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**Part 1: SOFTWARE SYSTEM PROBLEM IDENTIFICATION**

**Inventory Management System**An Inventory Management System is a sort of software solution developed for effective tracking, managing, and optimization of a company's inventory levels and movement in an efficient way. The effective management of inventory is actually critical for any enterprise to facilitate the availability of sufficient quantities of stock to meet customers' requirements without over-inventory, which may lead to additional costs.

**Key Processes in Inventory Management**

1. Inventory Tracking: It monitors the levels of inventory and placing orders for sales and delivery. It will deliver the accurate and updated data about the availability of stock to assist companies in avoiding any situation related to stock outs and overstocking.  
2. Order Management: The IMS automates ordering inventory. Once the levels of stock fall below the predetermined threshold, it can generate a purchase order that facilitates timely replenishment.  
3. Warehouse Management: The system enhances the operations of the warehouse by taking charge of how the inventory gets into the warehouse, retrieved and moved. It is also capable of helping with the design for the good and most efficient management of warehouse space.  
4. Supplier Management: IMS keeps a record of all the suppliers and subsequently monitors their performance. It assists firms in the managing of supplier relationships and often aids in negotiating better terms based on past performance.  
5. Inventory Forecasting: The system utilizes historic data and predictive analytics to forecast future inventory needs. This will enable a business to plan its inventory levels accordingly and reduce its carrying costs.  
6. Reporting and Analytics: It generates comprehensive reporting and analytics relating to inventory performance. In fact, these insights have the potential to help the business arrive at informed decisions and realize areas for potential improvements.

7. Integration with Other Systems: Generally, IMS integrates well with other business information systems like accounting, ERP, and e-commerce platforms. This ensures smooth flow of data and enhances overall business efficiency.  
How Can an Inventory Management System Benefit a Company?  
• Improved Efficiency: Automating the processes of inventory minimizes manual errors and saves time to allow employees to attend to more strategic issues  
• Cost Savings: The optimization of the levels of inventory allows a company to cut down its carrying costs and avoid overstocking.  
•    Enhanced Customer Service: In-stock merchandise means customer satisfaction and customer loyalty.  
•    Better Decision Quality: Real-time data and analytics for enhanced decision making.  
•    Scalability: The IMS is designed to grow and change with the business to meet growing inventory needs.  
An inventory management system enables organizations to undertake smooth operation, reduces cost, and improves customer satisfaction. With the aid of technology, it is now easy for companies to be competitive in the market.

**PART 2: Planning**

This project aims to address the inefficiencies of the current system by replacing manual processes with an automated integrated system for better access to data and efficient decision-making in real time.

The other identified business needs include the requirement for effective processes and efficient data management. Delays, inaccuracies, and loss of productivity mark the shortcomings in the present scenario. The aim would, therefore, be to enhance the operational efficiency for ensuring the integrity of data.

The proposed system is a user-friendly system of integrated data sources, automated execution of routine tasks, and analytical tools. It communicates well among teams to ensure the accuracy of data for decision-making.

The stakeholders involved in the project are management team, IT department, end users, data analysts, customers/clients, and regulatory bodies. All groups will benefit from increased efficiency, better data access, improved communication, cost savings, and enhanced customer satisfaction.

The factors that may affect the context of the project are rapid technological changes, peoples' resistance to change, the budget for the intended purpose, abiding by the laws, and fluctuating market conditions.

Assumptions of this project: full participation from stakeholders, existing infrastructure compatibility, user adaptability if proper training is given, resource allocation as required, and the system is scalable according to future development.

In conclusion, it is a strategic option to implement an inventory management system for those organizations that aim to reduce costs, smoothen their operations, and improve customer satisfaction. In fact, the most efficient businesses are those that have learned to make full use of technology in enhancing their competitive edge in the market.

**PART 3: REQUIREMENT ANALYSIS**

There are numerous requirements gathering techniques that can be used to gather information, but for this project we have decided to use only 2 of them, namely; Interviews and questionnaires.

The individuals who these information gathering techniques will be exercised on are; Staff members, IT department, Managers and any other individuals who are associated with the inventory management process.

**Sample of an Interview question:**

1. Can you briefly explain your current inventory management process?
2. What are the major challenges with the usage of the current system?
3. How do you currently monitor the levels of inventory?
4. How do you think the new inventory management system could impact your daily activities?

**Sample of a Questionnaire questions:**

1. How satisfied are you with the current process of managing inventory?
2. How often do you experience stock shortage or overstocking situations?
3. What types of reports do you need from the inventory management system?

**PART 4: SYSTEM DESIGN**

1. Level 0 Data Flow Diagram:

Inventory

Inventory data

0

Supplier

Management

Inventory system

1. Level 1 DFD :

New inventory

Inventory report

Inventory data

2

1

Management

Create inventory report

Receive inventory

Supplier

**DATA DICTIONARY**

**Data Elements**

1. **Inventory**
   * **Description**: Items provided by the supplier to the warehouse.
   * **Source**: Supplier
   * **Destination**: Receive inventory process
2. **Inventory Data**
   * **Description**: Information about the current inventory levels, including item details, quantities, and locations.
   * **Source**: Receive inventory process
   * **Destination**: Create inventory report process
3. **Inventory Reports**
   * **Description**: Reports generated for management, detailing inventory  levels, movements, and other relevant metrics.
   * **Source**: Create inventory report process
   * **Destination**: Management

**Processes**

1. **Receive Inventory**
   * **Description**: Process of receiving inventory from the supplier and  updating the inventory data.
   * **Input**: Inventory
   * **Output**: Inventory Data
2. **Create Inventory Report**
   * **Description**: Process of generating inventory reports based on management requests.
   * **Input**: Inventory Data
   * **Output**: Inventory Reports

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