

Operations management at bmw



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1. Executive summary:

This is a report of the operations management of the BMW automobile production plant at Dingolfing. In the first part this report talks of the dominant transformation process of the plant, the important operational objective of the car produced in the plant, the operational strategies of the plant and the difference between the operations in the service industry to the operations of this plant. The second part of the report analyses the product design and the process design of the cars produced here that is how they are designed and how they are produced. It also talks about various aspects involved in the process design of the cars, the sustainability practised in the operations, the gaps in their design and operations and how they can solve the gaps in their design. This report therefore gives a clear in-depth analysis of the design aspect in the operation of the plant.

2. Introduction:

In today's competitive world every product produced needs to have a design and objectives to attract the customers based on their corporate strategy, so to exceed customer's expectation an effective operations management is important for that organisation to execute that design. BMW produces luxury cars and main aim is to attract high-end customers it has many plants all over the world this report analyses the transformation process and how the cars are designed and produced in the BMW Dingolfing plant. The BMW plant at Dingolfing is the largest plant of the BMW it consists paint shop, body shop, press shop, logistics department, assembly line, quality check department. This plant produces about 200, 000 cars a year mainly the 5, 6,

7 series models and also parts and engines for other of its production plants all over the world. Nearly 11, 000 parts are shipped to this plant everyday from its suppliers which are used in the automobile production in this plant, parts and engines are also shipped from this plant to the other plant all over the world and also to its dealers who require parts for servicing. The finished cars are also shipped to other parts of Europe. This plant also provides serving faculties to the customers. This report looks upon the operations of the automobile production in this plant (BMW Group 2012).

3. Transformation process of BMW automobile production in the Dingolfing plant:

In the operations of automobile production of BMW various materials are processed to produce cars the way in which the process is managed to produce the outputs (cars) is called the transformation process. (Slack et al 2010). Below is the transformation process model of automobiles production companies.

In the transformation process of producing BMW's mainly materials are processed materials like steel, aluminium; leather, cotton, plastics and many combination of alloys and polymers are all processed to manufacture the car (BMW Group 2012). These materials together with supplied parts are transformed into outputs by the transforming resources like the equipment, technology and staff in the plant. In the Dingolfing plant many micro operations takes place inside the major operation process here the major operation process is the automobile production in which many micro operations like logistics, press shop, body shop, paint shop, assembly and

quality check sum up the main operation process that is automobile production.

Each process here is an internal supplier and internal customer to the other processes inside the major operation process. The operations process of the logistics department is to take the inputs (auto parts) from the suppliers, other operating plants, and also from Dingolfing plant, which produces seats, chassis, interiors and other equipment's and delivers it to the assembly division thus former is the internal supplier and the later is the internal customer. Similarly the body shop, press shop and the paint shop are all internal suppliers to the assembly division, which is their internal customer. The quality check is done before and after each of these processes starts and finishes therefore all the above micro operations is an internal customer to the quality check department.

The technical department provides the technical advice to all the micro operations taking place and also information about the customers requirement because most of the cars produced here are build to order and the customers can change their requirements until five days before their delivery. The cars produced here can be customised up to 10 to the power of 17 times, so the information given by the technical department must precise and all the above micro operations are internal customers to it (BMW Group 2012) and (Slack et al 2010).

“ All operations are service providers”

By (Slack et al 2010)

4. Differences between service and manufacturing operations:

By the above quote all operations are service operations because it provides services to the customers here and service is provided to customer by producing a car even though the overall operation process produces a product. In this plant in the operations of automobile production there are many micro operations, which help the main operation each micro operation either provides service or products to the internal customers. Here logistics department provides service to their internal customers by transforming materials.

The technical department and quality check department provides services to their internal customers by transforming information. The press shop, body shop and the paint shop produces products to their internal customers by transforming materials. The advantages of operations of an automobile production with respect to service industry are they cars produced here are tangible and the mistakes can be rectified where as an service provided will have a shorter life cycle and can be only or seen and provide service cannot be changed. The uniformity of the inputs and outputs in the transformation process in this plant are very and stable as compared to a service industry. Productivity can be measured easily in this operation as compared to a service operation and evaluating the operation in this plant as planned is easy as compared to an ' pure' service operation and there is more possibility to correct quality problems in this operation as compared to an service operation.

The design of the cars produced here are easily patentable as compared to a service which very difficult to be patented. There also some limitations in these operations as compared to a service operation the inventory levels in this plant is always high as compared to an service operation, this operation demand more labours who are needed to be trained by the organization itself, the degree of customer contact is low during the transformation process in this operation as compared to an operation (Slack et al 2010). The operations of production of BMW's is an ' pure' goods operation as only products (cars) are produced and they don't provide any service even though the overall organisation provides services such as financial services, after sales service to their customers but this operations produce only products. The service micro operations (logistics, technical and quality check) in the overall operations of automobile production also face the above disadvantages, which the ' pure' service operations face, but since they are micro operations they affect the overall operations in a smaller scale (BMW Group 2012).

5. Operations strategy of BMW:

The corporate strategy for a large corporation like BMW is to target the premium segments in the international automobile markets. The mission statement of BMW up to the year of 2020 is “ the BMW Group is to become the world's leading provider of premium products and premium services for individual mobility. “ due to the increased mobility and volatility in international markets. They business strategy of each segment is to achieve profitable growth and above average returns on premium segments even in times of change and implementing various initiatives to keep the

organization with the strategy's four pillars growth, shaping the future, profitability, accessing new technology and customers. The operations strategy must help the BMW Corporation to achieve its corporation strategy and the plants business strategy.

The strategy is to produce sustainable products by flexible, efficient, and innovative practicing 'clean production' in terms of manufacturing that is to reduce amount of water and energy used in production and also to reduce waste during manufacturing. The products are designed in such a way that they can be recycled. In procurement the aim is to achieve 100% sustainable procurement. The cars that are produced should be less in co2 emission and fuel consumption. That is the main strategy is target higher end customers all over the world (BMW Group 2012).

6. Operational objectives for automobile production in Dingolfing plant:

The various operational objectives for organization are speed, quality, dependability, flexibility, and cost by which the performance of an organization depends. Generally all objectives cannot be achieved if an operation process tries to achieve all the above objectives then they would face in problems in at least achieving their main objectives. So generally there are tradeoffs in prioritizing the objectives. By looking into the corporate strategy and operations strategy of BMW that is to attract high-end customers and also this plant produces only the 5, 6, 7 series cost becomes the least objective. Since the BMW 5, 6, 7 series are all high range cars cost does not come as a order winning factor, the cars produced by the BMW group is always known for its aesthetic appeal, updated technology very

dynamic performance and customization of the cars produced to the customers tastes it follows mass customization and allows customers to customize up to 10 to the power of 17 times thus providing flexibility.

Achieving quality also reduces costs and from a business strategic view it is very important. Dependability means delivering the car at the right time and also the parts to the dealers. This is a important objective as many customers go for BMW since it offers very good after sales service and also availability of parts is also good and its operation team provide information and technical advice to the dealers who do the service. By looking into the operation perspective providing good quality will reduce costs as reworking on the same car is not likely to happen and also increases dependability of the operation.

Dependability in an operations perspective also save money, time and avoids disruptions thus providing stability. Flexibility in BMW is by providing many options to the customers that is also called mass customization here the customers are allowed give the specification for their car and they are allowed to change it until five days before delivery this increases sales and by operation perspective it thus increases volume and dependability (BMW Group 2012). Based on the competitive factors the operational objectives are prioritized in the following way quality, flexibility, dependability, speed and cost. Based on this the order winning factors are quality and flexibility these are the significant winning factors. The qualifying factors are dependability and speed. Cost becomes the less important factor as the product attracts the high-end customers (Slack et al 2010) .

7. Design:

Design itself is a process where the information is from the customer's requirements, production facilities and company's strategy is processed to produce and design of a car, which will meet the customer's requirements (Slack et al 2010). Based on the operations strategy of Dingolfing plant is to produce cars for high-end customers by sustainable operations, which is flexible, efficient, and innovative. By looking into the order winning objectives of BMW the main value that car should have is attractive looks, superb performance and very good quality and service. The additional benefits the BMW provides is flexibility (mass customization) and speed in delivery and service and thus providing dependability to the customers cost is an trade off here as product costs is always high.

7. 1 Process design:

Process design in an operational perspective is defined as the physical arrangement of technology, operational facilities, and people. It can be classified into two types as the process by which a product is designed and also the process by which the operation process is designed to produce the product (Slack et al 2010). There fore the process and product design are always interlinked.

7. 2 Product design:

The cars produced in this plant are the BMW 5, 6, 7 series these cars are designed to be aesthetically appealing, deliver very good performance, have good quality, technologically updated, and customised to the customers

satisfaction and also the important factor to taken into account is that it must be easy to manufacture . To be able to do that the research and innovation team at Munich very closely with all the research and development teams of the BMW group to be continuously improving in its products. In BMW group the product development team and the production team always work to together because there may be problems in executing the design whether it is feasible to make the car so the work together to delver the car until the production lasts (BMW Group 2012).

“ The processes to design an product is concept generation, screening, preliminary design, evaluating and improvement and prototyping.” By (Slack et al 2010)

7. 3 Designing an car in BMW:

There is a tremendous amount of effort but in the design stage of the BMW concept is generated based on the competitors, customers requirements and company's strategy. In the design stage each and every aspect of the car is improved from its earlier model and there is continuous improvement in the same model still it its decline stage in the market. In the BMW's the sound for an warning or an indicator is picked from almost an thousand designed sounds and it is different for each and every model of it two acoustic scientists work to design the sounds for the model. The look is designed based on the cars speed and size for example high speed cars are designed in such a way to look moving even while they are standing. Each seats together with its luxury is designed with the help of doctor's recommendation for the best position for the spine.

The safety in the car is designed after several crash tests to match a high standard. The engines are designed to be more fuel-efficient with less CO₂ emission. The cars are designed to be very efficient in terms of quality and performance and also to be recycled easily without affecting the environment (BMW Group 2012).

7. 4 Evaluating and improving the design:

BMW group practises Taguchi method for improving the design fabricated by which the certain experiments are carried out so that the robustness of the design is checked and verified (BMW Group 2012).

7. 5 Simulation and prototyping in design of the BMW's:

Developing a new vehicle and its production facilities will not be possible without the use of virtual tools. Tools like CAD, 3D simulations, complex simulation models are used to build a virtual factory based on the available facilities in the plant the production of cars is simulated very closely to reality. In the product design of a BMW itself 80% of all the processes of how the car is going to manufacture is confirmed by virtual reality before the first production actually takes place by also taking into consideration the flexibility it provides to the customers by mass customisation (BMW Group 2012) and (Slack et al 2010).