The PAM Series ©

Practical **A**id **M**emoirs for the workplace

PAM 4 ‘Logistics’

‘*Ensure sustainable operations*’

Communication Training Improvements

P4.2

Foreward

Practical Aide Memoirs are just that, practical. The **PAMs** are intended as a reference to assist with decision-making, planning and action. The resultant action is intended to improve the workplace performance of individuals and teams, lifting the performance of the company, sustainably. The PAMs are about creating an environment of success; they provide sufficient information to allow the reader to easily digest the content and put it into practice at the workplace.

PAM 1 'Communication' is about laying the foundations. PAM 1 starts with the individual, then places the individual within and around the team. Throughout PAM 1 there is an emphasis on communication skills, an orientation towards objectives and outcomes, and reflective practice.

PAM 2'Training' puts the framework in place. The PAM establishes and maintains the learning environment and sets in place a culture of personal and professional development.

PAM 3 'Improvements' builds on PAMs 1 and 2 and is all about creating an environment of Continuous Improvement. This PAM remains practical due to the principle of being 'applied'; easy to grasp and transferable into the workplace.

PAM 4 'Logistics' provides a practical guide to logistics. The PAM has been put together to act as a springboard to a review of logistics and planning for the optimisation of operations.

PAM 5 'The Food Safety Miscellany' is a tour of topics relevant to the food production environment and is meant to serve as a point of reference. PAM 5 is a handy guide to have at the workplace in support of training and development.

PAM 6 'Projects' is derived from an established, well-known framework and is presented as a series of templates that can be adapted for use at the workplace. The approach offers a structured, flexible, and product-based approach to project management.

PAM 7 'Interaction' takes PAM 1 further and is a focus on advanced communication and coaching; the PAM is based on how information is transferred and processed.

Combined, the PAMs represent a **Systems Approach** to workplace improvements.

David Browne

Contents

1 Introduction to Logistics Management

1.1 Introduction

1.1.1 The term logistics refers to **the movement of resources (or products), where the resources may take the form of goods, services and information and their flow between a supplier to the customer** (or from 'A' to 'B'). Put into context it would be difficult to think of a time when logistics didn't form part of human activity and development. In fact, it would be easier to think of failings where logistics were poorly executed or ignored. There are certainly many military campaigns where the logistics function played a key role. In fact, it would be hard to think of any military campaign where logistics didn't play a part, towards failure (through neglect), or success (through attention). A second, recent example would be the logistical effort that would have been required to deploy and operate the test and trace sites during the Covid 19 crisis; the success of which remains a point of discussion.

1.2 The development of logistics

1.2.1 One characteristic are the steps in the flow where goods, services or information is transformed. **The flow is referred to as the Supply Chain or Information Chain**, the quality and efficiency of which is dependent on management. The product is transformed by Inputs. Key benefits of supply/information chain management is the supply of the right product or service at the right time in the right configuration to the right customer and within budget. This can be summed as '**Maximum Performance at Minimum Costs**'.

1.2.2 The industrial revolution marked a turning point in logistics management, as mass production created the need for more sophisticated methods of transporting and storing goods. The development of railroads, steamships, and later, automobiles and airplanes, revolutionised logistics by enabling faster and more reliable movement of products over long distances.

1.2.3 In the late 20th and early 21st centuries, advancements in technology further transformed logistics management. The advent of information technology and the internet facilitated real-time tracking, inventory management, and communication across the supply chain, leading to the emergence of modern logistics practices.

1.3 Importance of logistics management

1.3.1 Effective logistics management is vital for businesses to achieve operational efficiency and maintain a competitive edge. By optimising the movement and storage of goods, companies can reduce costs, improve delivery times, and enhance customer satisfaction. **Key benefits of robust logistics management** include:

> **Cost Reduction:** Efficient logistics processes help minimise transportation, warehousing, and inventory costs. This is achieved through strategies such as route optimisation, bulk shipping, and just-in-time inventory management.
>
> **Customer Satisfaction:** Timely and accurate delivery of products enhances customer experience and loyalty. Effective logistics management ensures that goods are available when and where they are needed, meeting customer expectations.

Inventory Management: Proper logistics planning allows for better control over inventory levels, reducing the risk of overstocking or stockouts. This helps in maintaining a balanced supply and demand, leading to efficient resource utilisation.

Global Reach: Logistics management enables businesses to expand their reach to international markets by managing the complexities of global supply chains, including customs regulations, international shipping, and cross-border logistics.

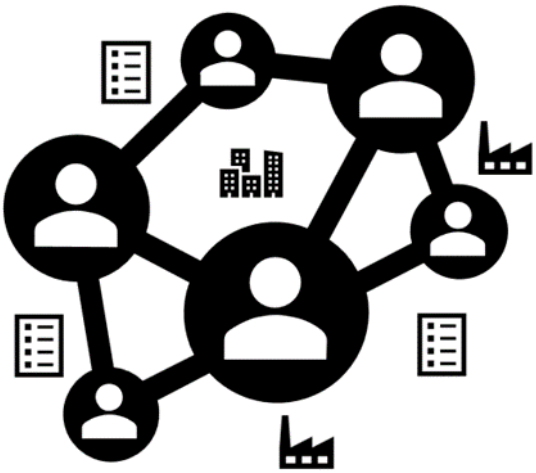
1.4 Key stakeholders

1.4.1 Several stakeholders play critical roles in logistics management, including:

- **Suppliers** who provide raw materials or components needed for production.
- **Manufacturers** who produce goods that require efficient logistics for distribution.
- **Distributors** That manage the storage and distribution of products to retailers or customers.
- **Retailers:** Who sell products to end consumers and rely on logistics for inventory management and replenishment.
- **Logistics Service Providers** Who offer specialised services such as transportation, warehousing, and freight forwarding.

1.4.2 Logistics management is a dynamic and essential field that underpins the efficient operation of supply chains. It involves **a complex network of activities and stakeholders**, all working together to **ensure the smooth flow of goods and services from production to consumption**. As businesses continue to globalise and technology advances, the importance of effective logistics management will only grow, driving innovation and efficiency across industries.

1.4.2 A **Systems Approach** could be adopted when considering logistics. This involves appreciating logistics as an **integrated, coordinated, self-supporting, organic function**. Furthermore, the system could be usefully illustrated within a Business Process Map.



Activity 1 ‘Follow-up Actions’

Revisit the topics covered in the Introduction and identify some areas relevant to your workplace that could benefit from a review. **Prioritise your observations and makes notes on Actions required.**	**Activity 1**
Priority 1	**Action/s**
Priority 2	**Action/s**
Priority 3	**Action/s**
Priority 4	**Action/s**
Priority 5	**Action/s**

2 Logistics Management Functions

2.1 Introduction to the functions

2.1.1 Logistics management encompasses a **broad spectrum of functions that are integral to the seamless movement and storage of goods, services, and information** within the supply chain. These functions ensure that products are efficiently and effectively transported from the point of origin to the point of consumption. The following provides an overview of key logistics functions management functions.

2.2 Demand Forecasting and Planning

2.2.1 **Demand** forecasting involves **predicting future customer demand for products or services to align supply chain activities** accordingly. Accurate demand forecasting is critical for logistics management as it **helps in planning production schedules, inventory levels, and distribution strategies**. Various methods, such as historical data analysis, market research, and statistical modelling, are employed to forecast demand.

2.2.2 **Planning**, on the other hand, involves **devising strategies to meet the forecasted demand**. This includes **resource allocation, production scheduling, procurement planning**, and logistics coordination to ensure that goods are produced and delivered efficiently and on time.

2.3 Procurement and Sourcing

2.3.1 Procurement involves **acquiring raw materials, components, and services** needed for production. Effective procurement **ensures the timely availability of high-quality materials at the best possible cost**. **Sourcing, a subset of procurement, involves identifying and selecting suppliers** who can provide these materials and services.

2.3.2 **Key aspects** of Procurement and Sourcing include **supplier evaluation and selection, contract negotiation, and supplier relationship management**. Efficient procurement practices are vital for maintaining the continuity of supply and managing costs in the supply chain.

2.3.2 While engaged in procurement and sourcing, companies will want to **monitor the performance of suppliers**. Customer Complaints is one indicator of performance. However, Customer complaints will also draw in factors not necessarily related to suppliers. For example, production activities. Two other approaches available to monitor specifically the performance of suppliers are:

- **Supplier rating**. A checklist of KPIs[1].
- **Vendor rating**. A rating within a range (vis. 'Below' 'At' 'Above' the desired range).

[1] KPIs. Key Performance Indicators.

2.4 Inventory Management and Control

2.4.1 Inventory management is the process of **overseeing the ordering, storage, and use** of materials and products. The goal is to **maintain optimal inventory levels to meet customer demand while minimising holding costs**. Key activities include inventory **forecasting, order management, and stock replenishment**.

2.4.2 Inventory control methods, such as **ABC analysis** (See Appendix A), **Economic Order Quantity** (EOQ) (See Appendix B), and **Just-In-Time (JIT)** inventory, are used to monitor and manage inventory levels. These techniques help in **minimising excess inventory, reducing storage costs, and avoiding stockouts**, thereby enhancing overall supply chain efficiency. The following table provides some of the advantage and disadvantages of JiT and JiC. Then Article 1 gives an example.

Just-In-Time		**Just-In-Case**	
Advantages	**Disadvantages**	**Advantages**	**Disadvantages**
Lower inventory costs	External pressures on supply	Improved Lead Time	Larger inventory required to be held (Costs)
Reduced space	Vulnerability to Quality issues	Ability to react to change	Increased exposure to poor rotation
Production to plan	Requires tight co-ordination		
Quicker inventory rotation			

Article 2.1 ‘Just-in-Time’

Toyota Production Malfunction: Just-in-Time for Supply Chain upgrade

(Sin To, September 2023)

When production came to a screeching halt at 14 Toyota assembly plants last month, the automobile industry took notice. A *‘fault in the parts order management system was the reason production could no longer be procured’* (My italics). It’s a surprising setback given that Toyota is renowned for its ‘just-in-time’ (JiT) principle, stemming from the Toyota Production System (TPS) […].

Just-in-Time no longer up to date?

Today's global supply chains rely heavily on the just-in-time (JiT) principle, where production and transport plans are meticulously synchronised. This involves ordering materials to arrive precisely when needed for manufacturing, and shipping finished products promptly to meet customer demand, effectively reducing storage costs.

However, the success of this JiT approach hinges on the timely delivery of all goods, components, or materials, which hasn't been the case since the pandemic outbreak. The global supply chain fell out of sync, causing significant disruptions.

For instance, the delayed delivery of chips, crucial for many cars, created bottlenecks in the automotive industry. These disruptions persist, leading to production stoppages and, in the worst scenario, financial strain on companies.

These experiences and recurring supply shortages, such as the recent incident at Toyota or the drought-related water shortage in the Panama Canal, are causing many companies to question the JiT production model that has been established for years and to rethink it in the interest of greater safety, especially because of supply shortages.

Safety versus costs - is it really that simple?

In order to be able to react quickly and at short notice in the event of supply bottlenecks, many companies are now going back to building up a larger safety stock and reintroducing ‘just-in-Case’ (JiC) production.

To mitigate supply issues, particularly when essential materials originate from a single source like China, the concept involves maintaining a larger safety stock. This approach reduces risks but escalates storage costs, tying up more capital.

To ensure the availability of the correct products in the right places, employing inventory optimisation strategies […] [may] determine the appropriate quantities of finished goods, intermediates, and raw materials for each location, potentially resulting in higher stock levels for some items and lower levels for others.

Diversification and regionalisation

Companies aim to reduce reliance on single suppliers by diversifying their supplier base, enabling quicker pivots to alternative partners during delivery issues. Global crises have highlighted benefits in outsourcing activities to nearby partners, including shared time zones, physical proximity, and cultural alignment, fostering improved collaboration while promoting sustainability through reduced travel distances.

However, companies should also keep in mind that splitting the order among multiple suppliers can preclude volume discounts and add additional burdens to the procurement process, such as triggering multiple purchase orders, which in turn is prone to errors.

End-to-End visibility across the supply chain

To enhance supply chain resilience, transparency is crucial. This involves sharing information with partners regarding supply and demand fluctuations, capacity constraints, and sustainability data like emissions, waste, and employee well-being.

However, it has been shown in the past that a well-established JiT model strengthens relationships between companies and suppliers, enabling them to respond quickly to supply chain disruptions. In this way, they can not only minimise risks, but also work together to build a sustainable supply chain. A simple return to the JiT model with low inventory levels as before the [Covid] pandemic is unlikely to happen anytime soon. If companies can leverage the benefits of the JiT model along with a well-designed and resilient supply chain, then they stand a good chance of being well prepared for future disruptions.

2.5 Warehousing, Storage and Location

2.5.1 Warehousing involves **the storage of goods and materials in a central location before they are distributed** to their final destinations. Effective warehousing management ensures that products are stored in a manner that maximises space utilisation, minimises handling costs, and facilitates easy access.

2.5.2 Key functions of warehousing include **receiving, put-away, inventory management, order picking, packing, and shipping**. Advanced **Warehouse Management Systems** (WMS) are often used to automate these processes and improve accuracy and efficiency.

2.5.3 The cost of **holding stock** within the supply chain **could be up to 25% of operating costs**. In order to reduce this cost, the philosophy and practice of 'Just-in-Time' is widely practiced throughout various industries. However, any (significant) interruption to the supply chain causing delay causes huge damage to the company and costs may rise alarmingly.

2.5.4 There is a balance of risks to be managed between Demand, Inventory (Work-in-Progress (WiP)) and Supply. The management of this function of the company is usually under the control of **Material Resource Planning**.

2.5.5 Holding stock. The **main reasons for holding stock** include the:

- the **maintenance of a buffer** between points in the supply chain
- the ability to **accommodate fluctuations** in demand
- **control over delays** in deliveries
- scales of **economy**
- **fixed price** at purchase (within a volatile market environment (vis. Inflation))
- protection from **seasonal effects** on operations
- reduced **transportation costs**
- the **ability to respond** effectively in an emergency

2.5.3 **The importance of location is that it determines the best geographical places for the various supply chains** and avoids potentially expensive unfavourable locations. For example, a location that has difficult access and egress points will cause transportation difficulties. Another example is a location that suffers poor broadband services, adversely affecting communications within the site and between sites.

2.5.4 **Factors affecting location decisions** include:

- **Regional/National**:
  - Access to a workforce
  - Political stability and policies
  - Economics
  - Climate
  - Living standards
  - Location of suppliers and markets
  - Infrastructure (The Built Environment)
  - Local culture, population and attitudes
  - Pollution trends
  - Site availability
  - Proximity of competitors
  - Local services

- **Site**:
  - Traffic
  - Ease of parking
  - Public transport
  - Maintenance costs
  - Development

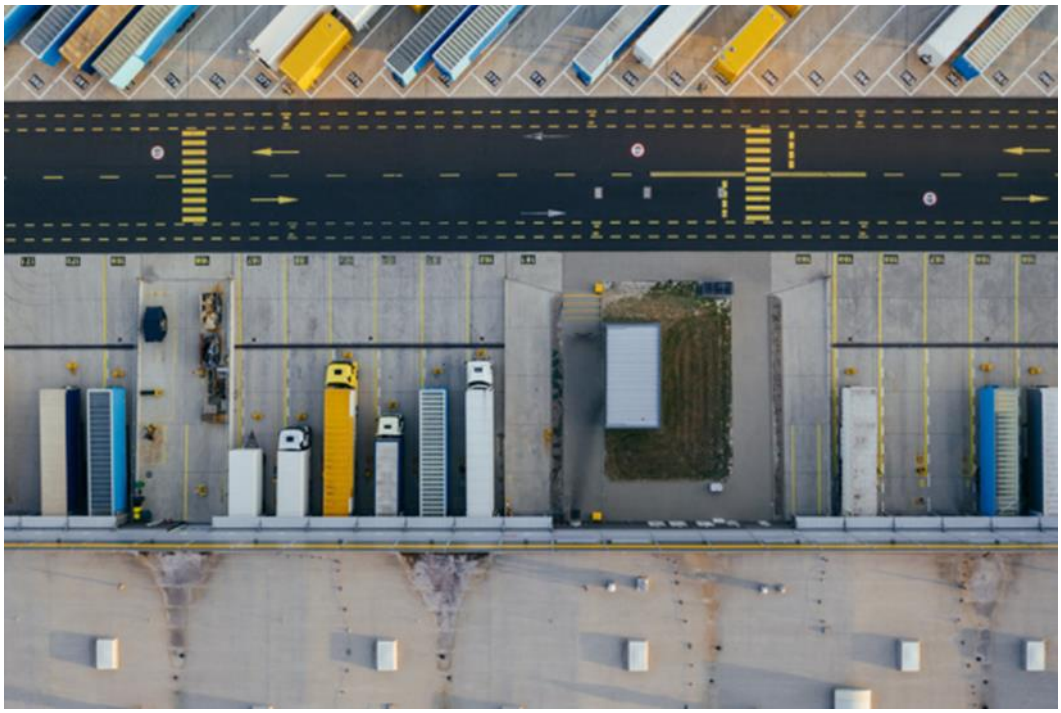
2.5.5 **Facilities management** is the about the role the facility and **the organisation of structures, utilities and capacity** within the facility. One important element is **the ability to adapt the facilities function** in response to, or in anticipation of, market conditions and changing customer requirements.

2.5.6 In relation to capacity, or volume of production, the ideal Lean environment would seek an **'optimum' flow of production through the facility**, **with capacity to increase production in response to customer demand, before returning to optimum, sustainable operations**. A state of under-capacity would not be desirable.

2.6 Transportation and Distribution

2.6.1 **Transportation** is **the movement of goods from one location to another**, while **distribution** involves **delivering products to their final destinations**. Transportation management includes selecting appropriate modes of transport (e.g., road, rail, air, sea), route planning, carrier selection, and freight management.

2.6.2 Effective management **reduces costs, improves delivery times, and enhances service quality**. Distribution focuses on ensuring that products are delivered to customers in a timely and cost-effective manner, which is crucial for maintaining customer satisfaction and competitive advantage.



2.7 Packaging and Material Handling (MH)

2.7.1 **Packaging** involves **designing and producing the containers or wrapping for products**. Effective packaging protects goods during transit, facilitates storage and handling, and can also serve

as a marketing tool. Packaging design must consider factors such as product protection, cost, sustainability, and regulatory requirements.

2.7.2 **Material Handling encompasses the movement, storage, and control of materials** throughout the manufacturing and distribution process. This includes using equipment such as conveyors, forklifts, and automated systems to move goods efficiently within warehouses and production facilities.

2.8 Order Fulfilment and Customer Service

2.8.1 **Order fulfilment involves the complete process from receiving a customer order to delivering the product to the customer**. This includes order processing, picking and packing, shipping, and handling returns. Efficient order fulfilment is crucial for meeting customer expectations and ensuring timely delivery.

2.8.2 **Customer service** is an integral part of logistics management, focusing on **resolving customer inquiries and issues related to orders, deliveries, and returns**. High-quality customer service enhances customer satisfaction and loyalty, which are vital for business success.

2.9 Reverse Logistics and Returns Management

2.9.1 **Reverse logistics** involves managing **the flow of returned products from customers back to the company**. This includes processes such as **returns handling, product inspection, refurbishment, recycling, and disposal**. Efficient reverse logistics can help recover value from returned products, reduce waste, and improve customer satisfaction.

2.9.2 Returns management is a critical component of reverse logistics, dealing with the policies and procedures for handling product returns. Effective returns management can minimise costs associated with returns and enhance customer loyalty by providing a hassle-free return experience.

2.10 Integration of Logistics Functions

2.10.1 **Integrating** these logistics functions i**s essential for creating a cohesive and efficient supply chain**. Integration ensures that information flows seamlessly across different functions, enabling better coordination and decision-making. Advanced technologies, such as Enterprise Resource Planning (ERP) systems, facilitate integration by providing a centralised platform for managing all logistics activities.

2.10.2 Effective logistics integration **enhances visibility** across the supply chain, **improves responsiveness** to customer demands, and enables more accurate forecasting and planning. This holistic approach to logistics management helps organisations achieve greater efficiency, reduce costs, and improve overall supply chain performance. By integrating these functions and leveraging advanced technologies, businesses can **optimise their logistics operations, reduce costs, and enhance customer satisfaction, thereby gaining a competitive edge in the marketplace.**

Activity 2.1 ‘Functions’

Select a ‘Logistics’ function and carry out a SWOT analysis. **Repeat the activity for other topics as required.** **Refer to PAM 2 ‘Training’ for advice on facilitating a team activity.**	**Activity 2**
Strengths (Internal)	**Action/s**
Weaknesses (Internal)	**Action/s**
Opportunity (External)	**Action/s**
Threats (External)	**Action/s**
Top 3 Priorities	**Action/s**