



Assignment Cover Sheet

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Overview

In this report therefore, we explore the way that Nissan has managed its business- it is an international giant that produces approximately 3.5 million vehicles annually with distribution to 160 countries. Although it is huge, Nissan is facing severe problems: it lost its market share, squeezed its profits, and implemented a slow launch of the main electric vehicles (EVs). The company has hashed out these problems with the introduction of the Nissan Next transformation plan, which reduced the unnecessary capacity and focused on core markets, e.g., Japan, China, and North America with the support of its electrification objectives, Nissan Next 2030.

One of the key points to be examined in this analysis is the Nissan Production System (NPS). Our results, based on the principles of lean production to eliminate waste, Kaizen, and Just-in-Time indicate much variation between plants across the global scale. This is an evident quality and efficiency eaten up that is felt particularly when it comes to competition with Toyota, which possesses such factors to the advantage. The report further goes into Nissan shift towards an Intelligent Factory and a hybrid inventory system that has been meant to cushion supply-chain shocks.

This paper uses a supply-chain prism and SWOT analysis to examine the operational position of Nissan starting with the source of raw materials to the final customer. To conclude, it should be noted that despite the fact Nissan has a strategic vision, the gap between the strategic vision and the day operation needs to be bridged and in particular related to the visibility of suppliers and the continual introduction of lean technologies and procedures, which leads to sustained performance over time.

SWOT Analysis

Strengths

1. International Alliance Coefficients and Buying strength.

One of the key operational anchors is Renault -Nissan-Mitsubishi Alliance. Nissan enjoys enormous economies of scale which single competitors cannot match because of the Renault- Nissan Purchasing Organization (RNPO). With this structure, group sourcing can be implemented, which is essential to achieve the reduction of the next-generation EVs price by 30% in the intention of The Arc plan. The Alliance financially benefits by reducing the unit level spending on R&D by sharing common platforms (CMFsEV) and standardized components that establish a defensive moat against the increasing cost of raw materials.

2. Installed Lean Foundation (Nissan Production System).

Although its implementation can be different, Nissan Production System (NPS) is still a powerful structure that has sound lean foundations. The system puts an emphasis on waste minimization (Muda), persistent improvement (Kaizen) and standard operating procedures (SOPs). This base knowledge enables Nissan to respond to any emergency more quickly, like air-shipping needed chips in a crisis setting, than do non-lean companies. Making such a shift in business is possible because of a decades-old practice of visual management and efficiency of processes in the company.

3. Supply Chain Resilience and Hybrid Inventory Model.

Abandoning the brittle nature of pure Just-in Time (JIT) model, Nissan has managed to switch to a Hybrid Inventory Model. This strategic switch implies safestock holding of high-risk high-value parts (such as semiconductors) and lean processes on bulky parts. Such a decoupling of inventory policies allows to strike the right balance between the financial efficiency of low holding cost and the operational security that is necessary to survive exogenous supply shocks which is also learned in a somewhat costly way in the wave of disruptions following the post-COVID period.

4. Digital Leadership Intelligent factory.

Nissan Intelligent Factory is a project currently being implemented at the Tochigi plant and makes the company a trendsetter in digital manufacturing. Nissan aims to establish a connected chain of manufacturing steps that links its manufacturing operations with real-time feedback by incorporating AI, IoT, and robotics to perform the workload with high-complexity assignments, like mounting the powertrain and automated inspections. Through this feature, it becomes unnecessary to use manual craftsmanship (Takumi) in carrying out repetitive jobs, which would enhance precision and curb the risk of labor shortage with the aging population such as in the case of Japan.

Weaknesses

1. Sporadic implementation and Shredded Kaizen.

The entire Nissan Production System is somewhat blurry in the global locations. The culture of Nissan changes dramatically as opposed to Toyota that adheres to SOPs. Kaizen materials become entangled at certain plants hence it does not diffuse well. This translates to quality discrepancies - the rate of defect is lower than the industry leaders and the overall recall rate is lower.

2. Weakening Structures of manufacturing.

Many of Nissan factories continue to operate on outdated equipment, increasing their energy expenses and reducing their output relative to current-day so-called Gigafactories. The Re:Nissan

recovery plan openly refers to this weakness as it will decrease the number of large-scale production locations by 17 to 10 by 2027. The expenses of supporting these unused, out-of-date assets lowers margins, compelling the organization to engage on the game of value over volume in order to put the corporation back into the black.

3. Supplier Visibility Gaps

Although Nissan is a massive company, they do not have real time information on the Tier-2 and Tier-3 suppliers. That causes blind spots: the burning down of a sub-suppliers chip plant will make the entire production to come to a standstill before anybody can do something. The reduction of deep-tier transparency transforms the supply chain into a reactionary one.

4. Weaknesses in Financial Stability of Operations.

The auto biz has been registering operating losses over the last couple of fiscal periods, citing a high break even point. Costs remain heavy and the emergency 300 billion yen reduction in fixed costs attempted by Re:Nissan is indicative that the current model cannot survive long term unless it goes through significant restructuring.

Opportunities (External Drivers)

1. The Arc and Nissan Next Rationalization.

The strategy of Nissan Next and later The Arc essentially provides us with a clear road map of returning to profits. Nissan can reduce the global production by 20 percent and withdrawing into the unprofitable markets will allow it to focus on its core markets, which are Japan, North America, and China. This step also enables them to reduce the size of the supplier list, reducing complexity significantly (by approximately 70 percent) and securing improved deals in the process with a reduced, more reliable group of partners.

2. EV36Zero Hubs (Supply chain localization)

Taking the concept of the EV36Zero hub to locations such as the US (Canton, Smyrna) would imply that it would be a massive shift to local sourcing. It reduces logistics expenses by a huge margin, removes carbon taxation, and protects production against hiccups of the long-haul shipping. In essence, it future proves the supply channel against the skyrocketing energy prices among other limitations.

3. Leadership at Solid-State Battery (ASSB).

Nissan is seeking to ride the wave of All-Solid-State Battery (ASSB). Its growth strategy, Ambition 2030, is seeking to launch EVs using its own ASSBs by FY 2028. When they pin this tech, it would make a true blue ocean- 50 percent cheaper charging and comparable costs on a battery as a gas car. That has the potential to radically change the position of Nissan in EVs.

4. Digital Transformation & Digital twins.

There is a good opportunity to introduce Digital Twin technology into the older plants. The construction of the virtual copies of the production lines will enable Nissan to experiment efficiency improvements and identify areas requiring repairs without expensive real prototypes. In such a manner they can make the "Intelligent Factory" advantage to the established setups not breaking the budget.

Threats (External Risks)

1. Geopolitics Supply Chain Brittleness.

Frankly speaking, despite the fact that things have improved somewhat the supply chain remains a very fragile one. We are essentially relying on a few locations to supply such materials as lithium, cobalt, and nickel, and it puts Nissan in a vulnerable position to geopolitical games. Consider all the tariffs between China and the West, or those disorganized decoupling policies, yeah, they are disorganizing the part flow. This means that Nissan is left with no option other than to establish front-loads of supply chains across various regions which is a major pain and it costs a fortune.

2. Unstable Demand and Difficulty in Forecasting.

The market of the cars is simply too hype-pocked to guess at. The entire Bullwhip Effect phenomenon of small alterations in consumer preferences to gigantic supply chain disaster continues to strike Nissan. The past record of pursuing sales volume put the company in a difficult position whenever the demand falls or peaks leaving us with sales piles and occasions we are not able to cope with the orders.

3. Electrifying the three Delays.

Nissan is in actual trouble when compared to the so-called born-electric companies such as Tesla and BYD that operate their supply chains vertically. These guys are able to modify prices and launching technology so quickly that the complex structure of partnership of Nissan cannot keep pace. The competitive gap on EV front implies that Nissan is already losing the market share particularly in China and Europe.

4. Supplier Risks/Raw Material Inflation.

One of the most top critical suppliers is located all over the map and this constitutes a disservice to Nissan production safety net. Meanwhile, fluctuations in the cost of raw materials are very existent source of threat to the minute margins Nissan is striving to achieve through Nissan Next. In case the inflation continues to increase, the Arc cost reducing objectives may be inaccessible, and the entire recovery strategy could come to pass.

Discussion: Strategic Analysis, Suggestions and Implementation.

Strategic Environment and Operational Generalization.

The Nissan motor corporation analysis demonstrates that it finds itself at a very critical point. They are attempting to change the rationalization stage of Nissan Next to the growth-related criteria of The Arc business plan. The economies of scale permitted by Renault-Nissan-Mitsubishi Alliance and years of lean manufacturing experience are some of the main advantages of Nissan, yet the small business practices sometimes do not correspond with the grand vision. Nissan Production System (NPS) that was a gold standard is currently applied sporadically and finds itself stuck in shredded Kaizen and is causing quality lapses not experienced by competitors such as Toyota. Added to that, emerging, more electric, competitors like Tesla and BYD have vertically integrated supply chains, which demonstrates the vulnerabilities to a weakly integrated complex network of Nissan to the global market. To seal this divide and meet the target of the Greselfore Insisting 2030, Nissan must have a three-part approach: manufacture digitally, localize the supply chain, and take advantage of solid-state battery technology to overcome the existing restrictions of EV.

Recommendation 1: International Harmonization through Digitalizing.

The Strategic Imperative: A major weakness of Nissan highlighted in this report is its geriatric infrastructure. Many of their plants are still operating old machinery and increase their energy use and reduce capacity relative to new Gigafactories. What is even more bad, dependence on manual work, or Takumi, is a bottleneck. The manual transfer of the Kaizen culture causes quality that is not uniform across the world with the workforce growing old, and EV production becoming more complex.

Implementation Strategy: Nissan must roll out Nissan Intelligent Factory concept concept, now a pilot at Tochigi plant, to their entire global presence.

Digital Twins Deployment: Begin with the development of the Digital Twins of sites of older manufacturing plants. Constructing virtual models of the already known lines will allow the ops managers to simulate the workflow and identify waste paths (which are known as Muda) and experiment with efficiency enhancements without incurring the high costs of prototyping. This addresses the issue of weakening structures of manufacturing by exploiting legacy assets prior to being substituted.

Skill Population: Replace human-based quality control with one that is automated. Get into AI, IoT, and robotics to deal with very-complicated jobs such as the mounting of the power-train and automated inspection. This not only standardizes the work, the principle of lean, but also maintains SOPs as hard codes in machines instead of relying upon human responsiveness, which is variable.

Recommendation 2: Localization and Visibility of Supply Chain.

The Strategic Imperative: Nissan is in a weak state of the supply chain which is both reactionary and fragile. An all-embrasive thicket of Tier-2 and Tier-3 suppliers forms blind spots, where a hit can bring the manufacturing process to a standstill before anybody can even become aware of what is occurring. The traditional JIT model is risky, mostly because of the altering consumer demand and the tension between geopolitics over such raw materials as lithium and cobalt, which leads to the Bullwhip Effect.

Implementation Strategy: The use of globalized efficiency model should be replaced with the localized resilience model.

Growth of EV36Zero Hubs: The primary instrument would be to duplicate the EV36Zero model of hubs in major markets and in particular the plants of Canton and Smyrna within the U.S. Localization of the supply chain will allow Nissan to cushion itself against supply hiccups along the long-haul shipping routes, reduce carbon taxation, and evane the increasing energy prices. This is a future-proof of the channel to geopolitical instability.

Formalize Hybrid Inventory Model: Decouple inventory policies. Low-risk, high-volume products remain on a lean JIT schedule to safeguard working cash but the high-volume, high-risk components such as semiconductors and battery minerals are maintained on a safety-stock regime. This Hybrid Inventory Model provides the compromise between financial efficiency and a degree of shocks resistance must be secured; no longer are the forecasting mistakes of a sales pile or a stockout going to occur.

Recommendation 3:ASSB Leapfrogging Technological.

The Strategic Imperative: Nissan has been losing its market in select markets like China and Europe due to the inability to keep pace with the swift changes in pricing and technology of other vertically integrated firms. Repeating the existing lithium-ion technology will not help bridging this gap. Nissan has to develop a blue ocean or untapped space in the market to survive.

Implementation Strategy: Almost all the resources of R&D should be devoted to commercializing All-Solid-State Batteries (ASSB) by FY 2028 according to the plan described in “Ambition 2030.”

Taking advantage of Alliance Synergies: tap into Renault-Nissan Purchasing Organization (RNPO) to access common components and common platforms known as CMF-EV. This protection barrier against rising raw materials allows Nissan to shift the capital to building ASSB.

Targeting Cost Parity: This aims at approaching a 50% reduction of the charging time and cost parity of EV vs. gasoline vehicles. When Nissan attains these metrics, it will be able to distinguish its product based on brand as well as the actual economic benefit to the purchaser-in effect fighting the pricing authority of the Chinese manufacturers.

Conclusion

Nissan Motor Corporation is at a cross within itself at the moment, it remains to be seen whether they can transition between the stability of Nissan Next to the growth-based Arc strategy will determine how competitive they will continue to remain in the long term. In my observation, Nissan has had few small ones; it has strong partnerships, strong lean history, and a global presence. However, they are also carrying some severe headaches such as aging plants, sporadic deployment of the Nissan Production System and strained, cut-up supply chain. To add to it, EV ramp-up leaders such as Tesla and BYD are highlighting the inefficiencies and technological backwardness of Nissan. A digital-first makeover, localized supply chains, and new battery technology are all things that the company truly needs to stay afloat in this high-paced auto industry.

The three solutions include digital harmonization, supply chain localization, and leaping forward with all-solid-state batteries, which come up with a fairly good game plan. The implementation of the Nissan Intelligent Factory to the global scale and application of the digital twins can assist in keeping the production straight, increasing quality control, and raising those old plants to the same speed. Resilience mode, which combines a less pure global efficiency mode, is switching to more local memory-think EV36Zero hubs, a hybrid inventory system, would ensure that Nissan was not exposed to politics, material crunches and changing demand. And last, the value of investing in the ASSB

research will make Nissan shine in the EV market by performing better, being equal in cost to the gas cars, and charging faster.

Combined, these actions provide Nissan with an easy way back to their competitive lead and making operations lean and ruthless and securing future expansion. With digital upgrades, localization at the right place, and an innovative battery technology, I believe that Nissan will be out of where they are and become a force that will be prepared to take on whatever 2030 and years beyond will present them.

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