Methodology for Supply Chain Management

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Abstract – In the rising global trade and increasing competition, an emphasis on supply chain management (SCM) is experienced in all sectors, as these major factors drive the firm in improving the global distribution. Thus, these factors have forced the firms to invest more in streamlining their supply chain to achieve enhanced productivity and increase the customer satisfaction level. As there is a demand for the chain management, the study illustrates the significance of entire supply chain where the consumers are focused, though there are various frameworks developed for supply chain management, still there is a lack of appropriate structure in the fastest growing sectors in the world and remains as a technical marvel in all the industries. Moreover, in the German industries, (transport, logistics and automotive sector) supply chain is identified to facilitate in moving the raw material to finished goods. In transportation, the trade-off between the responsiveness and efficiency is manifested with the adopted SCM practices. Germany is recognized the world over for its outstanding automotive industry and excellence in engineering. From Asia to the Americas, German cars embody highly cherished values of innovation, reliability, safety, and design. Germany is by some distance Europe's leading production and sales market. Thus, the present study is aimed to analyze the competitiveness and competitive strategy of German automobile industries.

Index Terms – Supply Chain Management, Measures, Value based engineering, Flexibility, Strategies, Lead time.

1. INTRODUCTION

In the ancient Greek fable about the tortoise and the hare, the speedy and overconfident rabbit fell asleep on the job, while the "slow and steady" turtle won the race. That may have been true in Aesop's time, but in today's demanding business environment, "slow and steady" won't get you out of the starting gate, let alone win any races. Managers these days recognize that getting products to customers faster than the competition will improve a company's competitive position. To remain competitive, companies must seek new solutions to important Supply Chain Management issues such as modal analysis, supply chain management, load planning, route planning and distribution network design. Companies must face corporate challenges that impact Supply Chain Management such as reengineering globalization and outsourcing. Why is it so important for companies to get products to their customers quickly? Faster product availability is key to increasing sales, says R. Michael Donovan of Natick,

a management consultant specializing in manufacturing and information systems. "There's a substantial profit advantage for the extra time that you are in the market and your competitor is not," he says. "If you can be there first, you are likely to get more orders and more market share." The ability to deliver a product faster also can make or break a sale. "If two alternative [products] appear to be equal and one is immediately available and the other will be available in a week, which would you choose? The answer will be a Smart way of Supply chain management right?

Fierce competition in today's global markets, the introduction of products with shorter life cycles, and the heightened expectations of customers have forced business enterprises to invest in, and focus attention on, their supply chains. This, together with continuing advances in communications and transportation technologies (e.g., mobile communication, Internet, and overnight delivery), has motivated the continuous evolution of the supply chain and of the techniques to manage it effectively.

In a typical supply chain, raw materials are procured and items are produced at one or more factories, shipped to warehouses for intermediate storage, and then shipped to retailers or customers. Consequently, to reduce cost and improve service levels, effective supply chain strategies must take into account the interactions at the various levels in the supply chain. The supply chain, which is also referred to as the logistics network, consists of suppliers, manufacturing centers, warehouses, distribution centers, and retail outlets, as well as raw materials, work-in-process inventory, and finished products that flow between the facilities.

The German automotive industry has done very well relative to its international competitors in recent years. In the world's most important car markets German companies have managed to grow or at least maintain their respective shares of car sales. Some 20 years ago, when the sector slid into a deep recession following the reunification boom and had to grapple with high structural costs, a number of market observers claimed that the German automotive industry was in terminal decline. In this light, the positive performance of the sector since then is commendable. German automakers would not have been able to achieve this success if their product ranges did not satisfy the demands of car buyers. German corporate brand vehicles set

world-leading standards in safety, performance, comfort, versatility, design, reliability and image. Another decisive factor in the pleasing development was a concentration on core competencies, which helped to cut internal fixed costs.

Increasing global trade acts as a primary attribute for the rising growth in world commercial distribution systems, but poor standardization in the supply chain tiers remains as a key constraint and challenge for the manufacturing and other sectors. Furthermore, the SCM design needs to be modified for physical product development in the international market, but the dynamic changes need to consider the other domestic issues like local suppliers or retailers cost issue, transportation problem, etc. These SCM practices must mainly discuss regulatory procedures of both the host and home country along with other legal liability issues. Even though there are various studies, which have proposed various SCM practices, but none was identified to be the best.

The present study aimed to analyze the competitiveness and competitive strategy of German automobile industries. The main research objectives of the study are

1. To investigate and explore the issues that impact the competitiveness of German automotive industries.

2. To isolate the key strategic issues that need to be considered and generate policy options that address these critical issues;

3. To critically analyse the success factors for organizational growth of German automotive industries.

The study adopted qualitative methodology where data has been collected using secondary data collection method. This process is carried out to fulfill the research objectives, primary and secondary are the two data collection methods. The present study adopted secondary data method for data collection. The semi-structured interview is chosen as the data collection technique so as to answer the research questions. Further this interview also provides the solutions that are aroused by the participants and proper responses also given. Further, additional details are taken from follow-up questions. The researcher may use secondary data collection in which data is collected using books, research paper, journals, websites and data from the internet with respect to the Supply chain segmentation in automotive industries specifically in Germany. The researcher collected the secondary data through various sources like journals, websites, books and newspapers, however, to ensure the reliability; these are obtained from academic databases in order to support the research work. As the researcher has no clear vision of the study outcome, the qualitative methodology and exploratory research were adopted to identify the competitiveness and competitive strategy of German automobile industries.

2. LITERATURE REVIEW

In the recent years, there is an increased interest in analyzing the competitiveness of the economy in general. The economic growth and income generation depends on the competitive performance of individual enterprises. From a sectoral perspective, reflecting the notion that the competitiveness of the economy at large amount cannot properly be understood without looking into the performance of individual sectors. In order to attain the objectives of the study, this research involves searching various keywords include supply chain segmentation or economic growth of different industries or SCM practices by using several scientific databases such as Emerald, EBSCO, Google scholar etc. This section reviews the theories and concepts of competitiveness and competitive strategy of German industries in particular defined by Kotler (2009) [33]. Finally, this chapter identifies the research gap on the basis of previous study findings.

The definitions of strategy by Chandler is "the determination of the long-run goals and objectives of an enterprise and the adoption of course action and the location of resource necessary for carrying out these goals" Johnson et al (2011) [31], p. 3-4; citing Chandler (1963) [21]. Every firm adopts a set of policies and managerial procedures in order to withstand for a long-run, these policies and procedure are called as strategic management. These procedures are in the form of both internal and external environmental scanning, formulation of a strategy for a long range, implementation of strategy, estimation, controlling and maintenance. Thus, the strategic management study concentrates on observing and determining the threats and opportunities available externally that remains as strength and weakness of the firm. The term 'supply chain management' has not only been used to explain the logistics activities and the planning and control of materials and information flow internally within a company or externally between companies.

2.1. External Analysis – Market-based View

In general, to conceptualize competitiveness with the dominant economic features the literature can be divided into various different streams of analysis which includes Macro and Microenvironment Analysis. This Macro environmental analysis consists of various analysis which includes the Global Environment Analysis, Analysis of Industry dynamics, Industry structure (Five forces) analysis, Competitive Landscape and Competitor analysis, Customers and Market Segmentation, Logistics and Supply Chain. Thus, the below section illustrates the concepts of various macro analysis.

2.2. Macro Analysis Market-based view

The term macro-environment consists of external elements which control the business activities directly. These external elements include the social and economic changes, government policies, legal procedures, etc. For instance, an organization is

impacted by any new changes or legislation in taxation policies but the firm rarely has the power to shape them itself. Even though these macro factors have the capability to change the environment of the firm fundamentally yet their relationship is normally in the one-way form. The majority of the individuals or firms adopt the PESTEL analysis [59] technique to examine the macro analysis. This PESTLE technique is abbreviated as "Political, Economic, Social, Technological, Environmental and Legal". These elements are chosen as the external factor because these are considered to affect the firm's business, independent of its size.

2.3. PESTEL Analysis

The majority of the researchers adopt the PESTEL analysis, as the elements of PESTEL analysis determined the macro environment factors which might influence various variables like firms to cost and supplying and demanding. By adopting this technique, the firms identified the factors, which influence the business activities. This tool not only supports in making the business plan but also supports the firm in having a clear understanding of the business position, potential opportunities and direction for successful operations and deep understanding about the market growth. Thus, this tool ensures the performance of the firm and identifies the driving force which helps the firm attain a competitive business environment [68].

2.4. Global environment analysis

To sustain in the global marketplace, it is essential for the firms to identify the external environment and internal organizational factors, Critical Success Factors (CSF) with the preceding analysis of the external global environment. The features of the Global environment analysis are identified by determining the CSF. The term CSF is defined as "factors which are, in any business, the limited number of areas in which results, if they are satisfactory, will ensure successful competitive performance for the organization".

From the global analysis the essential factor which needs to be considered by these firms in order to sustain in global environment with inter-organizational relation are identified to be:

- Technological innovation and commercialization; attaining new standards of the environment and minimizing the amount of resources needed

- New Product Development (NPD) developing the products according to the changing consumer requirement and improving quality and affordability.

- Cost competitiveness and cost efficiencies along the whole value chain due to higher costs imposed on carmakers

- Capture and maintain proximity and loyalty

2.5. Analysis of Industry dynamic

Over the past few decades due to the fast changing business environment, the firms have to identify the industry dynamic and capabilities which act as added value to the firm. However, these industry dynamic capabilities are termed as the ability the firm to redesign according to customer's preference, adapt and adjust, integrate with the changes both internally as well as externally compete in comparison to changing business environment.

2.6. Industry structure (Five forces) analysis

Any organization which attempts to enhance its business activities it is essential for the firm to adopt the popularized approach proposed. This approach determines the Industry structure along with the firm's returns as it indirectly impacts various other factors. Thus according to these factors are "value of barriers to entry, the number and size of competitors in the industry, the existence, and degree of product differentiation and the overall demand elasticity in the industry". Later, this five force model was redesigned and proposed by in which another element was added which includes the bargaining power of suppliers, this element was developed to shape the industry competition and is represented in Figure 1.

From the model it can be inscribed that industrial sectors reveal large entry barriers i.e. there is minimum threat for new entrants, competing firms were small in number, differentiation in products and availability of new substitutes in both product as well as service, low demand elasticity which is represented as the minimized bargaining power of buyers, these are indicated by minimum competition and higher returns.
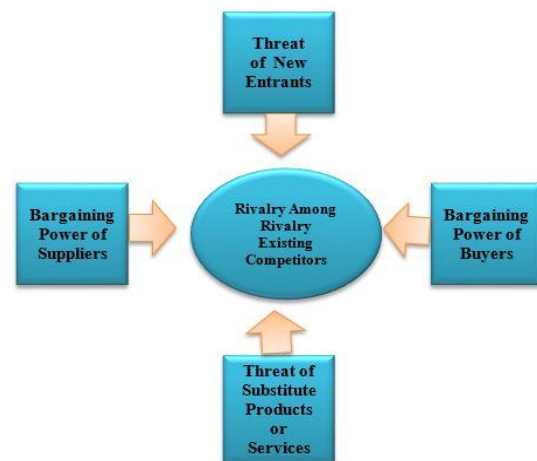

Figure 1: Model of five forces

2.7. Competitive landscape and competitor Analysis

In the business environment, the firms must keep their competitor on track in order to differentiate the business activities and stay ahead with the current trends which

influence the business. Thus every firm has to stay smart in the competitive landscape which supports the firm in making practical decisions during the development of the product, promotion, pricing, messaging and the brand landscape.

2.8. Customers and Market Segmentation

In the modern marketing arena, every firm has to adopt the market segmentation technique in order to attract a different group of customers, this market segmentation is a fundamental element of market success. The market is segmented based on psychological, behavioral, geographic and demographic factors. This segmentation is done to have a better understanding of the customer's requirement which influences the marketing in more efficient and effective manner.

2.9. Logistics and Supply Chain

In the global market, it is essential for every firm to have strong logistics and good supply chain. The definition defined by Bowersox, Closs, and Cooper on Logistics and Supply Chain which is stated as "the responsibility to design and administer systems to control movement and geographical positioning of raw materials, work-in-process, and finished inventories at the lowest total cost".

2.10. Industry Value Chain Analysis

The firms adopted the Value Chain Analysis (VCA) proposed to determine the firm's competitive position which was identified as a powerful analytical tool. From the framework proposed, it is stated that each and every firm has its own value-adding activities which establish its cost position in accordance to their competitors, on the other hand, where customer create value for the product. Although organization from the same sector have same value chain according to the product and services, the value differs which remains as the key element for building competitive advantage.
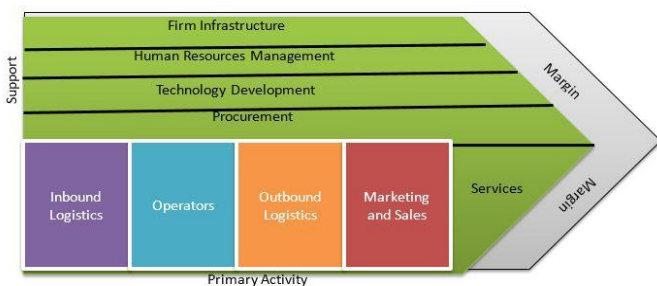

Figure 2: Porter's generic value chain model

The model proposed by Porter consists of nine generic segments of activities that are categorized as primary and supporting activities (fig 2). The primary activities portray the physical creation up to the transfer of the product to the purchaser; supporting activities are needed along the entire

value chain for the fulfillment of the primary activities. The secondary consist of firm infrastructure, HR management, Technology development and procurement.

2.11. Key Resources and Capabilities

Resources are categorized as tangible i.e. transferred easily, codified and explicit and intangible i.e. uncodified, tacit and difficult to transfer (Barney et al, 2001; Lu et al, 2008). Even though assets, attributes, capabilities, organizational processes, knowledge and information of a firm are considered as resources for the firm various studies have distinguished capabilities and resource. In their view resources from the source of firm's capabilities, while the latter represent the firm's ability to deploy those resources in the most efficient and effective way.

2.12. Proposed method

From the above analysis, we focus on proposing a methodology for Supplier segmentation by assuming a scenario, where a firm is considered as a supplier for other companies. The firm is supposed to deliver different kinds of products to different customers. A categorization of these products from the production side could be done as (which is not limited to) standard products, special products, fast delivery products, quality products etc. Based on this kind of product deliveries to different customers in the model different criteria are set for grouping or segmenting the suppliers. For example, the criteria could be logistics capability, cost, distance, delivery timer, security etc. In this way, I need to create different clusters for different product categories. Based on this cluster designs the segmentation of the suppliers is done.

Based on this model, we could cluster its suppliers based on their skills and deliverable matching the required delivered product. An example would be as one in the figure below:
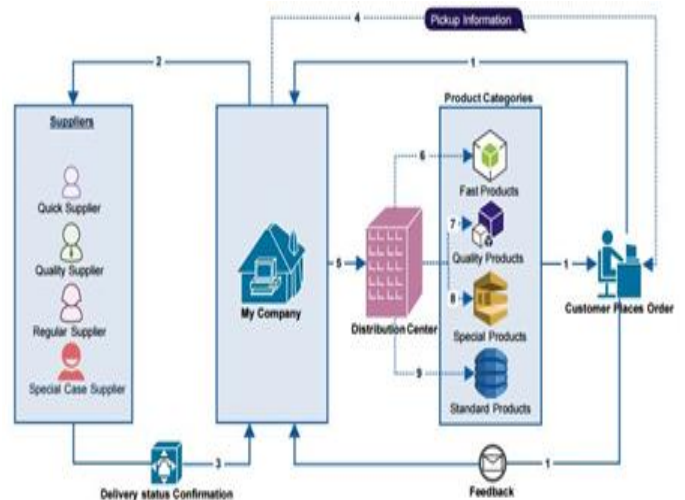

Figure 3: Model illustrating the company processes

2.13. Flow of Model:

Our products are categorized into different types like:

- Fast products, where the primary concern is the Speed and time with the prescribed quality with a Lead time of Next time delivery.

- Quality Products, where we focus mainly on quality aspects, with lead time 2-3 days.

- Standard Products: These are regular products, mainly concerned with Costs and quality with a lead time of 2-3 days.

- Special Products: On-demand products, which are specially requested with customization. Lead time depends on the requirements and quantity of products ordered.

2.14. Steps in completing an order:

Step 1: Firstly, our customer places an order as per their necessity. The ordered information will be received by my company.

Step 2: At our company, we will process the order to the concerned supplier as per type of product requested (e.g. Fast, Quality, Standard etc.).

Step 3: Now, the supplier manufactures the requested order and send the expected delivery status confirmation to the company.

Step 4: Our company send the short pickup notification to the customer regarding the expected delivery for transparency.

Step 5: Next we transfer that requested product to our distribution center

Step 6: Our distribution center then stores in particular category based on the type of product.

Step 7: From our distribution center, the products ordered will be delivered to the customer.

Step 8: Finally, the customer sends feedback regarding the service provided and the product satisfaction to our company.

From the above model, based on the capabilities of the suppliers we could form clusters with matching the manufacturing products of the organization as shown in Figure 4.

From the cluster diagram (Figure 4), we can justify our segmentation as:

Here Cluster 1 are Fast products, where the required volume is large compared to smaller technology necessities and logistics. Then we can see from Cluster 2, Smaller volume constrained to Smaller technological requirements and logistics, results to

standard basic products. From Cluster 3, they are special purpose products with high need of logistics in moderate volume and technology. Lastly from Cluster 4, they are quality products, which consumes time, cost and technology.
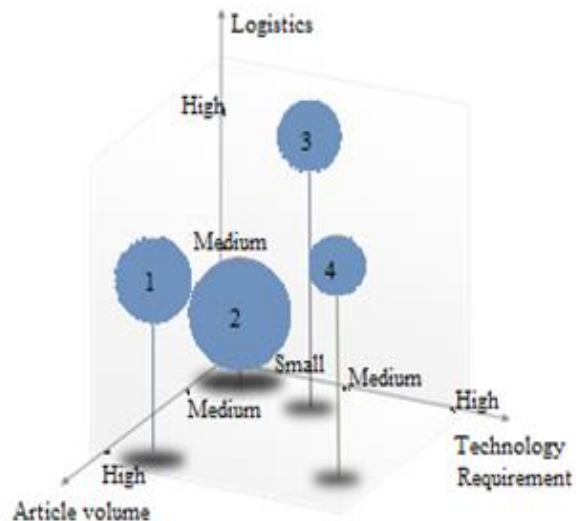

Figure 4: Cluster Design

3. RESEARCH METHODOLOGY

3.1. Introduction

Research is a "structured inquiry that utilizes acceptable scientific methodology to solve problems and create new knowledge that is generally applicable". Research methodology is generally described as the systematic way to give the solution for all issues involved in the study. This chapter gives the clear-cut idea on what the investigator carried out to complete their research study, especially how the data was collected and what are all the analysis applied to analyze the findings. It comprises of research approach, data collection methods, reliability and validity and analysis which are adopted in this study.

3.2. Research Approach

"The research approach indicates whether the use of theory is explicit within the research design"[26]. Further, illustrated that research approach substantiates the argument with the support of a theory. Generally, the research approach is used to increase the validity of the research by effectively illustrate the importance of research. This approach mainly determines the concepts of posed research questions.   In the research methodology, one of the most significant steps is to choose the relevant research approach catering to the objectives of the research study. They are two types of research approaches they are inductive approach particular for qualitative studies while the deductive approach for quantitative studies.

3.3. Qualitative approach

There are three research methods such as quantitative, qualitative and mixed research methods.

Not everything that can be counted counts and not everything that counts can be counted. (A. Einstein) So, the present study adopted qualitative research methods on the basis of document studies, observations and interviews from the real world projects as discussed in order to meet the research objectives. The difference between quantitative and qualitative research is argued by various authors who described the qualitative research design as: "the activities of collecting and analyzing data, developing and modifying theory, elaborating or refocusing the research question, and identifying and dealing with validity threats are usually going on more or less simultaneously, each influencing all of the others. In addition, the researcher may need to reconsider or modify any design decision during the study in response to new developments or to change in some other aspect of the design", described the qualitative research is interactive and open, and observation precedes theory while the quantitative research is theory precedes observation. For the present study, a qualitative method of data collection was utilized where the data is expressed in words rather than expressing in a lot of numbers. Since the researcher has no clear vision of the outcome of the study, the qualitative methodology was adopted, where input from interviewee was collected by going deeper into a subject and after gaining more knowledge about the subject, it is also possible to reformulate the questionnaire if needed, through employing this approach, the information which is gathered is immensely large and it consumes much time and effort to interpret the data.

"Scientific measurement is a key point to quantitative research. Because quantitative data is numeric, the collection and analysis of data from the samples are more commonly used. In its simplest terms, the more representative the sample is, the more likely it is that a quantitative analysis will accurately and precisely reflect a picture of the impact of the outcome when generalized to the whole industry, specifically automotive industry. In the automotive industry, whole research is based on the data analyzed from various segments and customer satisfaction with the results. Competitive strategy accounts for very impacting factor. Data collected using poorly designed questionnaires may lead to wrong results which in turn leads to disaster".

3.4. Case study method

The methods of collecting the data from real-time contexts are case study method. Strategy involved performing a research that includes an empirical investigation of the specific contemporary phenomenon within the context of real life and with the help of multiple evidence sources. This method provides the considerable ability to provide answers to the question how? why? and what? It is the reason for choosing the case study method in exploratory and explanatory research. The case study method refers to "A strategy that involves empirical investigation of a particular contemporary phenomenon within its real-life context, using multiple sources of evidence". In case study method, they are two steps involved such as the first step is defining the case. The strategy of a case study is usually employed in research of explanatory and exploratory nature. Interviews, observation, documentary analysis, answer to questionnaires, etc., are the techniques used to collect the data. It is essential for a case study to include multiple data sources. For example, quantitative data can be collected using the questionnaire whereas qualitative data can be gathered through other methods like a semi-structured interviews group. Secondly, deciding whether the case study has single or multiple case studies. A single case design may be enough to extend, confirm, test or challenge a better-formulated theory if the theory identifies a clear set of circumstances and propositions in which it is believed that the propositions are real. Therefore, the present study adopted a single case design.

"There is a great demand, especially in the field of automotive industry, for research which is able to build knowledge from observation of phenomenon within a contextually rich environment, where frequent feedback and customer satisfaction plays a key role. Most management dissertations and theses rely heavily upon case studies, either for supporting information or for an exposition of the main thesis of the work - it would be a serious blow to management research if, as many detractors contend, there is no real value to qualitative, case-based research. Important factors in the use of case studies should be summarized, and proper application, choice of a suitable case study protocol, understanding of key research and practical pitfalls and applications should be kept in mind".

3.5. Data Collection Method

This method is carried out to fulfill the research objectives, primary and secondary are the two data collection methods. The present study adopted secondary data for data collection. The semi-structured interview is adopted as data collection technique so as to answer the research questions. In the case study research, the interviews are a most suitable method for data collection. The semi-structured interview also provides the solutions are aroused by the participants and proper answers also given. Further, additional details are taken from follow-up questions. Secondary data can be collected through different techniques and approaches. This data collection approach encompasses both quantitative and qualitative information. The researcher may use secondary data collection in which data is collected using books, research paper, journals, websites and data from the internet with respect to the Supply chain segmentation in automotive industries specifically in Germany.

3.6. Semi-structured interview

The interview was defined as a data collection method which is accurate and the implication level supports the perception of an interviewee. The present study conducted the semi-structured interview based to identify the suitable methodology of supply chain segmentation. Before starting the survey process, the researcher planned to conduct the semi-structured interview. However, the researcher was able to conduct several interviews. Some of the data were obtained through secondary data.

Following areas in the automotive industries will be greatly impacted by this Big Data. Mainly, these are also some of the basic factors to German industries impacted by the data.

Conceptual Design

From data gathered throughout the life cycle of the vehicle, auto manufacturers will use Big data to shape future vehicle designs. Every part of the vehicle can be tweaked and tuned. Real-world data collected from billions of miles driven will undoubtedly influence safety, aerodynamics, performance, power algorithms and other fundamental elements of the vehicle.

Drawing Board

Consumer sentiment and information gathered from actual driver usage will affect the features included in new car designs. Efficiencies gained in design, production volumes and manufacturing through Big Data in the auto industry will make it economically feasible to make today's options tomorrow's standard equipment. Analysis of service and in-field performance will influence which components are chosen, and will pinpoint when selected parts should be redesigned for specific tasks.

Procurement

Supply chain management optimized by Big Data will help manufacturers continue to wring new efficiencies from the procurement process.

Manufacturing

On the assembly line, data gathered throughout the building process will be used in predictive analytics to improve manufacturing simulations and keep tabs on machine performance, making the next assembly line even more efficient and flexible.

Marketing

Big Data is already having a major influence on vehicle marketing. Social sentiment will play a growing role in manufacturers' plans to design new vehicles. Customer feedback on current models also helps marketing experts identify key themes and messages for new campaigns.

Finance

Understanding consumer habits, preferences and buying power across market segments gives manufacturers insights needed to develop more-effective financing programs. But that's just the first step. New insights from Big Data analyses of sales and in-field use data will help captive financing companies develop new services and new revenue streams.

Performance

Real-world vehicle performance will both influence and benefit from Big Data. Information gathered from vehicle systems, driver inputs and external conditions will exert a major influence on the design of components and the characteristics of future vehicles.

Service

Like performance, service will benefit as both a contributor and a user of Big Data in the automotive industry. Information gathered through millions of service events will provide invaluable feedback to designers. On the other end, predictive analysis will help identify problems before parts and systems malfunction, simplifying the service process and saving drivers from a nerve-wracking roadside breakdown.

Aftermarket

With manufacturers acting as a conduit, aftermarket services to drivers, based on insights gained from a combination of Big Data and location-based capabilities, are expected to explode. Travel services, insurance, petroleum, maintenance and entertainment are just a few of the industries that will benefit by developing partnerships to leverage data and reach willing drivers with special offers and features.

3.7. Reliability and Validity

In any research, it is a must to carry out in a proper manner; the study results are valid or reliable. Therefore, some of the types of validity were recommended by Saunders et al (2009) such as construct, external and internal validity.

Construct validity: This validity covers the relationship between observation and theory. This was making sure by conducting interviews.

Internal Validity: This validity covers the degree to which the outcomes could be trusted on the basis of the context of the study.

External Validity: This validity covers the degree to which the outcomes could be generalized to the entirely applicable context. Generalization has attained by the way of conducting qualitative survey and case study and the ability to reproduce the outcomes from each approach in the context of German automotive industry.

Reliability: The quality of measurement is concerned with the reliability. This reliability has been attained in case study method by using a similar set of questions for all the respondents. In semi-structured interviews, few questions are varying slightly in different cases.

Data Analysis

In qualitative research, the most common part is content analysis. The present study adopted a qualitative content analysis. Content analysis is a powerful tool to determine the authorship and also to examine the patterns and trends in documents. Furthermore, this analysis provides an opinion on an empirical basis for monitoring the segmentation.

4. RESULTS

This section discusses the importance of Supply Chain Segmentation in different Industries in Germany market. The researcher deals with various aspects of the supply chain. To analyze it critically the researcher takes into consideration the lead time requirement, Service level requirements, Purchase History, Geographical, Sales trends, Order, size and volume and Channel segmentation needs [13].

4.1. Market Overview: Transport and Logistics market in Germany

Germany is the Europe's Largest Market constitutes about 20 percent of European GDP and is identified as a home country for majority of the European Union (EU) population with a population of about 17 percent. The SCM is measured based on the logistic performance index as the recent report reported that the global logistic is measure, based on the Logistics Performance Index (LPI) measures the logistic "friendliness" of 155 countries. A country's score is measured in six key areas and after the analysis, it was proved that Germany ranked as high position category based on the Logistics Performance Index. The Logistics Performance Index (LPI) includes:

1. Efficiency of the clearance process with border control agencies and customs;

2. The quality of infrastructure related to trade and transport;

3. The level of arrangement of competitively priced shipments;

4. The quality and expertise of logistics services;

5. How well the consignments are tracked and traced;

6. The rate at which shipments reach their destination within the scheduled and/or expected delivery time.

The figure 5 indicated the market overview of different countries which was reported by the recent forecast report from TI GlobalContractLogistics it was evident that Europe – UK and Germany are the three largest markets which have reported having continuous growth until 2017.
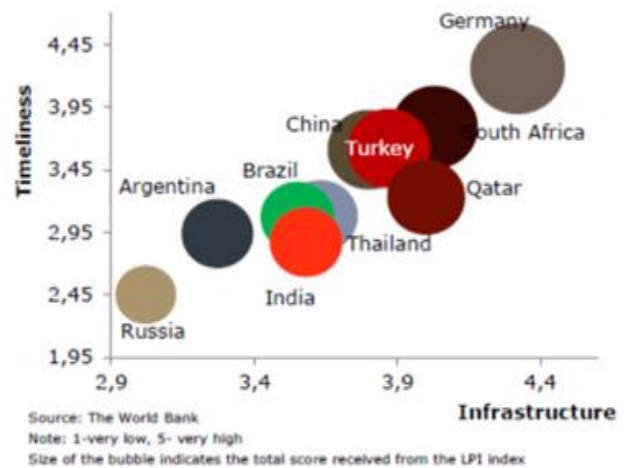

Figure 5: Different countries market

4.2 Supply Chain Factors affecting and Influencing Supply Chain Segmentation

4.2.1 Lead time requirement

Mentzer et al (2001) [11] define Lead time requirement as the moment from when a consumer places the order to the till the time when it ready to be delivered. Hugos (2013) [30] commented that the lead time is made up of Pre-processing Lead Time, Processing Lead time and Post-processing Lead time

The following table depicts the Lead Time requirement of all these four industries.

Table 1: Time delay in fulfilling order

Industries	Manufacturing	Order Scheduling	Order bank	Order entry	Sequenced order	Loading delay
Automobile industry	6%	40%	29%	14%	17%	5%
Fashion industry	4%	34%	27%	11%	15%	3%

| Retail industry | 5% | 35% | 28% | 14% | 15% | 4% |
| Hotel industry | 4% | 25% | 20% | 8% | 10% | 2% |

Source: Adopted From Barney (2012)

4.2.2. Service level requirements

A Service Level Requirement (SLR) is a statement that is provided by a consumer to the provider of the service to describe their service requirements. It deals with fulfilling the customer needs and preferences. Stewart (2015) [17] stated some of the main steps that need to wake in order to implement an SLR to the company are as follows:

- 01 • Obtain top management approval
- 02 • Establish SLR project team
- 03 • Identify to which SLR will apply
- 04 • Preparation of draft SLR specification
- 05 • Determine basis of charging by internal providers
- 06 • Finalize and adapt SLR
- 07 • Designate SLR managers
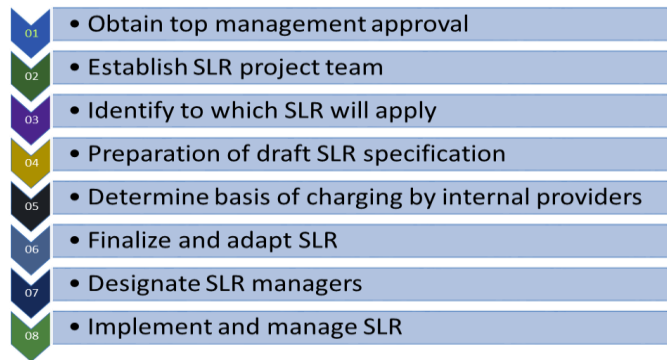- 08 • Implement and manage SLR

Figure 6: Steps taken to fulfil SLR (Source: Adopted From Stewart (2015))

In the case of automobile industry, the companies have taken the great initiative in understanding the requirements of the customers and then manufacturing the vehicles.

4.2.3. Purchase history

The purchase history has been crucial in determining the supply chain of an industry. By understanding the trends in the previous years, the industry has designed and its supply chain to increase its productivity and profitability. In the case of automobile industry, Mentzer (2011) [34] observed the trend of owning a sports car Supercar, large SUVs and luxury saloon has reduced considerably throughout the years. On the other hand, UK citizens are more to take superminis and hatchbacks in 2014. Hugos (2013) [30] stated that Ford Fiesta received maximum registration of 131,254, followed by Ford Focus with 85,140 registrations, Vauxhall Corsa with 81,783 and Volkswagen Golf with 73,880. This industry follows a Supply chain planning system. Here, the customer requirements are closely assessed.

4.2.4. Order, size and volume

The automobile industry follows the Supply chain planning system in order to understand the order and determines the size and volume of its production accordingly. It studies in detail the demands and requirements of the cars. It assesses on the

amount of order before preparing a manufacturing plan. Peck [12] stated that the estimation of the quantity is important to assess the size and volume of its production. It also makes an important decision regarding the showrooms and location of the final delivery.

4.2.5. Sales trends

In the automobile industry, proper management of supply chain has led to the sale of 2,476,435 new cars in the last two years. The biggest grosser have been Ford, Vauxhall and Volkswagen. However, Renault also saw a 44% jump in their sales. Recent sales trend showed that there has been 7% drop in sports cars. Chrysler sales have fallen by 21%. The following chart shows the ups and down in sales of companies (Cips.org, 2015) [22].

Table 2: Sales of companies in 2014 (Adopted From Cips.org (2015))

Companies	Sales in 2014	Up or down from 2013
Audi	158,987	+11.9
BMW	148,878	+9.8
Chevrolet	2774	-76.2
Honda	53,544	-3.8
Mercedes-Benz	124,419	+13.7

From this chart, it can be observed that from 2013, the demand for large and supercars have diminished. In place of that, superminis and compact cars are more in demand. Hence, the suppliers have designed their supply chain in order to cater to the consumers.
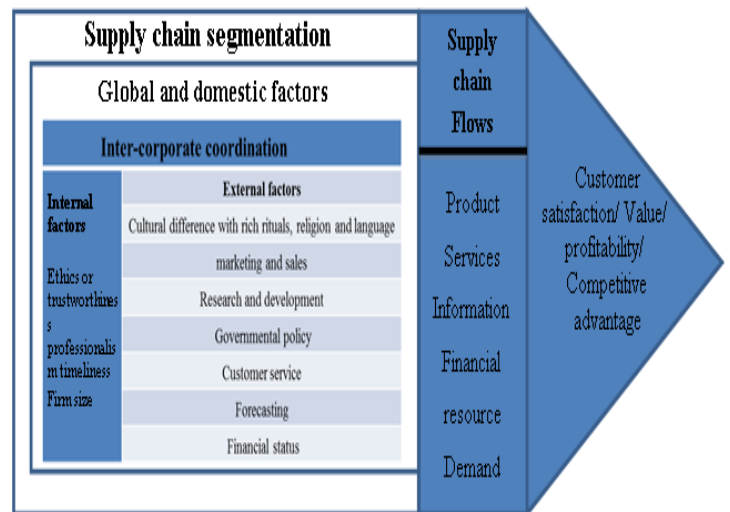

Figure 7: Supply chain segmentation enabler

4.2.1 Channel segmentation needs

In the automobile industry, the using of CO2/km as a metric has been effective in product transparency. This metric has enabled to regulate top-down targets for companies. It has created new competition in the sector. The main focus of this metric has been the environment.

4.2 Summary of the findings

From the findings, it was observed that the complex competitive world, if any firm there is a necessity to retain their position in attaining success. Further, the business environment is getting more complex for the purpose of developing innovative technologies, globalization drivers, growing business partner numbers and business models. This chapter finding observed the World Bank report of 2015 revealed the market overview of different industries in various countries. Further study report analyzed the different external factors like cultural variations, resource-based view, government incentives and regulations, financial status and customer service and forecasting. While internal factors like the size of the company, ethics and trustworthiness were observed. Moreover, the study observed the supply chain factors which affect and influence the supply chain segmentation.

From this supply chain factors, lead time requirement is essential to fulfil the customer requirement, different industries have taken the time delay in the pre-processing process, industries like automobile, retail, hotel and fashion industries. Some of the important processes of those industries had taken time delay like manufacturing, order bank, and order scheduling, sequenced order, order entry and loading delay. Automobile industry taken 5 percent loading delay followed by retail industry has taken 4 percent after that 3 percent was taken by fashion and finally least time delay was made by hotel industry at 2 percent.

Service level requirement is important for industries to fulfil the requirements of consumers in order to retain them and improve its own productivity. On the other hand, the fashion industry is the most attractive one compared to the other there. The industry takes the great initiative in fulfilling the requirements of the consumers in order to maximize their sale.

5. MEASURES FOR MAXIMISING THE EFFICIENCY OF SUPPLIER SEGMENTATION IN AUTOMOTIVE SECTOR

In this thesis, we aim to provide a systematic management of an Organization's suppliers in order to derive the maximum benefit and results which are beneficial for all the parties involved in the Supply chain (End to end). The automotive organizations that contain SCM need to have systematic processes which suggests that there is rigor that ensures that the process itself delivers and the second element is that supplier segmentation and management need to be separated from category management and strategic sourcing and need to be considered as a standalone process worthy of significant investment and resources and the effort to drive value throughout the entire product lifecycle.

We need to have the following measures that need to be employed in order to derive the maximum efficiency from the supplier segmentation process within the automotive sector

5.1 Ensuring that the organization gets what was contracted for from the suppliers

An organization shall keep enough effort in sourcing the right products or services from a particular supplier and then after a period of time (for example 6 months or so) there are complaints from the organization is not really getting from a particular supplier or the organization needs to intervene significantly to know what is happening. All this is nothing but cost to the organization which could be a quality problem or delivery problem or a customer complaint to the organization. All this could be categorized as Value leakage and the goal is to minimize or suppress the Value leakage from the suppliers.

5.2 Single interface between Supplier and Customer

Nowadays organizations have multiple interfaces between supplier and customer and those interfaces will be sitting in different levels of the organizations, having different functions or roles and sitting in different geographical locations. Good supplier management is ensuring clarity about roles and responsibilities and removing the duplication of efforts that goes into those relationships.

5.1 Good Supplier segmentation process

We need to have a mature process to define the strategic suppliers for an organization. We know that good supplier segmentation will bring value to the business and it needs to be also accepted that we could not employ such a process to all the suppliers that an organization has because it is time/cost consuming and not worthy. A good segmentation shall determine which are the most important suppliers and the organizations can build some consensus around them [15].

5.2 Proper tools, guidelines and understanding of Supplier management

The idea is to have a good understanding of what an Organization actually does with its suppliers. A good supplier management program shall have tools and guidelines of how an organization needs to engage with its suppliers, the related KPI's performance management meetings etc. This tools and guidelines are easily understandable by everyone and could be easily operable. These tools are not the soft skills but the everyday hard tools that are consistently applied.

5.3 Overcome the get and forget mentality from the suppliers

The suppliers generally place their best efforts to get the contract from an organization and it may happen that the suppliers do not have a commitment as earlier. So the idea is to drive focus, seriousness and commitment from the supplier side to get more value to what has been agreed.

6. CONCLUSION

Currently, automotive companies are embroiled in a worldwide industry transition. Nearly everything about their businesses is changing – their products and services, where and how they're sold, the degree of governmental involvement, even the fundamental business models of the industry. At the center of this massive change is the automotive supply chain. For automotive companies, emerging from this period of transition as healthy, vibrant businesses depend in large part on how their supply chains adaptability. Greater speed and efficiency will help, but won't be enough. Automotive supply chains need fact-based intelligence to predict which future scenarios are most likely to occur – and the flexibility to get repositioned before they do. Now more than ever, smart wins.

Supply chain management is as essential key in order to increase the organizational effectiveness. It also leads to a better realization of the goals of an industry such as better customer service and increase of productivity and profitability. SCM describes the chain linking each element of the manufacturing and supply process from raw materials through to the end user, encompassing several organizational boundaries. SCM has been a major component of a competitive strategy to enhance organizational productivity and profitability. In recent years the world has been seen as one big supply chain as it touches on major issues, including the rapid growth of multinational corporations and strategic partnerships; global expansion and sourcing; fluctuating gas process and environmental concerns. Driven by immense customer expectation, industries are continuously reorganizing their business strategies and models. It is important to integrate a deep knowledge regarding demand in the supply chain in order to gain a maximum competitive advantage. The automobile, retail, fashion and hospitality industries operate closest to the consumer. Hence these industries have been taken in order to analyze the management of supply chain.

The present study completely focuses on a purely different industrial setting. As past researches on supply chain segmentation are limited in the context of industrial focus, this study analysis gives novel ideas to the topic. Based on the literature review the following value chain analysis is presented for the German industry's SCM. From the review, it is clear the cultural difference, marketing and sales, research and development, the governmental policy, customer service and for casting significantly allows enhancing the performance of SCM. In addition, these supply chain management factors allow interlinking suppliers and customers. Thus the firms in Germany of any industry needs to adopt the proposed model as

a guide and reminder to practitioners to include all the typical business functions in supply chain management planning, organization, and processes. The German industries must consider the internal factors like trustworthiness or ethical behavior, commitment, truth in the supply chain to obtain the competitive edge. From the above findings, it is proposed that the supply chain lower costs with enhanced customer satisfaction and value will ultimately support in achieving the competitive advantage. The efficient SCM is built on the basis of good customer services and process of materials flow, information, and managing relationships across enterprise borders to deliver increased customer service and economic value through synchronized management of the flow of physical goods and related information from sourcing to consumption

Many supply chains are not properly equipped with entering the competitive world. In order to resolve this, future supply chain focus on major key areas:

- Firms need to modify their operation strategy

- There is a need for breakthrough change in strategy and operations of the firm, as the previous strategy does not reflect the future phase of the industry.

- There is a necessary to initiate new innovative ideas in the form of leading practices, new solutions. For instance, in order to measure the impact of novel parameters on the supply chain.

- The increased collaboration that is essential for all members involved in supply chain process.

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