



Proposed Design of Service Quality Performance Management System for Indonesian HSR

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ABSTRACT: In some countries, the development of High-Speed Railway (HSR) represents a significant technological advancement which helps modern society's value of time and various activities. Despite of having complex operational support and significant financial outlays, studies have shown that HSR sector has several growth barriers due to poor punctuality, reliability, pricing, and inconvenient passenger journeys. These brought specific impact on deciding factors whether or not passengers choose the transport option as it affected passenger satisfaction level. Recognizing the global challenge, this paper anticipates the impending Indonesian HSR operation by observing passengers' relevant service quality attributes. The findings served as the performance management design's foundation. In order to assist HSR operators to improve passenger experience and satisfaction, this study aims to identify the relevant service quality of Indonesian HSR potential passengers as one of many solutions to eliminate lack of demand problem. Qualitative and quantitative data analysis from in-depth interviews with several Indonesian railway expert and information from prior publication of Asian HSR which was used to carry out external benchmarking, validate results, support design process, and create contextual performance indicators for attributes using Knowledge-Based Performance Management System (KBPMS). This paper produced numbers of service quality performance indicators whose prioritization was arranged in specific order. Five variables are used to measure tangibility attributes' performance, whereas six variables are used to measure reliability attributes' performance. Tangibility and reliability were chosen based on Indonesian railway market preference and common success factor of HSR best practices. This performance indicators were specifically developed based on these attributes' sub-attributes which has been contextualized. In contrast to other countries, Indonesian HSR place a distinctive value on physical facilities as it affects travelling motivation. These new insights would direct Indonesian HSR operators to develop targeted solutions to increase passenger satisfaction and economic benefits.

KEYWORDS: High-Speed Railway, Key Performance Indicators, Knowledge-Based Performance Management System, SERVQUAL

INTRODUCTION

High-Speed Railway (HSR) is being considered as today's intercity transportation in a several countries that actively upgraded their route availability and existing infrastructure with high operating speed in the range of 125 mph (200 km/h) to 220 mph (350 km/h). This transportation choice has the ability to accommodate and present added-value to modern society's value of time and dynamic activities.

Research conducted among a representative sample of public transportation passenger worldwide revealed that each country has their preferred decision factors [1]. The outcome highlighted the necessity for a distinctive approach to be used at the operational strategy level to satisfy passengers across the region. As known, HSR service confronts barrier problems to boost ridership despite these global trends and its strength in solving passenger transport challenges in terms of speed, volume, and sustainability. It was found that most issues were coming due to its pricing structure, lack of punctuality and reliability, and inconvenience passenger journeys. Therefore, it directly affected the decision of passengers whether or not to use the HSR transportation.

Rail transportation market share and profitability are recognized prone to failure compared to other transportation industry. Preventing it to happen, right strategy to capture and retain market is considered important for HSR business sustainability. In addition to it, it was also told that socio-economic benefit of HSR industry is higher than the economic benefit [2]. It took longer time for the HSR business to reach its profitability, while it contributed a lot to economic development of local business and society. The majority of worldwide HSR are revealed not profitable even in major cities in industrialized nation such as France and Spain. They experienced diminishing earnings as result of lack of occupancy and high-ticket fee. Referring to the issue of low ridership and profitability,



service quality enhancement was proposed as it was proven to boost revenue through higher percentage of existing customers, acquiring new customers using recommendation, and raise the usage rate of present customers [3].

Based on information retrieved from several publications, it could be observed that most success factors of HSR best practice was relying on the reliability aspects. It was also publicized by ITF [4] that railway service users prioritize reliability, punctuality, and speed of transport. Many HSR best practice put their success factor on reliability aspects, for example: Japan, Taiwan and Korea. While, the other viewpoints about tangibility attributes rarely discussed by worldwide HSR, but uniquely found to be considered important by Indonesian. As a result of rapid technological change to the digital era that formed new lifestyles in society, social media has an impact on Indonesian's tourism motivation—particularly on how travelers usually access and use information [5].

Therefore, based on these Indonesian passengers' preference and worldwide HSR performance in tangibility and reliability attributes that impacted success in its operation, the qualitative and quantitative conversion of these attributes would be needed to ensure positive response of future passengers through monitoring and evaluation process. It is more likely that enhancement of these attributes could be maintained and continually improved based on passengers' feedbacks. This study offers a targeted performance indicator based on these attributes—tangibility and reliability attributes. An in-depth interview with Indonesian railway specialist was conducted to enrich, support, and localize external from prior publications, to make it relevant for Indonesian passengers. This research findings would cover performance indicators for Indonesian HSR passengers' prioritized attributes, which could be used to improve service quality and hinder common problems to occur.

LITERATURE REVIEW

SERVQUAL model is commonly considered as the most scientifically accepted method of service quality measurement in service industry [6], including public transportation sector. It is utilized to recognize customers' expectation and assess the quality of service given to customers. The significant service qualities across industries are listed according to these dimensions: tangibility, reliability, responsiveness, assurance, and empathy. Initially developed by Zeithaml, Berry, and Parasuraman [7], SERVQUAL model's emphasis was on quality development system in area of product or services. In more depth, this requires standardized observation of gaps in service quality experienced and perceived customer expectation.

Aiming to turn the previous SERVQUAL assessment as the basis of continuous evaluation measurement, Performance Management System (PMS) was involved to provide structured techniques and methods that enables organization to boost organizational performance—along with continuous improvement of effective measures. It was stated that majorly flaws of PMS were discovered as a result of lack attention paid to performance improvements, unclear performance goals, inadequate performance objective, and minimum technological support. Frequently, organization need to inject its added-value to make the PMS more personal according to its products or services' special characteristic and customer preferences [8].

Recognizing the alignment of the strategic management process and its wide view coverage to determine the measurement, Knowledge-Based Performance Management System (KBPMS) framework is used as analysis foundation. KBPMS is more widely used in Indonesia as it recognizes some perspectives other than financial metrics, including organizational output, the capability of tangible or intangible resources, and internal process alignment with organization's strategy. The non-financial indicators should be taken into account to make things objective since the result might differ due to various culture, preferable desired outputs, and environment situation. There are three stages that management must go through in order to establish performance management system [9] which further would be determined as conceptual framework of this research.

METHODOLOGY AND DATA COLLECTION

In this study, a mixed methods approach was implemented to address the research issue. It emphasized on gathering and analysing both quantitative and qualitative method to support the research objective from variety of angles [10]. In order to identify the appropriate and valid indicators of Indonesian HSR service quality PMS, qualitative data was retrieved through Indonesian railway expert in-depth interview and prior publication data which supported the design process of service quality PMS. With experience ranging from 9 to 26 years, the experts who took part in the interview had backgrounds in Indonesian railway industry specifically on Operation Planning, Passenger Service on-Train, Passenger Service on-Station, and Business/Property Development. After it, the benchmarking process would take place to oversee comparison of local and international railway to raise the standard of impending HSR service. This approach gave the author various insight that were very helpful in determining performance indicators.

Aiming to preserve the external data validity which came from various sources and period, the author properly selected the relevancy of the sources before recognizing it as the research basis.

The research analysis was adopting previous literature reviews especially the KBPMS framework to develop suggested PMS for Indonesian HSR Industry. Acknowledging HSR business complexity, high investment, and operational demand to provide dependable and timely service, KBPMS made the organization easier for organization to assign tasks and monitor stakeholders' performance to ensure smooth operation. Referring to the earlier explanation, there are three stages of KBPMS framework which consisted of environmental scanning, design, and implementation process. The flow of stages applied in this study was visualized on Figure 1.

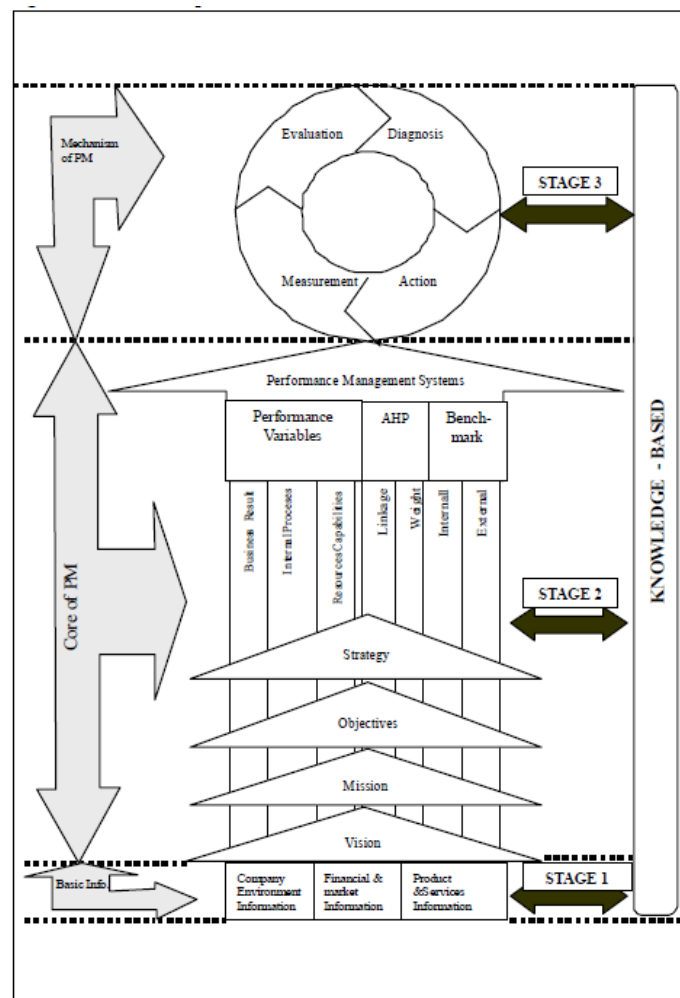


Figure 1. Conceptual Framework

PMS created for this research was specifically tailored for passenger-service division at Indonesian HSR operational level. Basic operational PMS has not been determined since Indonesian HSR service has not been released yet. Besides that, due to this reason, the AHP and correlation analysis to support linkage process also could not be conducted due to unavailability of valid operation data. Therefore, from a board perspective, the development of basic statement, analysis, and PMS design would hugely refer to Asian HSR's best practice due to its similarities and contextual fit to Indonesian HSR.

The initial stage of PMS development was to cover important data on industry, government, community, market, rivals, and products or services characteristic. Then, the second stage would establish the development of Indonesian HSR operator's corporate statements, including its vision, mission, and strategy which developed through compilation and benchmarking process of the Asian HSR best practices: China's CRH, Japan's Shinkansen, Taiwan's THSR, and Korean's KTX. Other than the region consideration,



these HSR references were chosen based on its exceptional performance in reliability aspects. Taking into account all the findings from earlier stages, the sets of performance indicator along with its Objective, Measures, Targets, and Initiatives (OMTI) for the tangibility and reliability service qualities were determined and categorized for Indonesian HSR’s PMS practical implementation and evaluation tools.

FINDINGS AND DISCUSSION

A. Environmental Scanning

HSR operation does contain complicated reality with numerous technical characteristics, starting with facilities, infrastructure, operational requirements, strategic business, and cross-sector issues. Geographical, cultural, and capability considerations could affect how HSR operates. To examine the industry’s environment and competitiveness, the PESTEL and Porter Five Forces analysis was conducted on this first stage. Through PESTEL analysis, it came to conclusion that Indonesian HSR might benefit greatly from political, economic, social, technological, and environmental elements. The success and failure of Indonesian could bring significant impact not only to the HSR operator, but also to the Government of Indonesia (GoI).

Meanwhile, from its competitiveness view, Porter Five Forces analysis revealed that both HSR operator and the potential passengers have equally strong bargaining power. Passengers have greater influence compared than HSR operator since there are many transportations option than HSR which offers more benefits. It was known that most passengers preferred to use private vehicle than railway transportation due to its greater flexibility and higher comfort. Passengers have tendency to lower HSR prices and impose restrictions on HSR operators’ ability to make sustainable profits. Other transportation options, such as traditional trains, travel bus, and especially private vehicles, which offer good service at a reasonable price and satisfactory service would be HSR's competitors. To boost demand level, additional initiatives to shift passengers from private vehicles to HSR would be required.

Recognizing the potential thread, it was discovered that Indonesia's HSR business faces a relatively weak threat of new entrance. Unfortunately, the thread of HSR being replaced by other transport options was also indicated as high due of some factors, including: accessibility, strategic pick-point locations, connectivity, facilities, schedule options, other transportation mode integration, and special service characteristic offered by HSR service to differentiate it from other option.

B. Company Statements

On the second stage, the combination of Asian HSR precedents could enable Indonesian HSR develop its vision, mission, and strategy since most of Asian HSRs share similar objectives to provide society with faster, reliable, and environmentally friendly transportation option. Referring to several HSR business model, four Asian HSR representatives were chosen to be evaluated and summarized to be the basis of Indonesia's HSR core statements development. After completing criteria checklist assessment, the best statement among the four representatives would be identified and its keywords was regenerated to create Indonesian HSR’s version. It was also discovered that the vision, mission, and strategy of each HSR references applied similar keywords that could be specifically combined and developed to achieve the same objectives. Below, the results of this stage would be elaborated on the Table I.

Table I. Core Performance Management of Indonesian HSR

Vision	To be people’s transportation choice to ease, connect, and enhance quality of life.
Mission	In order to contribute for better future, Indonesian HSR is dedicated to providing safe, punctual, and comfortable transportation which presenting top passenger experience. Strives to maintain passenger satisfaction, Indonesian HSR constantly strives to deliver excellent products, outstanding passenger service, and relevant improvement to be preferred passengers’ choice.
Strategy	<ul style="list-style-type: none"> • Fulfilling the mission to be people’s safe, punctual, and comfortable transportation choice by providing exceptional passenger experience, • Motivating staffs to continuously pursue growth and establish a solid management foundation, • Maintaining spirit of collaboration towards mutually beneficial goals, • Enforcing ESG management’s positive cycle to improve business environment, • Escalating earning power of the organization to provide added-value for stakeholders.



C. External Benchmarking to Asian HSR Service Quality Sub-Attributes

Generally, organization might benefit from benchmarking process in variety of ways, including transfer knowledge, new technology, and performance improvement standard. It is claimed to be a sustainable systematic process from outstanding organization to define better workflow and set realistic business objectives [11]. It served as point of reference or comparison which regarded as quantifiable standard. In this research, the benchmarking approach was performed to four Asian HSR service representatives whose prior researches has discussed about its tangibility and reliability sub-attributes along with its prioritization rank.

These references' ranks would enable the author to gain knowledge about the sub-attributes importance within common HSR industry and put them in respective order for Indonesian HSR indicator's final prioritization rank. The benchmarking process was involving Taiwan High-Speed Railway (THSR), Shanghai-Nanjing HSR, Beijing-Guangzhou HSR, and India's Northern Railways. Since the service quality scheme for conventional rail and high-speed rail are substantially similar, one conventional railway service reference (Northern Railways) is provided to address this limitation due to lack of prior research related to SERVQUAL. The benchmarking data compilation is presented in Table II.

Table II. External Benchmarking of Indonesian HSR Service Quality Attributes

<i>Service Attributes</i>	<i>Service Sub-Attributes</i>	<i>Initial Rank</i>
Tangibility	Cleanliness of Facilities	1
	On-board Comfortability	2
	Modern Facilities and Infrastructure	3
	Comprehensiveness of Facilities	4
	Facilities Convenience Way of Use	5
Reliability	Train Punctuality	6
	Accuracy of Schedule	7
	On-train and On-station Safety	8
	Staffs Professional Ability	9
	Record Keeping Accuracy	10
	Process Efficiency (e.g., Check-in, Ticketing, Boarding)	11
	Entrance, Exit, and Transit Access Convenience	12

From the data presented on Table II, the author found that most prior research which elaborated the important service attributes are having similarity in attribute contents. Most tangibility sub-attributes that were mentioned was the cleanliness, comfortability, modern equipment, and access convenience. While on reliability sub-attributes, punctuality, safety, staffs' capabilities, and process convenience were also repeatedly mentioned. The initial rank presented above would be the basis of both attributes' performance indicators final ranking. This initial rank was decided based on the pattern of prioritization or indicator weights from related researches [12,13,14,15]. Since each of HSR reference mainly presented similar aspects, the prioritization of these sub-attributes of country's HSR service quality were revealed in obvious way. It was noted, summarized, and put in respective order to determine this initial rank.

In addition to that, it could be indicated that majority of railway services placed more emphasis on reliability attributes, as most services focused on reliability to ensure their operation excellence. From the benchmarking process, it was also found that amount of tangibility is lesser than reliability attributes. It was aligned with earlier statement about worldwide HSR which rarely focus on tangibility aspects. According to the HSR references, there were many physical characteristics that prioritized train facilities and neat appearance of employees than station facilities. It was strengthened by the experts through in-depth interview that HSR service is prioritizing on-train services. HSR as rapid transportation would result in fewer passengers' spending time on-station. Hence, it



was also suggested for HSR operator to invest more on-train facilities as it would bring more positive influence to please passengers. The responsibility proportion of on-train service staffs would also be larger than on-station staffs.

D. Performance Indicators

Recognizing the HSR operation’s complexity and limited information to specific Indonesian HSR operator, KBPMS framework was selected as performance measurement design tool for this research since it provides the ability to oversee non-financial metrics, especially business result perspective, which strongly related to the service quality improvement objective. The determination of performance variables along with its final rank was conducted in this stage, referring to the previous sub-attributes (resulted on Table III and Table IV). Gaps and false alarms in the proposed indicators of tangibility and reliability attributes has been prevented. The final rank written on the table is suggested to be utilized by HSR operator for prioritization consideration during decision-making process since all-at-once improvement for all metrics would be inefficient and too costly for HSR business.

Table III. Tangibility Attributes Indicators and Prioritization Rank for Indonesian HSR

<i>Tangibility Indicators</i>	<i>Service Sub-attributes Equivalent</i>	<i>Description</i>	<i>Initial Rank</i>	<i>Final Rank</i>
Facilities Cleanliness Rating (%)	Cleanliness of Facilities	Environment aspect has significant impact on how passengers perceive the service and satisfaction level that influences their further decision-making to continuously using the HSR transportation choice.	1	1
Facilities Inconvenience Complaints from Passengers (%)	On-board Comfortability	Monitoring this indicator would prevent inefficient passenger flow or ticketing systems, parking problems, safety concerns, cramped area, uncomfortable seats and disturbing temperature as it impacted comfortability of passengers.	2	2
Asset Turnover Ratio (times)	Comprehensiveness of Facilities	The value of HSR operator sales or revenue in relation to the value of all assets is reflected in this ratio. It oversees the efficiency of HSR operator’s asset.	4	3
Innovation of Facilities New Features (idea per quarter)	Comprehensiveness of Facilities	This indicator would be assessing all submitted ideas for new features within HSR passenger experience.	4	4
Market Absorption to New Product and Services (%)	Facilities Convenience Way of Use	Prior to launching new HSR service, it would be crucial for HSR operator to assess how the market will react to the offer and whether the physical product and service can both be effectively absorbed by passengers.	5	5

Table IV. Reliability Attributes Indicators and Prioritization Rank for Indonesian HSR

<i>Reliability Indicators</i>	<i>Service Sub-attributes Equivalent</i>	<i>Description</i>	<i>Initial Rank</i>	<i>Final Rank</i>
On-board Travel Time Accuracy (%)	Train Punctuality	This indicator accounts for entire trip’s travel time, example: 20 minutes, 25 minutes, 35 minutes, etc.	6	6
Rate of Actual Service Delivered Meet Scheduled Service (%)	Accuracy of Schedule	The main emphasis of this indicator would rely on the Electrical Machine Unit (EMU)’s punctual departure time.	7	7



Number of Accidents and People Injured (per train km)	On-train and station Safety	On-	Passengers' carelessness and system errors, such as crossing accidents, suicide, etc. could result in railroad accidents. This would be utilized to assess current system and plan corrective action.	8	8
Operation Defect Rate (per one hundred million passengers)	On-train and station Safety	On-	The complexity of HSR system significantly increases the likelihood of operational defects which mostly came due to EMU and rail condition. This metric is recommended to raise awareness to equipment standard compliance of train. Station crews needs to thoroughly inspect and eliminate error.	8	9
Percentage of Standard of Procedure Conformity (%)	Staffs Ability	Professional	As HSR operation demanded high level of technical and non-technical SOP conformance, this indicator seeks to raise the standard of crew compliance for non-physical procedure.	9	10
Customer Satisfaction Score – CSAT (%)	Staffs Ability	Professional	This indicator would measure short-term passenger loyalty. As a tool, satisfaction survey was utilized to inform HSR operator regarding the service evaluation.	9	11

E. Cascading Process

Next, after the performance indicators have been decided, the cascading process would take part to symbolized the hierarchical structure that aided organizations in achieving their objective at all levels—from the strategic until operational level. As the higher level would hold greater responsibility in strategic decision-making, the weighting would resulted bigger compared than the lower level. The organization structure which includes passenger-service related departments should be defined to determine the weighting value.

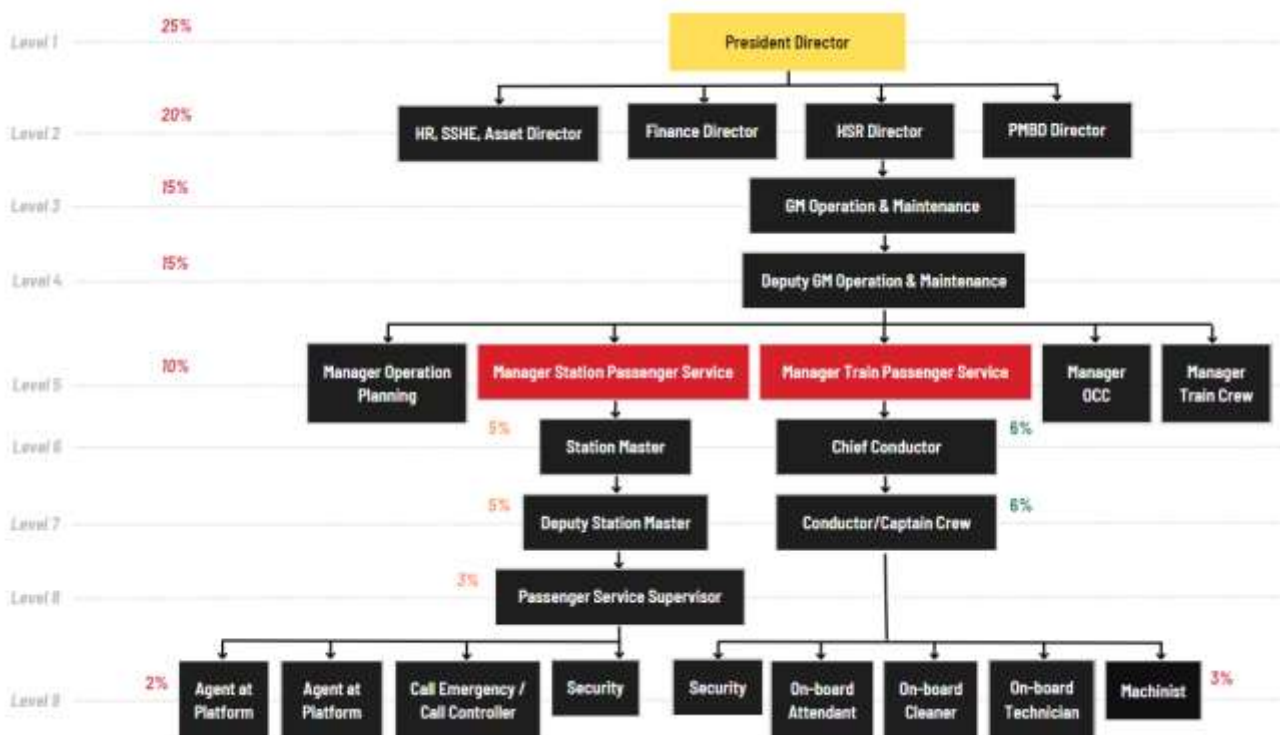


Figure 2. Passenger Service-Related Organization Structure and Level's Weight Cascading



According to the Indonesian railway expert, it was stated that the primary responsible department for passenger service responsibility consisting of station passenger service and train passenger service. Between these two, train passenger service is more prioritized since passengers tend to spend more time on train rather than station. Moreover, in HSR business, the station development would implement grab-and-go concept. Therefore, the commercial and retail development on-station would not be overly complicated. This statement impacted the weight given to train passenger service to be higher than station passenger service. The target accomplishment of each structural level would determine the corporate-level overall performance to passenger service quality. The hierarchical organization structure along with its defined weighting value (%) were visualized in Figure 2.

F. Key Performance Indicators (KPI) Definition for Implementation Plan

Implementing the concept that has been applied by other PMS framework—including KBPMS, each performance indicator needs to clarify its strategic measures which including its objectives, targets, and initiative action plan for practical implementation guidance. Based on its prioritization, performance indicators’ target for final measurement has been respectively sorted on Table V. Its red-yellow-green status was determined to monitor performance trend—while also assisting the appropriate follow-up action.

Table V. Indonesian HSR Service Quality Measurement Guide

Service Attributes	Measures	Target & Status			Initiative / Action Plan
		Green	Yellow	Red	
Tangibility	Facilities Cleanliness Rating (%)	≥ 90	80 – 89	< 80%	Frequently monitoring cleaning inspection checklist and setting defined guidance of cleaning standards.
	Facilities Inconvenience Complaints from Passengers (%)	0%	1 – 4	≥ 5	Allocating receptive personnel to manage repairs and continuously put effort to improve passengers’ comfortability.
	Asset Turnover Ratio (times)	≥ 1,3	1 – 1,3	< 0,9	Enhancing current assets’ value, and efficiently allocating funds for facilities upgrade and replacement.
	Innovation of Facilities New Features (idea per quarter)	≥ 2	1	0	Strengthening the Research and Development (R&D) department which in-charge of innovating features and offering rewards for performing personnel.
	Market Absorption to New Products and Services (%)	≥ 50	35 – 49	< 40	Offering promotional package or discounted price at early launching period and improving new technology to be more user-friendly.
Reliability	On-board Travel Time Accuracy (%)	≥ 98	90 – 97	< 90	Implementing traffic control formulation, improving accuracy controller system, and tightening pre-trip preparation to prevent time delay.
	Rate of Actual Service Delivered Meet Scheduled Service (%)	100	95 – 99	< 95	Creating dependable real-time communication system to broadcast the planned schedule



				all-at-once to the required media and assembling back-up plan in case of delay.
Number of Accidents and People Injured (accident per train km)	0	1	≥ 2	Regularly assessing the OCC trip record, and applying real-time performance dashboard for operation tracking purposes.
Operation Defect Rate (per one hundred million passengers)	≤ 1,3	1,4 – 1,9	≥ 2	Maintenance and hardware checks should be optimized together with its automatic defect detection and emergency command to upgrade HSR safety management.
Percentage of Standard of Procedure Conformity (%)	100	97 – 99	< 97	Implementing automatic warning system for any SOP violations and delegating SOP conformity supervisor to assure procedure compliance.
Customer Satisfaction Score – CSAT (%)	≥ 85	75 – 85	< 75	Using an automatic mechanism to assess and gather feedbacks while also offering incentives (discounts or free services) for passengers who are willing to complete the form.

The red-yellow-green status of indicators quantitative target was decided based on information retrieved from prior publication and validation from Indonesian railway experts. The main target would be referring to green status, while the red and yellow ones were adjusted to have maximum difference of 10% to maintain the premium services' standard of HSR industry. The success of service quality KPI fulfillment was not directly correlated with number of passengers, but it could be overseen from overall profitability which includes both fare-box and non-farebox revenue. Despite that, number of passengers' increase would still be able to be monitored as the major sources of HSR business revenue would still rely on its ticketing. According to prior study [16], a 5% increase in Customer Retention Rate (CRR) would result minimum of 25% increase in profitability. Through comprehension of passengers' perspective, relationship between passenger satisfaction and retention rate was also validated. Since CRR was dependent on number of passengers at beginning, end, and newly acquired passengers, the demand increase is suggested to be prioritized to prevent declining profitability.

CONCLUSIONS

The result of this study showed significant performance indicators which impacting Indonesian HSR service quality by accentuation on passenger experience and satisfaction. Based on common situation and on-going issues experienced by worldwide HSR, five tangibility performance indicators and six reliability performance indicators were discovered under business result perspective to tackle the demand issue. Performance indicators chosen was developed through best practice HSR model's observation. It was found that most successful HSR focuses on reliability attributes, while it was also found that Indonesian transportation market has high interest on tangibility attributes as it affected travelling motivation.

To help Indonesian HSR operator to conduct measurement, evaluation, diagnosis, and follow-up action towards current performance, the indicators' prioritization, quantitative measures, and color status were indicated. It was created with the intention to enhance Indonesian HSR service quality while also preventing common demand problem to happen on upcoming HSR operation. By implementing this PMS, Indonesian HSR would have the opportunity to be more competitive and welcomed by the market.



This study is regarded as the first step of service quality PMS design roadmap for Indonesian HSR. Due to some data limitation constraints, the study was taken general industry view, but it is still applicable for all Indonesian HSR operators. For future research, market survey to record Indonesian passengers' service quality expectation is suggested to increase the accuracy of established prioritization ranking. The result might differ as this research has not included real study to understand Indonesian HSR potential passengers' characteristics and reasonings. In addition to that, AHP and correlation analysis should also be conducted using real operational data. This research was not covering both of these analyses since the Indonesian HSR has not operated yet and no valid data could be acquired.

REFERENCES

1. McKinsey & Company. 2022. Boosting Passenger Preference for Rail.
2. ITF. 2014. The Economics of Investment in High-Speed Rail. ITF Round Tables, No. 15, OECD Publishing, Paris.
3. Danaher, P.J. and Rust, R.T. 1996. Indirect Financial Benefits from Service Quality. *Quality Management Journal*, 3(2), 63-75.
4. ITF. 2019. *Efficiency in Railway Operations and Infrastructure Management*. ITF Roundtable Reports, No. 177, OECD Publishing, Paris.
5. Xiang Z., Magnini V.P., & Fesenmaier D.R. 2015. Information Technology and Consumer Behavior in Travel and Tourism: Insights from Travel Planning Using the Internet. *Journal of Retailing and Consumer Services*, 22, pp. 244-249.
6. Cavana, R.Y., Corbett, L.M. and Lo, Y.L.G. 2007. Developing zones of tolerance for managing passenger rail service quality. *International Journal of Quality & Reliability Management*, 24(1), pp. 7-31.
7. Parasuraman, A., Zeithaml, V. A., & Berry, L. L. 1985. A Conceptual Model of Service Quality and Its Implications for Future Research. *Journal of Marketing*, 49(4), pp. 41-50.
8. Bhattacharyya, D. K. 2011. *Performance Management Systems and Strategies*. Pearson Education.
9. Wibisono, D. and Khan, M. K. 2010. The Conceptual Framework of a Knowledge-Based Performance Management System, *Gadjah Mada International Journal of Business*, 12(3), pp. 393-414.
10. Sekaran, U., Bougie, R. 2016. *Research Methods for Business: A Skill-Building Approach*. Seventh Edition (Ed. 7), John Wiley & Sons, Inc, United Kingdom.
11. Wibisono, D. 2016. *How to Create World Class Company: Guide for Director and Manager*. ITB Publisher, Indonesia.
12. Chou, P.-F., Lu, C.-S., & Chang, Y.-H. 2014. Effects of Service Quality and Customer Satisfaction on Customer Loyalty in High-Speed Rail Services in Taiwan. *Transportmetrica A: Transport Science*, 10(10), pp. 917-945.
13. Zhen, F., Cao, J., & Tang, J. 2018. Exploring Correlates of Passenger Satisfaction and Service Improvement Priorities of the Shanghai-Nanjing High Speed Rail. *Journal of Transport and Land Use*, 11(1).
14. Shi, R., Feng, X., Li, K. and Tao, Z. 2022. Evaluation of passenger service within the area of Beijing west railway station, *Smart and Resilient Transportation*, 4(1), pp. 2-11.
15. Hundal, B. & Kumar, V. 2015. Assessing the Service Quality of Northern Railway by using SERVQUAL Model. *Pacific Business Review International*, 8, pp. 82-88.
16. Reichheld, F. (2001). Prescription for Cutting Costs. Bain & Company. Retrieved from https://media.bain.com/Images/BB_Prescription_cutting_costs.pdf

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