Nissan operations management

QSO-300 Operational Management, Final Project

Nissan background

Introduction

Nissan has been a pioneering company in the automotive industry, and the supply chain management in Nissan is different from the other multi-national companies. Localization is a priority for the Nissan's production plants in the other countries outside Japan. The company aims at developing local production and service units those can function independently from each other but also under a perfect cooperation under the central management. One of the challenges that Nissan has recently faced is the earthquake that occurred in 2011 and the tsunami that resulted in the catastrophic destruction of infrastructure across Japan. This occurrence greatly affected Nissan's sales and overall operations. However, to overcome the crisis, Nissan needed to restore to its former position, and this was made possible through operations management approach. Nissan implemented some different tactics in operations management such as Just in Time production and inventory control as will be discussed in this paper.

Nissan competitive advantage

I. Generating Value

A. Nissan is a leader company in the automotive industry, and it has a worldwide supply chain based on localization principle under a strong central control. The center allows the production plants in the other countries to develop their organizational behaviors and production under the conditions of the country they are located. The central management develops some

general plans like marketing globally or developing a strategy against the disasters because these management strategies influence all the supply chain around the world. The case explains to us that the production plants are related to the each other; however, Nissan is trying to develop a system to reduce their dependence on each other (Schmidt & Simchi-Levi, 2013). Notably, the particular parts are produced in Japan and exported to other countries, and that might be a problem if a disaster occurs in Japan, the production activities all around the world might be disrupted. Enabling the production plants in the other countries to produce most of the parts required for the final product will allow a continuous production. Also, the supply chain organization allows Nissan to create cooperation between the production plants in the different countries, and the company can create efficient and quick solutions (Bag, 2016). Subsequently, Nissan is trying to serve its customers continuously even during the disaster time.

B. Localized production units work in cooperation with each other, and the efficient communication between the units in the different countries enable the central management to develop quick and proper management decisions and start the implementation in a short time. For instance, the central management has developed a risk management strategy, and the local production plants have adapted this to themselves. After that as the whole supply chain, a simulative test has been implemented many times to increase the responsiveness of the entire supply chain to an unexpected situation that might affect all the supply chain.

C. Manufacturing operations are planned globally in Nissan while service activities are planned differently in the different countries as adaptive to the

conditions in the different places. However, Nissan develops coordination in the supply chain and all the supply chain take actions together efficiently and tackle with significant issues more quickly than the other global companies. While manufacturing cars many of the parts required for production are produced at the local base, some particular parts are only made in Japan and exported. On the other side, service operations are mainly planned locally; however, there is a strong central control of the local activities. For instance, all the agents in the supply chain have to follow the business continuity planning, and they have to implement disaster simulation training. They might make small amendments to develop relatively better adaption to their local conditions while these are mandatory for all.

II. Theories and Techniques

A. Material requirement planning (MRP) is a critical approach that helps organizations to control both production scheduling as well as inventory. The successful implementation of the MRP system benefits an organization by ensuring it gives better responses to its customers; it lowers its inventory levels; it better utilizes its labor and other facilities and that it responds appropriately to market changes. For the net requirements to be calculated, it is important that the inventory level, as well as the gross requirements, be determined. To arrive at the net requirements, this is done by subtracting the inventory at hand from the total requirements. For a successful MRP, Nissan would require input files such as a bill of materials, production cycle, master production schedule, customer focus, and supplier lead times among others.

B. PERT is a project management used for managing the uncertain activities while CPM is a statistical method of management of well-defined activities in a project. PERT is a probabilistic method of control while CPM is a deterministic one. The production operations in the production plants in the different countries can be managed by using CPM, and it is more suitable to use PERT for risk management and disaster strategy management. The localized production plants have a relatively well-developed activity plan, and the local management can collect statistical data quickly on the production procedures. Therefore, CPM can be implemented quickly. PERT does not require a high-quality statistical information. A well-managed information creation and transfer, and PERT can be performed. Considering that Nissan has developed an efficiently working information system, PERT might be the proper way of management during a disaster (Sule Adegoke, 2011).

C. Sequencing ensures that the order in which jobs will be executed is well defined. In this regard, different priority rules are often applied in process-oriented facilities. One of these rules is the first come, first served rule that requires that jobs be executed following the order of their arrival. This is most appropriate where the number of jobs is already known and when no jobs are cancelled after processing begins. However, this rule is disadvantageous where there are long jobs that may make other jobs to wait thus causing downstream idle time. The next rule is the shortest processing time rule that advocates for orders with shorter processing time be attended to first. This is advantageous where jobs involved require minimum completion time thus reducing any idle time or congestion. The shortcoming

of this rule is that is it ignores due dates especially for long jobs. Next is the earliest due date which requires that jobs with earliest due date be completed first. The merits of this rule are that it’s a simple and fast approach that ensures jobs are performed with regards to the due dates. However, this rule is disadvantageous since it may result to work content that is remaining to be ignored as jobs with earliest due dates are given priority. Lastly, the longest processing time rule can be applied which gives priority to tasks with the longer processing time. The main merit of this rule is that is recognizes both process times and job due dates. Nevertheless, remaining operations are ignored as high priority is given to past due jobs. A hybrid approach might work best in any of the above scenario in order to address the concerns at hand.