1.1 General Background

In current extremely viable world scenario, an organization’s capability to launch novel ideas is a major determinant for long-term survival and growth (Clark and Fujimoto, 1991; Davila et al., 2007; Tidd et al., 2009). Introducing novel ideas in terms of goods and services is crucial as creativity in upcoming products and services is required for firms to adjust to varying surroundings in market place, new expertise and proficiency (Dougherty and Hardy, 1996; Utterback, 1996; McDermott and O’Connor, 2002; Bessant et al., 2005; Pavitt, 2005). In this theory I have selected the meaning of product innovation given by the firms for the development of the economy and it’s widen areas (OECD, 2005, p. 48).

The meaning of product innovation is the launching of new products and unique services with major improvements in their salient features and applications. This consists of considerable enhancements in technological disclaimers, tools and resources, integrated programs, customer easiness and supplementary purposeful features.

In broad, creative actions could be explained as the hard work to make useful and specific amendment by the firm within its capability of social and economical progress (Drucker, 1998). Additionally, innovation has been described by Popadiuk and Choo (2006) as an plan that has been made to a goods or services or is processes and has been industrialized. They emphasized that, in common, the theory of innovation is frequently linked to phrase newness, creativity, industrialization and/operation. McDermott and O’Connor (2002) describes innovation as novel know-how or permutation of expertise that recommend useful and valuable advantages and they

* Part of this chapter has been published as:
additionally make a note that the assessment of a expertise as creative also requires to be linked to old know-how, both from inside and outside corners.

According to the Oslo Manual (OECD, 2005, p.46) a minimum condition for an innovation is that the product, process or technique innovation must be novel to the organization, which includes both novelty that the company is foremost to increase and those that are accepted from other organizations. Following from this disagreement, an innovation is considered to be new-fangled to the market if the firm is the primary to introduce the modernization on its marketplace (OECD, 2005, p.58).

Thus, the variety of innovations could go from the amplified concert of an old product, procedure or method to the development of entirely novel products, processes or methods. For one concern, an innovation could be regarding a moving up product improvement effort resulting in enlarged product concert, whereas for a further company, innovation could be about chief changes to their product variety, including a major element of uniqueness, both from an in-house and a marketplace perspective. According to Dewar and Dutton (1986) this variety of innovation links to the viewpoint of radicalness, where incremental innovation could be describe as attaching a low quantity of new information, as is the case with slight improvements or adjustments in present technology. On the other hand, radical innovation is about drastic changes in technology, linking apparent departures from old practice and a high quantity of new data. Leifer et al. (2000) observes that a radical innovation is based on new-fangled ideas or technologies that create a novel line of product or a novel product line. Tushman and Nadler (1986) argue that incremental innovation contains amendments in form of supplementary features and new series or extensions to a line of product, whereas a radical innovation includes the utilization of a novel technology or a new arrangement of technologies to novel marketplace demands.

Christensen (2006) examines the term sustaining innovation in opposition to disruptive innovation. A nourishing innovation does not have a troublemaking effect on old marketplace but could include both existing improvements (i.e. improving a product in an old marketplace in demanding styles) and radical alterations (i.e. developing a new marketplace by understanding the upcoming opportunity in a new
style). Generally, sustaining innovations improve buyer worth by providing a higher amount of manufactured goods routine. A disorderly innovation, conversely, brings a completely diverse worth proposition to the marketplace that has not survived before.

During modern decades increasing ecological concerns have become a well-built encouragement to creative thinking. Ecological system will exert huge weight on production industries, which will augment in the upcoming time, enabling a more surviving globe for coming generation. The automobile industry is one of several industries causing ecological pollution where cars have a important impact on all stages of the life cycle; manufacturing, use, reusing and dumping (Orsato and Wells, 2007). This business also continues to cultivate. The number of cars in worldwide use will amplify in close future, mainly due to growing command in budding countries. As an instance, the amount of cars sold in China has enlarged by over 25% per annum in the past ten years, building China the world's biggest car marketplace. In 2012, the international car fleet conceded the one billion score. As a result of the increasing car market, the automotive industry records for 27% of CO2 releases in the world (WWF, 2013). Automakers have also shown an escalating awareness of the ecological impact of their products as environmental rules and market demands for ecologically less disparaging cars have augmented. The centre on reducing CO2 has become a well-built driver in the growth of not only less ecologically vicious cars, such as Electric Vehicles (EV) and Hybrid Electric Vehicles (HEV), but also of mass-reduction way-outs. The heaviness of the car is one necessary factor that has a consequence on CO2 emissions for both expected cars and for EVs and HEVs. An uneven estimate recommends that a mass reduction of 100 kg marks in decreased fuel flaming up of 5% (Swedish Association of Green Motorists, n.d.). The basic fact is that a 10% heavy decrease results in a 4e6% diminish in fuel utilization representing some of the prospective in focusing on frivolous concepts in the automotive business. Even though automakers realize and largely master sensible difficulties with choices to the all-steel body, and despite various phases of aluminium-intensive cases vehicles or low- quantity, high-performance sports cars, the conventional industry has even now majorly engaged the all-steel parts.
Given the all-embracing ecological confront facing the automotive industry, an infuriating situation is, however, that the business is a fully grown industry featured by bulk-production, a leading design and progressive growth (Abernathy, 1978; Clark and Fujimoto, 1991; Utterback, 1994; Orsato and Wells, 2007). The foremost mass-produced cars penetrate the market place at the starting of the 20th century. The moving assembly procession by Ford was a requirement for the bulk manufacturing of cars, but the bulk manufacturing of cars was incomplete unless and until the launching of Budd’s all-steel parts in the 1920s (Nieuwenhuis and Wells, 2007). Previously accumulated and decorated when it indoors at the assembly line, this eradicates restricted access in assembly. This monologue formation, a opinionated body, has flourished since then. Budd’s equipment, to a great extent, twisted the automobile industry as we identify it, ensuing in numerous rewards both from a method and goods point of view, permitting the manufacturing of inflexible, well-built and economical cars. Nieuwenhuis and Wells (2007:207) even disagree that the all-steel parts formed “a real change in the production of cars, even though the major effect of this cannot be foreseen in the longer run, when it actually took place”.

The manufacturing of all steel parts became the major function of car manufacturing factories, recording for 75% of their capital (Nieuwenhuis and Wells, 2007), thus needed a mass level manufacturing to nurture the project further. Whereas, bulk manufacturing assists to make the automobile business of present scenario, the movable line of assembly or production, and all steel parts, combining with other conditions, stops the potential for transformation and the launching of new product developments (Abernathy, 1978). The command for novel goods has concurrently reduced the phases of product cycle, which leads to mergers and acquisitions in order to take the partially the burden of capital and to form the base where auto manufactures allocate parts such as the power train (Clark and Fujimoto, 1991; Williams, 2006; Wells, 2010). The ecological test, specifically the requirement to decrease CO2 releases due to the strict rules and policies on petroleum market in Europe, US and Japan, has, though, put forth immense force on automakers. The novel European aims for emanations of the total average novel car fleet of 130 g CO2 per km by 2015 and 95 g/km by 2020 (Transport and Environment, 2011) require
main actions and will pressurise auto manufacturers to not only focus on the power train but also to major efforts and will force automakers to not only go fast in on the power train, but also to search weight-reducing explanations, therefore questioning Budd’s major structure (Nieuwenhuis and Wells, 2003; Orsato and Wells, 2007). Already research on ecological innovation in the automobile industry seems, however, to have mainly determined on searching the effects of the ignition engine and distinct options to impulsion like EV, HEV and petroleum cells (van den Hoed, 2007; Aggeri et al., 2009; Berggren et al., 2009; Zapata and Nieuwenhuis, 2010). Regardless of substantial achievement in budding high-strength steel, the all-steel parts is still too bulky. Less research has determined on options or variations to the all-steel parts and on the effect this specific technology could have the potential to make easy to use theory that can decrease the ecological effects of cars. Our reviews of earlier research also indicate a deficiency of research that has been established access to the functioning level of automakers’ inventiveness toward developing ecologically sounder options.

Moreover, a progressively more universal with fast increasing population leads to increasing demand for vehicles. To attain our possible for a superior life style and a long-term surviving society, our means of transportation and consuming habits must shift (Johan Rockström, Nobel talk 2013).

On the other hand, auto manufacturers have reflected an progressive knowledge of the ecological effect of their goods as ecological rules and policies and demand of the market for ecologically protective cars have been increasing. The ecological test, specifically the requirement to decrease CO2 releases due to strict policies on petroleum regulations in Europe, the US and Japan, has exercised enormous force on auto manufacturers. The focal point on falling CO2 has become a well-built driver in the growth not only of less ecologically critical cars, such as Electric Vehicles (EV), Hybrid Electric Vehicles (HEV) and other options to impulsion, but also of bulk-reduction way-outs. The new European aims for releases of the total new car fleet of 95 g/Km by 2020 and 130 g of CO2 per Km by 2015 (Transport and Environment, 2014) requires major efforts and will force auto manufacturers to search novel way-outs.
An marginal growth in automobile business will not be enough. In spite, it will need new value-creation systems, altering the old industrial model of business based on investment oriented manufacturing, with bulk amounts (Williams, 2007; Wells, 2010) and the focus is on the development of scratch changes i.e. drastic innovations (Niewenhuis and Wells, 2003; van den Hoed, 2007; Beaume and Midler, 2009). The ecological issues will even involve basic change where new curves are evolved (Berggren et al., 2009) and the theory in the automobile business will have to be answerable.

Given the all-embracing ecological confront facing the automotive industry, an infuriating situation is, however, that the business is a fully grown industry featured by bulk- production, a leading design and progressive growth (Abernathy, 1978; Clark and Fujimoto, 1991; Utterback, 1994; Orsato and Wells, 2007). The foremost mass-produced cars penetrate the market place at the starting of the 20th century. The moving assembly procession by Ford was a requirement for the bulk manufacturing of cars, but the bulk manufacturing of cars was incomplete unless and until the launching of Budd’s all-steel parts in the 1920s (Nieuwenhuis and Wells, 2007). The manufacturing of all steel parts became the major function of car manufacturing factories, recording for 75% of their capital (Nieuwenhuis and Wells, 2007), thus needed a mass level manufacturing to nurture the project further. Whereas, bulk manufacturing assists to make the automobile business of present scenario, the movable line of assembly or production, and all steel parts, combining with other conditions, stops the potential for transformation and the launching of new product developments (Abernathy, 1978). The command for novel goods has concurrently reduced the phases of product cycle, which leads to mergers and acquisitions in order to take the partially the burden of capital and to form the base where auto manufactures allocate parts such as the power train (Clark and Fujimoto, 1991; Williams, 2006; Wells, 2010). Previous ten years have been featured by alliances and take-overs, for e.g. Saab and Volvo targeting for advantages by sharing the base, bulk production, variety in product line, world-level development of products etc. (Wells, 2010, Zapata and Nieuwenhuis, 2010).
Taking on the ecological issue, it is argued that firm’s don’t have sufficient ways to check the market place and its demands such as methods to track the markets, tools and equipment and processes to check the demands and to search new options apart from already established businesses (Drucker, 2002). A General opinion in the innovation theory is that big, developed organizations in the automobile business generally face problems in enabling major innovations (Henderson and Clark, 1990; Utterback, 1996) and in spite focus the growth and application of marginal innovations (Dougherty and Hardy, 1996). The information regarding how to handle scratch and drastic innovations is very few because the methods, tools and processes to handle such innovations are vague (Pavitt, 2005) resultant in marginal enhancement which is considered to bring low threat and instant return (Dougherty and Hardy, 1996; Leifer et al., 2002., McDermott and O’Connor, 2002). It is also agreed that managers in big developed firms are not familiar with the process of drastic innovation or how they seems (Leifer et al., 2002, fler).

In revising the theory on drastic or scratch innovations it is known that the theory of innovation is vague. The broad definition of innovation has resulted in different and unclear in discussing these challenges (Henderson and Clark, 1990; Chandy and Tellis, 2000; Garcia and Calantone, 2002). Although researchers are not similar with the facts and distinct forms of innovation, it cannot be said that researchers will know from the research events (Garcia and Calantone, 2002). Since the theory involves the words “Novel” and “commercialization” in the theory (McDermott and O’Connor, 2002; Popadiuk and Choo, 2006; fler), the rule of innovation uses distinct forms of groupings; extent of system integration (Henderson and Clark, 1990), search and use (March, 1991), trouble-making (Christensen, 2006)), marginal or drastic (McDermott and O’Connor, 2002; et al).

In addition, issues leading to drastic innovations are the arguing expectations to search novel choice in equi-distant with day-to-day business (March, 1990) targeting for multi-tasking firms (Tushman and O’Reilly, 1996). There is a need to think about idea for the future development when managing with day-to-day activities of the technology and fighting with deficient materials. There is a requirement to know how to aim a stability between them and to cross legal hurdles attached with drastic plans.
(Leifer et al., 2000; see also Dougherty and Hardy, 1996). The usual expectation to determine on any of the plans that seems to be based on managerial, ecological and firm’s determinants (Lavie et al., 2010).

Although, the theory agrees the fact that over formal system is negative for drastic change projects, which expected to be handled in an flexible way (Eisenhart and Tabrizi, 1995; Veryzer, 1998; Benner and Tushman, 2002, Engwall, 2003). In addition, well developed or firms hierarchy discourage such innovations to start from scratch (Henderson and Clark, 1990; Wheelwright and Clark, 1992; Dougherty and Hardy, 1996; Christensen, 2006). A promise to old methods and marketplace not willing to disassemble old goods and their own capital leads to determine on marginal enhancements of major technologies (Chandy and Tellis, 1998; Stringer, 2000; Bessant et al., 2005; Assink, 2006).

There are, in fact, dangerous hurdles to handle if the automobile business is to successfully look the main theory in which it is stopped, although there are instances of how profitable firms such as automobile firms are able to aim novel ecological way outs in spite of lack of deficiency in their resources and technology (Chandy and Tellis, 2000; Hill and Rothaermel, 2003; Macher and Richman, 2004, Bergek et al., 2013). Although, to sustain in the 21st century a transfer in the industrial chart is required, inclusive of novel drive substitutes and distinct worth proposals to clients (Donada, 2013). The automate management, it is contended, has arrived the end of its current composition and in forthcoming will be featured by automation, marketplace and industrial paradigmatic difference (Wells, 2010). Current threats to the big chart come from both internal and outdoor the business.

A firm’s capacity to flourishingly launch entirely novel goods and services is a important beneficial component for nourishing competing benefit (Davila, Epstein, & Shelton, 2007). Amiably, this is specifically correct for the automate business, where being state of the art and providing modernization are reasons for sustaining instead of just a matter of sticking around nourishment. The last ten years has been featured by mergers, alliances, acquisitions and shut-downs in this field of industry, in regular trials to have cost benefits scale through staging amalgamations and different forms of mergers targeted to get
incremental product scope beyond multiplying the uncertainties. Rules of inadequate manufacturing (Womack, Jones, & Ross, 2007) have been highly affected in making progressively effective growth and production procedure, yet many auto-mate businesses are still fighting to survive. In specific terms, tiny constructors with core products cannot fight with the massive level attempts of their enormous opposition and are therefore in furious want to create their solutions of the deadlocks.

An important threat for businesses searching for modernization is how to sharpen the knowledge about the role of uncertainties in cutting-edge manner. It argues that uncertainties needs to be grasped and maintained, not just decreased, if targeting to enhance business modernizing capacity. The theory of uncertainties requires to be seen not only in critical actions like product-mix decisions but all over the initial level growth process and actions to permit the firm to concurrently destroy increasing state of the art and search entirely radical market place variation or in fact unflinching altering modernizations (Benner & Tuchman, 2003; March, 1991). This action of maintaining creative occasions and uncertainties taking in to account both longer and shorter time point of view in equi-distant is component of the creator’s plight (Christensen, 2006) because business are needed to concurrently make both surviving and trouble-making automation. Also, taking into account entanglement of synergy between both specialized setup and the integral shareholders, manufacturing a car could be visioned as nasty problem (Rittel & Webber, 1973) for which there is no specific trouble-making and no final exam of a result. As Pavitt (2005, p.88) observes, innovation is “natively vague, given the unfeasibility of anticipating correctly the expenses and execution of a novel art effect and the review of customers to it.”

The nastiness of the troubles faced by automate business automatically links to numerous aspects such as increasing automated complications in terms of function allocation within parts, involvement of mechanization and technical components, more variation in light of evenness through product bases etc. Also, there is an increment process complication which links to the requirement for reducing margin periods , including more disciplines, execute extra work in equi-distant, making choices based on initial knowledge etc. (Flanagan, 2007). The interconnection between large chunks of parts and segments makes the arrangement of the car
threatening in itself, and there is also a complicated integrate to the client, where the contentedness and client worth lies not just in shipment but in function which are more sophisticated and new to the customer (Clark & Fujimoto, 1991).

The problems in finding new client demands make it threatening to select which creative plans to start in the automate business. Car customers like any other client, may find it hard to clear their intentions on upcoming car versions although they inform what they want with current goods (Clark & Fujimoto, 1991). This challenge is difficult to manage in the automate business because the start time of a car is equally higher than many other customer goods.

Another threatening condition that is important for the continuous sustainment of characters in the automobile business is ecological issues. Environmental rules are already putting higher force on producers and this force will surely move up in the near time. The expectation that new automation should provide way outs for long-term goods in jointly with the clients more expectations for ecologically concern solutions will improve the essence of innovation actions.

At the core of innovation action is the capacity to, for instance, making and sharing of ideas, to join old innovations into novel way outs or use old way outs in a novel manner. A basic thing to achieve such a capacity is to make a allocation of knowledge of what, by whom and in which manner it will be implemented (Randall, Harper, & Rouncefield, 2007), but also the group has to give consensus on what an creativity is this. A leading strength for innovation action is the expectation to alter a condition, a product, a situation or the similar in to anything good. This wider use of the theory makes it viable to see innovation from many points of views, for instance from a product-making, a product process, marketing or a business cycle perspective (Moore, 2004). In common, the term of innovation is novel that has arrived a marketplace but such a generalization does not support knowledge. For example, what is novel? And what is a marketplace? A business perspective knows that there are minimum 15 distinct factors that come from the term innovation, and minimum 15 distinct variables which links to these (Garcia & Calantone, 2002).
Product innovation makes the healthy environment inside the firm that enhances the
growth, improves the financial returns and superior brand image (Liu et al. (2002)
(Walker, June, 2004). Studies have revealed that good experience within the firm is
linked with growth of novel information and facts, which is significant element for
organization results and uniqueness (Wheelwright & Clark, 1992) (Wong, 2014). Hence,
there is need to address the issue of how to create product innovation in the organizations.
The empirical research on the product innovation is limited both in volume and scope;
especially in Indian Context. Thus, there is a need to understand the product innovation
and its impact on the financial performance of the organizations.

Big business houses and new ventures are motivated to grab the market place
openings through their unique selling products and services (Dess et al. 1999).
Numerous wealthy firms and worldwide MNCs had modest initial stages as hatchling
starting (for instance, Pizza hut, Sony, Apple). Several initially successful companies
become contented, diverted their focus or found their competitive advantage falling
down because of altering consumer demands, techniques and outside pressures. While
entrepreneurs are glorified, one cannot ignore the fact that a large number of start-up
businesses be unsuccessful. Hasty judgments about the trends at the level of
management can be main reason of shut-down of businesses at early stages. Small
groups have inadequate resources and minor profit margins left for their mistakes.
Barret and Weinstein (1998) (Worthington, 1998) proposed that big organizations
have power to handle uncertainties and capacity to bear their mistakes (consider the
Reliance Group, Tata Motors). The focusing point for large firms is to inculcate the
favourable and unique ideas of tiny and start-up entrepreneurs. This can be facilitated
by some positive attributes exhibited by these companies as outlined here. The bigger
firms manage to take higher risk levels (Wu & Yu, 2010) (WWF, 2010). They have
better information about the current happenings as compared to tiny ones. For
example, development of novel products, MDPs, Advertising and promotional
campaigns, research activities. Big houses have an upper hand in terms of availability
of resources and its utilization, high-salaried professionals, modern methods and
techniques, vast research and development facilities and assistants. They can easily
bear the risk and uncertainties in the surroundings and can easily invest in the line of challenging businesses.

The research about innovation and behavior of the managers with its usefulness keeps on growing. The use of this effort is to apply the outcomes of theory and practical study to know the determinants of product innovation and its impact on financial performance of the organizations. The study proposed that Firm innovation composed of many types, product innovation investigated in the research from organization’s and consumer’s viewpoint; examine in the literature both from customer’s perspective and firm’s perspective; inter-related product-process innovation, working place and HRM policies (Yamin, et al., 1999) (Yinghong & Morgan, 2004). Product or a process direction towards innovativeness will lead to success if the organization changes as per the market demands. According to Petrella (1996) making successful goods are difficult in today’s dynamic world. Many firms are more succeeding almost every time and maintaining this status demands lot of efforts on the part of senior management. Some of the features that lead to development of product challenges are versatility, time limits, new developments and tradeoffs.

Product innovations can make use of novel information or techniques, or it depends on novel applications or two of them together i.e. old knowledge with modern technology. The definition of product consists of both goods and services. Product innovation is not a easy route motivated by modern methods, dynamic consumer demands, time pressures and growing worldwide competition. To become successful, it includes close communications inside the firm and with the outside environment as well (Akova et al., 1998) (Zahra, 1991).

1.2 Scenario of Indian Automobile Sector

The automobile business involves two distinct businesses: (i) the automotive business; and (ii) the auto segment business. The automotive business further has three sub-parts: (a) two-wheelers; (b) three-wheelers; and (c) four-wheelers (passenger and commercial vehicles). While the history of India’s growth in the economy is known in
the last two decades, it is usually termed as a services-leading concept. Although, some production fields have played an major act in this industrial development and the automobile industry is important among them. The automobile industry’s addition is not only in terms of sales revenues, incomes, taxes to be paid and jobs, but more particularly in production-process superiority, efficient enhancements and state of the art. This change has been vision through the sectors in the economic transportation, usability transportation, cars and automotive parts business. According to a research by the confederation of Indian Industry, superiority error percent in production falls from as higher as 12% in 1998 to 100 ppm in 2008- the Indian automobile industry which was at the front of the quality action can legally take attention for this major enhancement. The automobile industry is the most important place of the state of the art in Indian production. It stands for the 2nd highest average expenditure by business on research and development, followed by the pharma business.

The automobile industry is the pillar of global economy, a main driver of macro economic growth, stability and technological advancement in developed and developing countries, covering many adjacent industries (Kearney, A.T, 2013). According to the Society of Indian Automobile manufacturers (SIAM), India’s auto industry is world’s sixth largest producer of automobiles in terms of volume and value and has grown 14.4% over the past decade. The industry contributes to 7% of India’s GDP and absorbs 8% of the total employed population having more than 35 automakers. India’s automobile marketplace is one of the rapid moving auto marketplaces in the globe. It is one of those production sector which have developed importantly since the freedom of the economic system which starts in a rough and tough way back in the 1980s. The business is also known for many numerous creativities. The business which was managed by just few home constructors was rarely acknowledged for any modernization before 1991, but is now one of the rapidly moving production business not here in India but at International Level also. In 2010, India has known as the second rapid developing car market in the globe after China. Sales of two wheelers moved beyond 10 million units during the one year, a foremost, with all important two-wheeler constructors having large multiple growth. India in
2010 is the largest tractor builder, second largest two-wheeler builder, fifth largest economic vehicle builder and the eleventh largest car builder in the globe.

There are many cases of modernization in the business, the Tata’s Nano car being one of the renowned cases of these state of the art attempts. It can be said that it is an business which is truly enhanced in launching variety of Novel products not just in the home market but in the Global market as well. For the ambition of the investigation, the automobile sector has been chosen as it is known for its innovation and new product development.

Figure 1.1: Passenger vehicle exports from India

Passenger vehicle exports from India stood at 0.5 million during FY13.

Figure 1.2: FDI in Indian automobile industry

FDI inflows in the Indian automotives sector aggregated to US$ 9.6 billion during April 2000-February 2014.
1.2.1 Automotive Sector-Historical Perspective

In the Initial period after India’s freedom in 1947, the Indian Govt. under the leadership of Prime Minister Jawaharlal Nehru embraced a planning of making heavy industry under a process of growth in economy. While the automate business was already known by that period as a parent business that could make better areas across the economy, India willingly under estimate the car industry (which was seen as providing personal conveyance for the upper class) and in spite motivated the making of production capability in Heavy vehicles. Two major firms that are main players to this day- Ashok Leyland and Tata Motors (then Tata engineering and Locomotive Company Ltd. - Telco) were set up in 1950s with amalgamations with Leyland and Mercedes Benz correspondingly to make the starting of a heavy conveyance vehicle industry. A finite car manufacturing capacity was also established afterwards by two firms- Premier Automobiles and Hindustan Motors. Ancillarisation was motivated in the late 1960s and many firm making auto parts were established in that period, generally through international association. Under the new industrial policy, international investors could not invest in domestic market independently neither in the final goods nor in raw-materials- Therefore they were interested to give technology association and help to domestic investors. The auto business varied after the freedom of economy which takes place in the late 1989s. Ford was the foremost to invest through alliances with M&M but the Escort model they introduced was already thrown out of other marketplace and it did not take much of a success in the domestic market place. General Motors suffered a same failure with its Opel Astra. The foremost foreign investors to make a success happen in the “Novel” Indian auto industry were Hyundai which manufactured car specifically for the domestic marketplace. The Santro, introduced in 1998, had fast race, the capability to move in compact surroundings, excellent fuel usage and efficiency and with its tall boy style, was different from the old cars in the market place. Over the last decade, everywhere all the main auto firms have invested in the domestic marketplace- Toyota, Volkswagen, Skoda, Honda, Fiat, Nissan and Renault are all now in India in addition to GM, Ford, Hyundai and of course, Suzuki which was the foremost to invest and still in position to capture the domestic auto marketplace and its well-built image credit goes to its presence in the lower end of a market sensitive to costs and process. Many producers involving Toyota (with the Etios), Ford and Volkswagen have launched cars which are specifically made or customized to the domestic marketplace.
India Brand equity fund (2010) has separated the emergence of automobile business into three levels as:-

**Level 1: 1947-1983**
- Closed marketplace.
- Development of marketplace defined by home supply.
- Very rare creativity, old versions, expensive fuel.
- A total firm in number is 5.

**Level 2: 1983-1993**
- Collaboration between Indian Govt. and Suzuki to make Maruti Udyog
- A total firm in number is 6.

**Level 3: 1993 onwards**
- Industry was free from licensing system.
- Main blue chip companies (OEMS) started assembly in India
- Use of Value Added Tax (VAT)
- Imports permitted from April 2001
- A total firm in number is greater than 35.

1.2.2 Innovations in the Automotive Industry

There have been several cases of new product development in the India’s Automobile sector. The list below is comprehensive:

- The growth of the Nano, the innovative US$2,250 car, has advertised India’s capability to creativity and Modernized.
- Reva, India’s first electric car, is also an instance in innovation;
- Firms such as M&M and the Hero Group are deciding to make electric vehicles;
In the economical vehicles segment, Tata Daewoo, a branch of Tata Motors, has just made an LPG-based MCV (4.5 ton), the Novus, which leads to Euro V emission rule.

Ashok Leyland has made India’s first six-cylinder CNG engine for buses, which implement the multipoint fuel injection system and leads to Euro IV emission norms.

Two-wheeler producers Bajaj Auto, Hero Honda and Mahindra are in talks with Energtek, a supplier of absorbed natural gas products, for technovation that will lead two-wheelers to move on natural gas in spite of gasoline.

The automobile business is one of the biggest R&D contributors inside India’s industrial base firmly ensuring the leader in this segment, named as pharmaceutical industry.

The automotive industry in India consists of all conveyances, involving 2-3 wheelers, passenger cars and multi-utility vehicles, light and heavy commercial vehicles, and agricultural tractors and other earth moving machineries, also the parts division for all these classes (see GenreChart for the various types of vehicles produced in India). The vehicles division and the related parts division are frequently known as auto-business. The business is featured by a large percentage (about 80%) of 2-3 wheelers manufacturing. To say, India is the biggest producer of motorcycles and second biggest in manufacturing of scooters in the globe. In tractor manufacturing also India is the second biggest manufacturer in the globe.
1.2.3 Brief synopsis of the major players in the automobile sector

The brief synopsis of major players in the automobile sector is examined and presented below:

1. Maruti Suzuki India Ltd.

Maruti Suzuki India Limited (earlier known as Maruti Udyog Ltd) is a branch of Suzuki Motor Corporation, Japan and has been the ruler of the domestic auto business for last twenty years. Maruti Suzuki started the business and put a India on wheels. Since starting Maruti is known for with having assembled and led the innovation of the domestic passenger car business. Over its 26 years of period, Maruti Suzuki changed itself from a nourished Public Sector Company (PSU) to a active and renowned Multi-National Company (MNC), surviving its ruler ship rank and continued beneficial apart from difficult fight. In October 2, 1982 the company had written the license and joined hands with Suzuki Motor Corporation, Japan. It is the foremost firm in India for bulk manufacturing and sells more than a million cars. In the year 1983 the company launched their new model and introduced Maruti 800. In the year 1987 the company moved into the international market by selling first lot of 500 cars to Hungary. In the year 2005 company introduced international level strategic car model popularly known as Maruti Suzuki Swift which enters the
domestic auto marketplace. Presently Maruti Suzuki India Ltd has 14 brands which involve Maruti 800, Omni, Eeco, Zen Estilo, Alto, Alto-K10, A-Star, Wagon-R, Swift, Ritz, Swift Dzire, Sx4, Gypsy, and Grand Vitara. Maruti Suzuki has a total share in the market of 44.9% of the Indian passenger car market as of March 2011. Today Maruti Suzuki has made strong sales offices of 600 outlets spread over 393 towns and cities. The repairing help is given to the clients through 2628 workshops all over 1200 towns and cities.

2. **Tata Motors**

Tata Motors Limited is domestic biggest auto firm company, with overall sales revenue of INR 1,88,818 crores (USD 34.7 billion) in 2012-13. It is the ruler in economical vehicles in each division, and among the first few in passenger vehicles with successful model in the small, middle size car and user-friendly division. It is also the globe’s fifth biggest truck producer and fourth biggest bus producer.

Set up in 1945, Tata Motor’s existence moved beyond the boundaries of domestic market. Over 8 million Tata vehicles follow on domestic lines, since the foremost moved in 1954. The firm’s production base in India is all over the Jamshedpur (Jharkhand), Pune (Maharashtra), Lucknow (Uttar Pradesh), Pantnagar (Uttarakhand), Sanand (Gujarat) and Dharwad (Karnataka). Having a mergers and alliances with Fiat in 2005, it has established an collaboration with Fiat Group Automobiles at Ranjangaon (Maharashtra) to make both Fiat and Tata cars and Fiat powertrains. The firm’s tall ship deals, jobs and allied components chain spread over 6600 contact marks.

Tata Motors, also registered in the New York Stock Exchange (September 2004), has known as an Global auto firm. Through branches and joint firms, Tata Motors has functions in the UK, South Korea, Thailand, South Africa and Indonesia. Among them is Jaguar Land Rover, taken over in 2008. In 2004, it takes over the Daewoo economical vehicles firm, South Korea's second biggest truck manufacturer. The redesigned Tata Daewoo economical vehicles firm has introduced many novel goods in the Korean marketplace, while also shipping these goods to many world marketplace. Presently, two-thirds of heavy economical vehicle ships out of South
Korea are from Tata Daewoo. In 2006, Tata Motors made a 51:49 collaboration with the Brazil-based, Marcopolo, a world ruler in structure making for buses and coaches to produce fully-made buses and coaches for India - the factor is setup in Dharwad.

It was Tata Motors, which introduced the foremost endemic made light economical vehicle in 1986. In 2005, Tata Motors made a novel division by introducing the Tata Ace, India's foremost homegrown mini-truck. In 2009, the firm introduced its international level prime variety of trucks and in 2012 the drastic variety of world level light economical vehicles. In their capability, velocity ferry capabilities, functioning, economical and compacts, they will launch novel criterion in India and contest the excellence in the globe in achievement at a small expenses of the life phases. Tata Motors also launched India’s foremost SUV in 1991 and in 1998, the Tata Indica, India’s foremost fully home grown passenger car. In January 2008, Tata Motors launched its user friendly car, the Tata Nano. The Tata Nano has been frequently introduced, as decided, in India in March 2009, and thereafter in 2011 in Nepal and Srilanka. A growth, which reflects a foremost for the world auto business, the Nano brings the happiness of a car within the capacity of middle-class groups.

Tata Motors is equi-distant determined on ecological technovation in releases and fuel efficiency. It has made electric and joint vehicles both for private and civil vehicles. It has also been using many eco-friendly techniques in production process, importantly improving resources. With the base of its wealthy ancestry, Tata Motors is currently engraving a bright imminent.

3. **Hyundai Motor India Limited**

Hyundai Motor India Limited is a fully owned branch of Global fifth biggest auto firm, Hyundai Motor Company, South Korea, and is the biggest passenger car shipper. Hyundai Motor currently sells 49 variety of passenger cars across divisions. These involves the Santro in the B segment, the i10, the premium hatchback i20 in the B+ segment, the Accent and the Verna in the C segment, the Sonata Transform in the E segment.

Hyundai Motor, moving with its culture of being the rapid developing passenger car producer, accounted total sales of 559,880 vehicles in the year 2009, an increment of
14.4% over 2008. In the home marketplace, it reached a development of 18.1% in comparison to 2008 with 289,863 units, while international sales moved by 10.7%, with shipment of 270,017 units. Hyundai Motor presently exports cars to more than 110 countries all over EU, Africa, Middle East, Latin America and Asia. It has been the number one shipper of passenger car of the India for the sixth year consecutively.

In a last ten year since Hyundai has been existing in domestic market, it has become the successful shipper of passenger cars with a total share in the marketplace of 66% of shipments of passenger cars from India, making it a prominent giver to the Indian auto business. In 2009, instead of a world crisis, Hyundai Motor India’s ships moved up by 10.7%. In 2010 Hyundai decided to reach more markets with Australia being the recent entry to the index. The foremost export to Australia is of 500 units of the i20 and the entire i20 shipments to Australia are conventional to be in the area of 15000 per year.

4. Mahindra & Mahindra

With a total share in the market place of 10.01% in economical Vehicles, 6.50 in Passenger Vehicles and 1.31% in Three Wheelers, Mahindra & Mahindra is majorly involved in the Multi Utility Vehicle and Three Wheeler divisions precisely. The firm fights in the light economical vehicle division through its collaborated branch Mahindra Navistar Automotives Limited and in the passenger car division through other collaborative venture branch Mahindra Renault. In the year 2009, on the home market side, the firm along with its branches sold a total of 220,213 vehicles (consisting of 44,533 three wheelers, 8,603 Light economical Vehicles through Mahindra Navistar Automotives and 13,423 cars through Mahindra Renault), accounts a jump of 0.6% over the last year.

The firm’s home Multi Utility Vehicle total sales grew by 3.3%, as compared to a fall of 7.4% for business Multi Utility Vehicle total sales volume. A registered number of 153,653 Multi Utility Vehicles were sold in the home market in 2009 compared to 148,761 MUVs in the last year. Hence, Mahindra & Mahindra is now bolster its power of the home Multi Utility Vehicle sub-branch during the year, moving its share in the market to 57.2% over the last year’s market share of 51.3%. Mahindra & Mahindra is spreading its impression in the international market place. In 2009 the Xylo was introduced in South
Africa. The firm made new collaborative venture Mahindra Automotive Australia Pty. Limited, to determine on the Australian Market place.

5. **Ashok Leyland**

Total market share: Commercial Vehicles 16.47%. As compared to rapid fall in the demand for economical vehicles, during 2008-09, Ashok Leyland accounts total sales revenue of 47,118 Medium and heavy commercial vehicles (M&HCV), 37.5% less than in the last year. This involves 16,049 M&HCV buses and 31,069 M&HCV trucks subsequently, 8.7% and 46.3% less than in the last year.

The firm obscured 1.8% market share in the domestic medium and heavy commercial vehicle market place during the fiscal year 2008-09, majorly because of fall of sales in the truck division. This was because the Eastern Region, where the firm’s existence had been satirically not string, was comparatively balanced, while the market place falls rapidly in other areas. While entire business quantity of the medium and heavy duty buses falls by about 8.7%, the firm’s market share moved up incrementally and Ashok Leyland maintained its first rank in this area. The firm sold 6,812 vehicles in the international market place during 2008-09. This shows a fall of nearly 6.5% over the last year. Entire industry amount linked to global market place to which the firm ships (such as Sri Lanka, the Middle East) proved a fall of about 25% over the last year. To show the effect of fall in CV sales, the firm determined on non-seasonal industries in the mix. The firm made in total 54,049 vehicles during the current time. To have costs and save money, the firm functioned only about 50% of the functionings days in all its producing units during the next half of the. **The below table1.1 shows the data the passenger car market share in the financial year 2014:-**

<table>
<thead>
<tr>
<th>Company Name</th>
<th>Market Share (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maruti Suzuki</td>
<td>42.08%</td>
</tr>
<tr>
<td>Hyundai</td>
<td>15.18%</td>
</tr>
<tr>
<td>M&amp;M</td>
<td>9.15%</td>
</tr>
<tr>
<td>Tata Motors</td>
<td>5.59%</td>
</tr>
<tr>
<td>Honda Cars</td>
<td>5.36%</td>
</tr>
<tr>
<td>Toyota</td>
<td>5.16%</td>
</tr>
<tr>
<td>Ford</td>
<td>3.37%</td>
</tr>
</tbody>
</table>
1.3 Need for studying Product Innovation

The success of any organization can be traced or linked with successful products and this based on their capability to search the wants of clients and to quickly make goods that fulfil these demands. Therefore, product development can be described as the life blood of any business organization. Brown and Eisenhardt (1995), Balbutin et al. (2000), Efcharis et al. (2008), Chux Gervse Iwe (2010). Contending the wants of clients is not only a commerce obstacle neither is it only a architecture hurdle or production hurdle. It is new product development problem. Product development is an integrative function that needs help from almost all the activities of a company, however three activities are nearly focussed to a product development achievement. This consists of commerce, architecture and production (Ulrich and Steven Eppinger, 1995; Ulrich and Eppinger, 2007). The commerce activities arbitrate communication between the company and its clients. Commerce usually aids the recognition of client demands. Commerce also commonly organizes for interaction between the company and its clients fix prices and introduce and advertise the product internationally (Ulrich and Eppinger, 2007) (Zahra, 1993). The architecture activities edges the term of the substantial type of the good to better meet client’s demands. The architecture activity could be construction, business, advertising or all of them, (Ulrich and Steven Eppinger, 1995) (Zahra & Covin, 1995). The production activity is mainly culpable for making and functioning of the manufacturing system in order to make the goods. Widely delineated, the producing activity also involves buying, allocation and setting up (Ulrich and Eppinger, 2007). Product development defines contributing novel or enhanced goods for current market place. By informing the current market demand, a company may see way outs to alter or improve goods characteristics, make many superior phases, or summate different forms or breadth by launching novel models of known plans i.e. properties of radical changes.

Over the period, moving up amount of evidenced research have shown the connection between firm’s creativity and its function. As a part of the interpretation, these research involves distinct forms of versions, predicted methods, financial performance measurement tools and creative function (Geroski et al., 1997; Bottazzi et al., 2001; Del Monte and Papagni, 2003; Loof and Heshmatt, 2006). There presents large
structure of research which recommends that there is a tight connection between creativity and development (Nelson and Winter, 1982; Aghion and Howitt, 1992; Klette and Griliches, 2000; Klette and Kortum, 2004). For many companies, nourishing novel goods are appliances of development (Cohen, Eliasbergh and Ho 1997). Many ground works involving the life-cycle of the product and BCG’s growth share matrix, hypothesize the requirement for goods that generate forth most benefits and needs companies to ensure that their lines of product do not become old (Cooper 1984, Chaney, Devinney and Winer 1991). In sales revenue terms, 25% of firm’s sales revenue simply come from goods launched in previous three years time (Mahajan and Wind 1991). Numerous researches have examined the effect of either novel goods launches or advertisement on direct financial measurement tools or value of the firm (Bayus et al. 2001; Chaney et al. 1991; Eddy and Saunders 1980; Kelm, Narayanan and Pinches 1995; Wittink, Ryans and Buyus 1982).

1.4 Objectives of the study

This study aims at studying impact of product innovation on the financial performance of the organizations and to evolve a model for practicing product innovation within the organizations. The broad objectives of the study are as follows:

a) To analyse the factors that lead to product innovation in Automobile sector
b) To analyze the impact of Product Innovation on the financial position of the Co. through impact on revenue, costs and ratios.
c) To find the innovations and development in the automobile sector, by gathering the experience of people directly linked with the innovation process in the company and from the customers.

1.5 Issues for the study

Firms adopted innovation approach since long-time, but very little published literature is available on the experiences of firms. Most companies are using the basic innovation approach without categorizing the types of innovation. However, the implementation strategies and managerial commitment to innovation approach vary
from company to company. This study deals with the determinants of product innovation and its impact on the financial performance of the organizations. The study is focused on identifying the determinants of product innovation. The main issues covered in the study are as follows:

a) Identifying the role of intelligence generation in stimulating product innovation within the organization.

b) Identifying the role of intelligence dissemination in stimulating product innovation within the organization.

c) Identifying the role of technology selection in promoting product innovation.

d) Exploring the role of production flexibility and quick delivery in facilitating product innovation.

e) Identifying the relationship between process and product innovation in stimulating the product innovation within the organization.

f) Identifying the role of quality and marketing of products in promoting the product innovation.

g) Identifying the financial factors which measure the impact of product innovation on the organizations performance.

h) Evolving a product innovation model, this may serve as a guiding framework to measure the impact of product innovation on the financial performance of the organizations.

1.6 Scope of the study

The ambit of the study is finite to product innovation. It does not consist of production process, commerce innovation, firm innovation or any other form. It does not involve the outside ecological factors such as economy, technovation, providers, rivals and government regulations that affect the product innovation. The basic underlying assumption is that the external environment is same for all the organizations, as the study has been undertaken in the Indian context. The performance is measured only in financial terms (Zahra & Sidhartha, 1993). Marketing performance, innovation performance, organizational performance or any other performance is beyond the
scope of this research. The study covers the organizations in automobile industry. The study is focused only to know the impact of product innovation on the financial performance of the organizations.

1.7 Overall methodology of the study

The thesis is based on the empirical research on the impact of product innovation on the financial performance of the organizations in Indian context. The complete study has been divided into two parts, i.e. pilot study and questionnaire based survey study.

The pilot study of select organizations has been carried out to identify the determinants of product innovation. Number of macro and micro hypotheses has been evolved, based on the conceptual framework, which have been statistically investigated/tested on the basis of a questionnaire-based survey conducted in organizations selected. The unit of analysis for the study is the firm. The data has been analyzed statistically using univariate, bivariate and multivariate analyses techniques. Based on the results so obtained, a product innovation framework has been evolved to understand its impact on the financial outcomes. Empirical Cum Descriptive Research Design is used for this research to find out the solution of the problem through the collection of primary and secondary data. For pilot Survey, Judgemental and Purposive has been used to collect the data of 100 respondents. It means questionnaire were filled through references from the firms of auto sector. EFA (Exploratory Factor Analysis) was conducted to know the number of factors extracted. To Analyze the impact of product innovation on financial performance, Structural Equation Modelling–Confirmatory Analysis and Path Analysis will be used.

1.8 Limitations of the Study

Limitations of the study are as follows:

i. The findings of the study is restricted to Delhi/NCR alone

ii. The research is limited to product innovation only. It excludes all other types of innovation.

iii. This study executively discusses about the impact of product innovation on the financial performance in auto industry with respect to Delhi/NCR region.
iv. This study does not include marketing performance, organizational performance, innovation performance or any other type. Every effort is boiled down in financial terms.

1.9 Structure of the Thesis

The following section provides an overview of the contents of the chapter that are presented in this research:

i. **Chapter one:** Chapter one gives introduction to the study. This consists of the background of the study and its relation to the automobile industry. The research problem, objectives, issues and scope are defined. The overall methodology and limitations of the study has been described. In the end, organization of the thesis is outlined in brief.

ii. **Chapter two:** Second chapter is the literature review which provides the existing work related to product innovation. This chapter in detail discusses about the meaning and definition of product innovation. This chapter also focuses on the need for product innovation. Part of the section also discusses about the determinants of product innovation. Next to that, this chapter focuses on the benefits of product innovation and also highlights the challenges encountered with the product innovation. Apart from these, this study also concentrates on the models of product innovation in detail. In addition to these, this study also concentrates on the financial factors that measures the impact of product innovation such as (ROI, market share etc.)

iii. **Chapter three:** Third chapter is the research methodology chapter which provides an overview about research design, strategy for research, sampling design, sampling plan, sampling size, types of data or data collection, various data analysis and interpretation techniques that is used in this research. Apart from these, this chapter also discusses in detail about the ethics of the research.

iv. **Chapter Fourth:** Fourth chapter is the data analysis where the factor analysis and SEM will be used along with the results in tabular form. Result chapter describes about the various concepts related to primary data which was collected by the researcher or investigator from the survey.
v. **Chapter fifth is the** discussion chapter. The discussion section discusses about the determinants of product innovation and its impact on the financial performance of the organizations in Delhi/NCR.

vi. **Chapter Sixth:** Sixth chapter is the conclusion and recommendation chapter. Conclusion and recommendation chapter that describes about the summary of findings obtained through the discussion section and also provides conclusion to the research followed by suggestions or recommendations and best innovation practices to be adopted to enhance the product innovation with respect to Delhi/NCR region. This study will provide valuable insights for the organizations to innovate their products and also helpful to future researchers.

vii. **Bibliography:** This section lists all works of interest including those mentioned in the text.

viii. **Appendices:** The appendices include all necessary relevant data supporting the study including the survey about the impact of product innovation on the financial performance of the organizations with specific reference to Delhi/NCR region considered in the study and to collect the primary data for the purpose of this study.

### 1.10 Concluding Remarks

Innovation has important role in making the distinct of function and fights among companies’ areas and even countries. For example, the research by Fagerberg et al. (2004) shows that creative countries had larger capacity and profitability than the less-creative ones. OECD reports market out that firms’ that grow creativities in a more serious way and quickly, had also more educated labor class, paid much higher monetary incentives and provided more convincing forth most decisions for their staff (Zikmund, 1997). The entrepreneurial revitalization helps the company to become innovative which is a vital blood for the survival and growth of a company.

With setting of the research objectives in a clear manner and defining the relevant issues, the scope of the research problem has become clear and well focused. The study has been designed to understand the determinants of product innovation and evolve a frame work to measure its impact in financial terms.