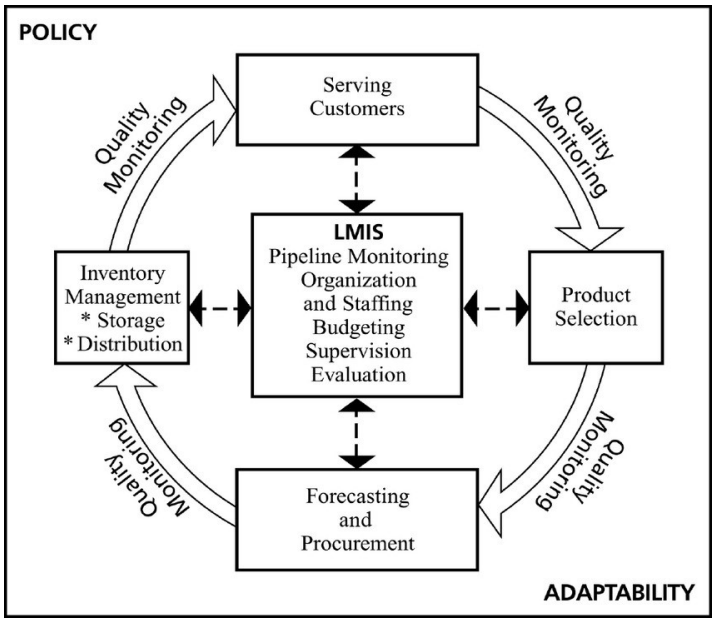

Figure 1. Logistic Cycle
Source : (Karim, 2015)

Hospital logistics services are divided into three major sub-logistics, namely Pharmaceutical Logistics Management, Health Nutrition Logistics Management, and Linen Logistics Management (Owusu Kwateng et al., 2017). Pharmaceutical logistics management meets pharmaceutical service

standards in hospitals covering 2 (two) activities, namely managerial activities in the form of management of Pharmaceutical Preparations, Medical Devices, and Medical Consumables and clinical pharmacy service activities (Liu et al., 2017). While health nutrition logistics management handles hospital food administration, it is a series of activities ranging from menu planning, food needs planning, budget planning, food procurement, receipt and storage, food preparation, distribution, and recording, reporting and evaluation (Hughes & Margetts, 2012). Linen logistics management in meeting the needs of bed linen, pillows, bolsters, blankets, staff clothes, patient clothes and other sterile instruments (Bandoophanit, 2020).

Service Quality and Patient Satisfaction

Service quality is the difference between customer expectations of service and their perception of the service they receive. When the customer's expectations are lower than the perception of the service obtained, it becomes a pleasant surprise for the customer. When the customer's expectations match the perception of the service obtained, the customer will feel satisfied. However, when the customer's expectations are greater than the perception of the service obtained, the customer is not satisfied with the service (Ali et al., 2021b; Ramya et al., 2019).

Two main factors affect service quality, namely expected service (expected service) and perceived service (service received). Lower than expected, the service quality will be perceived as bad or unsatisfactory, thus whether the service quality is good or not depends on the ability of the service provider to consistently meet the expectations of its users (Upadhyai et al., 2019).

Public demands on the quality of hospital health services have become a fundamental problem faced by most hospitals in various countries. This demand is the basis for the development of health organizations and health care systems in various countries through the implementation of decentralization. The complexity of the problem of hospital service quality is not only related to limited resources and the environment but also stems from differences in perceptions between service users, health workers and the government (Endeshaw, 2021).

Patient satisfaction is a level of patient feeling that arises because of the performance of health services obtained after the patient compares with what is felt. Patients will feel satisfied if the performance of health services obtained equals or exceeds expectations. Measuring patient satisfaction is useful for improving the service quality. It intends to evaluate to improve the quality of service. When measuring patient satisfaction, a lot of important information will be obtained, and it will be used as a benchmark for activities to improve service quality. Service quality and patient satisfaction are the main outputs that hospitals can excel in improving the hospital's business image, especially private hospitals in encouraging hospital profit growth (Ali et al., 2021a).

Hypothesis Development

Logistics becomes an expanding function in various chronological and contextual forms. Hospital logistics focuses on managing flows in achieving effective output in medical care so that it is included in the critical aspects of hospital management (Frichi et al., 2019). Many of the previous research reviews have examined the issue of hospital logistics because it is a very interesting study to review. Some of these studies highlight the importance of logistics in improving the quality of health services and patient satisfaction as customers in hospitals (Aladwan et al., 2021). Tukamuhabwa et al. (2021) stated that hospital logistics affect the quality of health services provided.

The quality of service within the hospital must reflect clinical effectiveness that can improve the quality of health care outcomes provided by specialists, including reducing the potential for death, restoring body functions, reducing infections, and increasing patient satisfaction. Service quality also includes compliance with medical output standards set by health system stakeholders. Various studies have raised the relationship between service quality and patient satisfaction as one of the stakeholders in the health system (Alamelu et al., 2022). This study makes the first hypothesis, namely the quality of health services affects patient satisfaction.

H1: Hospital service quality has a significant influence on patient satisfaction specialist doctors in Indonesian private hospitals

The results of Cinaroglu research (2021) show that optimization of hospital logistics will encourage the efficiency of health service operations, both in terms of the supply chain logistics flow process and the clinical flow process (Cinaroglu, 2021). Hospital logistics must ensure the smooth flow of physical, information and finance as well as the efficiency of waiting time for services with the allocation of resource needs in meeting the needs of patients as users of health services and the health care system (Ferretti et al., 2014). Bad logistical events such as vacancies in the stock of one of the drugs or the availability of medical devices that make the planned surgical operation must be canceled have a negative impact on the patient's health and endanger the reputation of the hospital (Büchner et al., 2016). There are hospital logistics factors related to service quality and customer satisfaction including physical accessibility, waiting time, consultation time, hospital hotel services, and administrative procedures (Frichi et al., 2020).

Physical Accessibility (PA) is defined as the ease of accessing adequate hospitals both in terms of geography, human resources, skills, and hospital facilities according to medical standards. This variable looks at the ease of getting health services directly (Makinde et al., 2018). In achieving good health service outputs to get good satisfaction feedback from patients and reviewing quality health services, hospitals must improve the ease of physical access to health services for patients such as access to easily accessible locations and medical equipment that makes it easier for doctors to provide their services (Pan et al., 2018). The scope of PA role is the preparedness of health workers (Specialist Doctors, Nurses, Nutritionists, Medical Laboratory Personnel) and non-health workers (Administration, Security Guard etc.), stock of medicines, medical devices etc (Hierink et al., 2021). The results of Aashima (2021) and Swain (2021) research related to show that PA encourages service quality and increases patient satisfaction (Aashima et al., 2021; Swain & Singh, 2021).

H2: Physical Accessibility has a significant influence on hospital service quality (HSQ)

H3: Physical Accessibility has a significant influence on patient satisfaction (PS) specialist doctors in Indonesian private hospitals

Waiting Time (WT) is a chronological consideration variable starting from the patient's arrival at the hospital to getting medicine and payment for health transactions (Azraii et al., 2017). The problem of waiting time in health services is very crucial for patients in showing service satisfaction and as an indicator for assessing the quality of hospital services in Indonesia (Prasad et al., 2019). Moreover, there are so many specialist patients, that even 1 doctor can have up to 35 patients in one day who need to be served. Some studies state that patient satisfaction with patients is low due to frustration with long queues that make waiting periods too long (Bleustein et al., 2014). In addition, another study stated that the low quality of service was caused by several factors including poor planning, poor organizational culture, administrative procedures that were too complicated, the flow of patients abundant, and limited health personnel to fulfil the needs of serving patients (Storm-Versloot et al., 2014).

H4: Waiting time has a significant influence on hospital service quality (HSQ)

H5: Waiting time has a significant influence on patient satisfaction (PS) specialist doctors in Indonesian private hospitals

Consultation Time (CT) is stated as the estimated service time of the consultation session between the specialist and the patient (Hwang, 2006). In contrast to the waiting time where a long CT increases patient satisfaction. But unfortunately, CT cannot be too long for the sake of accessing other patient services and managing the administration - logistics during the consultation process. Sometimes specialist doctors are too busy entering patient data in medical records, thereby reducing the convenience of consulting patients (Wood & Wand, 2014). In fact, various studies state that CT is too short to make patients less satisfied, but on the one hand specialists are asked to independently enter the patient's electronic medical record (Alarcon-Ruiz et al., 2019; Swain & Kar, 2018). It is very important for hospital managers to seek the release of administrative records to doctors and delegate them to other staff such as nurses or hospital administration staff in the treatment room so that doctors' services to patients are maximized during consultation sessions.

The quality of specialist doctor's services will be maximized if the patient gets a standard consultation time of 8-15 minutes, so optimally 4 patients in 1 hour (Azraii et al., 2017).
H6: Consultation time has a significant influence on hospital service quality (HSQ)
H7: Consultation time has a significant influence on patient satisfaction (PS) specialist doctors in Indonesian private hospitals

Hospital Hotel Services (HHS) is a condition variable when patients have received inpatient services including health nutrition services, ward cleanliness, comfort of the situation, etc (Rocha de Carvalho et al., 2016). The results of Ashraf et al. (2018) study stated that the inpatient service perceived by the patient affected the level of satisfaction (Ashraf et al., 2018). In addition, this inpatient service is a consideration for service quality assessments, especially in hospital accreditation and extension of service licenses.
H8: Hospital hotel services has a significant influence on hospital service quality (HSQ)
H9: Hospital hotel services has a significant influence on patient satisfaction (PS) specialist doctors in Indonesian private hospitals

Administrative Procedures (AP) are various administrative procedures that must be carried out by patients in the process of health services in hospitals, both pre, during and post service (Swain & Kar, 2018). Every patient would want an administrative procedure that is not too bureaucratic and complicated, where the Gonzalez (2019) research study in it stated that patient satisfaction was negative and even tended to be angry with complicated administrative procedures such as photocopying files many times every time they wanted to get service in the midst of a technological system with developments could advance (Gonzalez, 2019). Currently, hospital procedures, especially the implementation of technology in encouraging efficiency, are a measure of the quality of hospital services.
H10: Administrative procedures has a significant influence on hospital service quality (HSQ)
H11: Administrative procedures has a significant influence on patient satisfaction (PS) specialist doctors in Indonesian private hospitals

From the theoretical review of the various studies above, this study will test 11 working hypotheses with an overview of the theoretical framework below:

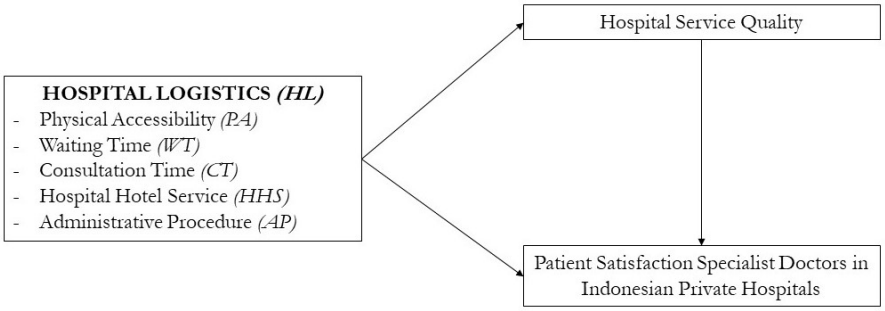

Figure 2. Research Framework
Source: (Hwang, 2006; Kahlenberg et al., 2018; Makinde et al., 2018; Rocha de Carvalho et al., 2016; Swain & Kar, 2018; Tukamuhabwa et al., 2021)

Research Methods

Quantitative explanatory studies were carried out to achieve the research objectives by examining the relationship between the independent and dependent variables through data collection, tabulation and hypothesis analysis. The survey was taken through the distribution of online questionnaires to the participant population of private hospital specialist patients through social media, requests for assistance from specialist doctors affordable by researchers and channels for medical resident students affordable by researchers.

The determination of the purposive sampling technique makes this study only process data from participants with moderate criteria or who have been hospitalized for at least two days and one night at a private hospital because they have experience in the entire flow of health services, including hospital logistics. Therefore, this study excluded outpatients and patients under 17 years of age. The decision of purposive sampling technique was taken because of efforts to obtain information for data taken from specific targets, by taking samples with certain criteria (Rai & Thapa, 2015). In addition, it is suitable for use for quantitative research, or research that does not generalize (Campbell et al., 2020).

The process of distributing questionnaires and collecting survey data was carried out during April-June 2022. The minimum sample of this study refers to the theory of Hair et al. (2018) which states that the minimum sample size that must be met is four times the number of indicator question items supported by Loehlin's theory (2003) with a minimum standard of 200 respondents (Hair et al., 2018; Loehlin, 2003). The number of questions in this study were 51 so that the minimum respondents were 255 respondents. In accordance with the theoretical framework incorporated in Figure 2., the questionnaire has been formed with a five-point Likert answer scale with the lowest point scale 1 indicating strongly disagree and the highest point scale 5 indicating strongly agree with the statement submitted.

Table 1. Variables Measurement

Variables	Indicators Description	Sources
Physical Accessibility (PA)	PA01. Estimated time to hospital PA02. Hospital geographical location PA03. Ease of reaching ambulance PA04. Availability of large and adequate parking space PA05. Location of the emergency unit that is not difficult to access PA06. There are guidance and administration staff PA07. There is lighting and a signboard for the patient path in the hospital hallway PA08. Hospital orientation panel PA09. Some facilities make it easier for people with disabilities to access PA10. The hospital has specialist doctors, nurses, nutritionists and laboratory technical personnel who are reliable and qualified PA11. The hospital has non-health staff who are ready to serve PA12. Hospitals have adequate medical and non-health equipment facilities PA13. The hospital has a good stock of pharmacy PA14. Hospitals have adequate blood supply for patients PA15. Overall this private hospital has good physical accessibility and meets decent standards	(Ferretti et al., 2014; Frichi et al., 2020)
Waiting Time (WT)	WT01. Doctor appointment rescheduling rarely happens WT02. Patient registration doesn't take too much time WT03. The waiting time for the doctor's consultation queue is not too long WT04. The waiting time for the emergency department is not too long WT05. The waiting time for the medical tests and radiological examinations is not too long WT06. The waiting time for the get an inpatient room is not too long WT07. The waiting time for receive medical treatment (surgery, therapy, injection, etc.) is not too long WT08. The waiting for the decision to go home and post-hospital administration is not too long	(Frichi et al., 2020; Storm-Versloot et al., 2014)

Variables	Indicators Description	Sources
	WT09. I always get delay information from the hospital WT10. Overall the waiting time for the private hospital I went to was good	
Consultation Time (CT)	CT01. The consultation time with the doctor is enough to understand my health problems CT02. The time to meet the nurse is enough to meet my health care and not rush	(Frichi et al., 2020; Hwang, 2006; Wood & Wand, 2014)
Hospital Hotel Service (HHS)	HHS01. The waiting room and doctor's consultation are very clean and comfortable HHS02. Air ventilation conditions and seat availability are very good HHS03. Very clean patient room HHS04. Clean patient bed with complete equipment HHS05. Toilet cleanliness is very well maintained HHS06. I don't smell weird in the hospital HHS07. Hospital Inpatient Food Quality is very good HHS08. Quantity of nutrition in food HHS09. Hospital food freshness awaken HHS10. Health nutrition officer respects the patient's mealtime HHS11. The patient's family also feels the comfort of hospital inn	(Frichi et al., 2020; Rocha de Carvalho et al., 2016)
Administrative Procedure (AP)	AP01. The administrative process of registering outpatient and initial inpatient is very easy AP02. The payment administration process is very easy AP03. The administrative procedure for completing treatment and recording medical records is not complicated AP04. Overall the administration of the private hospital that I visited was not too difficult	(Frichi et al., 2020; Swain & Kar, 2018)
Hospital Service Quality (HSQ)	HSQ01. This private hospital proves the excellence of the health services offered HSQ02. This private hospital passes the standard of hospital service in general HSQ03. This private hospital specialist doctor really provides high-quality services and a good attitude HSQ04. Overall this private hospital provides quality health services	(Aladwan et al., 2021; Tukamuhabwa et al., 2021)
Patient Satisfaction (PS)	PS01. This private hospital has met my high expectations and health needs PS02. I will recommend this hospital to my colleagues PS03. If I have a health problem, then this hospital will be my first choice PS04. This hospital in my eyes is an ideal private hospital PS05. Overall I am satisfied with the services of this private hospital	(Aladwan et al., 2021)

SEM PLS was chosen as an analytical tool in validating the model as well as evaluating the proposed hypothesis with the advantages of ease of analyzing data that are not normally distributed and being able to analyze not too many sample data.

Result and Discussion

The online questionnaires were distributed to 297 respondents with a good level of 100% filling. Based on the respondent's data, it is known that 167 respondents (56%) are male, while the remaining 130 respondents (44%) are female. Most respondents registered directly to the hospital for services followed by a reservation in advance. In general, most respondents come from the age range of 29-48 years, which is natural amid a tiring work density accompanied by a shift in

epidemiological trends towards lifestyle diseases. Based on the demographics of the respondents, almost 50% came from the island of Java, followed by respondents from the island of Sumatra. Most respondents are Obgyn, Internal Disease, Surgeon, Pediatric, Cardiologist, Psychiatrist, Pulmonologist specialist patients and Oral Surgeon for dental specialists.

The origin of the doctor's specialization in handling respondents is a reinforcement that currently, most diseases are due to lifestyle patterns, plus the Covid-19 pandemic situation accompanied by increasing awareness of the importance of health. Most respondents use Healthcare and Social Security Agency/BPJS Kesehatan and private health insurance as health financing. It is a natural thing because currently, almost all private hospitals in Indonesia open health services for BPJS patients. Suppose we dissect more in the category of Healthcare and Social Security Agency/BPJS Kesehatan patients. In that case, we find surprising results where 50% of respondents are recipients of assistance from the Government, followed by 32% paying for it themselves.

Table 2. Characteristic of Respondents

Characteristic	Type	Frequency	Percentage
Gender	Male	167	56%
	Female	130	44%
Hospital Admission Path	Emergency Department	71	24%
	Scheduled Patient	104	35%
	Direct Admission	122	41%
Age (years)	18-28	77	26%
	29-38	95	32%
	39-48	78	26%
	Above 48	47	16%
Region	Jawa	137	46%
	Sumatera	65	22%
	Kalimantan	32	11%
	Bali-Nusa Tenggara	30	10%
	Sulawesi	11	4%
	Maluku-North Maluku	4	1%
	Papua	18	6%
Handling Specialist	Obgyn and Gynecology	56	19%
	Internal Disease	67	22%
	Surgeon (Orthopedic, Neurosurgeon, Plastic Surgeon)	37	12%
	Pediatric	33	11%
	Orthopedic	3	1%
	Neurology	5	2%
	Cardiologist	25	8%
	Psychiatrist	23	8%
	Dermatologist	4	1%
	Ophthalmologist	6	2%
	Pulmonologist	17	6%
	Audiologist (THT)	5	2%
	Oral Surgeon	14	5%
	Orthodontist	2	1%
Sources of Health Financing	Healthcare and Social Security Agency/BPJS Kesehatan	175	59%
	Private Health Insurance	76	26%
	Independent Fee	46	15%
Source of Insurance Contribution (If the health fund uses an insurance claim)	Self Contribution Payment	81	32%
	Covered from the Government	124	50%
	Covered by Work Institution	46	18%

Furthermore, the data were analyzed using a Structural Equation Model (SEM) approach with Smart-PLS (Partial Least Square) software. Smart-PLS produces a measurement model (outer model)

that confirms the validity and reliability of the study. The validity of the study was measured by looking at the processed Smart-PLS at the lambda value (loading factor). In the outer loading test, the lamda value must be greater than 0.5 to state that the indicator is a reflection of the variable. If the lambda value is less than 0.5, a retest is carried out after modifying the indicator on that variable. The loading factor value is complemented by an assessment of the analysis of discriminant validity by assessing the reflective indicator of the variable by looking at the value of the cross-loading between the indicator values on its own and non-owned variables or simply reading the Average Variance Extractor (AVE) value. The AVE value must be equal to or greater than 0.5 (Sarstedt et al., 2020).

Furthermore, if the values in all measurement models are fit, an assessment is carried out to measure the reliability of each lambda by looking at the composite reliability value. Indicators with values less than 0.7 are recommended not to be included in the model, especially in the exploratory model. Composite reliability needs to be strengthened by the Cronbach's alpha value for each variable to determine the level of closeness or strength of the indicator's reflection on the variable. A strong relationship must have a value > 0.6, and everything is seen in the results of the PLS calculation (Cepeda-Carrión et al., 2022).

Table 3. PLS Algorthm Outer Model Result

Variables	Item	Loading Scale Ouput	Cronbach Alpha	Composite Reliability	AVE
PA	PA1-PA15	0.703 - 0.881	0.933	0.941	0.518
WT	WT1-WT10	0.712 - 0.828	0.914	0.929	0.568
CT	CT1-CT2	0.800 - 0.880	0.790	0.828	0.707
HHS	HHS1-HHS11	0.700 - 0.819	0.992	0.934	0.562
AP	AP1-AP4	0.706 - 0.832	0.867	0.851	0.589
HSQ	HSQ1-HSQ4	0.756 - 0.853	0.840	0.890	0.669
PS	PS1-PS5	0.757 - 0.788	0.839	0.886	0.608

Based on Table 3., PLS Algorithm outer model result can see that the entire value of the loading factor on each indicator is more significant than 0.5, so it can be said that all indicators are valid. Meanwhile, from table 2, it can be seen that the value of Cronbach's alpha is more significant than 0.6, and the value of composite reliability is also greater than 0.7, so it can be said that the questionnaire in this study is reliable.

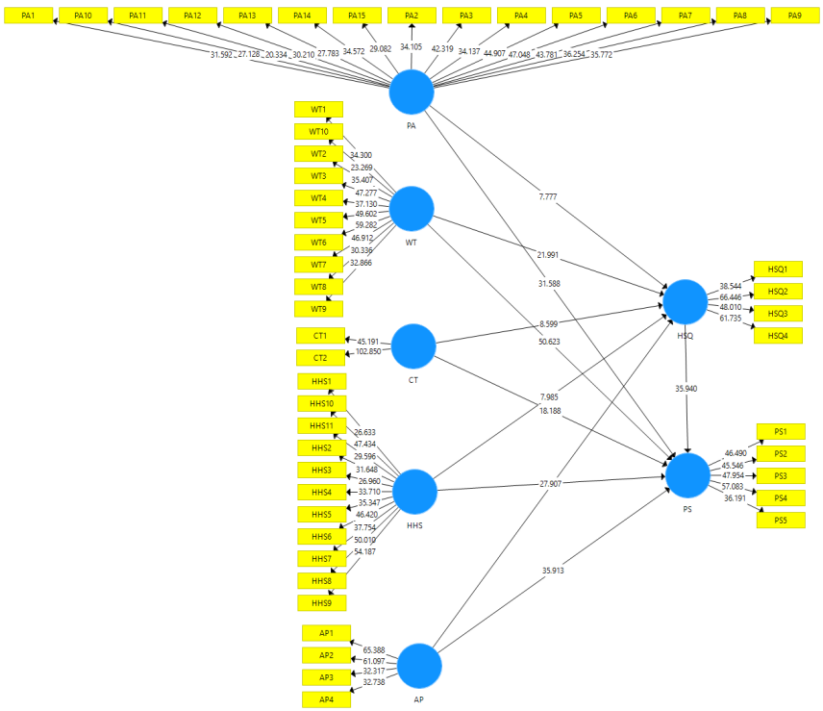

Figure 3. Bootstrapping Methods of Research Statistical Result

To calculate the structural model value, the value of the relationship between variables built by the model with sufficient Goodness of Fit (GOF) values can be seen in the BT calculation or bootstrapping by looking at the original sample value, which is the path value and the significance value, namely the statistical T-value (Streukens & Leroi-Werelds, 2016).

The path value is significant if the T-value is greater than 1.28, namely the T-value with an error rate of 10% (Memon et al., 2021). However, as a start, it is necessary to calculate R-Square for each model variable first to assess the amount of diversity or variation of research data on the phenomenon under study. Based on the results of the R-Square test in Table 4 shows that 94.2% of Health Service Quality is influenced by the independent variables in this study, while 5.5% is influenced by variables outside the study. Likewise, the dependent variable, patient satisfaction of 99.3%, is controlled by the independent variable in this study. These two independent variables are included in the Strong R-Square category.

Table 4. R-Square Result

Endogenous Variables	R-Square	R-Square Adjusted
Health Service Quality (HSQ)	0.942	0.941
Patient Satisfaction (PS)	0.993	0.993

While the results of Path Value through procedural bootstrapping showed positive significance and support results for all hypotheses proposed in this study, in reviewing the hypothetical relationship, we need to recall that the purpose of this study is to examine the effect of private hospital logistics factors on treatment satisfaction and specialist patient satisfaction.

Table 5. Bootstrapping Methods of Hypothesis Result

Direct Hypothesis Impact	Standardized Direct Effect	T-Test	P-Value	Conclusion
(H1) HSQ → PS	0.826	35.490	0.000	Accepted
(H2) PA → HSQ	1.308	7.777	0.000	Accepted
(H3) PA → PS	2.421	31.558	0.000	Accepted
(H4) WT → HSQ	1.263	21.991	0.000	Accepted
(H5) WT → PS	1.764	50.623	0.000	Accepted
(H6) CT → HSQ	0.187	8.599	0.000	Accepted
(H7) CT → PS	0.206	18.188	0.000	Accepted
(H8) HHS → HSQ	1.009	7.985	0.000	Accepted
(H9) HHS → PS	1.931	27.907	0.000	Accepted
(H10) AP → HSQ	0.172	4.766	0.000	Accepted
(H11) AP → PS	0.453	35.913	0.000	Accepted

The results of hypothesis testing successfully support the significance of hospital service quality on patient satisfaction which implies that the fulfilment of hospital service standards, including quality specialist doctor services, will encourage reasonable customer satisfaction. These results provide new support for the previous literature, which states that the quality of health care services forms a high level of satisfaction at public hospitals in Romania (Radu et al., 2022) and significant relationship between service quality and patient satisfaction in Healthcare Startup (Alamelu et al., 2022). The quality of health services plays a major role in determining patient satisfaction, especially inpatients who feel that the health care process is more intensive. The perception of the service quality of a hospital in the community through Word of Mouth (WoM) or social media reviews will make prospective patients choose a hospital that will be trusted to handle their health problems. This process becomes the hospital's business turnover system in achieving profit.

As previously explained, hospital logistics has several performance measurement indicators. The second and third hypotheses were successfully supported so that it can be stated that Physical Accessibility affects the quality of health services and patient satisfaction. Currently, the problem of access to health in Indonesia is still a rolling problem, especially in distance areas, due to

geographical constraints, shortage of specialist doctors and pharmaceutical supplies, and medical equipment that is still not qualified for medical transportation that has not accommodated services optimally. The significant correlation effect on this hypothesis indicates that the quality of hospital services determines how easy access to hospital specialist services can be reached. In addition, the movement of access to services felt by specialist patients will determine patient satisfaction. This confirms previous research, which states that Aashima's (2021) and Swain's (2021) research shows that PA encourages service quality and increases patient satisfaction (Aashima et al., 2021; Swain & Singh, 2021).

Waiting Time is something that tests the patient's patience during enduring pain and has an impact on patient satisfaction. In various instruments, the declaration of commitment to hospital service standards, especially in private hospitals, offers a standard time for waiting and tries to respect patient time as part of improving the specialist health services provided. The waiting time hypothesis quantitatively shows its effect on service quality and patient satisfaction, supporting previous research evidence (Storm-Versloot et al., 2014). However, sometimes it must also be explicitly understood for patients in the emergency department that services base the patient's condition on the order and timing of services because emergencies requiring prompt medical intervention must be prioritized to save the patient's life. So there are minimal exceptions for emergency room patients, but they still apply the principle of service efficiency.

The health consultation process with a doctor is a value of satisfaction for the patient as well as a record of the history of meeting health service standards. The results of the bootstrapping test also show the significance of the effect of consultation time on the quality of hospital services and patient satisfaction as well as the same results in the previous literature (Azraii et al., 2017). When it comes to quality, the aspect of patient waiting time in obtaining health services is one of the important things and greatly determines the quality of health services provided by a health service unit, as well as reflects how the hospital manages service components that are tailored to the patient's situation and expectations. In terms of context, waiting time is a problem that always causes patient complaints in several hospitals. A hospital ignores the long waiting time in its health services, so the total quality of hospital services is considered unprofessional and can reduce patient satisfaction as well as the patient's family. One of the outpatient Minimum Service Standard (MSS) indicators related to waiting time is the length of waiting time for outpatient services 60 minutes (Akter, 2015).

The results of PLS data analysis show the support for the influence of Hospital Hotel Service on Hospital Service Quality and Patient Satisfaction. The scheduled patient would have gotten a room with a ready condition so that it wouldn't be a problem. However, emergency patients face a different situation, who sometimes find it difficult to get a room because it is unplanned and unprepared. Preparedness of officers and room data must always be updated so that if an emergency patient does not get a room, it can be handled first and then transferred to another hospital. The quality of inpatient services must also meet good standards of cleanliness, safety and patient comfort. The results of this data analysis are in line with previous research which states the inpatient service perceived by the patient affected the level of satisfaction (Ashraf et al., 2018).

Hospital administration procedures become a negative impression that most often appears in the queue of patients. The administrative complexity that is too much and time-consuming is often a bad record for some hospitals in Indonesia. The role of technology is very important in reducing administrative procedures and respecting the time of patients seeking treatment. The results of statistical testing through SEM PLS show support for Hypotheses ten and eleven so that it supports Gonzalez (2019) research study in it stated that patient satisfaction was negative and even tended to be angry with complicated administrative procedures such as photocopying files many times every time they wanted to get service in the midst of a technological system with developments could advance (Gonzalez, 2019).

Implication and Conclusion

Hospital industry is not only running by relying on the strength of human resources but also accompanied by logistics management, so this research has an important contribution in optimizing

the role of logistics management, especially academically theoretically to improve service quality and patient satisfaction, especially those handled by specialist doctors. Hospitals need to design planning strategies to encourage improvement in the quality of service that is satisfactory for patients. The output of hospital services, especially the success of specialist doctors in encouraging patient healing, both inpatient and outpatient, is also supported by the performance of the hospital's logistics chain as a service support. Effective management of logistics activities can make medical and non-medical procedures (administrative, cleaning, etc.) of high quality.

This study succeeded in demonstrating the significant impact of private hospital logistics on service quality and patient satisfaction. In an effort to increase access to specialist services at private hospitals, this study recommends optimizing the function of medical transportation and access to hospital care, especially the empowerment and procurement of medical personnel as well as planning for the availability of medical material logistics to avoid a crisis of drugs and medical devices that delay treatment and increase patient satisfaction. decreased and became a bad record in the service system of the private hospital. In anticipation of waiting time, it is necessary to design an effective administrative archive flow and invest in technology in an advanced hospital information management system in order to reduce queue time.

In order to maximize the doctor's consultation time with the patient, it is necessary to release the administrative duties of a specialist doctor by delegating it to nurses and assistant administrative staff, which is expected that the patient can maximize the time for health confide while the doctor can be more focused in solving the patient's health problems. The inpatient service side is the shared responsibility of both specialist doctors, heads of inpatient wards, nurses, nutritionists and the hygiene team in providing full service attention to patients. The inpatient logistics flow structure must be adjusted properly so that there are no delays or situations in inpatient facilities that make patients uncomfortable. Specialist doctor visits to the patient's room should be carried out every day to ensure control of the patient's health. Simplification of the administrative bureaucracy through the hospital information system can be implemented to support the collection, transfer of data across departments and data access in the provision of health services can be better.

Optimizing hospital logistics elements in private hospital specialist patient care is a challenge that is not easy because it requires strategic planning and resource management. Efforts to synchronize the flow of the hospital's internal and external logistics chains. The patient is the center of the hospital's operations so that all efforts must prioritize the interests of the patient. Hospital leaders and the government as regulators of the state health system should pay more attention to the important role of logistics in public health services. This research has limitations where the scope of research is limited to Indonesia setting so that further studies are encouraged to do the researches across countries with a more comprehensive methodology.

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