

Stakeholders and issue management utilization in mining industry: Case study warehouse PT Freeport Indonesia

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ABSTRACT

Keywords:

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This research proposed the improvement of warehouse operations by employing a comprehensive analysis of stakeholders and implementing an issue management framework. The three-dimensional model of stakeholder identification and salience is applied to evaluate the attributes of power, legitimacy, and urgency among key stakeholders: customer, warehouse crew, and transportation crew. Utilizing tools like Empathy Map and Stakeholder Maps, the study gains insight into stakeholder perspectives and relationships within the material management environment. The analysis explains the crucial role of the warehouse crew in connecting and managing relationships. The Issue Management Framework, supported with Empathy Maps, is used to identify and address potential issues, while Stakeholder Maps aid in prioritizing solutions. The research concludes with a strategic plan and providing a holistic approach to potential challenges. The findings emphasize proactive measures to prevent stockouts and lateness of material services, proposing a direct material delivery system and regular training programs for customers to enhance understanding and reduce errors in material orders.

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INTRODUCTION

The mining industry plays a vital role in human lift by providing essential raw materials and minerals used in various industrial sectors (Candeias et al., 2019; Coulson, 2012; Ndlovu et al., 2017; Sovacool et al., 2020; Spitz & Trudinger, 2019). Many of the products we use in our daily lives, such as electronic devices, vehicles, household equipment, and building infrastructure, rely on resources extracted from mines. Copper, gold, and various other minerals are crucial commodities extracted from mines and used in the production of goods and services that are essential for global societies (Christmann, 2018; Dold, 2020; Mudd & Jowitt, 2018; Verbrugge & Geenen, 2019). Moreover, the mining industry also created job opportunities for many people and contributes to a country's economic growth. However, it is essential to manage these natural resources wisely and responsibly to ensure their sustainable utilization.

The warehouse of PT Freeport Indonesia plays a crucial role in material management, with its primary objective being to cater to customer material needs. However, a significant business issue has arisen due to the increasing level of outstanding reservation, the unfulfilled reservations to the customers. The trend of outstanding reservations is on the rise, with as many as 69 thousand reservations which has not been service to the customers until the end of 2022. This situation adversely impacts customer operation as materials are not readily available.

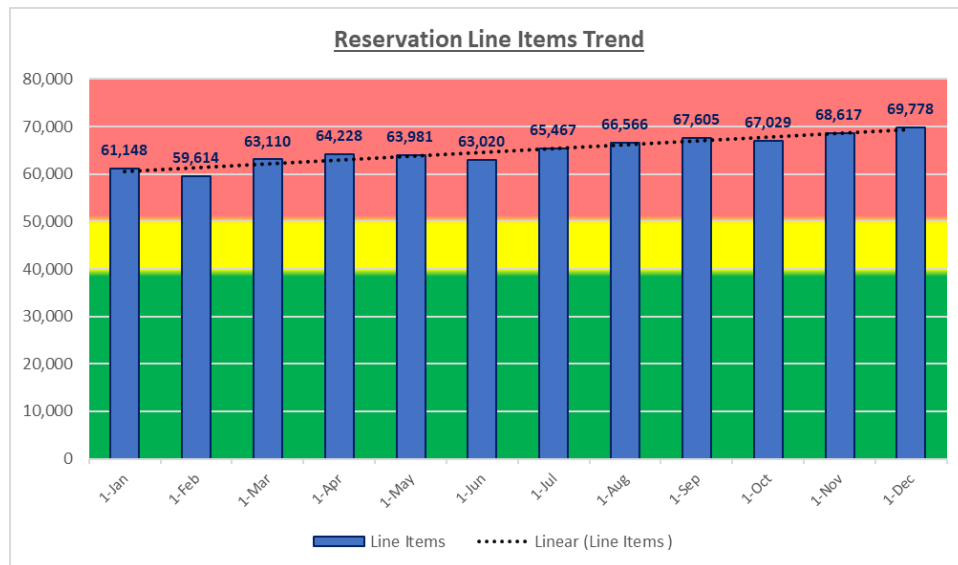


Figure 1. Reservation Line Item Trend (PTFI Report)

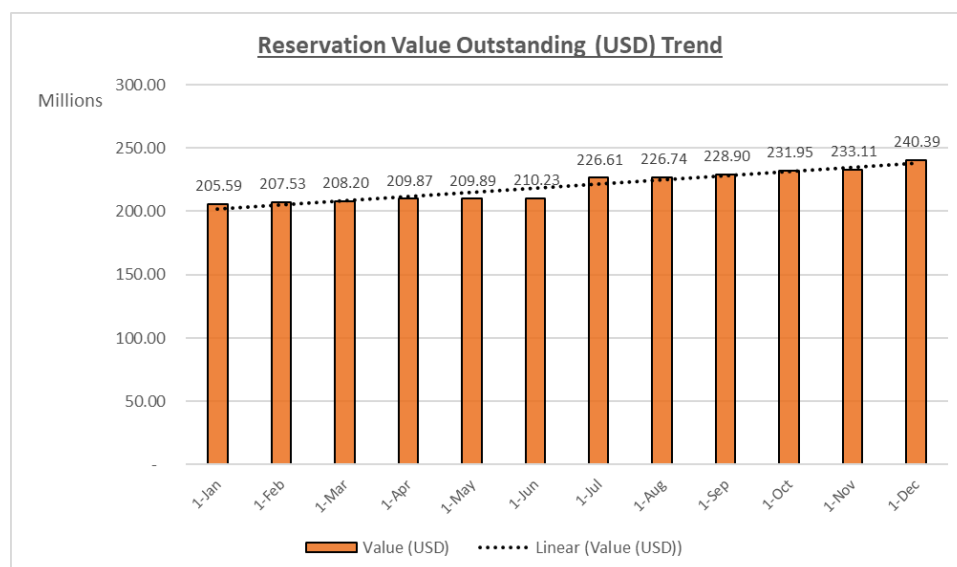


Figure 2. Reservation Value Outstanding (USD) Trend (PTFI Report)

Moreover, the outstanding reservation issue has led to a growing accumulation of unmet value, amounting to 240 million dollars until the end of 2022. This condition can affect the overall production planning as the unmet demand might rise. Customers, who have already allocated budgets for material purchases, are left dissatisfied as they cannot physically received the ordered materials.

Weiss (2021) defines issue management as the systematic process of identifying, monitoring, and resolving issues or challenges that an organization may face. In similar vein, Heath (1980) explain issue management as a systematic process of identification and analysis to manage issues related to the organization. Both of them emphasizes the importance of issue management is about proactive action rather than stay reactive. This approach also involves a comprehensive and structured approach to manage concerns that may impact the organization's reputation, operations, and stakeholder relationships. It goes beyond the conceptualization of focusing solely on public policy and politics and has evolved into multifaceted mechanism encompassing early warning and pre-crisis strategies closely aligned with strategic planning, as highlighted by Fahey and King (1977). Issue management has also gained recognition as valuable tools for crisis prevention, which emerged as separate discipline after significant events like the Tylenol poisoning of 1982 in the USA and the Chernobyl disaster of 1986 in the Europe, respectively (Falkheimer & Heide, 2006).

Stakeholder management plays a pivotal role in crisis prevention and organizational success by fostering a comprehensive understanding of stakeholder perspective and concerns (Bundy et al., 2017; James et al., 2011;

Mojtahedi & Oo, 2017). The significance of grasping stakeholder potential is exemplified in various cases where inadequate comprehension of stakeholders led to severe failures.

Freeman (2004) define stakeholders as organizations or individuals those can influence or be influenced to attain the goals of the organization. This broadens the scope of stakeholders to encompass not only those directly involved with the organization but also external parties that might have an interest in or be affected by its operations.

Several tools already employed on this research to comprehensively understand and engage with the stakeholders. The three-dimensional model is used to provides a nuanced understanding of the influence and importance of stakeholders. Empathy map delves into the subjective experience of the stakeholders by mapping out deeper insight from each stakeholder's perspective. Additionally, the stakeholder map is used to visually represent the relationships among different stakeholders and overview their interactions.

The objectives to be explained on this research are identifying the potential stakeholder in the Warehouse of PT Freeport Indonesia, identifying the potential issue in the warehouse operation issue management, and proposing the strategy to improvement the stakeholder and issue management of PT Freeport Indonesia's Warehouse. This research offers valuable insight and practical strategies to optimize warehouse operations, promoting efficiency, and customer satisfaction.

METHOD

The data analysis method for the research entails the utilization of the framework of issue management. This approach offers several notable advantages. Firstly, it provides structured and systematic means of identifying, assessing, and managing potential risks and issues within organizational context. This systematic approach ensures that no critical concerns are overlooked, allowing for a comprehensive understanding of the landscape in which the organization operates.

Moreover, the framework of issue management offers a proactive stance, as opposed to a reactive one. By anticipating and addressing potential issues beforehand, the organization will get a better position to mitigate their impacts and even turn them into the opportunities for the improvement. This approach aligns with contemporary best practices, emphasizing the importance of foresight and preparedness in today's dynamic business environment.

The choice of the issue management framework is particularly applicable for this thesis due to its tailored alignment with the research focus. Given that the thesis delves into potential risks and issues within the organization, it necessitates a methodological approach that can adeptly capture and analyse these aspects. The issue management framework, with its emphasis on identifying and analysing issues, is well suited to this purpose. Furthermore, considering the interplay between these potential issues and the stakeholders, the framework inherently acknowledges the significance of stakeholder perspectives in the issue management process. This alignment ensures that the research is conducted in a manner that not only identifies and analyses potential risks but also considers the broader stakeholder context, thus enhancing the overall effectiveness and relevance of the research.

RESULTS AND DISCUSSION

Anticipating and Analyzing Issues

In the Anticipating and Analyzing Issues step, it will make an understanding of potential problems and capturing the distinct perspectives of each stakeholder involved. The three stakeholders will be analyzed using the three-dimensional model for identify deeper regarding the stakeholder perspective and capturing the potential problems.

Table 1. Three-Dimensional Model for Customer

Attribute	Category	Key	Potential Issue
Power	High	Volume of reservations	Stock out
		Frequency of reservations	Lateness of material service
Legitimacy	High	Customer satisfaction	
		Compliance	
Urgency	High	Production needs	
		Customer satisfaction	

These analysis shows the potential issue from the stakeholder perspective of customer. The first is stock out material which occur when the required materials are not available when needed and will disrupting the customer's project. The second is the lateness of material service which happened when the material is ready in the warehouse but the customer still not get the material on time.

Table 2. Three-Dimensional Model for Warehouse Crew

Attribute	Category	Key	Potential Issue
Power	High	Managing material	Warehouse crew limitation
		Service the material	Lateness of material service
Legitimacy	High	Area responsible	Stock out
Urgency	High	Production needs	
		Optimal workflow	

These analysis shows the potential issue from the stakeholder perspective of warehouse crew. The first is the warehouse crew limitation that can happen if there are high urgent material that need to be processed. The second in the lateness of material service which happened when the material is ready in the warehouse but the customer still not get the material on time. The third is stock out material which occur when the required materials are not available when needed and will disrupting the customer's project.

Table 3. Three-Dimensional Model for Transport Crew

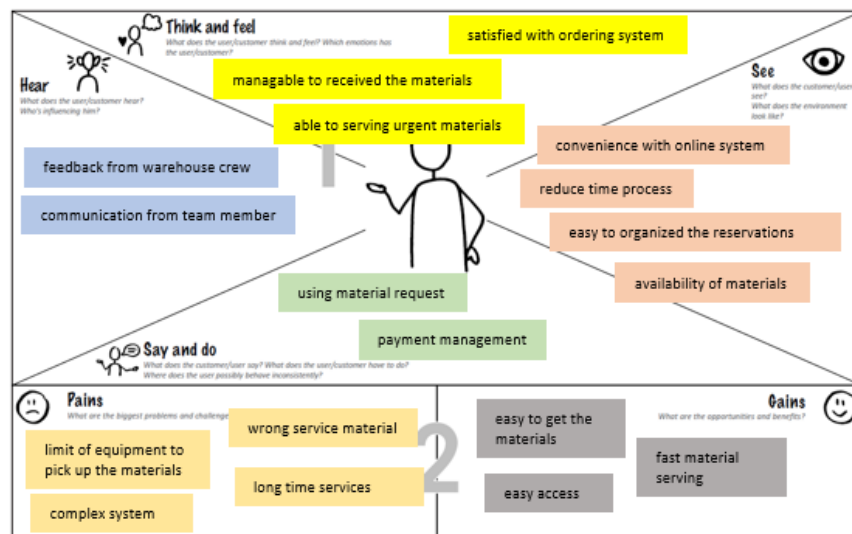
Attribute	Category	Key	Potential Issue
Power	High	Transport the material	Equipment limitation
Legitimacy	High	Route of transportation	
		Transport responsible	
Urgency	High	Production needs	
		On time schedule	

These analysis shows the potential issue from the stakeholder perspective of transport crew. The potential issue is equipment limitation that can delay the container movement but specifically in the condition when there're many urgent containers that need to be moved.

Developing Position on Those Issues

In the Developing Position on Those Issues step of Issue Management Framework, a meticulous approach is employed to conduct a profound analysis of the root cause associated with the identified issues. This step serves as a critical juncture in the framework, allowing for the systematic unravelling of the layers of complexity surrounding the issues at hand. To navigate through this complexity and gain a comprehensive understanding, the use of an empathy map proves invaluable. The empathy map serves as a strategic tool for exploring potential issues in depth, enabling a nuanced exploration that goes beyond surface level observations. Through the lens of empathy, this step facilitates a more profound comprehension of stakeholder perspectives.

The empathy map of three stakeholders can be see below.

**Figure 3.** Empathy Map for Customer

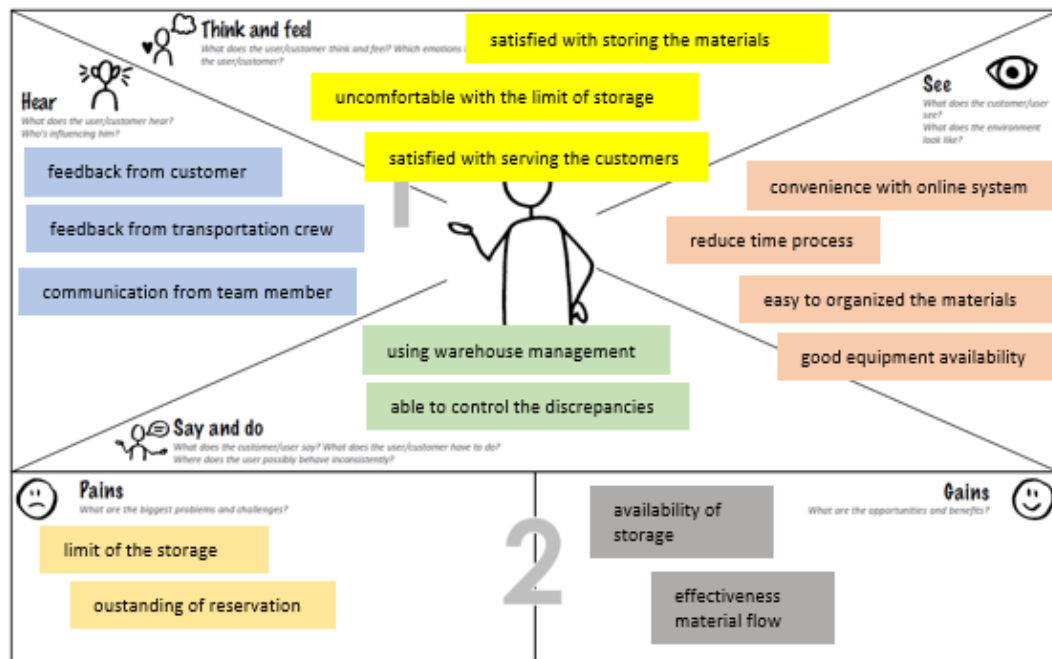


Figure 4. Empathy Map for Warehouse Crew

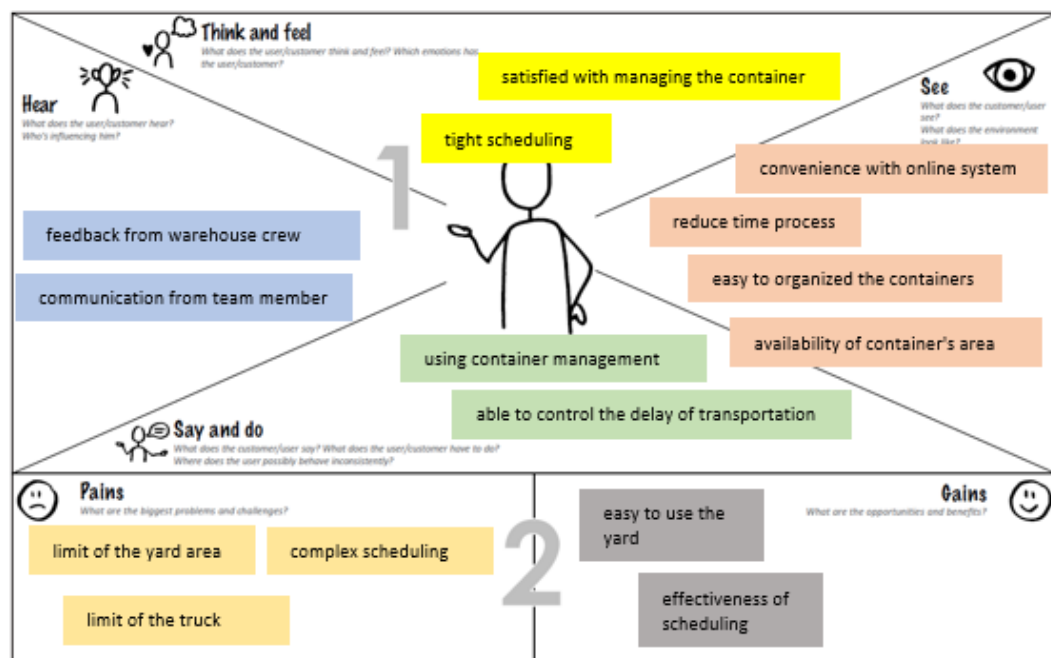


Figure 5. Empathy Map for Transport Crew

Looking from the more depth analysis, it can be seen that several root cause can be connected to the potential issue that already shows from the last step.

Table 4. Mapping for Potential Issue and Root Cause

No	Potential Issue	Root Cause
1	Equipment limitation	Limit of the storage Wrong service material
2	Lateness of material service	Limit of equipment to pick up the materials Complex system
3	Stock out	Limit of the storage Wrong service material

		Complex scheduling
		Outstanding of reservation
4	Warehouse crew limitation	Limit of the storage
		Wrong service material

The first potential issue, equipment limitation can be seen that happen from two possible root causes. The first root cause came from the warehouse crew, limit of the storage. If the warehouse is not able to store the material, the transport crew also cannot move the container as the schedule to the warehouse. It will impact with the accumulation of unsend container and also make the container schedule will be move to the next schedule. So, in the future, the transport team need to do extra work to move the remaining container from the previous area to the warehouse. The second root cause came from the customer, wrong service material. This root cause possible to be connected since the customer can cancel the reservation of material anytime, while the material is still being transported by the transport team. This case can make the transport crew do the extra work that not needed.

The second potential issue, the lateness of material service can be happened from two possible root causes. The first root cause came from the customer, limit of equipment to pickup the materials. This case is happening frequently that make the warehouse looks not good since it shows that the warehouse cannot do the service material on time while the problem came from the customer that still not pickup the materials. The second root cause also came from the customer. There is frequently the customer forgot to pickup the materials on the specific date due to managing many reservations with the complex system. More time are needed to ensure the material that need to be picked up.

The third potential issue, stock out can happen from three possible root causes. The first root cause came from warehouse crew, limit of the storage. The condition of warehouse that already full will hold the incoming container so the material needs by the customer cannot be received from the vendor. The second root cause came from customer, wrong service material. It became the root cause since the not needed material are being kept in the warehouse to make the warehouse became full. The third root cause is coming from the transport crew, effectiveness of scheduling. The problem will arise when the container that came to the warehouse consist only material that not needed by the customer. It can only make the warehouse became full. It has happened due to the complex scheduling that made the transport team need more time to compile the data for container scheduling.

The fourth potential issue, warehouse crew limitation can happen from three possible root cause. The first root cause came from warehouse crew, outstanding reservation. The increase of outstanding reservation will make extra work for the warehouse crew to monitor it and the incoming materials of the outstanding reservation will make the increase of load work in that day. The second root cause came also from warehouse crew, limit of the storage. The condition of warehouse that full will make extra work for warehouse crew to do the daily activities. Many daily activities will get pending related to this root cause. The third root cause came from the customer. The wrong service material will also make extra work for the warehouse crew since they need to pickup again the material and store it in the warehouse.

Identifying Key Audience

In the Identifying Key Audience step, it is assuming a pivotal role by employing the stakeholder map. This strategic mapping endeavour is integral to gauging the weight of each stakeholder's impact on the prevalent issues. The stakeholder map not only facilitates the prioritization of stakeholders according to their influence but also serves as a compass for discerning the most effective solutions. Its utility extends beyond mere identification, offering a comprehensive understanding of the intricate web of relationship within the material management environment.

Based on the interview with three categories of stakeholder and integrate to the stakeholder map, it can be seen as below.

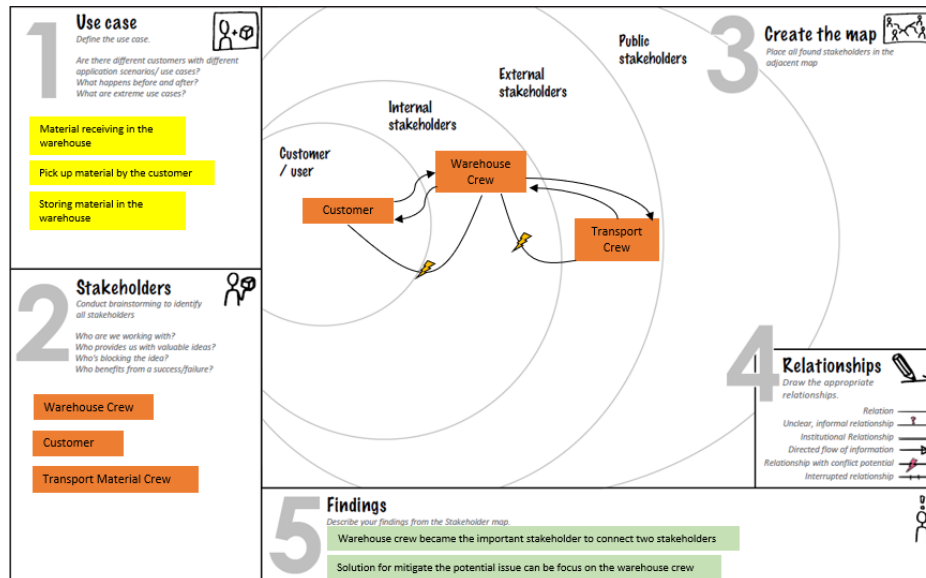


Figure 6. Stakeholder Map for Warehouse Management

In the map creation, customer is categorized as users, intrinsic to the system, while warehouse crew assumes the role of internal stakeholders steering the material management ship, and transport crew stands as the external stakeholder facilitating the flow of materials.

A symbiotic relationship blossoms between customers and warehouse crew. For instance, a customer, reliant on the warehouse crew for efficient material provision, maintains a positive relationship by promptly submitting reservation requests. Conversely, the warehouse crew enhances customer satisfaction by ensuring the availability and accessibility of materials, fostering a reciprocal bond.

Similarly, the good collaboration also shows between transport crew and warehouse crew. The transport crew has responsible for the smooth transition of materials, relies on effective communication with the warehouse crew. This is exemplified when the transport crew promptly update the warehouse crew on container schedules, in return of receive assistance in timely unloading and storage.

However, there're potential conflicts emerge. The first conflict potential can be seen from the scenario where the customer, in pursuit of emergency, demands immediate material access, conflicting with the warehouse crew's existing schedule. This divergence in priorities highlights the potential for their relationship. Similarly, tensions may arise between the warehouse and transport crews when discrepancies occur in container scheduling, disrupting the seamless flow of materials.

Then the first finding for the stakeholder map is the pivotal role assumed by the warehouse crew. They have strategic position who can fostering a crucial connection between the other two stakeholders, the customer and the transport crew. The warehouse crew able to be a mediator for the communication gap between the customer and the transport crew.

The second finding for the stakeholder map is the focal point of the warehouse crew for formulating the solution to mitigate the potential issues within the material management environment. By honing in on the warehouse crew, solutions can be designed and implemented that not only resolve existing concerns but also proactively address emerging challenges.

Determining the Desire Behaviour

In the Determining the Desire Behaviour step of Issue Management Framework, it will be acting as the synthesizes insight from preceding step of this framework. The strategic plan will not merely be a summation of findings but a meticulously crafted blueprint, aligning organizational objectives with stakeholder needs, ensuring effective solution, and fortifying the material management framework against potential issue.

Table 5. List of Solution against the Root Cause

Solution	Root Cause
Container scheduling	Effectiveness of scheduling
	Outstanding of reservation
Material delivery	Easy access
	Limit of equipment to pick up the materials

	Limit of the storage
Training	Wrong service material
	Outstanding of reservation

The first solution that will be provided is “Container scheduling”. It is a way to ensure the container that move is contain with the material needed by the customer. It will directly solve the root cause of effectiveness problem of scheduling. Enhancing the effectiveness of material flow is pivotal in ensuring the availability of reservations for the warehouse crew to manage within standard daily loads. The current outstanding reservation report indicates a concerning upward trend in outstanding reservations, signifying a potential future challenge for both warehouse crew and the company as a whole. Without prompt and effective intervention, this issue may escalate. To address this, improvement in container scheduling, as indicated by the in-transit monitoring report, can play a crucial role. Many materials needed already located in the jobsite area yet to be sent to the warehouse, indicating a disconnect in the current scheduling process. Optimizing container schedule becomes imperative to align material delivery with demand, ultimately resolving the issue of outstanding reservation and streamlining the overall material flow within the warehouse operation.

The second solution will be “Material delivery”. Introducing a direct material delivery system to the customers is a strategic move that enhances accessibility and convenience. This approach eliminates the need for the customers to physically visit the warehouse to pick up materials. Instead, the customers can await the delivery in their office, simplifying the process by relying on email notification. This not only saves times for the customers, but also removes the necessity for them to prepare equipment for warehouse visits, enabling them to continue their work seamlessly. Furthermore, this direct delivery system contributes to efficient warehouse operation by reducing the volume of materials stored, making it easier for warehouse crews to allocate incoming materials. By ensuring that all reservations are promptly served through direct delivery, the warehouse will become more organized, benefitting both the warehouse crew and the customers.

The third solution will be “Training”. Implementing regular training session for customers is crucial to enhance their awareness of the material stored in the warehouse. By imparting knowledge about the available materials, customers can make more informed and accurate material orders, reducing the likelihood of errors. The outstanding reservation report highlight a notable issue where reservations have due dates on the same day they are created, indicating a lack of understanding about the need for planning material orders in advanced. Conducting training for the customers can address this gap, ensuring they have the capability to devise more effective material order plans. Additionally, notifying new customers about the regular training sessions can contribute to a more informed customer base, fostering better collaboration and coordination in the warehouse operation.

CONCLUSION

The study highlights the importance of three key stakeholders in warehouse operations: equipment, lateness of material service, stock out, and warehouse crew. The research identifies four potential issues: equipment limitation, lateness of material service, stock out, and warehouse crew limitation. To address these challenges, the proposed solutions include optimizing container scheduling, improving material delivery systems, and implementing a comprehensive training program. Expanding stakeholder analysis could provide a deeper understanding of material management and provide innovative solutions. Including other tools for stakeholder analysis could provide nuanced perspectives and a more holistic understanding of stakeholder dynamics.

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