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What are the four major functions of logistics

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Logistics problems are a significant concern for organizations providing services like garbage collection, mail deliveries, and public utilities. The operational costs of an organization or country can be substantial, with logistics occupying around 11% of the United States' GDP in 1997, and similar percentages in the European Union. Dedicated simulation software can simplify logistics complexity by modeling, analyzing, visualizing, and optimizing various aspects. Minimizing resource use is a common goal in all logistics fields. Professionals in this field are known as logisticians. A logistician at the USS George H.W. Bush during Operation Enduring Freedom inventory supplies in a storeroom. The term "logistics" originated from French "logistique" and has its roots in 19th-century military terminology. Antoine-Henri Jomini coined or popularized this term in his work, defining it as the art of well-ordering an army's functions and movements. Logistics is described by some sources as the military science related to procuring, maintaining, and transporting materials, personnel, and facilities. However, dictionaries like New Oxford American Dictionary and Oxford Dictionary online define logistics as a complex operation involving coordination among many people, facilities, or supplies. This perspective views logistics as an engineering discipline focused on creating "people systems" rather than "machine systems". According to the Council of Supply Chain Management Professionals, logistics encompasses planning, implementing, and controlling procedures for efficient transportation and storage of goods from origin to consumption, including services and related information. Traditionally, terms like operations or production management refer to physical transformations within a single business location, while logistics pertains to activities such as distribution, moving products across territories. Managing distribution centers falls under the realm of logistics as it involves aggregating and processing orders from various areas, ensuring the movement of products according to some logic. Despite similarities between operations management and logistics, companies often use hybrid professionals who address similar problems. The term "supply chain management" originally referred to integrating production and logistics perspectives from origin to consumption. Inventory management allows companies to optimize logistical costs while enhancing customer service. By storing completed goods in advance, businesses can reduce frequent transportation trips and better cope with fluctuating customer demands. However, maintaining an inventory requires substantial upfront investments in finished goods and warehouse upkeep. Logistics, including freight transportation, is a critical component of supply chain operations. This sector represents two-thirds of logistical expenses and significantly impacts customer service. The integration of technology has led to the emergence of "e-logistics," which focuses on transporting smaller parcels to customers worldwide. The logistics process can be divided into several key areas: Procurement logistics: Involves purchasing, arranging, and managing the movement of materials from suppliers to manufacturing or assembly plants. Outbound logistics: Focuses on storing and moving final products to customers. After-sales logistics: Concerned with addressing customer needs after a sale. Furthermore, various fields within logistics encompass: Distribution logistics Disposal logistics Reverse logistics Green logistics Global logistics Domestic logistics Additionally, procurement logistics entails activities like market research, supplier management, and ordering. The objectives of procurement logistics may conflict, as companies strive to balance efficiency with security and cost minimization. Advance logistics involves setting up logistics plans and establishing the necessary infrastructure for smooth operations. Global logistics is concerned with managing the flow of goods through supply chains, often utilizing intermodal transport systems. Lastly, distribution logistics prioritizes delivering finished products to customers, involving order processing, warehousing, and transportation services. Disposal logistics focuses on optimizing waste management by reducing costs and enhancing services related to waste disposal during business operations. Reverse logistics involves reusing products and materials, including managing surplus sales and returns from vendors to buyers. This process aims to recapture value or ensure proper disposal of goods. In contrast, forward logistics moves raw materials and finished goods from the point of consumption to the point of origin. Green logistics seeks to minimize the ecological impact of logistics activities by using intermodal transport, optimizing routes, and reducing vehicle usage. RAM logistics combines business and military logistics for complex technological systems requiring high reliability and maintainability. Asset control logistics involves managing assets such as display equipment and seasonal materials in retail channels. Emergency logistics provides rapid transportation during emergencies, while humanitarian logistics involves governments and aid agencies responding to disasters. Production logistics optimizes processes within a value-adding system, ensuring that machines and workstations receive the right products at the right time. This includes production, testing, transportation, storage, and supply. By continuously improving the production logistics system, businesses can enhance customer response and capital efficiency. In various industries, including mobile phones and automotive sectors, the primary focus is on achieving a batch size of one to meet individual customer demands efficiently. Traceability and tracking in production logistics have gained significance due to safety concerns, especially in medical and automotive fields. Construction logistics has been pivotal for human civilizations throughout history, dating back thousands of years. It has evolved into a crucial aspect of construction, with the Seven R's concept providing best practices for logistics management. The Seven R's comprise: - Right product - Right quantity - Right time - Right condition - Right place - Right customer - Right resources The US Armed Forces can optimize supply chain management by analyzing trends in peacetime consumption of ammunition and fuel versus wartime consumption, as well as considering the linear demand relationship between troops and supply items, and accounting for time as a variable. Good logistical planning leads to lean and efficient forces, while poor planning results in clunky and slow units with insufficient or excessive supplies. Business logistics encompasses various methods, including distribution centers, digital distribution, order processing, trade routes, cross-docking, sustainable distribution, commercial vehicle management, and supply chain optimization. The goal of business logistics is to ensure that products are delivered at the right time, price, and condition to customers. Logistics professionals manage inventory, purchasing, transportation, warehousing, and consulting to coordinate resources in organizations. There are two main forms of logistics: one focuses on optimizing material flow through a network, while the other coordinates resources for specific projects. Distribution networks rely on intermediaries to bring goods from manufacturers to consumers or industrial users, who then markup the products for sale. Effective logistics is critical to managing supply chains and ensuring that organizations meet their customer demands efficiently. Distribution networks involve various intermediaries and nodes to manage the flow of goods. The number of intermediaries required depends on the type of goods being distributed. For consumer goods like cosmetics and handicrafts, no intermediaries are needed as they can be sold directly or through local markets. Industrial goods, however, don't require intermediaries since manufacturers sell in bulk. There are three main types of intermediaries: agents/brokers, wholesalers, and retailers. The distribution network includes factories, warehouses, distribution centers, transit points, and retail stores. Distribution centers act as way stations for further supply chain distribution, while fulfillment centers ship directly to customers. Transit points facilitate cross-docking activities, and retail stores vary in size and type. A logistic family consists of products with similar characteristics like weight, volume, storage needs, handling requirements, order frequency, and package size. Companies use various metrics to organize their products, including physical metrics like inventory capacity and monetary metrics like space holding costs. Handling systems include pallets, trans-pallet handlers, counterweight handlers, and AGV handlers. Storage systems include pile stocking, cell racks, cantilever racks, and gravity racks. Order processing involves withdrawal of the list, picking, sorting, package formation, and order fulfillment. Gathering packages into transportable units involves picking, which can be manual or automated. Manual picking includes man-to-goods and goods-to-man methods using carts, conveyor belts, or mini-load storage systems. Automatic picking employs dispensers or depalletizing robots. Sorting is done manually via carts or conveyors or automatically with sorters. Consolidating small shipments into larger ones can reduce transportation costs through facility, multi-stop, and temporal consolidation. These methods combine packages into pallets or containers for efficient transport by ships, trains, trucks, air, and pipelines. Shippers choose carriers based on total cost and transit time. Cargo is organized in categories like unit loads, which are often standardized using ISO containers, swap bodies, or semi-trailers. Transportation operators include rail, road, boat, airplane, courier, freight forwarder, and multi-modal transport companies. International shipments comply with Incoterms standards. In logistics, systems are designed at a minimum cost based on expected customer service levels, which can increase sales. Proper configuration and management are crucial for effective logistics. Inventory management in network nodes uses Economic Order Quantity models borrowed from operations management. Distribution resource planning (DRP) is similar to production systems, ensuring efficient logistics operations. In logistics, configuration typically deals with planning the movement of goods through a network's links rather than optimizing activities within nodes themselves. Traditionally, configuration can occur at two levels: warehouse (node) or distribution system (network). When designing a single warehouse, various technical-economic problems need to be addressed: determining rack cell dimensions, choosing palletizing methods (manual or automated), designing and selecting racks, retrieval systems, and ensuring fork and load beam durability. Although picking is more of a tactical decision, it affects warehouse layout and tool purchases. At the distribution system level, configuration revolves around node location in geographic space and capacity allocation among nodes. This involves facility location and site selection for new nodes or outsourcing to existing ones. Distribution networks can be categorized by their complexity: direct store delivery (zero levels), one-level networks (central warehouses), two-level networks (central and peripheral warehouses). This distinction aids modeling but also impacts tactical decisions on safety stocks. Configuring a distribution network is challenging due to factors like changing demand, product or process innovation, outsourcing opportunities, government policies, transportation innovations, regulations, and ICT system availability. Once configured, logistic systems require continuous management through tactical decisions at both the warehouse and distribution network levels, considering internal constraints like available resources and external ones like market fluctuations. Logistics requires careful consideration of various factors such as product shelf life and expiration dates, storage options, and picking efficiency. The logistician must make decisions on how to distribute merchandise over racks, taking into account different situations such as shared storage, dedicated storage, and class-based storage. This can affect the approach to picking, including routing paths, replenishment methods, and picking logic. At the warehouse level, warehouse management systems (WMS) and warehouse control systems (WCS) play a crucial role in optimizing efficiency. A WMS plans weekly activity forecasts based on statistics and trends, while a WCS works in real-time to adapt to changing situations. The effective operation of a warehouse or distribution center relies heavily on the synergy between WMS and WCS. Logistics outsourcing involves partnering with a logistics service provider (LSP) to utilize customized services and long-term relationships. This can range from complete externalization to partial outsourcing, such as creating spin-off entities or joint ventures. Third-party logistics (3PL) refers to the use of external organizations to execute logistics activities previously performed in-house. ### Given text here The field of logistics is supported by various organizations, including consulting companies and universities. Kihne Logistics University in Hamburg, Germany, is a non-profit institution that offers undergraduate and postgraduate programs with a primary focus on logistics. The Chartered Institute of Logistics and Transport (CILT) in the UK provides professional qualifications for those working in the sector. It has branches in Australia and Hong Kong, offering distance learning options. The Global Institute of Logistics, established in New York, is a think tank that focuses on intercontinental maritime logistics. Meanwhile, the International Association of Public Health Logisticians (IAPHL) promotes professional development among supply chain managers, with an emphasis on developing countries. Museums dedicated to logistics include the General Logistics Museum in Russia, the Museum of Logistics in Japan, and the Beijing Wuzi University Logistics Museum in China. Additionally, there are several other organizations that contribute to the understanding of logistics, such as the International Association of Public Health Logisticians (IAPHL), which supports logisticians worldwide. Logistics management is a vital component of supply chain management that encompasses planning, implementing, and controlling the efficient movement and storage of goods, services, and information from origin to consumption. This process aims to meet customers' requirements while minimizing costs and maximizing efficiency. The industry includes various sub-segments such as inventory management software, performance-based logistics, physical inventory, and sales territory management. The use of blockchain technology is increasingly being adopted in logistics for secure and transparent data storage and digital transaction processing. Other emerging trends include the development of autonomous vehicles like self-driving trucks and automated systems such as automated storage and retrieval systems and automated guided vehicles. According to a report by Jon Hurdle, South Jersey has become a hub for warehouse construction in the Philadelphia region, with activity continuing to amaze industry experts. The importance of logistics is highlighted in various sources including Gianpaolo Ghiani's "Introduction to Logistics Systems Planning and Control" which emphasizes the need for efficient supply chain management. The role of marketing channels in supply chain management is also a crucial aspect, as highlighted by Irina Kozlenkova et al. in their study on "The Role of Marketing Channels in Supply Chain Management". Logistics is often defined as "the part of supply chain management that plans, implements and controls the efficient forward and reverse flow and storage of goods, services and related information between the point of origin and the point of consumption". Historically, logistics has its roots in ancient times, with Baron de Jomini's work providing insight into the subject. The term "logistics" is derived from the Greek words "logos" meaning reason and "khalepas" meaning servant. Logistics management encompasses the planning and execution of the flow of goods, services, and information from raw materials to end customers. The Role of Logistics Functions in Supply Chain Management Inventory management is crucial part of logistiks sistem, involving tracking and control of goods as they move through supply chain. Effective inventory management helps meet customer demand without incurring excessive storage costs or facing stockouts. Key activities include: Demand forecasting - predicting future customer demand to ensure stock levels are adequate. Inventory tracking - monitoring real-time inventory levels using technology like RFID and barcoding system. Stock replenishment - ordering new stock in timely manner to maintain optimal inventory levels. Warehouse Management is final pillar of logistiks, focusing on efficient handling and managing warehouse activities such as: Picking and packing - coordinating with inventory management to prepare orders for shipment. Inventory tracking - monitoring real-time warehouse inventory levels using technology like RFID and barcoding system. Warehouse optimization - using metrics like space utilization and labor costs to optimize warehouse management practices. Order processing is critical function involving handling of customer orders from the moment they are placed to the moment they are fulfilled. Key activities include: Order entry - capturing customer orders accurately and efficiently, often through e-commerce platform or customer service center. Order validation - verifying accuracy and completeness of orders before processing. Shipping and delivery - ensuring orders are shipped promptly and delivered within promised timeframe. Effective order processing is critical to maintaining customer loyalty and satisfaction. Modern companies leverage CRM system (Customer Relationship Management) and sophisticated OMS (Order Management System) to streamline order processing, reduce errors, and speed up delivery times. A warehouse's effectiveness relies on efficiently storing and managing goods. Key components include: verifying shipment accuracy, organizing storage, tracking inventory levels, preparing orders, shipping products, and coordinating transportation. Advanced technologies like AGVs, robotic systems, and Warehouse Management Systems (WMS) are transforming warehouses into smart, interconnected hubs that boost operational efficiency. The four major logistics functions work together seamlessly to create a synchronized supply chain. Accurate inventory management is essential for efficient order processing, while transportation management ensures timely delivery of goods. Technologies like IoT, AI, and blockchain provide real-time data, predictive insights, and enhanced transparency, driving better decision-making and higher efficiency across the supply chain. Technology continues to revolutionize logistics functions by automating tasks, predicting trends, optimizing routes, and managing inventory levels more precisely. WMS systems have automated warehouse management, while Big Data analytics enables companies to predict trends and optimize operations. IoT devices provide real-time visibility into inventory levels, and blockchain ensures transparency and security in transactions. The convergence of these technologies allows for a more integrated, intelligent, and responsive logistics system. Companies that leverage technological advancements can gain a significant competitive edge by driving efficiency, reducing costs, and enhancing customer satisfaction. Companies should leverage best practices to boost efficiency and collaboration across their four major logistics functions: inventory management, transportation management, order processing, and warehouse management. To achieve this, they should implement integrated systems like ERP and SCM, utilizing data analytics for informed decision-making, fostering interdepartmental collaboration, and regularly reviewing processes for continuous improvement. Staying up-to-date with the latest technologies and incorporating them into their workflow can also enhance efficiency and productivity. By adopting these best practices, companies can streamline their logistics operations, reduce costs, and improve service levels, ultimately ensuring that goods move smoothly through the supply chain to meet customer demands promptly and efficiently.