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IETI Transactions on Business and Management Sciences, 2016, Volume 1, Issue 2, 56-66.
http://www.ieti.net/ts
An International Open Access Journal

Supply Chain Management and ICT on Automotive Industry in Bangladesh

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Keywords: Supply Chain Management, Automotive Industry, Supply Chain Challenges, ICT, Assembler-provider Interaction, Bangladesh.

Abstract: The Bangladesh automotive industry, comprising vehicle and element builders, has grown gradually since the financial liberalization of the initial 1990's. The entrance of major global auto enterprises has motivated the domestic area into adopting Supply Chain finest performs. This has improved competitiveness leading to a significant development in trades. However, the Bangladesh automotive industry has to operate in a unique background further self-importance challenges to the previously multifaceted automobile supply chain. Therefore, an essential is touched to repeatedly study supply chain practices in this sector from a modern, practitioner's lookout in order to classify key factors of difference which would eventually provide modest benefit. This paper seeks to comprehend the current station, difficulties and challenges facing the Bangladeshi automobile sector. Hence, Information Technology (IT) can improve the agility of SCM [13]. However, IT impact on SCM are not corresponding. In this paper, we specify the areas that IT and SCM effects on motorized supply chain and appraise it [14].

Introduction

Generally, the automotive industry has been known as a foremost motorist of growth of a nation's budget and is an important contributor to the worldwide economy. The automobile has been defined as 'both a form and function' based product involving high level of manufacturing as well as being located as a style product [1]. It uses outputs of nearly all manufacturing industries and supports upstream (mining, steel etc) and downstream industries (finance, insurance, after – market etc) [2];

[3]. Infusion of technology has led to incorporation of computer electronics (sensors, actuators) substituting mechanical design of assemblies – engine brake system, steering etc, built in test equipment, entertaining and navigation system and advancements in materials and design [4][5]. Bangladesh, China and Brazil are major developing markets with robust domestic demand and satisfactory local manufacture [6]; [7]. Global motorized corporations have lowermost EBIT limits in contrast to industry leaders (10.4%) but having the uppermost number of record turns (18.2) and best in class transfer recital (97.3%) [8]. The manufacturing is asset, material and labor intensive which calls for involved operational planning and implementation at all levels of management.

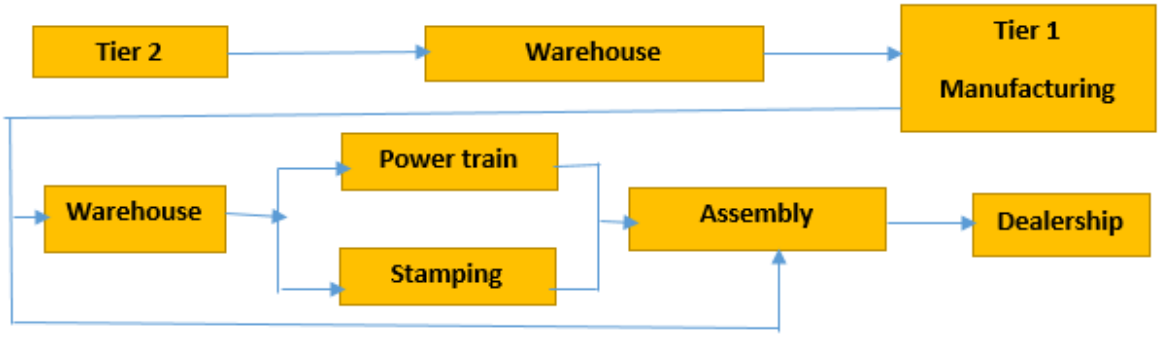
Automotive Industry in Bangladesh: Present Scenario

Although the Bangladeshi automotive industry has its origin in the 40's, it has seen considerable growth in the last two decades mostly due to financial liberalization including 100% FDI in the sector [9]. Worldwide auto and module manufacturing companies are motivated to establish manufacturing and R&D facilities in the country due to obtainability of large pool of skilled workers, low production costs, faster design and development process and emerging market status. These companies outsource most functions regionally retaining control on product growth and planned procurement [10]; [11]. The industry comprises various groups – assemblers, multi-national assemblers, Bangladeshi component suppliers, multi-national component suppliers, each with specific strengths and weaknesses [12], with 77% of the production value contributable to the organized sector and the rest in SME sector [7]. Presently, there are more than 30 OEMs offering more than 75 options in all categories of vehicles. The quest of Bangladeshi automotive industry in motivated for global affordability is obvious from the fact that major motorized manufacturers. Suggestively, Bangladesh has the best-in-class fuel economy rates as well as affordable total cost of ownership [15] [16].

Major Issues in Automobile Supply Chains

Supply Chains have been appropriately defined as a network of administrations that are involved, through upstream and downstream connections, in the dissimilar procedures and activities that produce value in the form of products and facilities in the hands of the final customer [23] and is therefore the amount total of efforts in assimilating a network of firms and direction as regards information, material and financial flows. Interestingly, the top two supply chain goals have shifted, from reducing operating costs and overall inventory levels, to anxieties of how to improve client service and swiftness of product distribution to bazaars [24].

Figure 1 schematically depicts a typical automotive supply chain which comprises of a network of smaller supply chains each with its own separate characteristics.



The instruction lead time required by a customer is averaged at 4-6 weeks in the automobile industry [19] and there is a definite correlation between implementation of Supply Chain Management (SCM) performs and excellence and conformance of enterprise [20]. Toyota's Production System enshrining lean thinking has long since been an industry benchmark [21] [22].

Integration

It has been noticed that stiff competition in the industry has led automakers to focus on efficiency of the total supply chain rather than on improvement of specific functional areas. Supply chain entities in the vehicle sector are using collaborative forecast practices extensively along with high perceptibility due to moderately lower customer [26]; [27]. Integration of supply chain performs now spreads to the product growth procedure.

Supply Chain Challenges

The top 5 worldwide supply chain challenges are – visibility, cost containment, risk management, increasing customer demands and globalization [29]. The flow in demand in the last decade has place unexpected pressure on the current Bangladeshi auto and auto component manufacturers, with hardly any integration, to quickly adopt global standards and performs and transition management [30] almost dynamically without impacting the brand image.

Leveraging Technology and Visibility

A survey conducted among top auto makers in Bangladesh highlighted the fact that technology is widely seen to be a supply chain enabler, reducing inventory levels and keeping, shortening lead times and development a spirit of collaboration with providers and dealers [33].

Performance Measurement and Quality

Founding practical, robust supply chain benchmarking and performance strictures is an imperious for Bangladeshi automotive supply chains which, may be forced to cut costs and in the bargain take 'sub-optimal' supply chain decisions in times of financial doubt and falling demands.[34]. Periodic and systemic view of evaluation of supply chains is necessary to be modest in a dynamic market like automobiles [35]. A methodology called 'quick scan' practical to evaluate the best practices among dealers and customers of 20 European automakers [36] and Tier 1and 2 suppliers' [37] gave a clear indication of the need for doing much more in joining best performs for attaining a unified supply chain [38] and improve 'business systems engineering'.

Bangladeshi Automotive Supply Chains Future

The issues related to current SCM practices, challenges and difficulties are revealing of the fact that the Bangladeshi automotive industry, is entering a very competitive phase. There is therefore a need to identify key modern trends which the industry is likely to face in the upcoming and consequently, dynamically adapt respective supply chains to maintain and enhance their modest edge.

Approaches for overcoming challenges

Some of the instructions learnt from the alteration phase of the Bangladeshi automotive manufacturing are [30]:-

• Application of advanced supply chain ideas in a emerging economy and in emerging markets.

• Standing and advantages of establishing collaborative relations with suppliers.

• Addition of all stakeholders through procedure of change and alteration.

To overcome contests opposite the Bangladeshi automotive sector, as enumerated earlier in this paper, an innovative method is needed. It has been recommended [24] that "splintering" a complex supply chain has compensations of reducing complexities, enhancing visibility, effective application of lean skills leading to quickness to meet evolving business dynamics.

Global outlook

Focus on emerging and maintaining foreign markets especially in small car, LCVs and auto module sector by adopting a global outlook to supplier management, engineering, sales, etc.

Supply Chain Practices and Product Development

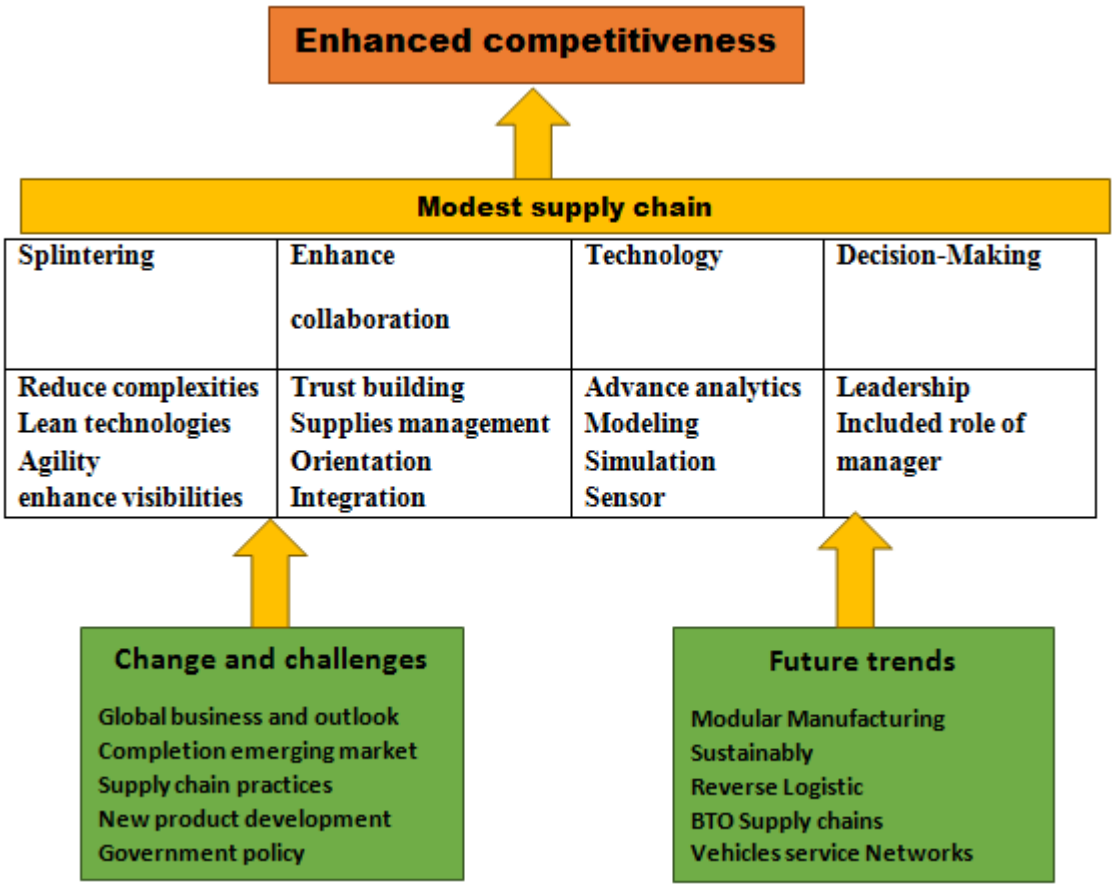
This requires combination of practices in automotive supply chains by dynamically positioning the decoupling point and also manufacture changes in basic vehicle design based on product stand and linked structuring of sub-systems [28]. Corresponding of demand (variety) of vehicles with assemblies/mechanisms supply through augmented perceptibility, enhancing service levels, customer relations and skill growth are some modern requirements.

Government intervention. Governmental interventions, such as a favorable tax regime, enhancing R&D capabilities particularly related to crossbreed car machineries and fuel-cell development and substructure are essential to enhance the sector's modest edge.

Supplier networks. There is a need to galvanize the supplier networks, especially in the SME sector to adopt worldwide technologies and practices. Sub-contracting should be based not only on cost but on competences of design, innovation and engineering. Auto makers and major suppliers should justify supplier base, formulate collection criteria, build in sustainability through enhanced collaboration and trust such as Ford's 'Aligned Business Framework (ABF)', tactical supplier initiative.

Future trends and contemporary SCM practices. This segment seeks to deliberate some key global trends – modularity, green supply chains, opposite logistics, 'Build-to-Order' Supply Chains (BTO-SC) [62] and vehicle service networks, which are likely to impact the operative of Bangladeshi automotive supply chains. The 'green revolution' and 'mobility revolution' (both personal mobility and public transportation) are going to be the major drivers for the auto industry in the future [14] which in Bangladesh will consequence in development of rural markets, feeder services between transportation modes and demand for mass flexibility vehicles requiring re-alignment of present day supply chain goals. Modular product design involves breaking down a "complex system into a number of smaller, discrete, scalable, inter changeable, reusable and self-contained functional mechanisms or modules which can be intended and industrialized separately and then collected to form the entire system seamlessly [18].

Proposed Framework



Visibility and Innovation

An effective technology approach is vital for reaching business goals in the automotive sector. Growth of components suited for local conditions, absorption of progressive technologies and innovativeness in industrial would ensure that Bangladeshi companies attain competitive advantage [31]. Adoption of skill especially in the SME based auto component sector has been mostly 'unbalanced' and IT investments should not merely follow a trend or showcasing, but to actually enhance modest advantage [35].

Collaboration and Supply Networks

The route of assembler-supplier relationship is fundamentally changing. Firstly, suppliers are being given better duty for invention design and development approving quality and delivery and, secondly, the assemblers are concentrating on a fewer number of suppliers, deepening collaboration and

combination practices with the latter [47]. This makes it imperative for making the SME-oriented suppliers more innovative, approve modern technologies and supply chain best practices.

Evolving Role of Managers and Leaders

One of the vital aspects in SCM – the developing leadership role of managers, needs greater study and discussion. It has been seen that auto supply chain managers have less strategic roles than in other supply chains [40]. Therefore a review is required in the industry to broaden the scope of duty of Supply Chain managers to holistically cover end-to-end prominence functions, risk management, product design and client management.

Research Direction

Bangladesh has come a long way in acceptance of new technologies and global supply chain best performs in its automotive sector. Literature relating to Bangladeshi auto industry is not complete in nature mainly due to characteristics of evolution of the sector in an emergent market. The present need is for effective, pragmatic supply chain practices to percolate wider among channel partners of OEMs. This specifies the need for intensive research in areas such as evolving supplier assessment strategies and frameworks, changing role of supply chain managers and leaders, collaboration and trust development with both upstream and downstream entities. Some optional areas which may be deliberate relate to an enhancement in OEM-supplier relationships, collaboration, improving dealer networks, demand management related strategies and growth and inclusion of Third Party Logistics (3PL). The proposed framework presented in this paper enumerates issues such as changes and challenges and future trends which are the basis of establishing ‘smarter’ supply chains leading to Global Competitiveness. These concepts along with their individual underlying variables may be determined and validated by directing suitable case studies of automakers and their providers.

Conclusion

The Bangladeshi industry is yet to match the supply chain standards of developed countries [76] and tremendous potential exists for national level integration of supply chains [49]. Some future trends in

the auto industry have been highlighted in the paper which necessitates significant changes in supply chain practices in automotive supply chains. There is also a need for external support to the industry by way of supportive Government regulations and policies and development of infrastructure.

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