CHAPTER 1. INTRODUCTION

Supply chain is the strategically important and shortest path to the journey of sustainable development as it covers the whole end to end closed product life cycle loop (D’Amours et al., 1999). According to Cooper et al. (1997), in the 1980’s onwards supply chain management concept is used extensively to describe the management of materials, information flow and internal and external logistics activities. Even though the traditional challenges in supply chain are cost reduction, just in time delivery etc. increased customer pressure and awareness force organizations to look into the matters like waste elimination, eco-friendly logistics, social equity, human right violations etc. Green supply chain management philosophy is only concerned with the environmental issues related with supply chain. This motivates organizations to adopt sustainability as a single tool to attain long term profitability and operational stability. Empirical evidences from research bodies are quite enough to break the traditional thought process that organizational actions and policies linked with all major decisions in supply chain are only driven by economic efficiency considerations (Kauppi, 2013). In recent times, the adoption of sustainability practices in supply chain is becoming acute, due to the increasing demand from the stake holders, increasing environmental issues and rapidly increasing competition.

1.1. Motivation of the study

In twentieth century, organizations started to realize that not only cost, quality and speed of delivery of products, but awareness about society, environment and ethics also play an important role to customers’ buying behavior. Customers increasingly prefer green packaged products due to increased environmental awareness and ethics (Rokka and Uusitalo, 2008). Green products also help organizations to improve brand equity through green marketing and by targeting green customers, who in turn will help organizations to achieve competitive advantage (Liu et al., 2012). Thus, extending sustainability attributes to supply chain will help any organization to gain competitive advantage (Forman and Jrgensen, 2004 and Preuss, 2007). Sustainability efforts are cost effective in short term as well as long term basis and organizations can enjoy a competitive advantage by integrating sustainability initiatives with their supply chain strategies (Krause et al., 2009). Few of the benefits of sustainable supply chain performance listed out by Ageron et al.
(2012) include customer satisfaction, suppliers innovation capacity, quality, trust, supply risk management, and fill rate, apart from other benefits listed out by other researchers such as long term competitive advantage (Forman and Jrgensen, 2004 and Preuss, 2007) and economic benefits (Krause et al., 2009).

1.1.1. Sustainability issues

According to National Oceanic and Atmospheric Administration report published in 2005, since industrial revolution, there is a 35% increase in the level of carbon dioxide all over the world within a period of three centuries. Supply chain is one of the major stages in the life cycle phases of a product, and the greenhouse gas emissions vary from stage to stage. Transportation alone is responsible for 5% of the total emissions in the product life cycle (Apple, 2011). According to Wal-mart, over 90% of its total emissions related to its operations are from its supply chain (Birchall, 2010). The interesting fact is that, more than 20% of global greenhouse gases emissions are made by about 2500 largest global companies, and their supply chains are responsible for a major chunk of emissions resulting from corporate operations (Carbon Disclosure Project, 2011). Because of globalization, distribution channels of goods and services became very complex (Reuter et al., 2010), and the socio-economic conditions of the respective regions became a major success factor of supply chain networks (Beske et al., 2008). This led to the competition between corporate multinational companies based on sustainability oriented innovations (Nidumolu et al., 2009; Hansen et al., 2009). In this context, sustainable supply chain can contribute significantly, and has become one of the main focus areas of researchers (e.g. Grosvold et al., 2014; Ahi and Searcy, 2013; Wittstruck and Teuteberg, 2012; Closs et al., 2011). As a whole, sustainability perspectives help any organization to gain competitive advantage, and thus are very important for supply chain managers also (Forman and Jrgensen, 2004 and Preuss, 2007). Easterly (2007) emphasis the need of financial inclusion and argue that inequality leads to underdevelopment. Stiglitz (2013) clearly shows the need of stronger social protection for economic growth. Researchers also argue that, enough attention is not given for the social component of sustainability in majority of the research works in supply chain domain. Implementation of sustainable practices are in a nascent stage in India (Gopal, and Thakkar, 2016; Xu et al. 2013). Thus, the focus of this research is on sustainability performance of supply chain by considering all three components of triple bottom line concepts of sustainability with equal priority.
1.2. Theoretical point of view
There are calls for more theory based empirical research works in supply chain domain (Hitt et al., 2015). Moreover, there is a pressing need to have more research attempts based on organizational theories (See, Carter and Ellram, 2003; Carter and Easton, 2011; Craig and Rogers, 2008; Ketchen, and Hult, 2007; Melyn and Handfield, 1998). There are research articles emphasizing the need to have more empirical based researches based on organizational theories for the design of best value supply chains (see, Ketchen and Hult, 2007). Based on the literature review, it is understood that empirical research attempts by using a combination of more than one theory are also very scant. In most of the studies, selections of constructs and elements have no theory base and theory behind the selection of constructs are also ignored (Winter and Knemeyer, 2013; Touboulic and Walker, 2015). And thus, to overcome these research gaps (Clemens and Douglas, 2006; Madhok, 2002) and to contribute to the existing literature body in supply chain, the researcher has attempted to choose the variables based on a combination of well established theories. Institutional theory and resource based view theory were selected as a base for the selection of variables based on extensive literature review and expert opinion.

1.3. Theoretical framework
Theoretical framework is purely based on the well established linkages between the variables carefully chosen based on the literature evidences. The variables of the sustainability performance of supply chain were selected in the first phase of research based on extensive literature review and expert opinion. Ten different critical variables of sustainable supply chain performance such as coercive pressure, normative pressure, mimetic pressure, top management belief, top management participation, supply chain connectivity, supply chain information sharing, social performance, environmental performance, and economic performance are selected to form the proposed theoretical framework. Each link in the framework is considered as a hypothesis, which are tested through semi-structured questionnaire survey and statistical analysis conducted in the second phase of the research.

1.4. Choice of research area and overall data collection strategy
There is no much investigation done on the sustainability issues with reference to the Indian auto manufacturing industry and there is a large research gap exists in this direction (Gopal,
Thakkar, 2016; Xu et al., 2013). Automotive industry has a major role in deciding the growth pace of any economy. The fact is not different with India as well. After the remarkable economic transformation in 1990s, Indian automotive industry has huge foreign investments and exponential growth. Thus, the research focus is limited only to Indian automotive industry. There exists a gap in the literature, which considers sustainable supply chain performance of small and medium enterprises (SMEs) based on triple bottom line concept (Mohanty and Prakash, 2015; Min and Galle, 2001; Pagell and Wu, 2009). Many of the tier-1 auto-component manufactures are medium scale industries. Greening or ensuring sustainability practices in (SMEs) in India are not easy when we consider many key practical challenges, like, lack of availability of adequate and timely credit; limited access to equity capital; procurement of raw material at a competitive cost; inadequate infrastructure facilities, including power, water, roads; low technology levels and lack of access to modern technology; lack of skilled manpower for manufacturing, services, marketing, etc. (Singh, et al., 2014). Since many of the tier 1 auto-component manufactures in India fall under small and medium scale industry segment, researcher has decided to limit the focus area of research in this particular segment.

1.5. Overview of research methodology

The main objective of this research is on combining sustainability concept with supply chain management, which is a relatively new way of strategic thinking and is very crucial in attaining long term operational stability. Ciceri (2010) define sustainability as a quality which helps to preserve, save and keep. According to Garbie (2014); Carter and Easton (2011) and Dyllick and Hockerts (2002), environment, society and economy are the three widely accepted components of sustainability. Combining sustainability concept with supply chain management philosophy help managers to solve social, environmental and economic issues related with day to day purchasing logistics and operations activities. Forty five measurable constructs are figure out for all the selected ten variables. Measurement instrument were developed based on these forty five variables. Testing of the questionnaire and validation of the instrument is done by depending upon the opinion of supply chain experts from industry and academia. Cronbach’s Alpha values are evaluated to check the reliability of the questionnaire. Sampling plan adopted and data collection strategies are also finalized in detail as a part of the research design process. Data
adequacy assessment and non-response bias tests are also considered at the end of the research design process.

1.6. Thesis structure overview
Thesis is arranged in a total of six chapters including this first introduction chapter. After this first chapter, literature review is systematically arranged in the second chapter. Literature review was conducted by keeping multiple objectives in mind like identifying the research gaps in sustainability performance of supply chain, analyzing theoretical background in supply chain research bodies, analyzing research methodologies and tools used, and in fixing the research objectives and research questions. Preliminary variables that directly impart the sustainability performance based on the triple bottom concepts and two organizational theories such as institutional theory and resource based view theory are also narrated in this chapter in detail. The next stage is the theoretical framework development, which is carried out in the third chapter. Findings from literature review were used to figure out the linkages between the variables used in the theoretical framework. In detailed explanations and justifications for the selection of each linkage in theoretical framework is included in the chapter. Fourth chapter is explaining the research design adopted throughout the research journey in detail. Methods adopted in questionnaire preparation and finalization, validation process and the details of data collection and sampling strategies are also explained in detail in the research methodology chapter. The next is the fifth chapter explaining the analysis carried out based on the data collected. Data testing for normality, correlations etc. are explained in the initial part of the chapter followed by hypothesis testing in the last section. PLSR based SEM is done by using Warp PLS 5.0 tool. Confirmatory factor analysis is used to validate the model. Ten out of the thirteen hypotheses tested were proven and two of the remaining hypotheses were rejected. Detailed discussions and conclusions of the study are presented in the sixth chapter of the thesis. Theoretical and managerial contributions of this research were explained in detail in the conclusion chapter. Last but not least, limitations of this research are also included in last part of this chapter. Finally referencing is done after the sixth chapter and all articles cited in the write-up are listed in this section. Questionnaire used in the survey is attached in the appendix section. Last but not least, research outcomes such as publications are attached at after the appendix section. With this brief narration on the chapter
plan, this introduction chapter can be concluded and the chapter has explained the overall research process adopted throughout the work within very minimum possible words.