GENERATION OF PRIMARY BUSINESS PLAN: AN UPCOMING AUTOMOTIVE INDUSTRY

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ABSTRACT

Studying the recent advancements in Industrial Engineering stream, we have tried to examine the trend and behavior of an industry before it is actually commissioned and erected. A need of a detailed plan describing its whereabouts, its capacity, and behavior as well as expense in terms of area, money and parameters like marketability, budget and need of human resource is felt. So, we have tried to develop a detailed business plan according to which the future of industry can be forecasted. We have incorporated various parameters used as a tool in industrial engineering.

Key Words: Quad Bike, Lean Production System, Industrial Business Plan, Facility Layout, Star Topology Layout, SWOT Analysis, Forecasting, Gantt Chart, Scheduling, Planning and Erection.

1. INTRODUCTION

In order to build the plan, we have taken a virtual problem of commissioning of an upcoming industry, which will have the capacity to manufacture newly developed quad bike automobile. A quad bike is such a vehicle which has bike like structure and runs on four wheels. The reason of introducing such concept automobile is to achieve a business plan which has never been built specifically in India, we still don’t have a manufacturer who can manufacture such a concept vehicle at large scale.
2. COINING THE NAME OF THE INDUSTRY

This is not an industrial engineering attribute, but still we have considered it as the name of the industry later becomes the brand and a key word between product’s manufacture and its marketability.

Here, we have devised the name of our industry as “Tavishi Motors”. It is basically an experimental name and the term ‘Tavishi’ is taken from language Sanskrit. It is a feminine term resembling strength and power. It can help becoming the company’s name a big brand and showcases its strength and power.

3. DEFINITION OF MISSION, VISION AND ORGANIZATIONAL GOAL

The company’s mission, vision and goal are defined before it is commissioned and erected.

They basically mean to resemble the futuristic aims it has planned for itself and the way it would progress being in the market.

4. TARGET AND DEMAND FORECASTING

Opening up in a location where Quad Bikes and ATVs are not a scenario, Tavishi Motors would be the first Quad Bike manufacturer of India that would also offer a complete store for specific models of Quad Bikes. The ATV sales in India have increased substantially in the past few years since the other oncoming of brands and sales are expected to grow at an even better pace in the forthcoming years. The current prospects of growth of ATV industry in India are enormous as it is in its initial phase and other companies have just entered the marketplace with Polaris leading the tally.

5. PRODUCT AND MARKET

A series of Quad Bikes will be manufactured under the brand Tavishi Motors which will serve various purposes according to the needs of target market. Though some customers prefer to use these bikes just for recreational activities, these vehicles are also used by paramilitary forces, Border forces and state police departments as well. Also, due to largest young population (aged between 18-35), India offers one of the most promising markets for Quad Bike. The strategy to reach the potential customers will be mainly through online medium and channels accompanied simultaneously by traditional marketing approach. The ATV marketplace in India, as of now, lies absolutely unexplored as there are no production plants and all the Bikes which are sold here, are
imported, for which the government levies a duty of a whopping 100%, which can be shaved-off once a production unit is set up. To sum up, our company’s Mission is to produce Quad Bikes in India at a much lower cost thus fulfilling the needs of our customers and instituting a change in urban lifestyle.

6. INFRASTRUCTURE REQUIRED

During the last few decades, the layout of automobile manufacturing plants has changed very often, always adapted to the present conditions and facilities. With the inception of terms such as “Lean Production”, the minimization of so called non-value adding activities are now taken into consideration and thus the new plants are developed for the future as well. The main aim is to improve the product quality and reduce unnecessary costs which can be done by using new production methods, or even by reducing material handling. Also to minimize the needed storage space, “just in time” delivery method will be implemented. Therefore two logistic centers are planned.

For our plant, the chosen layout is star topology layout. In the centre is the communication centre, which controls all processes that have to be done in the plant. Also, the canteen will be in this centre where people from different departments can sit together and exchange information or discuss problems.

On the bottom of this figure, the production process starts. The raw material will be delivered to the first of two logistic centers. The material handling process is designed in order to save floor space and takes advantage of gravity by using a chain conveyer system which will be supported from the ceiling. For lifting mechanism, electromagnetic hook will be employed which will lower down during loading of the products. To save cost and time in transportation, the press shop and the body shop will be located directly besides this department. After the body is finished, it passes through a Quality control and Quality inspection process which is adjacent to the body shop in the communication centre. After quality check, the body passes through the communication centre for the first time and goes on to the paint shop. From the paint shop and again through the communication centre, it finally reaches assembly shop where the Quad Bikes will be assembled and will be sent to the logistics centre.
Table above shows the characteristics of the new plant, 8,000 sq. meters are required for the communication centre, another 5,000 sq. meters are demanded by the entrance hall with the exhibition area, an event cell, and an area where people can pick up their new Quad bikes. Another 2,000 sq. meters are employed for the testing track and rest 13,000 sq. meters are left for future expansion.

7. CELLS/DEPARTMENTS

The various Cells/Departments that are to be incorporated in the plant are:

7.1 Press Shop
Different body panels will be pressed in the Press Shop. The main objectives of a well designed press shop are to produce the products at the lowest rates, minimize stocks and delays and to maintain the product quality.

7.2 Body Shop
The body shop will consist of several different sections for the fabrication and assembly of body parts. Welding of the frame and the assembly of the body parts from pieces of sheet metal will be carried out in Body Shop.

7.3 Communication Centre
Potential failures can be discovered in an early production stage, repaired and because of better communication channels, can be easily avoided in the future. After finishing one production step, the Quad Bike would pass through the communication centre, where all data and specifications will be verified through the most modern CIM system, which also incorporates various applications of CAD/CAM/CAE and modern management information systems. It will also include the R&D centre, the Quality Control and Quality Inspection section and other facilities such as a canteen.

7.4 Paint Shop
The key purpose of the paint shop will be “to provide a good finish with long term durability”. To reach Quality standards and to minimize the space usage, the paint shop will have an S-shaped layout. A numeration of the various processes is given below:

1. Detergent Wash  6. Degrease
2. Phosphate Treatment  7. Rinse
3. Electro- phoresis  8. Spray Rinse
7.5 Final Assembly

After leaving the paint shop, the body finally enters the assembly line to get assembled. The assembly shop will use the strategy of modularization. Thus the assembly line includes the following modules in their operation sequence:

7.6 Logistics

Logistics include various sections such as area required for storage of various raw materials, Steel bars and also the final assembled products.

7.7 Machinery Required

Following is a list of machineries required for the production of the Quad Bike: Injection Molding Machine, Welding machine, CNC, Lathe machine, Spray Paint, Power Wrenches, Drills, Furnace, Ladle, Screw Drivers, Testing Equipment, Tool board, Metal forming tools, Electrical Equipments.

In addition, gravity based material handling systems are also incorporated to pursue efficient and low energy material and resource relocation medium.

8. PRODUCTION PLAN

The Production plan of the Quad Bike starts with the conceptualization of the product at the very first stage. From the genesis of the product concept to the launch of the product in the market and its feedback mechanism, the production plan encompasses every included aspect of it.

The layout for the production plan through different phases is shown in the figure below:
9. ANNUAL BUDGET AND TURNOVER

The annual turnover of our start-up for the first financial year, as estimated considering the sales of 500 Quad Bikes in the first year of its production will be Rs. 750 millions. (app.)

9.1 Initial Investment

It has been a general misconception in the Indian mind that, since the cost of a Quad Bike and other ATVs burn a hole in their pocket, their production cost is also fairly high and thus the investment done in starting up such a business will be huge. However, on the other hand, the reality is that the Quad Bikes and the ATVs sold in India cost a fortune because they incur heavy custom duty (100%) and other taxes since they are imported from other countries. Now, since this is the first production plant of a Quad Bike, the only considerable investment, that will be required, would be in the unit set up and marketing of the product. So, this needs to be managed wisely so as to reduce the overall investment. Below is a table which shows section-wise investment: (Investments in Crore Rupees.)

| Press Shop | 20.8 |
| Body Shop  | 57.2 |
| Paint Shop | 33.8 |
| Assembly   | 26   |
| Logistics  | 3.7  |
| Communication centre, infrastructure and outer area | 2.6 |
| Boundary Area | 5.9 |
| **TOTAL**   | **150** |

10. BREAKEVEN ANALYSIS

With the total initial investment of Rs.15 millions, and the fixed monthly expenses equaling Rs. 4.17 millions, the business will break even at approximately Rs. 45 millions in revenues.
11. SALES AND MARKETING STRATEGY

There is a potential market for Quad Bikes in our country as they prove to be highly effective for farming purposes, and at the same time, these vehicles are also a great source of recreational activities, as it is evident from their extensive use around sea beaches and deserts in India. Also, as these bikes run on different terrains, they are of a great help to the border forces and state police departments. Recently, Polaris Inc. has supplied some units to the Gujarat state police to patrol border areas. Our target market, other than the government departments, thus would be the young age population of India (between 18-35), which is indeed beneficial for us as we have the largest young population where 65% of the total population of India are aged below 35 years and the agricultural sector dependent people. Talking about our market size, we have a vast market to serve as more than one third population lies in the same age group as we are targeting. Also, an uprising in the Quad Bike market can be expected as several professional ATV tracks are now being developed, some of which are used for various competitions.

12. COMPETITION RESEARCH

We have no direct competitions but there are alternatives to our product in the marketplace, such as Quad Bikes manufactured by Polaris, Jaguar. However, our product would be unique because they will be manufactured in our own production plant and thus we have a competitive edge as our products would not attract custom duties and other charges. Also, an optimal growth in the Quad Bike market can be expected as several professional ATV tracks are now being opened in some states such as the recent MUDOTRON track which is now open and is used for various competitions in Hyderabad.

13. PUBLICITY AND MARKETING STRATEGY

As it is apparent that our target market is spread uniformly in almost all parts of the country, we need to have an aggressive marketing strategy. For this reason, we have segregated our marketing strategy into two different phases, both running simultaneously. In the first and most important phase, we will start with online marketing, through various social networking and blogging tools. It has now become a major marketing tool as companies can now go online and easily reach their target market, including some potential customers that may have been missed when using traditional marketing methods. Best of all, social media marketing is very low cost and one can easily respond to customers feedbacks. Intangibles such as experience, relationships with customers will prove to be the most valuable components of our company. Our company believes that happy customers are long term customers and one unhappy customer can do a lot of damage. So, a feedback mechanism will be designed in such a way that we could easily respond if we see any negative feedback from our customers.

The sites that we have sorted out for marketing our business and product are:

1. Facebook  2. Twitter
3. Linkedin  4. Google+
5. Youtube  6. Holiday Websites

Besides these, email is another great and more personal way to market online. Also features and benefits will be provided to regular and loyal customers (in the form of coupons and other products).
14. SWOT ANALYSIS

**Strengths**
- New plant with latest technologies.
- Modular Product configuration.
- Primary and secondary failure detection through communication centre.
- Marketing Techniques.

**Weaknesses**
- Fulfilling safety requirements
- Not suitable for every market
- Not suitable for all age groups.

**Opportunities**
- First production unit of its kind.
- Expansion of the plant.
- Increased fuel prices.
- Unexplored market.

**Threats**
- Shift to urban lifestyle.
- Competition from foreign companies.

15. SCHEDULING AND GANTT CHART

Gantt charts illustrate the start and finish dates of the terminal elements and summary elements of a project. Terminal elements and summary elements comprise the work breakdown structure of the project.

16. CONCLUSION

With this paper, an effort is made to generate a detailed business plan which would work as the Bible for the commissioning, erection and running of the industry. Various engineering and non-engineering tools are incorporated to generate the same and various futuristic aspects and goals can be easily estimated and be controlled in an effective & efficient way. This may be the first stage of prior planning and depicting out things which are going to take place in an ordered way with the promising scope of future expansion and flexibility.
REFERENCES