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An Exploration of Firm Level Competitiveness through Choices in Manufacturing Strategy: The Case of Indian Four Wheeler Passenger Vehicle Companies

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Abstract: In today's fast changing uncertain business environment several factors influence competitiveness of a manufacturing firm. There are several competing priorities such as cost, quality, delivery, flexibility and innovation on the basis of which firms compete with each other. Together with these competing priorities, technology plays a significant role in manufacturing competitiveness that ultimately leads to firm competitiveness. This paper explores different perspective of manufacturing strategy, different competing criteria of competitiveness and the role of innovation in manufacturing strategy for achieving competitiveness. Using the cases from Indian four wheeler passenger vehicle companies, the paper presents the use of innovation in gaining competitive positioning within Indian four wheeler passenger vehicle industries. By using case study and systematic review as a methodology this study outlines the role of manufacturing strategy and role of various forms of innovation in achieving competitiveness. The findings have important lessons for firms in their efforts towards innovation. It is seen from the various examples discussed in the study that there is a growing conviction that innovative practices ultimately contribute to the success of firms.

***Keywords*:** Manufacturing Strategy, Competitiveness, Innovation, Passenger Vehicle Companies

1 Introduction

In any market economy, a customer makes a decision to buy or not to buy an offered product based on certain factors such as cost, quality, delivery, customization etc. The ability of a firm to attract customers and to offer better products and services is essential for survival of any firm. In order to compete effectively in a market, a firm needs to continuously update its offerings to meet customers' need in better way. The competitiveness of a firm has been described as an ability of a firm to win orders in the market (Hörte and Ylinenpää; 1997). The importance of manufacturing strategy in firms' competitiveness has always been important. Several authors have found that existence of manufacturing strategy contributes positively to a company's performance (Demeter, 2003; Milling et al., 1999). A carefully designed manufacturing strategy significantly contributes towards competitiveness. Manufacturing strategy is a systematic directional plan that guides a firm and determines a long-term path of a firm. The emerging paradigm of manufacturing strategy that appears in the literature suggests that, innovation is one of the most important strategic imperative along with cost, quality and flexibility. In today's dynamic environment, role of innovation has gained importance in the light of ever decreasing product life cycle. Innovation facilitates a firm by providing low cost, high quality customised and differentiated products. Further, innovation also facilitates in developing unique products that are needed in highly competitive uncertain environments.

Conceptual in nature, this paper explores different perspectives of manufacturing strategy, competing

criteria in different market requirements and contributions of manufacturing strategy toward manufacturing competitiveness of firms. Using case studies, we illustrate the use of innovation as a means of deriving strategic competitive advantage by key players in the Indian four-wheeler passenger vehicle industry.

2 Methodology

Published literature and their cross references were used as a starting point for this research. Structured literature review was carried out by using various online databases of journal publications for all the available years and also research institute libraries. Different perspectives of manufacturing strategy and different criteria for competitiveness by various researchers were studied through literature review. Using case studies of major Indian four wheeler passenger vehicle companies the focus of study was on well-established firms that have long and successful history of innovations in technology adoption and innovative practices.

3 Manufacturing strategy and Competitiveness

According to a study report by Commission on Industrial Competitiveness (1985), competitiveness at national level generally refers to the ability of a country to produce goods and services in order to fulfil the demand of international markets, while retaining and increasing the real income of its citizens. Recently, attention in the field of competiveness has shifted towards competitiveness at the firm level as competitiveness in domestic and international level ultimately depends upon firms in the country. At the firm level, competitiveness has been defined as the firm's ability to retain and expand its market share and increase its profits (OECD, 1993; Clark and Guy, 1998). Recent research in the area of competitiveness proposes that non-price factors also contribute equally towards competitiveness. The range of non-price factors include several factors such as human resource factors, technical factors (research and development capabilities and ability to innovate) and organizational factors, both internal to firm and externally organized through relationships with other bodies - customers, suppliers, public and private research institutions, and other firms (Clark and Guy, 1998). These factors collectively determine the firm's ability to compete successfully in the market in the face of changing technological, economic, and social environment. However, manufacturing competitiveness is difficult to define, because its two basic elements - price and quality of product- are not easily comparable. Price comparison without regard to quality is difficult and quality is difficult to compare in face of product differentiation. National Manufacturing Competitiveness Council (2006) suggests that competitiveness of manufacturing sector is a very broad multi-dimensional concept that includes various aspects including price, quality, productivity, efficiency and macro-economic environment. The OECD (1996) definition of competitiveness, which is widely cited in the literature, also considers factors such as employment and sustainability for defining competitiveness. Research in the field of manufacturing strategy has significantly developed and refined over the years and different perspectives have emerged, leading to three broad paradigms of competitiveness of the firm (Voss, 1999, 2005).

3.1 Competing through Manufacturing: Capability based approach

In this perspective, a firm competes in the market through its manufacturing capabilities. A firm should try to develop manufacturing capability in a related area to gain edge over its competitors.

Further, it is important to identify the dimensions of manufacturing that are required to compete in a market. Firm should align its manufacturing capabilities with its business and functional strategies and the demands of the market place to compete in the dynamic environment. Cost, quality, dependability and flexibility are the four competitive dimensions of manufacturing strategy that have been cited by several authors in the literature. Hill (1995) suggests that it is important to identify those criteria that are necessary to win the orders in the marketplace. These criteria, also called as order winning criteria, comprise of price, delivery, quality, product design and variety. Further, order qualifier criteria are as important as order wining criteria. Order qualifier criteria are qualifying criteria that a firm must meet in order to survive in the market place. New (1992) has used competitive edge factor and hygiene factors to represent order wining criteria and order qualifying criteria.

3.2 Strategic choices in manufacturing strategy

Strategic choice paradigm is based on contingency approach that suggests the need for internal and external consistency between choices in manufacturing strategy (Voss, 1995). Using a contingency approach, strategic choice paradigm suggests that misalignment of firm's internal operations with external market demand leads to mismatch in the market place. Similarly, strategic choice paradigm emphasises that there should be internal consistency between various choices in manufacturing which affect a firm's ability to compete effectively. Choice of process depends on both the market strategy that has been expressed in similar terms to Hayes and Wheelwright (1984)'s volume and variety and on the order-winning criteria (Hill, 1987; Voss, 1995).

3.3 Best Practices in Manufacturing

A best practice in manufacturing is the most recent paradigm among the three paradigms. Philosophies, concepts and techniques should be driven by competitive benchmarks and business excellence models to improve a firm's competitiveness through development of people, processes and technology (Laugen et al., 2005). This approach evolved from diverse sources like Material Requirement Planning (MRP) from USA, Optimized Production Technology (OPT) from Israel and Flexible Manufacturing System (FMS) from UK (Voss, 1995)

Many of the concepts in best practices paradigm have been merged in the overall concept of World-Class Manufacturing. The best practice approach to manufacturing strategy incorporates the World Class Manufacturing philosophy (Laugen et. al, 2005; Voss, 1995). Best practices include practices such as total quality management, concurrent engineering, just in time, cross-functional co-operation, lean production etc. This paradigm mainly advocates that firm's focus should be on continues development of best practices in all areas of manufacturing. This paradigm assumes that adoption of world class practices will lead to superior capability and performance and in turn will increase competitiveness of the firm.

4 Competitive priorities in Manufacturing

Competitive priorities are defined as the focus areas that provide long run direction to a firm (Leong et al., 1990). It has also been defined as a set of manufacturing objectives that links firm to market requirements (Hayes and Wheelwright, 1984; Dangayach and Deshmukh, 2001; Slack and Lewis, 2002; Greasley, 2006). Competitive priorities gives the strategic focus to a company, thus it is essential that it should be clearly identified (Hoehn, 2003). Based on the competitive priorities, a firm

decides manufacturing strategies of a firm (Chen, 1999). Takala et al. (2002) suggest that a manufacturing firm needs clarity on three main areas: (a) determining the competitive priorities, (b) deciding manufacturing objectives, and strategies and (c) implementing action plans in order to compete effectively in the market. Cost, quality, dependability, and flexibility are the widely cited competitive priorities in literature (Hayes and Wheelwright, 1984; Ward and Duray, 2000). Further, other authors have suggested that a customer-service aspect is another important element in competitive priority (Miller and Roth, 1994).

5 Market Requirement and Competing Criteria

5.1 Competing through Price

In early sixties the primary focus of a manufacturing firm was to minimise its cost in order to make its product cheaper. Price had become an important criterion in order to compete in the market that considerably changed approach toward manufacturing. All possible effort was directed towards making the firm more efficient. Firm's manufacturing was mainly limited to narrow product lines and thus standard products with minimum variations were produced. Organisation design was based on the creation of simple, repetitive task with less focus on improving technology and delivering better quality products with different varieties.

5.2 Competing through Quality

In subsequent years, quality of products took an important place in the mind of consumer. Consumer became quality conscious and started to critically select products based on both price and quality aspect. Frequent breakdown, time consuming process, costly repair and replacement and short product life cycle started triggering consumer choice. The evolution of Japanese quality concept also contributed to this evolution and thereby, competing criteria in the late sixties became products with high quality at sharply priced in market.

5.3 Competing though Flexibility

In the late nineties, focus of market shifted from price sensitive, quality conscious supplier market to diversity seeking consumer market, where diversity in terms of colour, design, features, size, volume, weight, shape, timing to market etc. became very important. This led to arrival of manufacturing flexibility. Products are now demanded at right price with good quality and varying degree of varieties. Customisation in products started forcing manufacturer to adopt manufacturing flexibility in order to cope up with new range of consumer demand. Flexibility enables manufacturer to provide a wide range of products, production outputs and delivery options. Shahu et. al. (2012) suggests that incorporating the effects of uncertainty in planning are essential for managing projects. Therefore, role of flexibility becomes important for managing in uncertain environment. Several types of flexibilities have been defined in literature, all of which share a common basis (Shahu et. al.2012; D'Souza and Williams, 2000; Narain et al., 2000; Sethi and Sethi, 1990). For an example, manufacturing flexibility has been categorised into internal and external flexibility (Upton, 1995; Chang et al., 2003, 2011). Internal flexibilities are indirectly related to market requirement and customer demands. Internal flexibility aims to provide customer requirement more efficiently, and includes flexibilities such as machine, component, material and routing flexibility. On the contrary, external manufacturing flexibilities are directly related to customer need thus, in turn affects firm competitiveness. Therefore, manufacturing flexibility is a kind of enabler that enables a manufacturing system to offer shorter delivery lead times, wider product range etc.

5.4 Competing through Innovation:

Shorter product life-cycle significantly contributed towards firm's ability to innovate quickly in a highly competitive market. Thus, rapid and sustainable innovation has become an important factor in achieving competitiveness. Delivering outstanding products in terms of low cost, good quality and customisation require breakthrough advancement in all the areas of manufacturing. During nineties, companies started producing not only wide ranges of quality products at low cost but also customised products unique to the company. In rapidly changing environments, the ability to innovate is the key to competitiveness. Bolwijn and Kumpe (1990) proposed a phase model that describes market requirement in different periods, performance criteria of a firm and ideal type of firms for competing in these markets.

Table 1 Phase Model: Market requirements, performance criteria and ideal types of firms

	Market Requirement	Performance Criteria	Firms(Ideal Type)
1960	Price	Efficiency	The Efficient firm
1970	Price ,Quality	Efficiency + Quality	The Quality Firm
1980	Price, Quality, Product Lines	Efficiency +Quality+ Flexibility	The Flexible firm
1990	Price, Quality, Product Lines, Uniqueness	Efficiency + Quality+ Flexibility + Innovative Ability	The Innovative firm

Source: Blowijn and Kumpe (1990)

6 Technology and Innovation as a source of competitiveness in Indian four wheeler passenger vehicle Industry

Over the last twenties years, auto industry innovation has largely remained product-focused with very few innovations in the process or distribution channel. According to a study of the Asian Automotive industry by the Asian Development Bank,(2002) a vehicle manufactured in 2000 had, on an average, approximately doubled the number of electronic functions than that of a vehicle manufactured in 1990 (Veloso and Kumar, 2002) . Yet while innovation cost has increased, the sales volume to support the high costs has failed to materialize. Over the same period, the average price of a new car has doubled, but average incomes have only risen by fifty percent and this price-income gap has resulted in declining sales volume globally. Automotive assemblers have responded by globalizing model platforms and increasing the proportion of shared-use components implementation of modular and flexible ERP in order to cut costs (Gavrilă et. al, 2009).Other than growing through cost leadership innovation management need to refocus on various other types of innovation such as cost innovation, process innovation and business model innovation. Future innovation is likely to be more concerned with cost reduction through process innovation and extension of the low-cost market through business model innovation than purely functional innovation that was earlier used. This is evident in disruptive innovations of Tata Motors in the Nano car model. The next phase of India's automotive development is likely to focus on innovation rather than on manufacturing alone. This shift is already evident, despite constraints imposed by the economic and the physical infrastructure of India. The fact that many of the Indian manufacturers have either an MNC partner, or they are an MNC subsidiary that helps them in leveraging their deep knowledge and experience for improving manufacturing related functions. Innovation in automotive industry is moving from single innovation to system innovation, focusing on several aspect of innovation at a time. Aesthetic and design aspect of a product is becoming important in customers' decision making these days. In this scenario, automobile

companies are trying to study consumer demands in various segments and are using different models for different consumer segments to compete in such market. Different innovative technologies are being used in response to high customer expectation, high safety standards and low carbon future. Vehicle Stability Management, Electronic Stability Program, Anti-lock Braking System, Hill-Start Assist Control are some of these safety features that are being employed by automobile firms. Companies are using innovative products and practises such as use of products based on alternative fuel technology, automated oil management system, and recycled water utilisation in order to comply with environmental and regulatory norms.

We have presented a comparative innovation study for the major Indian four wheeler passenger vehicle companies on four dimensions – (a) Design related innovation (b) Technology related innovation (c) Efficiency and Safety related innovation and (d) Marketing and Process Innovation related innovation (d) Environmental Sustainability related innovation.

a) Design related innovation

TATA Motors Limited	• Indica: India's first indigenously designed and developed car • Nano: Disruptive Innovation from India - Designed Rs.1 lakh car based on Gandhian engineering principles. Even though, as of 2012, the price for the basic Nano is around 150,000, it is still a cheapest car in the market. • Smaller in overall dimensions than competitors in same segment but offers 20% more seating capacity with intelligent design - e.g. putting wheels at the extreme edges of the car • Evoque : Exceptional design and plentiful personalisation options make, Evoque is the smallest and lightest vehicle that uses natural and recycled material.
Maruti Suzuki Indian Limited	• First company in India which studied consumer demand in various segments and used different models for different consumers to take control of entire market – e.g. 800 for MIG, Deluxe models for HIG, Maruti van for businessmen and health care (ambulance),Gypsy for paramilitary forces and the police. • Under competition, it innovated new designs and models for small and medium car segment targeting MIG and HIG consumers. Example -Alto, Alto K-10, Estilo,A-star, Ritz ,Swift, SX4, DZir, Eeco, WagonR, Estillo, , Kizashi, Ertiga
Mahindra & Mahindra Limited	• e2o : Launched its all-electric four-seater passenger car, the e2o in 2013 as an urban mobility solution for a sustainable zero-emission society and gains relevance in the face of various issues such as environmental pollution, climate change, pollution related health concerns, energy security etc. • Xylo has been designed on "inside out" philosophy by following Global Product development practices like - "QFD" in which Project team members closely interact with Customers backed by a lot of research to understand the un-stated needs of the customers which helps them to deliver an emotional connect with the Customer. • Scorpio is considered the most frequently updated car in India - always one-step ahead of the curve in engine design, exterior styling and overall handling.

	• Logan designed to redefine space and luxury widest backseat, maximum legroom and three separate headrests.
Hyundai Motor India Limited	• Hyundai design centre independently focus of automotive design hat harmonize people and their emotions

b) Technology related innovation

TATA Motors Limited	• Much lighter than comparable models by reducing amount of steel and use of an aluminium engine. • Digital Manufacturing Planning (DMP) capabilities • In-house Knowledge Based Engineering (KNEXT) • Initiated of Real time Warranty Cost and Vehicle Production Quality Analysis. • Deployed Virtualization technologies to support global collaboration for product design and engineering. • Initiated Virtual Dealership using high definition rendering software and human interaction technologies to reach more potential customers
Maruti Suzuki India Limited	• World class R&D facilities & technology leadership with Japanese collaboration (Suzuki) • Commonality between the platforms of different models lead to lower product development efforts • Implementation of JIT and Japanese way of managing plant from technology, plant design to work organization • Introduced idea of partnership and tie ups between assemblers and supplier in Indian auto industry • Strategic alliance with GM for technology know-how and brand strength for medium and higher end small cars
Mahindra & Mahindra Limited	• World class manufacturing engineering research and development centre, "Mahindra Research Valley" for new technology development • Mahindra Graphic Research Design provides concept definition of passenger vehicle company and offers style, engineering, process related consulting • Strategic tie-ups with global manufacturing companies to bring the latest global technology and innovations to India.
Hyundai Motor India Limited	• Active intelligence engine featuring RhiA or Rotary Head Intelligent Valve Actuator, ad more efficient manner of opening and closing the valves in the cylinder head so that energy losses are kept to a minimum. • Other innovation in the engine is DPiL – Differentially Programmed Intelligent Injection for more fuel-efficient running and when required better acceleration as well. • Development of green engines for innovative fuel savings and lower exhaust

	emissions • Focus on the development of next generation high-performance Eco-Friendly transmissions and environment-Friendly exhaust Systems. • Introduced Eco LPG version of Xing, which runs on LPG also. • Hyundai is still working on new technology for driver safety and convenience such as Hologram HUD, Driven State Monitoring, Self-healing scratch shield, Solar cell sunroof, Pre-crash headrest, Nano glass (wiperless vehicles) and smart window

c) Efficiency and Safety related innovation

TATA Motors Limited	• All Company products and engines are compliant with prevalent regulatory norms. • Indica eV2 the most fuel efficient car in India with ARAI approved mileage of 25 kmpl for the CR4 diesel engine. The vehicle has been designed to achieve 32 percent increase in power and 46 percent increase in fuel efficiency over previous version. • Tata Nano CNG concept with world class safety strategies and an intelligently packaged CNG system so as not to disturb luggage space. • Developed vehicles that run on alternate fuels such as LPG, CNG, bio-diesel, electrictraction and hydrogen. • Developed of specialized oil conditioning system for engine friction mapping and analysis, to help improve fuel efficiency and CO2 reduction.
Maruti Suzuki India Limited	• Commitment to quality standards and pioneering quality awareness for component manufacturers in India • Pioneering in spreading the need of eco-friendly car technologies for car by encouraging its customers to act upon environment and energy conservation • Location away from established industrial area to attract Government exemptions and cheap labour – Example: MUL plant in a Greenfield location in Gurgaon. • Promotion of 3R reduces, reuse and recycle - to increase efficiency.
Mahindra & Mahindra Limited	• Active alternative propulsion tech. development program with distinction of designing India's first Hydrogen three-wheeler and India's first hybrid vehicle. • Some of innovative products in the area of green-technology are: ✓ Electric vehicles: Bijlee, E-alfa ✓ -CNG vehicles: Mahindra champion, Logan CNG in Delhi ✓ -Hydrogen vehicles: Alfa-3 ✓ -Hybrid electric Scorpio ✓ Biodiesel vehicles

	• Logan is one of the safest drives on the road. It's geared to protect you with a honeycomb dashboard and the front unit that's designed to resist even a head-on impact
Hyundai Motor India Limited	• Hyundai-Kia R&D centre are developing key technologies and vehicles that are ideal for local market • Hyundai i20: Euro NCAP 5 star rating has been awarded to Hyundai i20 for all four parameters of the NCAP safety test that is the highest rating and also the first for any car produced in India. • Santro Xing :Only compact car in India to have anti lock braking system • Neo Fluidic Elantra comes up with an array of Hi-end safety features like Vehicle Stability Management, Electronic Stability Program, Anti-lock Braking System, 6 Airbags, Hill-Start Assist Control, Speed sensing auto door lock and impact sensing auto door unlock for safety of the occupants

d) Marketing and Process Innovation

TATA Motors Limited	• "Open distribution" innovation to reach even remote rural consumers • Nano is constructed of components that can be built and shipped separately to be assembled and serviced by local entrepreneurs. • Aggressive leverage existing third-party and non-commercial institutions in rural areas to reach target customers. • Integrated of information technology with social institutions • Benchmark CRM (Customer Relationship Management) solutions. 3,200 channel partners and 37,000 users to handle customer needs. Tata Motor's Call Centre enhances key business processes across pre-sales, sales and service areas. Call centres handled 30 million calls in FY 2011-12, with a consistent under 0.5 Second response time. • Customer focused solutions like Tata Alert (emergency breakdown), AMC and Tata Assured (pre-owned vehicles) businesses and these solutions were supported by new IT capabilities • Solutions and capabilities built to support Rural Business expansion. New rural market initiatives, such as the NEEV programme and Tata OK, the used vehicle exchange business, have provided greater access to rural customers,
Maruti Suzuki India Limited	• Redesigned assembly layout (from a straight line with inspection at one end to a "U-shaped" configuration that improves interactions and feedback among workers • Vast Supplier network (600 car sales outlet in 393 cities, 265 'Maruti True Value' outlets in 166 cities) engaged in the sale, purchase and exchange of pre-owned cars. • Corporate level strategy to stay away from the ultra low-cost segment • Marketing communication in line with the need of Indian culture

	• Efficient value chain & manufacturing plant provides cost leadership. • To reduce the consumption of raw materials, the Company sends sheet metal scrap from its press shop operations to suppliers for production of child parts. These parts are then used by the Company in car manufacturing. This process optimises utilisation of steel sheet. A total of 6,648 MT of metal scrap was sent to suppliers for making small components in the reporting year
Mahindra & Mahindra Limited	• No information available in this regard.
Hyundai Motor India Limited	• No information available in this regard.

e) Environmental Sustainability related Innovation

TATA Motors Limited	• Indigo Manza hybrid, powered by a 1.05 litre DICOR engine and potent electric motors. • First Indian company that introduced vehicles with Euro norms well ahead of the mandated dates • Jaguar Land Rover, global leader in the use of aluminium and other lightweight materials that significantly reduced overall weight. • Environmental vehicle strategy, focusing mainly on weight reduction and reducing parasitic losses through the driveline • Range_e : first global luxury vehicle powered by plug-in hybrid system
Maruti Suzuki India Limited	• Maruti Suzuki is a zero-water discharge company met 41 per cent of its total water requirement through recycled and reused water in the reporting year. • Recycled water utilisation increased from 41% to 44% in the Gurgaon plant in the reporting year • Automated Oil Management System introduced in workshop to minimize oil spillage and to improve productivity, has been implemented in 502 workshops as on 31st March, 2012. • The Company is committed to offer environment-friendly products to its customers. All new models launched in 2011-12 were ELV compliant. • Power consumption per car has reduced by nearly 30% in the last decade at the Gurgaon unit, and by about the same percentage in the last five years at Manesar unit.
Mahindra & Mahindra Limited	• Engineering initiative for conservation of energy • Initiated use of Piped natural gas for heating that was used in place of electrical heating • Introduction of Rain water harvesting and water conservation • Initiated use of renewable energy in manufacturing related fuctions

	• Effective, effluent and Sewerage treatment, recycle and reuse of water • Move towards water neutrality • Move towards carbon neutrality • Optimisation of compressed air • Reducing solid waste and Eco friendly water disposal
Hyundai Motor India	• I-flow- i) energy conservation through thermal engine encapsulation that leads to fuel savings and emissions cuts of 5 per cent during summer and up to 9 per cent during winter. ii) Energy harvesting through thermo-electric waste heat recovery, this process further helps in reductions of fuel consumption by 5% at highest driving. • Blue drive strategy to improve fuel economies of mass production model and to develop a wide range of eco-friendly models • Utilising alternate fuel resources: In India, availability of Compressed Natural Gas (CNG) is compatibly more, Hyundai has launched i10 car , that can use both gasoline and LPG.

7 Implications and conclusion

The findings of the study indicate that innovation is one of most important factor for maintaining a firm's competitive position and addressing global challenges. A comparative study of Indian four wheeler passenger vehicle companies has been conducted in the paper to understand a firm's focus on different objectives of innovation which are mainly design and aesthetic related innovation, technology related innovation, safety related innovation, marketing related innovation etc. These types of innovations are primarily concerned with improving functionality of product and meeting regulatory compliances, environment norms, and safety standards. However, an existing technology or technology under development always faces the risk of obsolescence in terms of development of new alternative technology. Thus, a firm should always strive for disruptive innovation in order to provide technological differentiation which helps in producing distinct and profitable products for long period of time. Further, with growing dependence on technology and innovation for most of business operation, it is important that a firm develop appropriate manufacturing strategy to be able to deliver broad range of high quality and dependable products at low cost to their customers. In this light, innovation management also becomes important as innovation can act as a guiding tool for business strategy of a firm and helps a firm in delivering high quality, low cost and dependable products and in achieving competitiveness in long run.

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