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Application of SAP R/3 in on-line inventory control

Purnendu Mandal[a], A. Gunasekaran[b,*]

[a] *Division of Management and Marketing, Lewis College of Business, Marshall University, Huntington, WV 25755, USA*
[b] *Department of Management, University of Massachusetts, 285 Old Westport Road, North Dartmouth, MA 02747-2300, USA*

Abstract

An organizational competitiveness depends upon the effectiveness of information flow and subsequently the material flow. Information systems especially computer based ones greatly contribute to the effective communication within an organization whether it could be manufacturing or services. For companies to be competitive, they need to have access to "*the right kind of information at the right time*". An Enterprise Resource Planning (ERP) system can help to improve the communication within an organization. In this paper, the authors describe how SAP R/3 software came in rescue of a potentially devastating inventory management situation in a large corporation with worldwide operations. The paper describes in detail the assessment of system requirements at various locations (production and storage facilities), configuration of SAP R/3 to meet those requirements, difficulties in system implementation, and benefits realized.

Keywords: Organizational competitiveness; Communication; Enterprise resource planning; SAP

1. Introduction

Global companies are depending more and more on their IT infrastructure for strategic advantages [1]. But, the main challenge in building a credible global IT infrastructure is managing IT changes at individual locations and integrating those technologies with the enterprise network. Without a proper implementation and integration strategy the enormous benefits of global IT infrastructure cannot be realized. For example, there is a need to take into account the characteristics of an organization or a business model when selecting an information system. However, certain changes to the business process as well as to the information system are inevitable for the successful application of IT/IS in a business environment.

A central focus in IT strategy development is the consideration of compatibility between the hardware and software components in an organization. SAP R/3, a client/server enterprise resource planning (ERP) system, is a powerful technology to integrate various business functional areas and can address or facilitate changes in business processes [2]. SAP R/3 can also easily be configured and linked to other hardware such as various types of devices for input data collection. SAP R/3 could be interfaced to RF devices or bar-coding systems for direct and online collection of data for operational and management use. Many companies have realized the advantages of such powerful IT tool. In this paper, an attempt has been made to discuss the implementation of SAP R/3 for a real time inventory management system.

*Corresponding author. Tel.: +1-508-993-6512; fax: +1-508-999-9187.

E-mail address: agunasekaran@umassd.edu (A. Gunasekaran).

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A multinational company with operations in Australia, New Zealand, North America, Europe/UK and Asia is facing a huge problem of order tracking and stock management. The finished goods stock (mainly, wine in this case) is as high as 32 days cover, which is considered too high as per the wine industry standard. The management of the company realized the need to rectify this situation and decided to develop a system for better inventory management. This was especially so because of the fact that the plants operated across continents and at several times zones. Several plants had their own methods of stock-taking. Some plants used manual methods and others had varying types of bar-coding systems. In order to integrate the information systems across all the locations, the company decided to go for SAP R/3. However, it led to several problems in the process of implementation. This paper discusses the practical problems faced in the organization, the approaches to solve those problems, and finally the benefits achieved. The paper also provides suggestions for future development.

2. Information collection in inventory management systems

For inventory management system to be current and relevant to managers the information/data must be accurate, complete, economical, reliable, relevant, timely, secure and so on. ERP packages use a number of utilities, general tools and methods to preserve the characteristics of data as mentioned above. It is useful to briefly discuss some of those tools before we delve into the actual system development.

2.1. Bar coding

Bar codes can be seen today on everything we buy in a supermarket, in fact almost any item purchased off the shelf. The operation of such codes is fairly simple. There is a range of numbers under the actual bars of the code. The first two digits is the code for the country of origin: 93 for Australia, 87 for Holland and so on. The next four or five digits are the code number for the company manufacturing the product. Then the next four or five digits are the code for the actual product. The last is a check digit. When a laser scanner scans the bar code, the light beam from the scanner picks up the interference of light transmission between the bars and the spaces. These signals are translated by the scanner into a code number and that is then transmitted to a computer. The computer translates the code and can perform any specified operation for the product or part represented by it, remove it from stock, for example.

The code symbology used in retailing is EAN, also known as APN, the Australian Product Numbering system. This is a universal code to ensure that all companies comply with a standard method. In industry, Code 39 is more widely used because it is a code that allows an enormous number of permutations in alphanumeric combinations. The selection of the appropriate code is determined by the end application.

2.2. Manual data collection

Manual data collection is still one of the most widely used methods for entering data into an ERP package, in fact most 'automated' data collection methods require some manual operation to make them meaningful. For example, swipe cards employing bar code technology still require the user to manually swipe the card at the appropriate time. A system can only be said to be truly automatic if it requires no user intervention at all. Most FMS's for example will automatically record the processing time and number of parts for a time period.

Industrial keyboards or touch screens at strategic positions throughout a factory floor are popular manual data collection systems. Workers indicate the start and finish times for jobs, machine down time etc. by answering prompts from the data collection terminals.

2.3. Radio frequency

RF data collection systems do not attempt to answer the challenge of extracting data from the shopfloor into a computer system, rather they look to improve the methods of transferring data to