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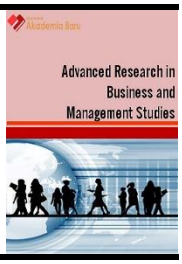

Analysis of Network Inventory Issue in Telco Company

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ABSTRACT

Analysis of inventory mismatch study was conducted at Network Operation Center in Telecommunication Company. The objectives of this study are to analyze impact and root cause of inventory mismatch issue. An automation concept is proposed as a solution for the Telco Company in order to overcome the discrepancy of inventory. The sample study is using quantitative data from document review and quantitative questionnaire surveys for sample size of 28. The document review was analyze using statistical percentage and feedback data was analyze using, mean and median and thematic for open ended questions. The survey results show negative feedback with Mean 1.6 and Median 1 for current method of inventory updating in the organization. Further analysis shows that current inventory updating process is complex and lengthy which cause the personal in charge does not able to comply to the process. An automation of inventory reconciliation concept has been proposed to resolve the discrepancy issue.

Keywords:
Inventory mismatch, Network analysis, automated inventory

1. Introduction

Telco Industry and service providers face an extremely dynamic market environment and tough competition in industrial revolution 4.0, which is rapidly disrupting and redefining industries thru digital transformation. Optimizing time-to-market for new products, providing excellent services, embrace customer experience, achieving maximum cost efficiency across all business processes, and delivering the best possible business performance via efficient provisioning, monitoring, and planning processes has become key business parameters that need to be emphasize. Maintaining quality and providing clean data is difficult task but once it is achieved, it will be able to provide real benefits to its users, stakeholder's confidents and most important thing is customer satisfaction. User always appreciates quality products, which have economic and social impacts [1]. Inventory management practices have come to be recognized as a vital problem area needing top priority [2].

The control mechanism of inventory is a vigorous problem experienced almost by all sectors of the economy. Inventory management challenges are a vexing problem for organizations, affecting not only operational productivity, but also customer satisfaction and revenue [3]. Any organization that endeavours to reduce inventory issues brings its own exceptional benefits and challenges to the battle [4]. Main objective of an inventory system is to maintain information and act as central asset

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repository to define assets or network infrastructure and relate the asset to its profile such as owner, location, and many other relative importance in order to deliver services to customers.

Inventory accuracy is defined as the occurrence where the recorded amount of the inventory in the system matches the actual physical level of stock [5]. Perfect inventory records are challenging to maintain as many activities take place during business operations; thus, the inventory record is very likely to be incorrect, and it is a very common problem across many industries [6]. Previous research has deliberated numerous reasons why inventory records are inaccurate; the reasons range from external and internal theft, incorrect incoming and outgoing deliveries, transaction errors, and misplaced items [7].

The relationship between inventory management and firm performance along with capital intensity and sales [8] [9]. A firm's fate depends on its ability to manage inventory and balance between customer service, or product availability, and cost of the inventory [10] [11]. The main problems related to network inventory system in telco service provider has been identified which are inventory mismatch issue is one of the contributing factor for prolong restoration during service assurance. The objectives of this study are to analyse root cause of inventory mismatch issue in Telco Company and provide an appropriate solution to reduce or minimize the issue.

Automation is described as a technology dealing with the application of mechatronics and computers for the production of goods and services [12]. Automation is mostly categorized into manufacturing and service automation. This automation is adopted in many firms or organization is to curb the problems of shortage of labor, high cost of labor, need to increase or improve productivity and to reduce the manufacturing lead times. From the literature, review done major finding for was on the effectiveness of inventory management automation especially to avoid discrepancy with the actual on the ground or physical inventory comparing to the inventory data or records. Inventory automation via database synchronization through Internet network is able to ensure stock availability and shorten lead-time of stock distributions for retails market. Every day centralize inventory known as hub will do data collection from all retails outlets, do the automated counts and analysis before preparing the list for the suppliers [13]. The software-automated data is guaranteed to be secured, work efficiently with least amount of human error, no duplications, and mistakes compared to manual inventory handling system. The warehouse system is also able to become more reliable and efficient after the automation, which lead to process simplification for the operators, suppliers and dealers [14].

2. Methodology

Survey research is a method of collecting information about a population of interest. This study was using questionnaires with a predefined series of questions used to collect information from the focus group, which is service assurance team at Telco Company. The questionnaire will be design using close ended where respondents are given a list of predetermined responses from which to choose their answers.

A comprehensive questionnaire has been distributed to the targeted personal that directly involved in inventory management process during Service Assurance at network operation center. According to Krejcie and Morgan [15] tabled for population of 30 sample size 28 is required to get 95% confidence with 5% Margin of Error (M&E) and this research has able to obtain the required numbers of sample.

Since the survey objective is to identify the root cause of inventory mismatch in the company, few possible causes have been group and included in the questionnaire which are process, people, method, machine and governance.

Figure 1 shows conceptual design for current network inventory system in Telco Company. There is no relationship between element management system and network inventory system. Refinement system with daily feedback is required to ensure for improving the data quality management process [16].

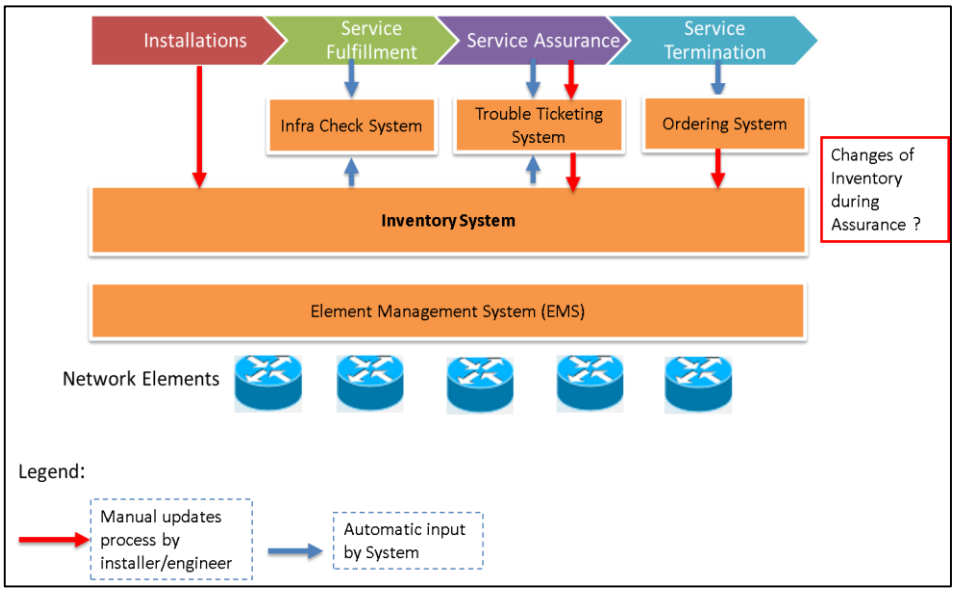

Fig. 1. Conceptual Design of Current Inventory System

3. Results and discussion

The survey has been categorised in to the five main possible root causes of inventory mismatch in Telco. Total 20 questions being measured using Likert scale to identify correspondent's level of agreements towards issue being discuss. A Likert-type questionnaire requires respondents to select one of several (usually five) responses that are ranked in order of strength.

Likert scale is method quantitative value to qualitative data, to make it amenable to statistical analysis. Below is the statistical result for Likert scale questionnaire whereby result being projected into the mean and median value. Since the data is positively skewed. Both mean and median result shows negative feedback on the method with mean 1.6 and median 1 as per Figure 2. This shows that majority of the correspondents strongly does not agree on the current method or procedure to perform the inventory management.

Another factor that show undecided or uncertainty with both mean and median of 3.1 and 3 which is governance. This shows that correspondents not sure if their organizations have implement proper polices and governance to the inventory management process.

Further focusing on multiple choice of question related to the method show below results whereby 68% agree that they take around 40-60 minutes to complete end to end inventory updating for one new network element as per stipulated in Figure 3. This shows that current inventory updating method is lengthy and time consuming.

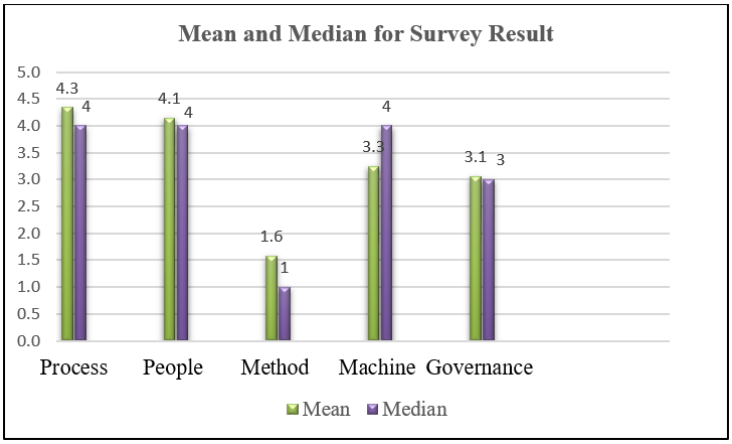

Fig. 2. Statistical Survey Result Analysis (Mean and Median)

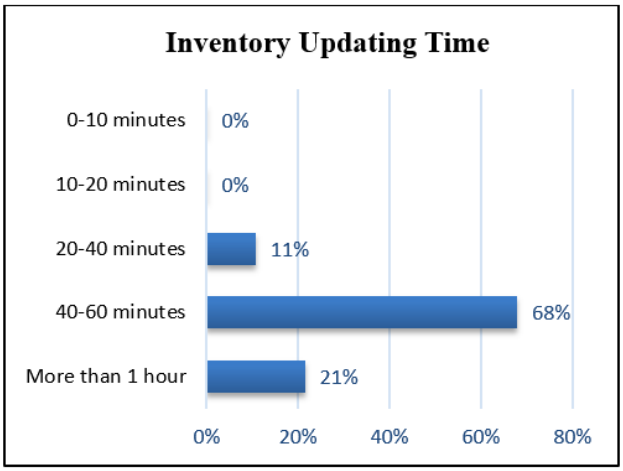

Fig. 3. Result for Inventory updating Time

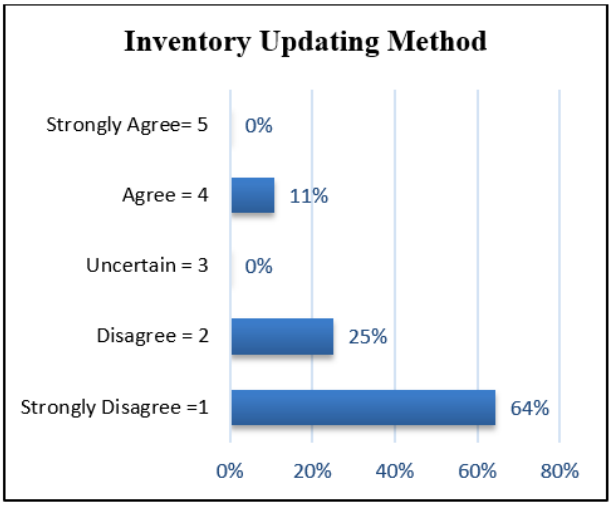

Fig. 4. Result for Inventory updating Method

Another question related to method shows that 64% strongly disagree that current inventory updating method is simple as per Figure 4. This result shows that current inventory updating method is complex and not easy to follow.

4. Conclusions

Main root cause of inventory mismatch is due to complex and lengthy work instruction to complete inventory updating for one network element. This cause the personal involve in the inventory updating process does not have adequate time to complete the inventory updating after changes of the network infrastructure and lead to inventory discrepancy at the system and what actual being installed on the ground. Further improvement for this issue has been identified and proposed by adapting inventory reconciliation method via automation to ensure that Inventory being reconcile and auto updated by schedule basis. This will eliminate human intervention on the inventory updating process and reduce opportunity of error in the whole process.

Acknowledgement

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References

[1] Khan, Nadia, Summaya Iqbal, and Tahira Mahboob. "A comparative study of data quality management in data warehouses." *International Journal of Computer and Communication System Engineering* 2 (2015): 464-471.
[2] Koumanakos, Dimitrios P. "The effect of inventory management on firm performance." *International journal of productivity and performance management* (2008).
[3] Atkinson, C. "Today's inventory management." *Inventory Management Review* (2005).
[4] Lee, Hsu-Hua, and Brian H. Kleiner. "Inventory management in the women's retail clothing industry." *Management Research News* (2001).
[5] Jou, Yung-Tsan, Hui-Ming Wee, Hsiao-Ching Chen, Yao-Hung Hsieh, and Laurence Wang. "A neural network forecasting model for consumable parts in semiconductor manufacturing." *Journal of Manufacturing Technology Management* (2009).
[6] Kang, Yun, and Stanley B. Gershwin. "Information inaccuracy in inventory systems: stock loss and stockout." *IIE transactions* 37, no. 9 (2005): 843-859.
[7] Fleisch, Elgar, and Christian Tellkamp. "Inventory inaccuracy and supply chain performance: a simulation study of a retail supply chain." *International journal of production economics* 95, no. 3 (2005): 373-385.
[8] Sahari, Salawati, Michael Tinggi, and Norlina Kadri. "Inventory management in Malaysian construction firms: impact on performance." *SIU Journal of Management* 2, no. 1 (2012): 59-72.
[9] Kasisomayajula, Srinivasa Rao. "An Analytical study on Inventory Management in commercial vehicle Industry in India." *International Journal of Engineering Research* 3, no. 6 (2014): 378-383.
[10] Angulo, Andres, Heather Nachtmann, and Matthew A. Waller. "Supply chain information sharing in a vendor managed inventory partnership." *Journal of business logistics* 25, no. 1 (2004): 101-120.
[11] Wisner, Joel D., Keah-Choon Tan, and G. Keong Leong. *Principles of supply chain management: A balanced approach*. Cengage Learning, 2014.
[12] Besley, Timothy, and Anne Case. "Modeling technology adoption in developing countries." *The American economic review* 83, no. 2 (1993): 396-402.
[13] Sutanto, Yusuf, and Riyanarto Sarno. "Inventory management optimization model with database synchronization through internet network (A simulation study)." In *2015 International Conference on Electrical Engineering and Informatics (ICEEI)*, pp. 115-120. IEEE, 2015.
[14] Atieh, Anas M., Hazem Kaylani, Yousef Al-abdallat, Abeer Qaderi, Luma Ghoul, Lina Jaradat, and Iman Hdairis. "Performance improvement of inventory management system processes by an automated warehouse management system." *Procedia Cirp* 41 (2016): 568-572.
[15] Krejcie, Robert V., and D. W. Morgan. "Educational and Psychological Measurement: Determining Sample Size for Research Activities." *University of Minnesota, Duluth Texas A. & M University* (1970).
[16] Lee, Sang Gi, Byeonghee Lee, and Hanjo Jeong. "A Study on the Problem Analysis and Improvement Plan of the Data Quality Management System of National R&D Data." *Indian Journal of Science and Technology* 8, no. 23 (2015): 1.