## Toyota motor manufacturing essay sample

Business, Company



Executive Summary Toyota Motor Manufacturing (TMM) confronted with several critical issues. (See Appendix 1) These issues caused the insufficient Just-in-Time (JIT) system. The first two critical issues are too much dependence on sole supplier and insufficient information management. Since TMM failed to communicate with sole supplier KFS, they projected the production unrealistically. Also, because of incapability of KFS to supply the car seat demand, a growing number of cars sit off the line with defective seats or no seats at all. For these two issues, we recommended a short-term solution for TMM to hold monthly meeting with KFS in order to overcome current crisis in seat supply. On the other hand, an effective information system should be set up to help TMM to determine the future projection. Meanwhile, TMM should use statistical process control (SPC) chart to monitor the product quality continuously.

For a long-run strategy, TMM needs to build up its own plant for production seats so that it can easily control the specification and quantity of the seats that fully subject to its own requirements, and also minimize material cost. Furthermore, lack of process synchronization and poor production planning delay the company to produce the best productivity and quality. For company<sub>i</sub>'s lack of process synchronization, possible solutions are recommended such as: utilizing JIT, eliminating waste, and providing a better training program to enhance teamwork. Similarly, possible solutions for poor production planning are recommended for improvement of process organization and process flexibility.

Organization Profile In July 1988, Toyota Motor Corporation (TMC) founded a subsidiary, Toyota Motor Manufacturing (TMM), which began volume https://assignbuster.com/toyota-motor-manufacturing-essay-sample/ production on 1, 300 acre site in Georgetown, near Lexington. Since then, the plant had an annual capacity of 200, 000 Toyota Camry sedans; furthermore, in 1992, TMM was expected to supply 240, 000 of the all-new Camrys. For the first time, in March 1992, TMM started producing wagon versions of the new Camry exclusively within Toyotails worldwide plant network. The vehicles of Toyota produced are subjected to variety of extremes, including high-temperature and high-speed performance evaluation, emissions standards, and environmental compliance. Among the strong competitions such as GM, Honda, Ford, Chrysler, Nissan and so forth, Toyota will soon begin producing automatic transmissions and had more growth ahead in investment.

In order to satisfy customers with variety, high quality, and low cost, Toyota Production System (TPS) provided two guiding principles to facilitate this goal: One is Just in Time, the other one is Jidoka. Further, TPS depended on human infrastructure, symbolized by Toyota; s corporate slogan: ¡§Good Thinking, Good Products.; However, since TMM had insufficient information system, too much dependence on the sole supplier KFS, and poor design and installation, they can not control the seat problem and this problem obstructs the process move smoothly. Also, this situation further makes JIT system insufficient. To pursuing JIT system successfully, TMM should deal with this problem immediately.

Critical Issues, Alternatives, Recommendation, and Implementation Critical Issue 1: Too Much Dependence on Sole Supplier Based on the given data, the total seat defect per day indicated an increase of cases since April 4th. The seat supplier of TMM was Kentucky Framed Seat (KFS) and KFS was the sole seat supplier of the company. With this situation, TMM must accept everything transported from KFS including defective production. Also, on February in 1992, TMM change the seat style of the old model camry from three to five and start production Camry Wagon which added eight seat variations to the production line. However, KFS cannot keep the quality with this increase demand and more variation of seat. In addition, since TMM operated on a system of sequential pull with KFS to match each model type and interior color, as long as the seat defect problem of KFS happen, TPS<sub>i</sub>!s process will be hindered. This issue becomes the major concern of the whole company.

Alternative A: Producing Seats by TMM itself In order to ensure the supply and the quality of seats, TMM should choose a location to produce seats by itself and continue the sequential pull system.

Pros: It can be easier to control the quality and quantity of seats under TMM<sub>i</sub>'s specification requirement. Also, it benefits TMM to reduce transportation cost and material cost.

Cons: It costs much investment to produce seats by TMM itself. Besides, TMM is lack of experience and knowledge in this field of producing seats. In the short run, this alternative cannot solve the seat problem of TMM.

Alternative B: Searching for another supplier other than KFS TMM has to search for another or more suppliers, which can meet with TMMils high quality requirement. Pros: Building relationship with other seat suppliers can reduce the harm and variability caused by the KFS<sub>i</sub>'s delay and bad quality problems. On the other hand, KFS will pay more attention on its QC improvement and work harder to meet the exact delivery time.

Cons: More than one supplier will dilute the strength of relationship with KFS and require TMM more workload to handle with the supply of seats among suppliers. Of course, it will induce an increase in transportation cost.

Alternative C: TMM and KFS need routine meeting The TMM should have routine meetings with KFS in order to evaluate ad review current production of seats and to discover and discuss the defective problems including delivery time. Pros: If there is anything changed about seats production plans, TMM and KFS will cooperate for same purpose each other. Also, mutual understanding will strengthen the relationship between TMM and KFS. Thus, JIT can be achieved without disruption.

Cons: This alternative can solve current problem immediately. However, in the long run, it cannot solve other problems occurred from any inharmonious decisions in the future between TMM and KFS.

Alternative D: TMM buys out KFS as part of TMM Through leverage buy out, TMM can buy KFS as a part of TMM to produce high quality seats under TMM<sub>i</sub>'s specific requirement and control.

pros: This alternative can reduce the number of defective seats and fulfill the requirement of TMM. Also, it can minimize the material cost.

Cons: This alternative will increase management cost. TMM may have to raise the expense in their training program in order to fulfill this alternative.

Recommendation: In the short run, alternative C is strongly recommended due to critical condition. From our observation, this alternative can help TMM to overcome current crisis. At the same time, TMM can meet its projected goal. Moreover, the most positive way of this alternative is to tackle the quality crisis, which will give TMM enough time to search for a long-term solution.

In the long run, alternative A is an optimal method in solving problems resulted by TMM<sub>i</sub>'s dependence on its sole supplier. In accordance with JIT production, TMM designs its own specification and produces seats that fully satisfy TMM<sub>i</sub>'s requirements. The product defects can be greatly minimized by using this method. Although this method inevitably comes up with high expense on equipment, overhead, and so forth, comparing the revenue and quality generated by this new plant, the incurred cost is absolutely minor in the long run.

Implementation: Person in charge: Vice president, Purchasing Manager, and Assembly plant General manager.

Steps: 1. Monthly meeting from May 1922.

2. Collecting information to set up facilities in order to produce seats by TMM itself from June 1992.

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3. Hiring and training workers and employees for seats production from September 1992.

 Setting up equipments and facilities to produce own seats from December 1992.

5. Evaluating and adjusting JIT planned seats production routinely from January 1993.

Critical Issue 2: Insufficient Information Management The information management between the workstation and the supplier was insufficient, which caused TMM to overlook the capability of KFS<sub>i</sub>'s seats product. Also, it leaded KFS to have overload production and bad quality. With JIT system, production plan is very important. However, TMM could not exactly implement JIT system harmoniously with KFS<sub>i</sub>'s seat production. Moreover, TMM applied ¡§Andon cord;<sup>¬</sup> to notify the supervisors to manage the problems immediately. However, this method often leaded to stoppage of the product line.

Alternative A: Sharing information with supplier To ensure about what to produce, when to produce, and how much to produce, TMM needs correct and effective information for its process in production. On the other hand, TMM needs to manage information effectively among the workstations and the supplier. An effective information system can be used and shared with the supplier to determine the future projection. Thus, the supplier can produce high quality products to match the specification of TMM. Pros: This alternative can improve the quantity and quality supplied by seats supplier, and reduce the waste and holding cost of inventory.

Cons: If the information is not accurate, the critical problem will happen again.

Alternative B: Implementing SPC chart TMM should use statistical process control (SPC) chart to record, monitor the quality problem. In the meantime, TMM can use the data from SPC chart to analyze, measure, and control the process. When the abnormal situation appears, the supervisors should solve the problems immediately. If the problem cannot be solved right away, the product could be pulled off from the assembly line instead of stoppage of the product line.

Pros: This alternative will help the inspection more organized. Also, it can strengthen the standard procedure and decrease the defective problem. Moreover, the stoppage of assemble activity will be reduced or eliminated.

Cons: Because data is very sensitive, the error might occur if the collector does not pay enough attention.

Recommendation: The alternative A and B are strongly recommended to solve this critical problem. As long as more accurate information can be collected, the TMM can produce right quantity and quality products. Also, these alternatives will improve information collection and flow between TMM and suppliers in order to reduce or eliminate any defective problem well. Implementation: Person in charge: General Manager of Quality Control department and General Manager of Assembly Plant.

Steps: 1. Determining the needed information from May 1992.

2. Setting up the process of data collection from May 1992.

3. Starting to collect and analyze those needed data from July 1992.

4. Sharing those data information and analysis with seat suppliers from July 1992.

Critical Issue 3: Lack of Process Synchronization The company lacks of process synchronization just because it has manifested in unwanted or defective products, high inventories, long delays and frequent stockouts. All these issues resulted in the company; s uneven flows between processing stages especially in the manufacturing and installation departments. Therefore, practicing process synchronization, not only will help the company to develop, produce and deliver products to meet the exact quality, time and location requirements.

Alternative A: Utilize the Just ¡VIn-Time (JIT) paradigm As one always noted, improving process performance musts involve a tool for all employees, as well as the company, to perform and produce a sufficient product. Therefore, this special tool of the JIT paradigm should be introduced Pros: a perfect JIT paradigm results in a perfectly synchronized process that always supplies just the right quality product, right quantity, right time and the right place. This paradigm is exactly expected or desired by the customers.

Meeting customer; s satisfaction is critical for meeting the company; s productivity and quality. Furthermore, the four isrights;" of process synchronization will define the ultimate in process capability, flexibility and speed. Producing any product without defects requires the process to be extremely versatile and precise. Therefore, to satisfy demand arising at anytime will create a process that have instant, complete and accurate information on demand with the capability to react by producing and delivering instantly.

Cons: If the company experienced any product defects, delays, excess inventories or stockouts, then the utilization of the JIT paradigm created an imbalance system of inflows and outflows at all stages. This process is not achieved at the lowest possible cost. Thus, an imprecise match of the supply and demand of various flow units at each processing stage means that at each stage, quality, quantity time and place requirements did not satisfy the next stage. Furthermore, achieving a JIT production successfully in the short run would be a more challenge than in the long run.

Alternative B: Elimination of Waste Likewise, the company must utilize the elimination of waste to improve its process synchronization. Since lack of synchronization may result in high processing cost, the company does not want to produce inefficiently. For instance, TMM has been producing excess inventory such as defective eats and too many product at one time. Therefore, the goal is to eliminate waste and increase total costs, quality and deliverability to meet customerils satisfaction.

Pros: The works of elimination of waste can decrease the number of defective products, inspection and rework or any non-value adding activities. Similarly, lack of synchronization from delivering wrong products to wrong location is often due to inadequate transmission of materials and information through the network. Therefore, the reduction of the need for on-line process control will improve synchronization and reduce the overall cost. Furthermore, the company accepts the given process limitations and learns how to deal could make the company process flow units in batches, keep safety inventory or capacity, employ process control and correct the defects to eliminate companyils waste.

Cons: It is not easy to prevent waste and improve process synchronization when you want to realize it. The company has to take into consideration of unreliable suppliers, unreliable equipment, and untrained worker and so on for correcting the problem during a short time. With ample time, the company will develop techniques to rectify any issues that may cause the process of eliminating waste.

Alternative C: better training Program to Enhance Teamwork It is crucial for all employees to obtain the knowledge and perform effectively. Thus, a proficient training will be beneficial for employees as well as the company to enhance teamwork. Ultimately, the best teamwork with well-trained employees can tremendously impact company; s productivity and quality to meet customer; s demand.

Pros: A better training program provided by the company would make the employees perform their responsibility efficiently. Also, the well-trained

employees will have a better understanding about their jobs and then they can enhance the teamwork.

Cons: the company will lack time availability to properly and fully train all employees especially within the plant in the short run. Therefore, a well trained or a seasoned employee must be on hand at all times to resolve any problems immediately.

Recommendation: In order to become a competitive company, the alternatives stated above are highly recommended. They will enable the well trained employees to fully utilize JIT production, eliminate waste and deliver a wider variety of high-quality products in the short run.

Implementation: Person in charge: Doug Friesen, manager of Toyota; s Georgetown Assembly Plant in Kentucky Steps: 1, Improve process synchronization (May 1, 1992) 2, Utilize JIT production (May 1, 1992) 3, Develop procedures to eliminate waste production(May 1, 1992) 4, Retrain assembly line employees within the plant(May 1, 1992) 5, Train new employees( two weeks, effective May 1, 1992) Critical Issue 4: Poor Production Planning Poor production planning existed within the TMM department. It is crucial for the company to develop a better production planning or system and then to improve its process organization and process flexibility. This implementation will be helpful in improving the product quality and synchronization and meeting the company; s demand.

Alternative A: Improve Process Organization The technique improves process organization within a plant by creating a cellular layout. This means the

network of activities, resources and their layout, has a significant impact on flow of work through the process and its ability to synchronize production with demand. Definably, a product-based cellular layout suggests all workstations that perform successive operations are grouped to form a ¡§cell;<sup>¨</sup>. Thus, all cells are located next to one another and laid out sequentially.

Pros: The new creation for a cellular layout will facilitates the transition flow of the information and materials between the processing stations. Also, it makes them run more smoothly. Physical proximity of stations within a cell reduces transportation between them, and makes them feasible to move the small lots of flow units quickly. Moreover, it facilitates the communication among stations and improves synchronization by permitting each station to see and produce parts when the next station needs them. More importantly, this layout improves defect visibility, trace ability, and accountability, which in turn lead to fast detection, analysis and correction of quality problems.

Cons: One of the greatest disadvantages is that it involves the loss of resource pooling when improving process organization by cellular layout. The resources of this type of layout are dedicated to specific cells and cannot be used by other cells. Therefore, this will result for a lack of substitution. Also, because this layout would only depend upon the flexibility, it will make the training cost of the workers or employees increase and make the efficiency lower. Furthermore, another problem exists that not all workers enjoy working with the others. Some people prefer to work individually.

Alternative B: Improve Process Flexibility In order to conduct this process flexibility, the company may prefer to choose a system called batch-size reduction, which will enhance productivity and guality. This system will allow

the plant to know the capability of how much to produce at each station, in addition to what and when to produce.

Pro: the approach of batch-size reduction will create a balance among the workstations. Therefore, the practice of heijunka technique will even out the total order in the daily production sequence. For example, a monthly order for 20 working days comprised 20, 000 dedans, equally divided between a base model and a luxury model. As a result the auto manufacturing operations will manage the order to be broken into several production runs and each one dedicate to just one model. In this case, heijunka practice would demand 500 base models and 500 luxury models every day. Also it would demand a base model and a luxury model made alternately. Moreover, this type of level production in batch-size reduction will place an even workload on the production process itself and on the supplier processes feeding it.

Cons: If batch-size reduction technique is used, the company will face the fixed cost associated with producing each batch. The fixed cost in this case results from the changeover cost and time required to switch production form on model to the other.

Recommendation: It is important to note that both alternatives in this critical issue would provide the company the necessary processes and make it become competitive in the marketplace. Furthermore, the company must

have a well-organized manufacturing and installation department. So the best product will be produced with the best quality. In this case, Toyota Motor Corporation, demand the highest quality of all new Camrys.

Implementation: Person in charge: Mike Deprile, general manager of the assembly plant Steps: 1, Begin a new strategy for poor production planning. (May 1992) 2, Develop cellular structure to improve process organization( May 1992) 3, Implement batch-size reduction with the heijunka practice to improve process flexibility (May 1992)a