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Improving Inventory Accuracy with Internet of Things: A Case Study in A Manufacturing Company

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ABSTRACT

Inventory accuracies need to be achieved to obtain efficient inventory management for a company. The problem of the study is the gaps of inventory accuracy between the ideal and actual KPI in ABC manufacturing company. ABC manufacturing company was chosen because the company experiences issues with inventory accuracy. Thus, this study aims to analyze the inventory accuracy of ABC manufacturing company, investigate the root causes affecting inventory inaccuracy in ABC manufacturing company, and propose a technology and best practices to improve the company's inventory accuracy. The study applied a qualitative research design, in which several interviews were conducted to get the data from the company. Besides, fishbone diagram analysis (Ishikawa diagram) is used to analyze the root causes of inventory inaccuracies in ABC manufacturing company. This study reveals that inventory inaccuracy is influenced by bill of materials (BOM) errors, wrong inventory counting and inventory shrinkage. Inaccurate inventories affect the optimal function of the company supply chain and directly impact its sales activities. This study proposes implementing a smart antenna in a radio frequency identification (RFID) scanner in improving inventory accuracy. This will be the best option for ABC manufacturing company because the finished products from the site of the operations are transported across the road through a conveyor bridge into the finished goods warehouse. A smart antenna RFID reader can provide a greater coverage area for each cell site.

Keywords: inventory accuracy, fishbone diagram analysis, smart Antenna, RFID scanner, case study

INTRODUCTION

The focus of this study is on the inventory accuracy in ABC manufacturing company. It attempts to identify gaps in its inventory accuracy and propose using technology such as the Internet of Things (IoT) to overcome the current inventory deficit. Using accurate data and processes into useful information that facilitates decision making is essential to supply chain management (SCM) (Avci, 2020). It is costly to collect accurate information and obtain the perfect inventory information. Yet, despite the ideal inventory accuracy, the complexity of forecasting inventory will be an obstacle to efficient supply chain operation (Avrahami & Korchatov, 2019). Poor inventory management may cause high stock holding, thus affecting the company cash flow. While shrinkage, pilferages and wastes caused the company to suffer financial loss (Atnafu & Balda, 2018).

Inaccurate inventories affect the optimal function of the company supply chain and directly impact its sales. This is because inventory inaccuracy makes the supply chain's overall costs higher and unpredictable (Avrahami & Korchatov, 2019). For example, a customer had placed an order of 100 units of an item. The company enterprise resource planning (ERP) system reflected that the stocks are available in the warehouse