Walmart Facility Location Proposal: Addressing International Supply Chain Constraints and Warehousing Strategies

QSO 635 International Supply Chain Management

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This report serves as a comprehensive location justification analysis for Walmart, we explore the viability of establishing a new manufacturing facility in either Russia or South Korea. Through a systematic approach, the analysis leverages supply chain management principles and the factor rating method to propose a location and strategies that align with organizational goals and international logistics demands, specifically exploring constraints. And ultimately recommending warehousing strategies that align with goals and best Practices. The findings presented will demonstrate how supply chain management concepts can inform critical decisions and contribute to the long-term success of international operations.

I. Organization Analysis

A. Material Requirement Planning (MRP) System

Walmart uses a material requirements planning (MRP) system, which is integrated with automation technologies to streamline inventory management, reduce costs, and ensure swift delivery across its supply chain. One example where Walmart did this well was when they acquired Alert Innovation, a robotics company that has enhanced the company's storage and fulfillment processes boosting operational efficiency and enabling rapid response to demand fluctuations (Guggina, 2022). This capability is helpful to further expansion since this system will support rapid adjustments to local market demand and help quickly adapt to the supply chain challenges in the region.

B. Forecasting, Capacity Planning and Scheduling

Walmart's approach to forecasting, capacity planning, and scheduling supports its business objectives and increases its readiness for expansion. Through demand forecasting, Walmart anticipates customer needs for popular items, ensuring optimal stock levels. This approach minimizes excess inventory, helping Walmart balance supply with demand, reduce waste, and support its cost efficiency goals (Banker, 2021).

Capacity planning requires a strategic approach. Walmart's extensive distribution network is already designed to handle fluctuations in demand and maintain efficiency even during spikes. High capacity fulfillment centers will be essential to allow Walmart to scale operations seamlessly, a capability that will be essential if expanding into new demand markets like Russia or South Korea. (Guggina, 2022).

Walmart uses an automated scheduling system that aligns inventory replenishment across distribution centers to reduce delays and improve availability. This efficiency is key for maintaining Walmart's high standards of customer satisfaction, an especially crucial factor for sustaining success in international markets with potentially complex logistics. (Carranza, 2022)

C. Current Planning Functions and International Expansion

Walmart's current planning functions can guide the approach for a new facility reducing the initial investments typically needed for expansion. Walmart's combined use of virtual and physical distribution channels provides a flexible framework that can quickly adapt to international locations, minimizing infrastructure costs while supporting consistent customer experience. By replicating Walmart's automated scheduling and fulfillment systems, a new facility could maintain smooth operations and high efficiency with minimal setup. Walmart's

commitment to leveraging advanced technologies such as artificial intelligence (AI) further supports this model; as Walmart's Chief Technology Officer, Suresh Kumar, explains, "At the heart of our platform strategy is developing common global core capabilities that are built once and deployed across Walmart U.S., Sam's Club, and Walmart International" (Walmart, 2024). This approach to adaptive retail ensures that Walmart's international operations, including in markets like Russia or South Korea, align with its global standards and maintain highest efficiencies.

II. Facility Location Analysis

A. Important Factors for Location Decision

In evaluating the optimal location for Walmart's new facility, comparing Russia and South Korea, four critical factors are used in this analysis: logistics and infrastructure, labor availability and costs, market potential, and political and economic stability.

First off, the logistics and infrastructure of South Korea are notably the better choice. Characterized by a highly developed transportation network that can facilitate lower logistics costs and faster transit times compared to Russia. This efficiency in distribution channels is vital for meeting consumer demands promptly. (Banker, 2021)

Secondly, labor availability and costs play an important role in the decision making process. South Korea has a highly skilled workforce that aligns well with Walmart's technological initiatives, particularly in automation. As highlighted in the comparison; "South Korea's economic growth has been supported by a well-educated and skilled labor force." This advantage however comes at a higher cost than in Russia, where labor may be more affordable but less skilled (Economy Stats, 2024).

Third, the market potential in South Korea is promising. The country is a leader in tech industries and shows significant demand for a variety of products, which aligns well with Walmart's diverse offerings. As noted in the Country Commercial Guide, "Korea remains one of the world's most export-dependent industrialized nations," suggesting that Walmart could tap into a robust market while also serving as a hub for expansion into other markets (U.S. Department of Commerce, 2023).

Finally, political and economic stability is a crucial consideration. South Korea provides a more stable political and economic environment, which reduces the risks associated with supply chain disruptions that may be encountered in Russia. As noted in the comparison, "South Korea has demonstrated incredible growth and global integration to become a high-tech industrialized economy," while "Russia's reliance on commodity exports makes it vulnerable to boom and bust cycles that follow the volatile swings in global prices." This stability offers Walmart a more predictable operational landscape. (Economy Stats, 2024).

B. Ranking and Weighting Factors

In the evaluation process for selecting the optimal location for Walmart's new facility, specific weights are assigned to each factor according to their priority. Logistics and infrastructure are given the highest weight at 30%, because of Walmart's strong emphasis on operational efficiency, which relies heavily on a reliable transportation network. Labor availability and costs received a 20% weight, due to the fact that access to skilled labor is essential for ensuring the facility operates efficiently. Market potential was assigned a 25% weight, highlighting the importance of consumer demand for electronics in driving profitability and the overall success of the expansion. Lastly, political and economic stability also will

receive a 25% weight, underscoring the necessity for a stable environment that allows Walmart to maintain consistent operations without significant disruptions. *(Figure 1: Sample FRM Analysis)*

C. Factor Rating Method (FRM) Analysis

Using the Factor Rating Method (FRM), South Korea outperforms Russia in key categories critical to Walmart's operational success. South Korea will receive higher scores for logistics and infrastructure , political and economic stability and market potential. South Korea also scores higher on labor availability, although conversely Russia has a slight advantage in labor cost but this benefit was not sufficient to outweigh the overall advantages offered by South Korea. South Korea is the clear optimal choice. Walmart's sophisticated material requirements planning (MRP) system, combined with its robust forecasting and scheduling capabilities, positions the company well to navigate the complexities of international operations and enhance customer satisfaction. By establishing a presence in South Korea, Walmart can effectively leverage the region's high demand for electronics and capitalize on an efficient supply chain framework. These factors collectively underscore South Korea's potential to support Walmart’s goals of operational efficiency and reliable product availability, making it the ideal choice for expansion over Russia.

III. Constraints in International Supply Chain Management

In this section, we will explore key constraints that could impact Walmart’s supply chain in South Korea, specifically bottlenecking issues and transportation limitations. Addressing these constraints is essential to ensure smooth logistics and inventory flow. We will also evaluate the

suitability of push vs. pull inventory systems, weighing the advantages of each in relation to the identified challenges.

In international supply chain management, ‘constraints’ refers to factors that can limit or disrupt the flow of goods, information, or finances. This includes regulatory requirements, infrastructure limitations, transportation delays, customs procedures, and local market demands. Constraints may arise at different stages of the supply chain, potentially creating bottlenecks that hinder operations and increase costs. According to Tom Bartman, “Global supply chains have been buckling under the strain of unprecedented demand and constricted effective logistics capacity,” which underscores the need for proactive strategies to manage disruptions effectively. By properly managing these factors, Walmart can develop strategies to avoid bottlenecks, minimize delays, and streamline logistics. This will allow Walmart to maintain high standards of service, optimize inventory flow, and respond effectively to market demands, positioning themselves for successful entry in South Korea (Bartman, 2022).

A. Bottlenecking Issues

Walmart may face several operational and logistical bottlenecks that could hinder supply chain efficiency. Regulatory delays in customs and import processing may occur due to South Korea's specific import regulations, where compliance with stringent protocols could slow product entry. Another challenge could be posed by congestion at major ports like in Busan, due to global demand cycles and seasonal fluctuations, which could impact turnaround times and disrupt Walmart’s supply chain flow. As noted by Bartman, “schedule delays have risen” significantly, particularly in key trading routes, emphasizing the global nature of bottlenecks and their ripple effects on local supply chains. Finally, limitations in local suppliers’ capacity may

lead to challenges in meeting high demand, potentially resulting in inventory shortages and delays (Bartman, 2022).

To mitigate potential bottlenecks, Walmart can focus on collaborating with local authorities to streamline customs processes and help expedite regulatory and customs procedures, reducing delays. Implementing predictive analytics could enable Walmart to anticipate demand spikes, manage inventory levels, and schedule shipments during less congested times, thereby minimizing delays by proactively increasing shipments before peak seasons. As Bartman highlights, "companies are navigating a climate of persistent unpredictability," making it critical for Walmart to leverage data-driven tools to enhance forecasting and adaptability. Additionally, partnering with multiple suppliers would reduce reliance on a single source, allowing Walmart to maintain consistent demand fulfillment and mitigate supply disruptions by pivoting to alternative suppliers when necessary (Bartman, 2022).

B. Transportation Constraints

Operating within South Korea presents several transportation challenges that could affect Walmart's ability to efficiently distribute products. Heavy road congestion in metropolitan areas, particularly Seoul, can cause significant delays, disrupt delivery schedules, and increase transit times. While South Korea has a robust railway network, limitations in connectivity for distribution could reduce its effectiveness in certain regions. High logistics costs driven by fluctuating fuel prices and extensive road tolls further add to the financial burden, impacting Walmart's ability to maintain cost-effective operations. (Kim, 2008)

To address transportation constraints in South Korea and minimize impact, Walmart can implement a number of strategic solutions to ensure efficient product distribution. One option is

to use nighttime transportation schedules to avoid high traffic times and reduce delays which will create more reliable delivery timelines. Additionally, Walmart can leverage South Korea's public transportation systems and logistics hubs to optimize routes and consolidate inventory, benefiting from high capacity transit options that reduce dependency on individual road vehicles. Finally, establishing regional warehouses and distribution centers closer to urban areas would shorten delivery routes to their final destination, cutting down on transit times and costs while improving overall delivery efficiency. (Kim, 2008)

C. Push vs. Pull System

In supply chain management, push and pull systems are two primary methods for managing inventory and fulfilling orders. A push system involves manufacturing and/or stocking products in response to forecasted demand. Walmart would maintain products ready for sale before customers place orders, which is effective in stable markets with predictable demand. On the other hand, a pull system relies on real-time demand, with inventory "pulled" from suppliers or warehouses only when customers place orders. This approach minimizes excess stock and closely aligns inventory with customer needs, but it requires strong logistics capabilities to prevent delays and stockouts. As Stevens (2022) explains, push systems enable faster order fulfillment but require higher upfront investments, while pull systems reduce waste and storage costs at the risk of running out of stock.

Ultimately, I recommend a pull system with some components of the push system to meet specific demands. Given South Korea's market and the rapidly growing and transforming landscape of e-commerce, a pull system will align inventory with real time demand, minimizing the risk of overstock. This system caters to the expectation for flexibility and fast delivery in turn

enabling Walmart to adjust inventory based on actual sales data, which reduces storage costs and enhances efficiency. As Stevens (2022) notes, "a pull system minimizes warehousing costs by ordering only as needed, thus saving on storage and reducing the likelihood of unsellable stock." However, due to certain constraints, such as the potential challenges with local suppliers' capacity, Walmart may need to implement a modified push system for high demand periods or essential products. This would ensure consistent availability of these products by maintaining stock levels even when production scaling is a challenge.

The recommendation to implement a pull system with components of a push system is justified by several identified constraints in South Korea. First off, a pull system would enable Walmart to meet demands as they come up, avoiding excess inventory. By minimizing large stockpiles, Walmart can manage high logistics costs better. As Stevens (2022) points out, "a pull system minimizes warehousing costs by ordering only as needed, thus saving on storage and reducing the likelihood of unsellable stock."However, for products with limited supplier capacity, a push system would ensure consistent inventory availability, addressing possible bottlenecks from limited scalability while maintaining stock levels for crucial items in response to market demand fluctuations.

The pull system also helps mitigate bottlenecks and transportation constraints. By managing inventory more precisely, Walmart can reduce the risk of overstock and storage limitations, preventing congestion at distribution centers. This system allows for more flexible inventory adjustments, which minimizes unnecessary build up of stock. The pull system also aligns with transportation efficiency by dispatching only what is needed at the right time, helping to avoid peak traffic and reduce delays. This approach complements strategies like utilizing nighttime or non-peak transportation schedules, effectively mitigating congestion related

transportation delays.

IV. Warehousing Strategies

The purpose of this section is to formulate a recommendation of effective warehousing strategies for Walmart's new facility in South Korea. We will address optimization strategies for warehousing, Customer needs, and cost saving industry standards focusing on how these strategies can optimize operations, reduce costs, and increase customer satisfaction.

A. Cost Saving

The most effective strategies for achieving cost savings in warehousing is through the implementation of industry standard methods such as automation, lean inventory management, and cross-docking. As well as automation, such as robotics, streamlines sorting, packing, and inventory management. Additionally, lean inventory practices, like just-in-time (JIT) systems, minimize storage costs by aligning stock levels with demand. As noted, "Effective inventory planning aims to strike a balance between avoiding stockouts (running out of products) and overstocking (holding excess inventory). Stockouts can lead to lost sales and dissatisfied customers, while overstocking ties up capital and storage space" (Copy of Process Manufacturing ERP, 2024). Cross-docking, where products are transferred directly from incoming to outgoing shipments, reduces storage time and associated costs, further optimizing the supply chain.

These strategies collectively contribute to significant cost savings by improving warehouse space utilization and labor efficiency. Automation and cross-docking reduce the need for excessive storage space, which leads to lower rental and operational costs. Automation

minimizes labor costs while lean inventory management reduces holding costs by maintaining only necessary stock levels.

B. Customer Needs

To meet customer demands at Walmart's South Korea facility, it is essential to focus on faster delivery times, stock availability, and inventory visibility. Locating the warehouses near transportation hubs and near high density population centers reduces lead times and speeds up deliveries. Lean inventory management ensures that high demand products are consistently in stock without overstocking, reducing unnecessary costs. As highlighted here; "Inventory planning starts with forecasting customer demand. By analyzing historical sales data, seasonal trends, market trends, and other relevant factors, food businesses can estimate the number of products they are likely to sell in the future. This helps them plan their inventory levels accordingly" (Copy of Process Manufacturing, 2024)

To increase customer satisfaction, Walmart could also benefit from adopting an advanced warehouse management system (WMS) that provides live tracking of e-inventory tracking. This technology will enable Walmart to respond quickly to changing demand, ensuring products are available when needed.

C. Warehouse and Manufacturing Facility Co-Locating

Co-locating Walmart's new warehouse with its manufacturing facility in South Korea has several benefits, especially in terms of transportation costs and operational efficiency. Walmart can minimize delays, streamline logistics, and ensure faster restocking. This will also improve coordination between teams, leading to quicker fulfillment and responsive operations. The

impact on cost savings and customer needs is substantial with this choice. Reducing lead times is a key advantage, as this ensures faster product delivery to customers, leading to improved satisfaction.

V. Quality Best Practices for Manufacturing and Warehousing

A. Best Practices for Manufacturing

To maintain high product quality and consistency, implementing Total Quality Management (TQM) principles will be essential for Walmart's new manufacturing facility. TQM focuses on creating a culture where quality is a priority at every stage of production, with all employees involved in quality improvement initiatives. As noted, "TQM aims to hold all parties involved in the production process accountable for the overall quality of the final product or service" (Investopedia Team, 2024). By adopting TQM, Walmart can ensure that its products consistently meet customer expectations and adhere to international quality standards.

Additionally, ongoing employee training is vital to maintaining high quality standards. Training in safety protocols, inventory management, and technology will equip workers to optimize processes and uphold quality standards. Investing in employee development leads to a more skilled, motivated workforce, driving both operational efficiency and superior service in the warehouse.

B. Best Practices for Warehousing

Implementing Six Sigma methodologies in warehousing will reduce defects and improve efficiency by identifying and eliminating process variations. This approach ensures a more predictable outcome by minimizing errors in order picking, shipping, and inventory management, and lowers costs. (Staff, 2020) Furthermore, adopting industry-standard strategies

like automation, lean inventory management, and cross-docking will enhance operational efficiency. Automation through robotic systems will reduce labor costs and improve accuracy in inventory handling, while lean inventory practices minimize excess stock and storage expenses. Cross-docking will streamline the supply chain by reducing storage time and enhancing delivery speed, meeting customer demands more effectively.

C. Justification of Recommendations

When we conduct a cost-benefit analysis of Walmart's new facility in South Korea will reveal that the recommended warehousing strategies such as automation, lean inventory management, cross-docking, and co-location will reveal cost-saving potential. Automation

through robotic systems, along with lean inventory practices, will reduce labor needs and minimize excess stock, lowering labor and storage costs. Cross-docking will further streamline the supply chain by cutting storage time and reducing overhead. And co-locating the warehouse with the manufacturing facility will minimize transportation costs and improve replenishment speed. These strategies will lead to substantial cost reductions by improving delivery speed, stock availability, and inventory visibility. This way Walmart can enhance customer satisfaction, leading to higher customer loyalty and potentially increased sales.

The recommended strategies align with Walmart's goals of efficiency, customer satisfaction, and cost leadership. Automation and lean inventory will cut costs and support low prices and great service. Faster delivery and better inventory management will meet customer demands which will improve satisfaction. Lastly, Co-locating warehousing with manufacturing will enhance operations and reduce costs. These customer focussed strategies will allow Walmart to stay competitive in South Korea.

By applying these strategies, Walmart will not only reduce operational costs but also enhance customer satisfaction through faster delivery times, better stock availability, and improved inventory management. These improvements will optimize Walmart's supply chain operations in South Korea, giving the company a competitive edge in the local market.

VI. Conclusion

Walmart's new facility in South Korea stands to benefit significantly from the strategic recommendations outlined. By adopting advanced warehousing practices such as automation, lean inventory management, and cross-docking, Walmart can optimize operations, reduce costs, and enhance customer satisfaction. Co-locating the warehouse with the manufacturing facility will further streamline logistics, minimize transportation costs, and improve replenishment speed. Additionally, the implementation of Total Quality Management (TQM) principles and Six Sigma methodologies will ensure high standards of quality and efficiency in both manufacturing and warehousing.

These strategies align with Walmart's overarching goals of cost leadership, operational excellence, and customer satisfaction, positioning the company for long-term success in the South Korean market. By leveraging these best practices, Walmart can strengthen its supply chain, maintain its competitive edge, and deliver exceptional value to its customers.

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