Logistics and Supply Chain Management

Individual Report-Case Study

Name:

University:

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1.0 Introduction

The second-big automobile manufacturer in Japan was Nissan Motor Company Ltd., headquartered in Yokohama. Around 248,000 individuals were hired by it worldwide. In 2010, it sold more than 4.1 million automobiles annually. In the same year, it generated about $102.37 billion, around JP8.77 trillion (in Japan) in sales, as per Akhter, Uddin and Jahan (2019). A tsunami and earthquake with a Richter scale nine had torn the nation apart. The World Bank calculated that the "3/11 disaster" had a total financial impact of almost US$235 billion. Manufacturing in the automotive sector was instantly halted. Nissan's Tochigi engine, car assembly facility, and Iwaki engine unit both sustained severe harm. Interestingly, the Iwaki engine facility resumed operations by mid-may, and the Tochigi engine and automobile manufacturing plant reopened in April.

This report will identify the significant issues affecting Nissan's automotive production and supply chain process. Further, the study will highlight the analysis of the recovery strategies and how Nissan can potentially rebuild their recovery options.

2.0 Analysis of Nissan's Plan to recover its supply chain operations

The triple tragedy in Japan impacted both local and global supply networks. Electronics and automotive manufacturing, two sectors with a significant presence in Japan, were most severely affected, as stated by Delic and Eyers (2020). Manufacturing and shipping were significantly interrupted, and employees were reluctant to go to their locations of employment because of nationwide shortages of fuel and power failures in the hit region of Tokyo (Ikegami & Maznevski, 2019). Plant closures in Japan affected the supply of goods—from electronics to automobiles—to producers worldwide. The Tsunami claimed 1,000 Nissan and 1,300 Infiniti vehicles for Nissan. The 2,300 automobiles had been entirely prepared and awaiting to be boarded and sent to the U.S. Five production plants were subsequently shut down by the corporation.

2.1 Key issues

It is identified that due to the effect of the three natural calamities, Nissan faced a sudden closure of their primary production units. Apart from that, some of the significant issues identified are as follows;

- Shortages of fuel led to improper shutdown of the production units, and also employees were barred from reaching their workplaces as in *Nissan Unveils Transformation Plan to prioritise sustainable growth and profitability* (2021)

- Huge loss as the ready-to-go models were washed off and gone with the Tsunami leading to substantial monetary setbacks in the U.S. market
- The instant shutdown of the manufacturing plant disrupted the supply chain of electronics (semiconductors) to automobiles failing to run the vehicles (Gunessee and Subramanian, 2020)
- ***Renesas Electronics***, which supplied 40% of the worldwide demand for automotive microcontrollers, also the sole supplier of electronic materials for Nissan, was severely damaged, and it took longer than a few months to resume manufacturing

2.2 Nissan's Plan

Nissan put up its Global Disaster Control Headquarters (GDCH) at its corporate office in Yokohama within 15 minutes of the earthquake so that it could provide updated details about handling crises, act to guarantee the security of employees and maintain uninterrupted operations as per Gong *et al.* (2021). Toshiyuki Shiga, the chief operating officer, served as the chairman of the disaster response committee. The committee managed all restoration initiatives and monitored domestic and international operations.

Only a month after the earthquake, automobile manufacturing resumed thanks to the mobilisation of numerous personnel from other companies to aid in rebuilding efforts at affected sites, as Gunessee and Subramanian (2020) claimed. The Iwaki Plant, which had sustained the worst damage, claimed in May that its infrastructure had fully recovered and that its output capabilities had reached those before the tragedy (*Nissan Unveils Transformation Plan to prioritise sustainable growth and Profitability* 2021).

Supply chains for Japanese companies were broken, forcing factories all over the globe to lower productivity (Ikegami and Maznevski, 2019). In Nissan's case, despite the fact that its Samut Prakan factory was unharmed, operations had to be halted due to a scarcity of parts. Manufacturing began again in November, but there were about 40,000 fewer automobiles than were needed.

Due to the globalisation of production, when an item's supply is interrupted, it affects manufacturing plants all over the world thanks to the supply network. At all the places where Nissan conducts business, management identified the car varieties that were in danger of running out of inventory promptly (Gong *et al.* 2021). By placing preventive steps in effect, the company was able to prevent business in the United States, Europe, and China from being impacted.

Shiga described Nissan's strategy, saying whenever such kinds of events take place, the corporation ought to understand that the safety of its workers comes first. Therefore, the company's primary objective was to affirm the well-being of its staff, sellers, and suppliers. The previously email-based safety assurance mechanism was changed to a web-based one. The business then began recovery activities at all of its facilities. Nissan had the capacity to perform recovery procedures quickly and precisely since they had regularly practised exercises and simulations (*Disaster Response at Nissan* 2012). Nissan was able to anticipate and prepare for all possible situations that might arise after the catastrophe thanks to the training and simulations. Nissan was capable of performing restoration tasks quickly and precisely because they had regularly practised exercises and simulations.

Production was being negatively impacted by the region's periodic power disruptions. To combat the impact of power shortages, the corporation investigated overnight actions, internal electricity generation, and an alteration in workweek (Delic and Eyers, 2020). Nissan warned sellers in April that, while shortages of components persisted at the facilities, it was going to mainly manufacture just the best-selling vehicles. According to rumours, the business placed massive orders for parts right before the earthquake, which, if accurate, might have aided in Nissan's comeback.

3.0 Nissan’s operational strategies for managing supply chain disruptions

3.1 Supply chain disruptions (Aspects and theories)

The provision of spare parts plays an essential part in the supply network for the automotive sector. Additionally, services for procurement need to be effective and satisfy consumers. Different arrangements need to be made for changes in vehicle elements and parts, as per Vanalle *et al.* (2020). The car type and customisation choices of each vehicle owner are to blame for this. Essential components must be accessible to car owners for a long period of

time frame as well. For instance, some German automakers provide genuine auto parts that are older than over 30 years old.

On a fundamental level, the supply network for the automotive sector consists of four primary steps:

1. Parts Suppliers
2. Manufacturing
3. Dealerships
4. Customers

An organisation, its vendors, and those companies' consumers make up the simplest supply chain. A business that produces raw materials; a producer; a supplier; a merchant; and a retail consumer are all included in SCM. Four major elements form SCM, which are integration, operations, purchasing, and distribution—work collectively to create a route to competitiveness that is both accessible and efficient (Warmbier and Kinra, 2022).

Integration

Teamwork with every stakeholder is a business strategy that avoids waste and saves money. The integration of each section with the others produces groups and draws expertise collectively.

Operations

The key understanding of the supply chain procedure, and supply chain operations ensures that the workers have constant employment, as in *Disaster Response at Nissan*. rep. Nissan-Global. (2012). Nissan had ensured that the workers were safe despite the fact that the country was highly affected, with people losing lives as well.

Purchasing

Knowing exactly the supply chain for the organisation's functioning will work prior to its implementation is one of the most crucial aspects, as stated by Dubey *et al*. (2019). It's critical to comprehend exactly which goods, such as components, tools, equipment, and supplies, to purchase for Nissan.

Distribution

The supply chain comes to its conclusion when the product that Nissan manufactures is supplied to customers, either straight from a store shelf or through immediate distribution. For products to reach their final point of distribution throughout the supply chain need to be meticulously handled, as claimed by Shibin *et al*. (2020). Nissan aimed to deliver quality cars to the end consumers who buy them from their stores.

Apart from these four aspects, supply chain management is based on several theories relating to each part of the total procedure, from manufacturing to delivering it. There are five theories, namely **resource-based view (RBV), stakeholder theory (S.T.), institutional theory (I.T.), transaction cost theory (TCT), and resource dependence theory (RDT)**. Each of the theories differs in different aspects.

3.1.1 Resource-Based View

Business action may be interpreted as an effort to gain a competitive edge over rivals, said to the company's resource-based perspective (RBV) (Dubey *et al*., 2019). Supply chain participants want to have control over the variables that affect operations within the structure of competitive marketplaces since those variables could provide companies a competitive advantage over their close competitors.

Acquisition of a resource or competence is related to resource diversity (important resource heterogeneity); if other competitor entities possess an identical useful resource or feature of the focus business, then that asset cannot provide a competitive edge over the rivals (Akhter *et al*., 2019). Because the expense of obtaining, enhancing, acquiring, or using a resource is too high, resource immobility indicates that it is difficult to achieve a resource through rivalry. The firm's RBV demonstrates how well a corporation manages its people resources, controls its technology, and innovates.

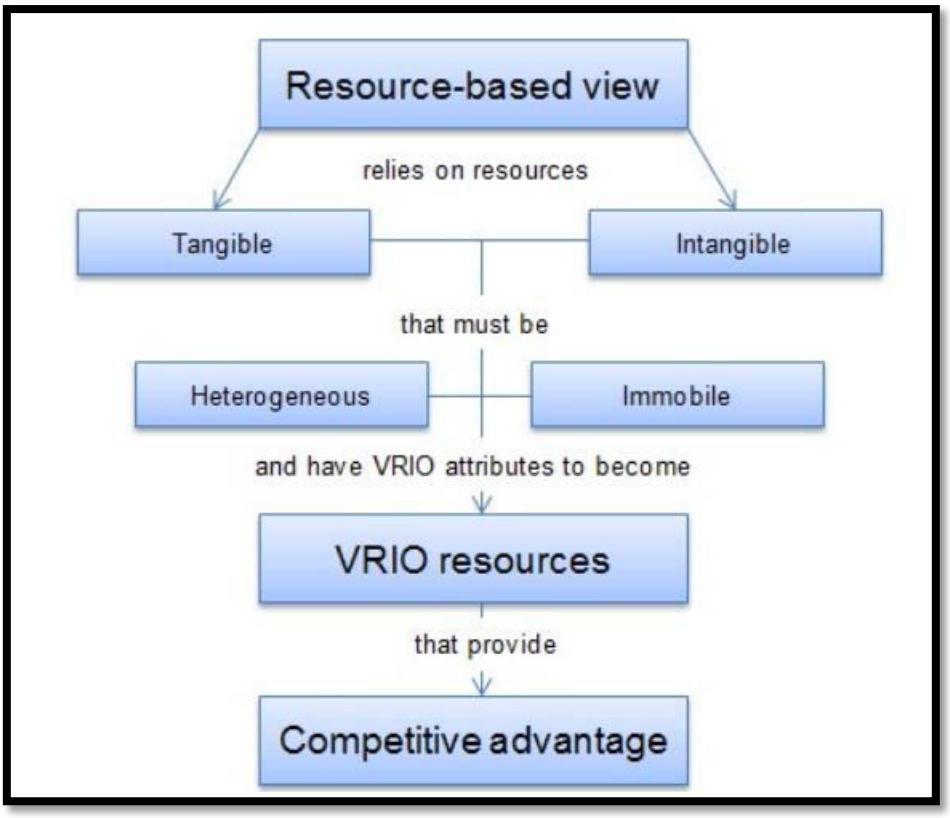

Image: Resource-based view

Source- (Akhter *et al*., 2019)

Tangible Resources

Land: Nissan views the land as a tangible resource, which comprises all the aspects the Nissan's property or rents for the procurement of manufacturing units and also for storage needs. According to Khosravi and Izbirak (2019), available storage options possessed or leased by Nissan for packaging the items are also in line with tangible assets.

Equipment: For Nissan, all of the equipment under the corporation, which is technically used in manufacturing, packing, and a number of other business operational functions, is considered to be a physical resource.

Raw materials: Materials include both the raw supplies and additional packaging elements that Nissan uses in the efficient production and shipping of its products (Akhter *et al.,* 2019). Competitor businesses may easily get the materials for employment in their particular production processes, and they are tangible in nature.

Intangible Resources

Brand Image: Nissan's lengthy record of inventiveness, throughout which it has put forth a tremendous effort to provide the core of its brand image, which includes high-quality items and earning the trust of its customers. As per Nandi *et al*. (2021), competitors cannot copy the brand identity of the company, which is built on its organisational culture and distinctive customer interactions, and could even give it an edge over others.

Intellectual property: The manufacturing system of Nissan is highly protected by the system used by the company to manage their intellectual properties. The company built their proforma to prevent copying or obtaining access of their intellectual property by any other rivals in the market.

Warmbier and Kinra (2022) stated that Nissan is safeguarded by patents and copyrights that provide protection for the way its goods are created and designed, but also for the R&D it carries out to enhance and further develop those goods.

3.1.2 Stakeholder theory

Companies are positioned in the core of a group of stakeholders according to the supply chain construction reason for the management of stakeholders. Any organisation of people that have a beneficial or detrimental impact on a company's operations is considered to be stakeholders, encompassing the company's investors, suppliers, employees, customers, rival businesses, communities in which it operates, and governmental organisations. However, stakeholder relationships are constantly under jeopardy, either consciously or unintentionally (Brady *et al*., 2018). The stakeholder management approach holds that when adopting crucial administrative and tactical decisions, businesses must additionally take into account the valid needs of all relevant stakeholders. Finding out which stakeholders are most memorable is one of the first steps in good governance of stakeholders (Khosravi and Izbirak, 2019). Customers, investors, staff, vendors, and local communities are just a few of the parties who endorse Nissan. All of our stakeholders should experience "Value-Up" from our business.

At present, 30% of all direct purchases in the Japanese auto industry are made by women. Women actively participate in the process of making decisions for an additional thirty per cent of all purchases. Therefore, 60% of all vehicle transactions are made by women.

3.1.3 Institutional theory

The ideas that guide the institution are the foundation of this theory. Organisations employ business practises, according to INT, since performing so strengthens their authority. This theory can offer insightful information regarding the use of SCM technologies and procedures. Since profitable businesses in industrialised countries function as examples outside of their original scenarios, institutional theory offers an explanation for the development and organisation of the educational and government research domains (Shibin *et al.,* 2020). Ghosn, the chairperson of Nissan, claimed that the business's achievement depended on minimising expenses for operations, eliminating material suppliers, developing new products, and reducing the number of Japanese manufacturing organisations.

3.1.4 Transaction cost theory (TCT)

Transactional costs are one of the important parts of any company's business operation. Any money debited for expenses of raw materials or payments are included within the transactional costs (Brady *et al.,* 2018). This theory states that Nissan should reduce their transactional costs. Even it is necessary that Nissan should understand which cost needs to be internalised and which will be publicly exposed.

3.1.5 Resource Dependence Theory

Focusing on a social constructivist theoretical framework, resource dependence theory (RDT) proposes inter-firm administration as a tactical reaction to circumstances involving ambiguity and reliance across exchange counterparties. RDT serves as the primary driving factor since supply chain members usually work together to accomplish common goals and depend more on each other in this setting (Nandi *et al.,* 2021). In that it views the employer as trying to take advantage of and reassemble unique sources that may be found outside the realm of the company and in which its strategic approach towards connections could potentially lead to the appropriation of these assets, RDT is a reinforcement to RBV.

3.2 Operational strategies

As per the case study, Nissan, including Japan, had faced a huge setback with the earthquake and Tsunami. The disaster erupted the entire supply chain of the automobile leader in Japan, leading to a halt in vehicle production. The company though figured out crisis management

procedures, but still, the need for a stable operational plan is highly appreciated. Nissan as a whole has developed a four-year plan which is primarily focused on two strategic areas. The company leaned on making decisions based on the operational phases and how the business can stand out in the market (Brady *et al*., 2018). By implementing the plan, Nissan aims to reach a 5% operating revenue margin and a 6% attainable market share worldwide by the end of the fiscal year 2023, with help from its 50% equity partnership in China.

4.0 Nissan's recovery strategy and the potential identification of improvements for future crisis

4.1 Recovery strategies

The 9.0-magnitude catastrophe claimed hundreds of thousands of lives, destroyed a nuclear power plant, and devastated the Japanese vehicle industry, which centred in one of the most severely affected regions in the nation's northeast (Ben-Daya *et al*., 2017). The manufacturing facilities of several of Nissan's suppliers were also affected. The extensive destruction severely limited productivity. However, recovery occurred very quickly, in large measure as a result of the automaker's determined response, claimed at the Management Briefing Seminars of the Centre for Automotive Research.

Nissan immediately applied the lessons it had learnt, polished, and developed, including:

1. Educating individuals on how to handle emergency circumstances, obtain correct assessment results, and communicate info.

2. Assigning responsibility and setting goals for what must be done, abandoned, or delayed.

Japanese automakers initially placed a significant emphasis on importing technology from the U.S. and Europe. Toyota took a more active approach to building up its own R&D capabilities, and other Japanese automakers later followed suit.

Nissan saw the need to enhance its supply chain after the catastrophe and its effects. The company intended to request its Tier 2 and Tier 3 suppliers to employ substitute procurement for their components, which they had not yet adopted, in order to avoid comparable interruptions and losses in the future (Vanalle *et al.,* 2020). So that the manufacturing

facilities could continue to get the necessary components regardless of disruptions, the suppliers may produce the identical component in various plants spread out across the nation.

4.2 Future implications

The natural calamities in 2011 have made the three automobile leaders of Japan bend down and learn. Though the companies have recovered, and Nissan is the first company to excel in their crisis management techniques, but there are certain improvement areas to avoid future risks (Abdel-Basset and Mohamed, 2020). Data from the case report says that there was a substantial decrease in production and sells of vehicles for Nissan in the month of April 2011. From 41,746 to 14,642 vehicles, Nissan manufactured in that month showed their incapability to face the sudden earthquake and post-calamity shocks.

In future, the company should first make sure their employees and plant operators are well-versed in dealing with any natural calamities that can take place within the nation (Abbas, Din and Farooqui, 2016). It is necessary that the company provide safety handling kits and training on how to overcome shocks and continue manufacturing vehicles. The next biggest threat is the supply chain system of the company, which was broken significantly in the 2011 disaster. Now that Nissan has learnt the effects of bad supply chain management, the company should be able to build more suppliers who will manufacture electronic items for the vehicles. A strong supply chain is a blessing for any company.

5.0 Conclusion

It is found from the study that in 2011, Japan was hit by a triple natural disaster leading to a huge negative effect on the automotive industry in the nation. Nissan one of the top leaders in automotive vehicles in Japan, also faced a similar situation. The major drawback was the eruption of the supply chain system of the company. Though soon after the disaster, the company started the recovery process, and by May 2011, they started to produce vehicles in their units. It can be concluded that using any supply chain management theories such as RBT, S.T. or IT, Nissan needs to improve its relationships with suppliers and also extend the network.

6.0 Recommendation

Following are some suggestions made on Nissan based on the analysis of the entire scenario and the report:

- It is recommended that Nissan should reduce business operations at the time of any such disaster to minimise pressure on the production units
- The company must develop a team of crisis management who will be responsible for providing training theoretically and practically to the workers and units managers, eventually
- Nissan should strengthen their supply management chain, which will ensure that even if any disaster takes place, the company can smoothly transport goods from theory suppliers to the plant
- The use of seismic retrofitting abilities to its plants is a must for the company. This system should first cover the earthquake-prone areas
- Based on stakeholder theory, it can be said that Nissan should ensure their strong relationships with stakeholders. This will encourage speedy recovery if they have the proper support from their stakeholders

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