The 20th International Scientific Conference
"DEFENSE RESOURCES MANAGEMENT IN THE 21st CENTURY"
Braşov, October 30th-31st 2025

CURRENT CHALLENGES IN LOGISTICS PLANNING

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Abstract:
Logistics planning faces significant challenges due to factors such as supply chain disruptions, rising costs, labour shortages, technological integration and sustainability and environmental impact, which can hinder efficiency and cost-effectiveness, requiring to adopt adaptive strategies and innovative solutions to navigate these obstacles successfully.

The key point for logistician is a good planning, however, in today's rapidly evolving business environment, logistics planners face numerous challenges that can significantly impact operational performance and customer satisfaction.

Keywords: *logistics; planning; challenges; geopolitics; supply chain; costs; sustainability***.**

The line between disorder and order lies in logistics…"– Sun Tzu

Introduction

In today's globalized and fast-paced world, logistics planning has become increasingly complex, facing numerous challenges that impact efficiency and cost-effectiveness. From unpredictable supply chain disruptions to the integration of new technologies and evolving customer demands, logistics professionals must navigate a dynamic landscape to ensure smooth operations. The rise of e-commerce, geopolitical tensions, and regulatory changes further complicate the task of delivering goods on time and within budget.

1. Logistics in civilian life

The logistics is not as simple as it used to be. Moving goods from one location to another quickly and without a lot of expanses is one from the main goals of logistics. Nowadays there are a lot of things to consider for the logisticians which make the logistics more complex. Furthermore, procurement of different types of goods, equipment etc. and calculate the price for live cycle and maintenance is a very big concern for logisticians all over world.

Logistics planning faces significant challenges due to factors such as supply chain disruptions, rising costs, labour shortages, technological integration and sustainability and environmental impact, which can hinder efficiency and cost-effectiveness, requiring to adopt adaptive strategies and innovative solutions to navigate these obstacles successfully.

The key point for logistician is a good planning, however, in today's rapidly evolving business environment, logistics planners face numerous challenges that can significantly impact operational performance and customer satisfaction. Some of the key challenges are as follows:

1.1 Supply Chain Disruptions:

- ❖ Natural disasters, geopolitical tensions, and health crises (like the COVID-19 pandemic) can disrupt supply chains, causing delays, shortages, and cost increases;
- ❖ Global events like trade wars or border closures can affect the flow of goods across countries.

Mitigation of Disruptions:

- ✓ Diversity Suppliers – Source from multiply regions and suppliers to avoid over-reliance;
- ✓ Improve supply chain visibility – use real-time tracking and predictive analytics to anticipate delays;
- ✓ Build resilient network – establish alternative routes and backup suppliers;
- ✓ Stock safety buffers – keep essential inventory reserves for critical disruption.

All resources should be focused on a fluent process of movement the goods to avoid rising of prices which in a long term will have negative influence on a final result.

1.2 Rising Costs:

- ❖ Transportation has a significant costs, rising fuel prices, along with regulatory changes (like carbon taxes) make managing costs more difficult.

Controlling rising costs:

- ✓ Optimise routes and loads – use logistics software for cost-efficient deliveries;
- ✓ Implement dynamic pricing – adjust pricing strategies based on demand fluctuations;
- ✓ Negotiate carrier contacts – partners with multiply logistics providers for competitive rates;
- ✓ Leverage automation – robotics in warehouses and automated inventory tracking reduce labour costs;

In addition increasing the percentage of automatization of storages may have positive effect on shortages of labour.

1.3 Labour Shortages:

- ❖ There's a shortage of skilled workers, such as truck drivers, warehouse staff, and supply chain planners, making it harder to maintain efficient operations.
- ❖ Additionally, warehouse and delivery workers face high turnover rates, leading to training and retention issues.

Mitigation of labour shortages:

- ✓ Improve working conditions – Offer better salary and other benefits;
- ✓ Improve level of working skills – invest in trainings.

The logistics industry is faced a workforce crisis, exacerbated by the Covid-19 pandemic, which has led to early retirements and a lack of new entrants into the field. This shortage affected various aspects of logistics, including transportation, warehousing, and customer service. Logistics planners had to find ways to attract and retain talent while implementing automation and technology to compensate for labour shortages. The challenge was to create a workforce that is not only capable but also adaptable to the evolving demands of the industry.

1.4 Technological Integration:

1.5 While technology offers solutions like automation, integrating new systems can be complex, costly, and time-consuming.

1.6 Cybersecurity concerns also arise as logistics companies increasingly rely on digital platforms and cloud-based solutions.

Integrating advance Technology:

- ✓ Implementing AI and machine Learning – Improve demand forecasting and warehouse automatization;
- ✓ Cybersecurity measures - Protect digital logistics system from cyber threads.

The rapid pace of technological change presents both opportunities and challenges in logistics planning. While innovations such as artificial intelligence (AI), the Internet of Things (IoT), and blockchain can enhance visibility, efficiency, and reliability in logistics operations, they also demand significant investment and expertise. Many organizations struggle to integrate new technologies into their existing systems, leading to an inefficiencies. Moreover, the fast-changing technological landscape means that logistics planners must continually update their skills and knowledge to leverage new tools effectively. The challenge lies in balancing the adoption of innovative solutions while ensuring that they align with overall business strategies and positive impact on environment.

2. Sustainability and Environmental Impact:

2.3 There's increasing pressure to reduce the environmental footprint of logistics operations, including the carbon footprint of transportation, packaging waste, and overall energy consumption.

2.4 Companies are exploring eco-friendly alternatives, but the implementation of sustainable practices often comes with higher upfront costs and operational complexities.

Achievement of sustainability goals:

- ✓ Use eco-friendly packaging – Reduce waste with recyclable materials;
- ✓ Optimize load capacity - Minimize empty truck space for fuel efficiency;

- ✓ Adopt renewable energy - Use solar-powered warehouses and electric trucks and equipment;
- ✓ Comply with green regulations – Stay ahead of sustainability laws to avoid penalties.

As environmental concerns gain prominence, logistics planners face increasing pressure to adopt sustainable practices. This includes minimizing carbon footprints, reducing waste, and optimizing resource utilization. Implementing green logistics strategies often requires significant changes in transportation methods, packaging, and inventory management. However, the challenge lies in achieving sustainability without compromising efficiency or increasing costs. Balancing economic viability with environmental responsibility is a complex task that requires innovative thinking and collaboration across the supply chain.

"My logisticians are a humourless lot … they know if my campaign fails, they are the first ones I will slay."
– Alexander the Great

3. Logistics in military

Advancements in technologies have revolutionized military logistics, improving efficiency and interoperability. Despite challenges in budget and standardization, focus lies in enhancing technological capabilities and sustainability, fostering multinational cooperation for resilient and adaptable logistics systems.

Recently, military logistics has undergone a significant transformation characterised by the introduction of advanced technologies. Drones and cyber technologies have revolutionised aspects such as surveillance, reconnaissance and resupply, resulting in improved operational mobility and shorter deployment times. Information technology is now at the heart of logistical operations, promoting effective management and facilitating the processing of real-time data

Another notable development is the increase in multinational co-operation. Given the complicated geopolitical scenario, a co-operative approach has become essential. This has led to greater standardisation and interoperability between the logistical units of different nations, which increases efficiency and strengthens the unity of defence strategies.

Despite progress, the sector faces numerous troubles and challenges. The integration of state-of-the-art technology is a particular challenge due to budget constraints and the complexity of modern systems. Defence budgets are often limited, leading to a dilemma between funding modernisation initiatives and covering operational costs. Furthermore life cycle of equipment if also a huge issue which require additional expenses

Differences in technologies and standards among deferent counties forces sometimes hinder effective multinational cooperation. The quest for a uniform standard in technology integration and operational procedures remains an ongoing endeavour.

Rapid technological progress also brings with it vulnerabilities, particularly in the area of cyber technologies, necessitating constant updates and robust security measures. In addition, the dynamic

geopolitical environment requires a flexible logistical framework capable of adapting to different crisis scenarios and aligning strategic objectives with wider security interests.

Furthermore, civilian field of logistics is in a close coordination with military logistics. For instance Transportation Company's involvement in a military movement makes a huge impact for the military units during the Reception, Staging and Onward movement (RSOM) phase of the operations.

4.1 Personal and equipment movement.

First of all most important is to know operation scenario to plan movement of personnel and equipment. To correctly provide Reception, Staging and Onward Movement (RSOM) process for the units is usually big challenge for logisticians. Changing the phases of operation causes rapid changes in entire process. This requires the ability and flexibility to accelerate flows by adding additional RSOM forces or reducing them if necessary.

4.2 Reception phase:

This phase includes preparing personnel and equipment for launch and establishing an appropriate staging area to ensure smooth reception.

Reception, or rather the reception process, is the conduct of operations having as a starting and the arrival points of deployed forces, equipment and support materials in a POD. The main effort of the reception process is given by the logisticians from those components of the land, air and sea forces that do not self-deploy, as well as the logisticians by the units of specific forces that self-deploy and are taken over by reception as single entities.

Military and non-military activities can take place in a port at the same time and they can compete for limited port capacity, which is an additional challenge for the logisticians.

As an example we can consider below mentioned case:

The military unit is deploying a peacekeeping unit to a foreign country. The first step involves logisticians in a time-consuming process of planning the receiving the convoys of trucks, ships, or aircraft carrying the military vehicles, equipment (such as weapons, medical supplies, food), and personnel. Furthermore, logisticians must have a ready plan for the reception process itself, such as plans for inventory verification and inspection of equipment. Logisticians also must be ready for Custom/import compliance and have all needed documentation on hand.

All above mentioned requires a correct planning of process, logisticians (movement component) are always in close coordination with a local authorities and private or governmental organizations representatives.

4.3 Staging phase:

Staging according to the agreed NATO definition is the process of temporarily stopping and organizing personnel and materials for their training in order to carry out the onward movement.

The deployment process begins with the arrival of staff, equipment and logistical support capabilities in the waiting/staging area (SA), where the main objective is to achieve the initial

operational capacity and ends with the start of the movement. The SA provides support, facilities and other services to support the units as they prepare to continue their movement.

Staging involves activities related to: arrival of the personnel and goods, distribution of materials in accordance with national and force logistical regulations, assembly, maintenance and functional checks of equipment to prepare for further movement.

This is a crucial part of logistics planning, especially in military or complex supply chain operations. Staging refers to preparing goods or equipment in a designated area before they are moved to their final destination.

4.4 Planning requires:

- **Space Utilization**: Adequate space must be allocated for each type of item, considering both size and priority.
- **Labelling & Categorization**: Proper labelling of items to avoid confusion.
- **Prioritization**: Items for urgent delivery should be staged separately and easily accessible.

Example of staging phase is as follows:
Once the equipment and supplies are received, they are moved to a staging area near the point of reception (e.g., a warehouse or open field near the airfield/seaport). This required from the logisticians have on hand the ready plans:

- **For Sorting and Segregation:** Items need to be grouped according to priority, function, and destination. For example, combat vehicles, medical supplies, and rations are separated into different sections to ensure swift identification and loading for onward transport.
- **For Inspection and Maintenance:** The vehicles and equipment undergo routine checks and minor repairs (e.g., topping off fuel, checking fluid levels, ensuring readiness for deployment).
- **For Packaging and Labelling:** For supplies that are perishable or sensitive (e.g., medical kits, food), they must be repacked and labelled appropriately for transport. This ensures the items are protected and easily identifiable.
- **For Transportation Readiness:** Vehicles are made ready for convoy movement. For example, fuel trucks are refuelled, and heavy equipment transporters are arranged for moving larger equipment.

In conclusion, the staging phase plays a crucial role in preparing resources and aligning them with the strategic goals of units. It serves as a foundational step, ensuring that all resources are effectively managed, optimized, positioned and ready for the next phase.

4.5 Onward movement phase:

Onward movement is the process of moving units, personnel and accompanying materiel from staging areas to the forward bases. It may be multimodal and require unit reassembly in the final destination. It is complete when the different elements reach the final destination.

Efficient onward movement requires good logistical planning and a balanced, integrated system of terminal transfer operations, movement control, and cargo transfer operations. The onward movement process encompasses logistic support and should include host nation support.

Logistics is one of the primary element in planning process to ensure the success of following elements.

a. Movement Control. Movement control is the planning, routing, scheduling and control of personnel and cargo movements along Lines of Communication.

b. Transportation Network Planning. It is essential that capacities and capabilities of the transportation network be balanced against the movement requirements so that congestion of nodes and routes is avoided. The use of the Transportation Network may require planning of necessary recovery and essential maintenance of the network. The size and type of logistic support planning during onward movement is mission tailored. Convoy Support Centres, when set up along the land Lines of Communication in the Area of Operation, should provide the required logistic support, such as recovery, repair and medical.

As an example of onward movement process we can consider follows:

After the staging process is complete, the logistics team coordinates the onward movement of equipment and personnel. For this it is necessary to have ready plans for:

- **Transportation:** The equipment and personnel are required to be moved by the most efficient and secure means, depending on the terrain and mission requirements. For example:
    - **Land Transport:** Heavy trucks or armoured vehicles are planned to be used to transport military equipment and supplies over land to the destination base or operating area.
    - **Air Transport:** In cases of urgency or where land transport is impractical, military aircraft (e.g., C-130, C-17 or helicopters) need to be ready for using to airlift critical supplies or personnel.
    - **Sea Transport:** If the deployment is to a coastal area, ships may be used for the onward movement of large, bulky equipment.
- **Routing and Timing:** The logistics team develops detailed transportation plans, taking into account the most efficient routes, the security situation (to avoid ambushes or delays), and the timing of transport. Convoys might be timed to move during hours of low visibility or in coordination with military security forces.

- **Final Destination:** To be ready for receiving the forces at the final destination (FOBs or designated peacekeeping areas) logisticians are required to have plans for the offloading of equipment and deployment of the personnel to their AOO.

As a result we can highlight that the planning stage for Reception, Staging, and Onward Movement (RSOM) process is a critical component of logistics planning in military operations. Effective planning of RSOM ensures that personnel, equipment, and supplies are accurately received, efficiently organized, and swiftly transported to their final destination.

Conclusion

In conclusion we can say that, nowadays logistics planning is faced with a myriad of challenges that require innovative solutions and strategic thinking. The complexities of globalization, the rapid pace of technological change, the demand for sustainability and labour shortages all contribute to a dynamic and often turbulent landscape. To thrive in this environment, logistics planners be flexible, involve new technologies and prioritize sustainability while navigating the complexities of a global marketplace. By addressing these challenges head-on, organizations can enhance their logistics planning processes, ultimately leading to improved efficiency and customer satisfaction.

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