



Utilization of Inventory Management System in Educational Organization

Hemant Kumar

Assistant Professor, Mechanical Engineering
Future University, Bareilly (UP), India

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ABSTRACT

An inventory management system (IMS) is a software-based solution that helps organizations track, manage, and optimize their inventory levels, product storage, and material flow. Its primary goal is ensured that the right products are in the right place at the right time to meet customer demand. In this paper discussed about the inventory management system an educational organization/institution. To reduced the paper work, student's attendance, student assignment, student tutorials, related storage materials equipment. And discussed about the data compilation of students. In this paper also discussed about the ERP (Enterprise resource planning) and work about ERP in the organization or institution. In this paper discussed about to reduce time work by inventory management system. Discussing about all data to keep on one place, its customer demand to make fast and forward system. Inventory management system is very useful for educational organization. This system makes a perfect organization or system. This system learns about to smart work and storage data. In current scenario students likes smart work or digital work because digital world is very easy to learn for students so that's reason maximum students like this.

1. Introduction

Inventory management system is the process of tracking, managing, and optimizing the stock of goods, materials, or products within a business or organization. Effective inventory management ensures that

the right products are in the right place at the right time to meet customer demand, while minimizing costs and maximizing efficiency. Inventory system talks about the technology used to manage for data and storage data. Inventory management systems in educational organizations help track and manage assets, resources, and supplies. These systems typically include asset management, tracking of equipment, furniture, and other assets. Library management, management of books, journals, and other library resources, Textbook management, tracking of textbooks, workbooks, and other educational materials, Supply chain management, management of stationery, consumables, and other supplies like lab equipment management, tracking of scientific instruments, equipment, and materials. Inventory tracking software, automated systems for tracking inventory levels, orders, and usage. Barcode scanning, use of barcode scanners for efficient inventory tracking. Automated reporting, generation of reports on inventory levels, usage, and costs. Vendor management, management of vendors, suppliers, and contracts. Compliance management, ensuring compliance with regulations, polices, and standards. Benefits of inventory management system in educational institutions include. Improved efficiency, reduced costs, enhanced accountability, better decision-making, increased productivity, improved student experience, reduced waste, improved resource allocation. Some popular inventory management system used in educational institutions include. Edutech, School Dude, Asset Works, Fiix, Snipe-IT, Easy Assets, Asset Panda, Cheerze, ENRentOut, MangerPlus. Many software used in the inventory management system for reduced the time, work, and men power etc. An inventory system is a software solution that help businesses track and management their inventory levels, orders, and storage. Its key features include. ERP is the part of inventory management system. Keeping storage data of employees and students and mange the daily attendance of employees and student by the help of ERP. ERP is very helpful for smart work for any organization. The purpose of IMS to optimize inventory management process, improve efficiency, and reduce costs. The benefits of inventory management system (IMS) are improved inventory accuracy, enhanced product tracking, optimized storage space, reduced stockouts and overstocking, improving customer satisfaction and better decision-making.

1.1 Key features of an inventory management system: -

1. **Inventory tracking:** Real-time monitoring of stock levels, locations, and product information.
2. **Order management:** Automated processing of orders, including receiving, picking, packing, and shipping.
3. **Product categorization:** Classification of products by type, category, or vendor for easy identification.

4. **Warehouse management:** Optimization of storage space, bin allocation, and product placement.
5. **Reporting and analytics:** Insights into inventory levels, product movement, and supply chain performance.
6. **Barcode scanning:** Quick and accurate tracking of products using barcode labels.
7. **Automated alerts:** Notifications for low stock levels, expiration dates, or product recalls.
8. **Integration:** Compatibility with other business systems, such as ERP, CRM, or e-commerce platforms.

1.2 Common types of inventory management system: -

1. Cloud-based: Web-based solutions accessible from anywhere.
2. On-premise: Installed on local servers for greater control.
3. Hybrid: Combination of cloud and on-premise solutions.

Here are some more common types of inventory management systems, manual inventory system. Paper-based or spreadsheet-based system for small businesses. Basic inventory management software, entry-level software for tracking inventory levels and orders. Cloud-based inventory management system. Scalable, online system for real-time inventory tracking. Enterprise resources planning (ERP) system, comprehensive system integrating inventory management with other business functions. Warehouse management system (WMS), specialized system for managing warehouse operations and inventory. E-commerce inventory system, integrated system for online store to manage inventory and orders. Barcode inventory system, uses barcode scanning for efficiency inventory tracking. Radio frequency identification (RFID) inventory system, uses RFID tags for automated inventory tracking. Just-In-Time (JIT) inventory system, system for maintaining minimal inventory levels, ordering just in time. Vendor-managed inventory system, system where suppliers manage inventory levels on behalf of the business. Drop shipping inventory system, system for managing inventory without holding any stock. Consignment inventory system, system where inventory is owned by the supplier until sold.

1.3 Popular inventory management software: -

1. TradeGecko
2. Zoho Inventory
3. Skubana
4. SAP Inventory Management

5. Oracle Inventory Management

1.4 Popular inventory management software for educational organizations: -

1. Asset Panda
2. Snip-IT
3. Easy Assets
4. Edutech
5. SchoolDude

1.5 Common inventory management techniques: -

1. Just-In-Time (JIT): Maintaining minimal inventory levels to meet immediate demand.
2. Economic Order Quantity (EOQ): Calculating optimal order quantities to minimize costs.
3. ABC Analysis: Classifying Products by value and importance to prioritize inventory management efforts.
4. Vendor-Managed Inventory (VMI): Partnering with suppliers to manage inventory levels.
5. Drop Shipping: Shipping products directly from suppliers to customers without holding inventory.

1.6 Inventory management applies to various industries, including: -

1. Retail
2. Manufacturing
3. Wholesale
4. Distribution
5. E-commerce
6. Healthcare
7. Food and beverage

1.7 Advantages of inventory management system in educational organization: -

1. **Asset tracking:** accurately monitor and manage educational resource, equipment, and assets.
2. **Optimized resource allocation:** ensure resources are available when needed, reducing waste, and improving utilization.
3. **Cost saving:** minimize losses, reduce unnecessary purchases, and optimize budget allocation.



4. **Improved student experience:** ensure timely available of required resources, enhancing the learning environment
5. **Streamlined administration:** automate inventory-related tasks, freeing staff to focus on core educational activities.
6. **Compliance and reporting:** easily generate reports for audits, grants, and accreditation purpose.
7. **Inventory optimization:** Identify slow-moving or obsolete items, enabling informed decisions on disposal or reallocation.
8. **Theft prevention:** Implement access controls and monitoring to reduce theft and misappropriation.
9. **Maintenance management:** Schedule maintenance and repairs for equipment, extending its lifespan.
10. **Data-derived decision-making:** Use IMS data to inform decisions on resource allocation, budgeting, and strategic planning.
11. **Scalability:** Easily adapt to changing educational needs and growing student populations.
12. **Centralized information:** provide a single, accessible platform for inventory information, reducing confusion and errors.

2. Literature review

Read many papers related to inventory management system, many authors work in many different areas. Some authors work on the product selling and cost reduce of product, printing invoice. Read some paper about manufacturing storage system, used AGV (Automated Guide vehicle) in this used technology which is remove the man power. In this technology used an automated machine run on the strips, this strip installed on the earth ground from working areas to storage areas. This machine work like as a robot, in this machine installed many sensors, the main purpose of sensors to define the path of machine. To reduced the time work and men power, the utilization of machine. Many others authors study about product storage by inventory management system and raw materials. Some authors used many software which learns about to smart work and remove paper work and remove storage areas. A literature review of inventory management systems (IMS) would cover various aspects, including; definition and importance of IMS in supply chain management. Types of inventory management systems (e.g., periodic review, continuous review, vendor-managed inventory). Benefits of IIM (e.g., reduced costs, improved efficiency, enhanced customer satisfaction). Challenges and limitations of IMS (e.g.,

complexity, data accuracy, scalability). Emerging trends and technologies in IMS (e.g., AI, IoT, cloud computing). Case studies and applications of IMS in different industries (e.g., manufacturing, retail, healthcare). Performance metrics and evaluation criteria for IMS (e.g., inventory turnover, fill rate, lead time). Future research directions and opportunities in IMS. Some relevant sources to include in the literature review are; academic journals (e.g., Journal of Operations Management International Journal of Production Economics). Industry reports (e.g., Gartner, McKinsey), Books and book chapters (e.g., “Inventory Management” by Edward H. Frazelle). Conference proceedings (e.g., International Conference on Supply Chain Management). Used many software in the inventory management system, name of software mention on the above introduction heading which used in this system. After reading many authors’ papers then finally decided that work on the paper work, remove men power and smart work. The history management systems (IMS) spans centuries, with significant developments in the 20th century. Here is a brief overview. Early beginnings (1600s-1800s), manual inventory tracking using ledgers and paper-based systems. Basic inventory control techniques, such as first-in-first-out (FIFO) and last-in-first-out (LIFO). Industrial revolution (1800-1900), mass production and increased trade led to more complex inventory management concept, such as economic order quantity (EOQ). World war II (1939-1945), development of scientific inventory management techniques, such as; ABC analysis (categorizing inventory based on value and importance). Classified inventory control (grouping similar items together). Post-war advancements (1945-1970), introduction of computerized inventory management system. Development of materials requirements planning (MRP) and manufacturing resource planning (MRP II). Modern Era (1980-2000), advent of enterprise resource planning (ERP) systems, integrating IMS with other business functions. Increased focus on supply chain management and just-in-time (JIT) production. Introduction of barcode scanning, RIFD, and other automated data collection technologies. Contemporary development (2010-present), cloud-based and software-as-a-service (SaaS) inventory management solutions. Artificial intelligence (AI), machine learning (ML), and predictive analytics applications. Internet of things (IoT) and real-Time inventory tracking. Increased emphasis on e-commerce, omnichannel retailing, and drop shipping. In institute or university have many courses, students, and employees, in this study focus to provide an easy path which is useful for every person which is work on. In this paper focus on the ERP software.

3. Survey of study

The purpose of this study to describe that working is inventory management system in the educational organization. According to this study collect the data of working organization.

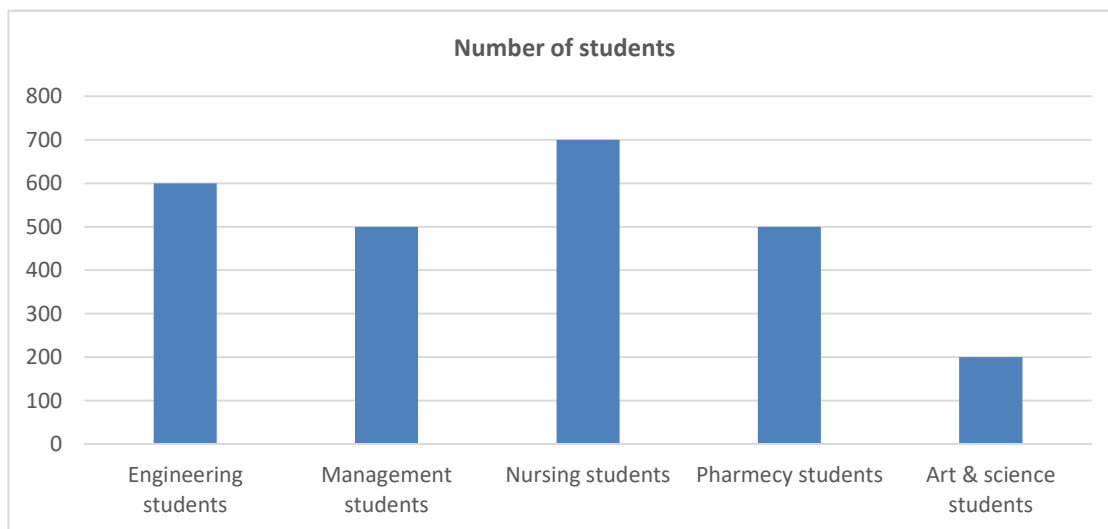


Fig [1]: - Data of students

Data collection is most important part to study for any survey and after analysis by inventory management system. In this survey study used some basic parameters, utilization of paper for written work or record maintain purpose.

Utilization of paper some specific areas, admission forms, payment receipt, attendance register, document files and many others areas. In this study collect the data of number of students and number of employees. The name of courses are engineering, management, nursing, pharmacy, science, and arts. Types of employees is professor, associate professor, assistant professor, administration officers and many others.

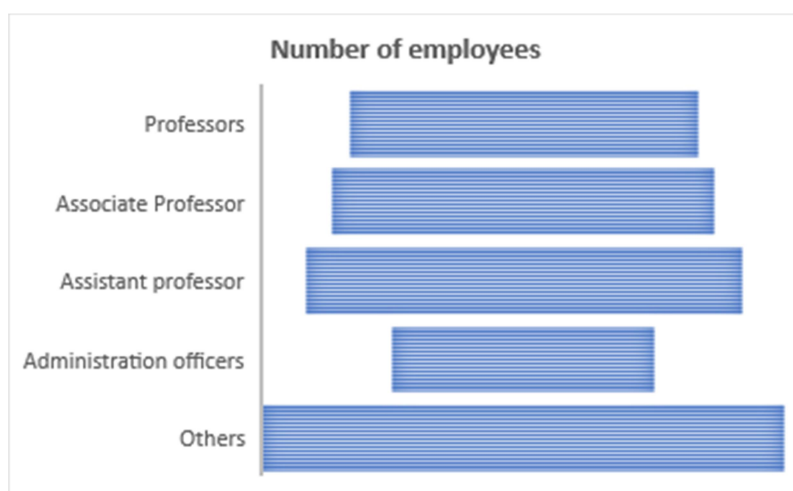


Fig [2]: - Data of employees

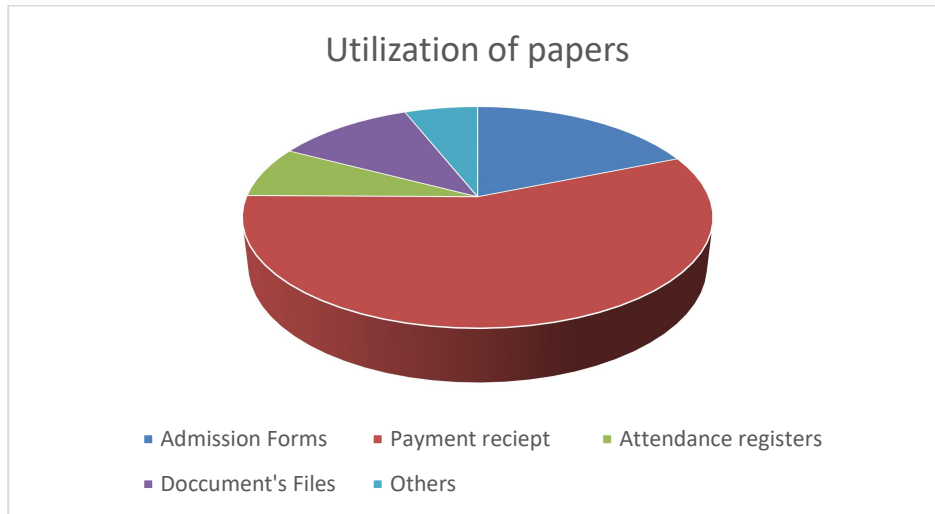


Fig [3]: - Data of papers

Due to huge used of papers for maintain/record of employees, students, equipment, and others. To maintain for all record need of storage system/automated/flexible storage system. In the educational organization have many classes for study of student, tutorials classes and many labs, computers labs, mechanical labs, electrical labs, management, and science related streams labs etc, to operate all things are very smoothly by inventory management system.

4. Result and discussion

Enterprise resource planning (ERP) is a software system that integrates and manages all aspects of business’s operations. ERP is the very helpful for remove paper work and compile data of the employees and students. Basic procedure of ERP is mention below.

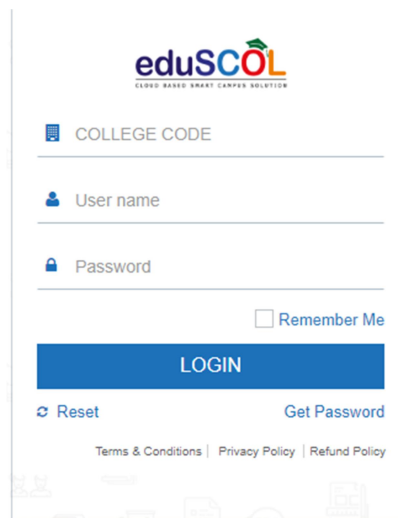


Fig [4]: - Login page

It is the first step of ERP that called is login page, some basic details of employees or student is need for login, college code, user name, password. Need of mobile number for OTP (one time password) purpose because without OTP password can't not be set, mobile number and email is very necessary part for login to ERP.



Fig [5]: - Main Menu page

In figure 3 shows, after login ERP page, in this show all feature which used by students or employees. Home profile, academic, attendance, CRM, certificate, leave, manage message, work allotted, college time, miscellaneous information and last is logout. Activity calendar, circular notice, reference student, holiday, daily work report and advisor is the part of academic.

Today is huge used of ERP in educational organization because all data store in the software and relation of all paper work. ERP based on the software work to operate this software by computer, phone, laptop, or tab. Send information one person to another person by this software its very easy to operate for students. By this software, student can see all update by the college like as an assignment, notice, faculty's notes PDF, XL etc sheet form and see whole attendance (weakly, monthly, yearly). And employees can also see all update which is given by institution or college/company. Employees can see his daily attendance or salary days month wise if found any error than send the message to account

department by the help of ERP software. Any higher authority like as dean/director allot any work to his junior person by ERP software. ERP is saving time for working hours.

Conclusion

- Inventory is very useful for storage of data and save the work time and improve the work efficiency.
- Inventory management system, utilization of ERP to remove the paper work and improve the data storage in the cloud computing.
- Student can see all update by the intuition, no used paper and pen. It is very helpful for learning.
- ERP is very useful for employees because daily attendance or salary days employees can see his login.
- The work efficiency is very high by inventory management system because all demand is whole full.
- Working efficiency output is excellent by utilization of inventory management system in an educational organization.

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