IMPROVING SERVICE MANAGEMENT IN PORT OPERATIONS USING IT HELPDESK TICKET ANALYTICS

Dr. D. Mythili, Assistant Professor, Sri Ramakrishna College of Arts and Science – Coimbatore
Mr. Selvam I, Student, Sri Ramakrishna College of Arts and Science – Coimbatore

ABSTRACT: The study titled *"Improving Service Management in Port Operations Using IT Helpdesk Ticket Analytics"* focuses on enhancing the efficiency and responsiveness of IT support systems across major Indian ports. The primary objective is to analyze the performance of helpdesk ticketing systems through statistical and analytical tools to identify delays, communication gaps, and process bottlenecks. Using a descriptive research design, data were collected from six major ports and analyzed through SPSS tools such as Correlation, Chi- Square, and Regression, supported by Power BI visual dashboards. The analysis revealed that issues like lack of manpower, poor communication, and limited automation significantly affect ticket resolution times and user satisfaction. The study emphasizes the importance of integrating automation and AI-driven tools to streamline IT service processes, enhance transparency, and improve overall operational performance. The findings contribute to the development of a more efficient service management framework within technologically driven port environments.

KEYWORDS:IT Helpdesk, Ticket Analytics, Power BI, Automation, Service Management, Port Operations

INTRODUCTION

In the modern logistics and maritime industry, information technology plays a crucial role in ensuring smooth operational performance. Port operations, being the backbone of international trade, depend heavily on effective IT service management to maintain uninterrupted communication and workflow efficiency. An IT helpdesk system serves as a key interface between users and technical support teams, addressing issues, tracking tickets, and ensuring timely resolution of service requests.

However, many ports continue to face operational inefficiencies due to delays in ticket handling, lack of automation, poor prioritization, and limited communication. These challenges not only reduce productivity but also affect user satisfaction and overall service quality. To overcome such issues, data-driven decision-making through IT Helpdesk Ticket Analytics has become essential.

This study titled *"Improving Service Management in Port Operations Using IT Helpdesk Ticket Analytics"* aims to analyze ticket data collected from six major ports in India to identify common problems, evaluate system performance, and propose strategic improvements. The use of tools like SPSS for statistical analysis and Power BI for visual analytics provides a comprehensive understanding of service gaps and areas of improvement. The ultimate goal of the research is to develop practical solutions that enhance IT service efficiency and contribute to a more agile and responsive port management system.

STATEMENT OF THE PROBLEM

In port operations, IT helpdesk support plays a crucial role in ensuring smooth functioning of service activities. However, many ports still face delay in ticket resolution, repeated issues, lack of automation, poor communication and inconsistency in prioritization methods. As a result, the service efficiency gets reduced, user satisfaction varies between ports, and decision-making becomes difficult due to manual based monitoring. There is a need to understand how ticket data analytics can improve service performance, enhance response time and support continuous improvement. Therefore, this study focuses on analyzing IT helpdesk ticket

patterns using simple percentage analysis and Power BI dashboards to identify gaps and propose data-driven improvements for better service management in port operations.

OBJECTIVES OF THE STUDY

- To analyze the efficiency of IT Helpdesk ticket resolution processes across major Indianports.
- To identify recurring problems such as duplicate tickets and escalation delays.
- To assess the impact of automation and prioritization on service performance.
- To suggest improvements through data-driven insights using SPSS and Power BI.

REVIEW OF LITERATURE

- Harini (2023), studied the use of data visualization tools in IT service management. The study mainly focused on how Power BI supports ticket pattern identification. It was found that visual dashboards help managers understand issues faster. Therefore, BI tools improve overall decision making in service operations
- Karthik & Prakash (2022), the authors studied automation impact in IT helpdesk workflows. They found that automated routing and categorization reduce technician workload. Automation also helps in solving issues quicker compared to manual handling. Hence, automation leads to lower delay and better time efficiency.
- Suresh & Nithya (2021)**, t**his study focused on logistics helpdesk ticket handling challenges. The authors identified manpower shortage and improper prioritization as major problems. These issues create repeated complaints and unresolved tickets. Thus, proper resource planning and demand based ticket priority is required.
- Mythili & Ramesh (2024), **t**he study investigated IT operational gaps within different port environments. The authors found port wise performance variation due to lack of standard process. Tool usage and efficiency differs in each port causing uneven service results. So, standardizing the helpdesk procedure is important for uniform performance.
- Raj & Joseph (2020), **t**hese authors studied communication link between users and helpdesk teams. They found that continuous ticket status tracking improves communication flow. Better updates reduce user frustration and support expectation clarity. Finally, this results in higher user satisfaction and trust in IT service delivery.

Research Design

The present study follows a descriptive research design. It aims to describe and analyze the existing IT Helpdesk management practices in port operations and to understand how ticket analytics can be used to improve service efficiency.

Analysis tools:

- Chi-square
- Correlation
- PowerBI (Dashboard)

Analysis

Chi-square

Table 1: Relationship between Port Location and satisfaction level with the tool's performance

Chi-Square Tests			
	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	146.030[a]	35	.000

Likelihood Ratio	57.159	35	.010
N of Valid Cases	122		
a. 42 cells (87.5%) have expected count less than 5. The minimum expected count is .03.			

The chi-square result shows a significant association between port location and satisfaction level towards the tool's performance, since the p-value is **0.000**, which is less than 0.05. This indicates that satisfaction level is not the same across all ports. The performance and effectiveness of the tool varies based on port location. Some ports may be handling tickets better and providing better support, while some ports may still struggle with tool usage, delay issues, or technical limitations. Therefore, port location plays an important role in user satisfaction and overall service quality of the IT helpdesk tool.

Correlation

Table 2: relationship between priorities for the ticket raised & Delay in resolving ticket

Correlations

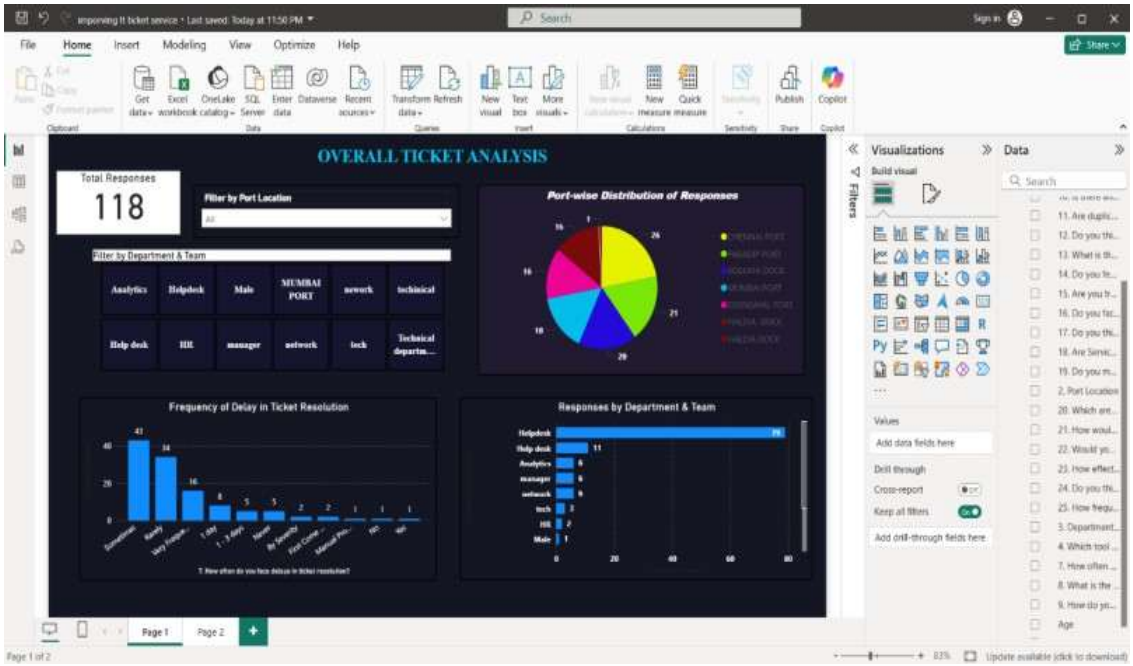
		derlay	ticket
Derlay	Pearson Correlation	1	.214*
	Sig. (2-tailed)		.031
	N	101	101
Ticket	Pearson Correlation	.214*	1
	Sig. (2-tailed)	.031	
	N	101	101

*. Correlation is significant at the 0.05 level (2-tailed).

There is a positive and significant correlation between how tickets are prioritized and the delay in resolving them (r = 0.214, p = 0.031). This means the way tickets are prioritized directly influences the resolution time. When prioritization is improper or not standardized, delay becomes higher. Proper prioritization methods can therefore help reduce resolution time and improve IT helpdesk efficiency in port operations.

DASHBOARD ANALYSIS

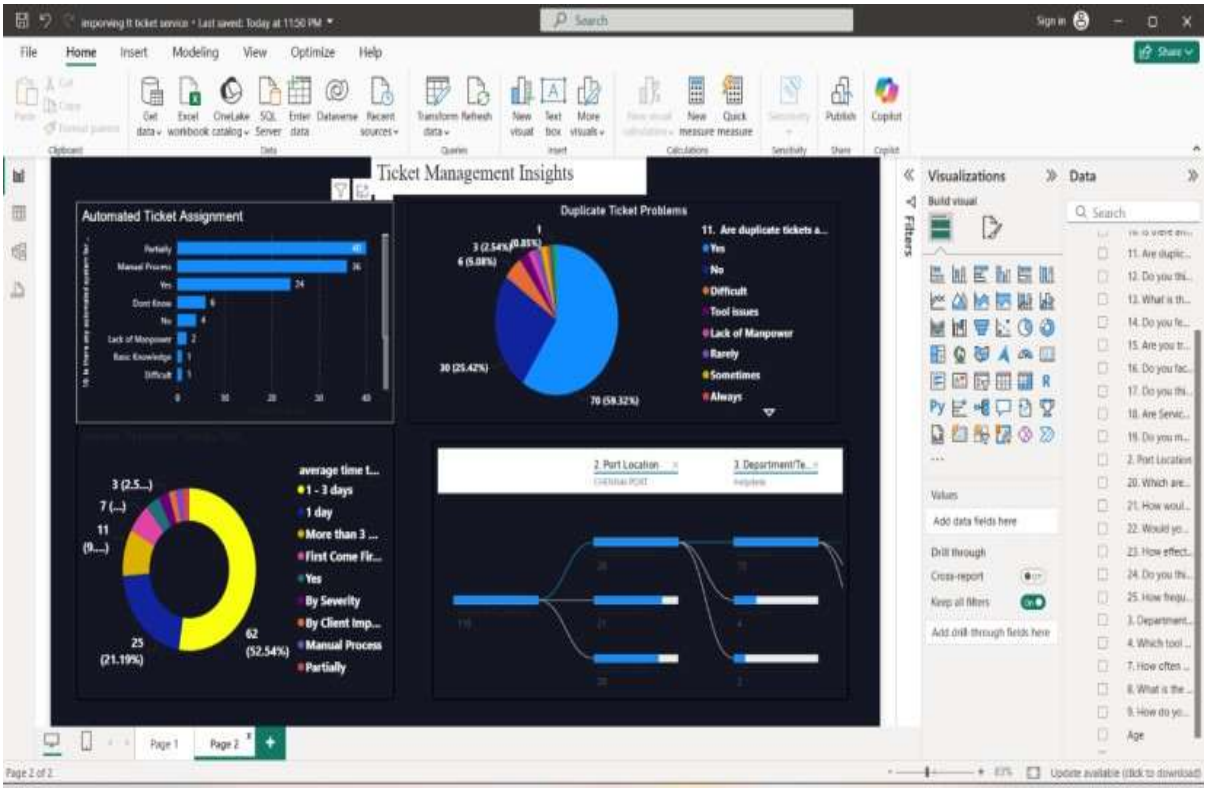
Picture 1: Overall Ticket Analysis



INTERPRETATION

The dashboard displays a total of 118 responses collected from all six ports. The port-wise distribution chart shows that Chennai Port has the highest responses, followed by Paradip and Mumbai Ports. The frequency of delay chart reveals that most employees experience delays “sometimes” or “rarely” in ticket resolution. The department-wise analysis shows that the Helpdesk department contributes the majority of responses, indicating their active role in IT ticket handling. Overall, the dashboard highlights that while ticket management is functioning, there is room for improvement in response time and automation efficiency across ports.

Picture 2: Ticket Management Insights Dashboard



Interpretation

- The dashboard highlights key insights into the IT ticket management process across various ports. Most tickets are handled through manual or partially automated processes, suggesting scope for automation improvements. The duplicate ticket problem chart shows that a majority of users face issues with repetitive or redundant tickets, indicating the need for better ticket filtering. The average resolution time chart reveals that most tickets are resolved within 1–3 days, showing efficiency in response. The Sankey chart connects port locations and departments, helping identify workload distribution and performance across regions. Overall, the visualization provides a clear understanding of areas needing process automation and better communication to enhance IT service quality.

FINDINGS

1. A majority of tickets are resolved within 1–3 days, indicating efficient handling of user issues.
2. Around half of the tickets are still managed manually or partially automated, showing a need to enhance automation systems.
3. Duplicate tickets remain a recurring problem, highlighting gaps in the current ticket tracking mechanism.
4. The helpdesk department handles most of the tickets across ports, suggesting it is the core area of IT support operations.
5. Ports with higher manual processing show slower response and resolution times, suggesting that automation could improve overall performance

SUGGESTION

- Increase Automation**:** Implement advanced automated ticket assignment systems to reduce manual workload and improve response time.
- AI Integratio**n:** Use AI-based tools to identify and merge duplicate tickets automatically, minimizing redundancy.
- Regular Training**:** Conduct periodic training programs for IT staff to improve efficiency and knowledge of new systems.
- Performance Monitoring**:** Introduce real-time dashboards to monitor ticket resolution speed and team performance across ports.
- Feedback Collection**:** Establish a structured post-resolution feedback process to assess user satisfaction and service quality.
- Resource Allocation**:** Allocate more manpower or digital tools to high-volume ports to balance the ticket-handling workload.
- Process Standardization**:** Develop a uniform ticket-handling protocol across all ports to ensure consistent and efficient issue management.

CONCLUSION

The study on the IT ticket management system shows that most ports still depend on manual processes, which leads to delays in resolving tickets. The analysis through Power BI helped in identifying the frequency of delays and departments that handle the highest number of tickets.

It was observed that ports with partial automation perform better in managing tickets and resolving them within a shorter time. Communication between IT staff and users also plays a key role in improving efficiency and reducing duplicate tickets.

To improve the overall process, adopting AI-based tools and automation is highly recommended. These steps will help in faster ticket resolution, better tracking, and improved satisfaction for both users and support teams.

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