THE DETERMINANTS TOWARDS FOSTERING INNOVATION PERFORMANCE FROM A SUSTAINABLE DEVELOPMENT PERSPECTIVE

Pandikote Valiya Veetil Gopi Krishna

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Pandikote Valiya Veetil Gopi Krishna

School of Public Administration

Associate Professor.....Major Advisor

(Tippawan Lorsuwannarat, Ph.D.)

The Examining Committee Approved This Dissertation Submitted in Partial Fulfillment of the Requirements for the Degree of Doctor of Philosophy (Development Administration).

Associate Professor.....Committee Chairperson

(Uthai Laohavichien, Ph.D.)

Associate Professor.....Committee

(Tippawan Lorsuwannarat, Ph.D.)

Assistant Professor.....Committee

(Kasemsarn Chotchakornpant, Ph.D.)

Assistant Professor.....Dean

(Pairote Pathranarakul, Ph.D.)

June 2017

ABSTRACT

Title of Dissertation	The Determinants towards Fostering Innovation Performance from a Sustainable Development Perspective
Author	Mr. Pandikote Valiya Veetil Gopi Krishna
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The research objectives of this dissertation were essentially threefold: i) to study how firms effectively pursue sustainable innovation and how innovation impacts its performance on the triple bottom line; ii) to conceptualize a strategic framework that outlines the determinants that nurture innovation from a sustainable development perspective; and iii) to establish an empirical link between "sustainability practices" and innovation performance through the pursuit of "sustainability exploitation" within current competences and "sustainability exploration" for new areas of opportunities. A quantitative research was conducted for testing the proposed conceptual framework. The data were obtained through a questionnaire survey that was run across two phases, from a sample of 163 organizations utilizing a probability-based sampling approach. The respondents targeted in this study constituted the top management, managers, and researchers in the R&D departments within the organization. The unit of analysis is the organization, selected from the state of Karnataka, where the government has focused a great deal on innovation strategies and is regarded as the prospective innovation hub of India. A path analysis was used to identify the causal relationships between the variables of stakeholder sustainability orientation, market orientation, organizations internal trust and the sustainability practices of "exploration" and "exploitation" on innovation performance.

The research findings identified the significance of market orientation, which had a direct impact on innovation performance. Market orientation also was seen to have a strategic significant relationship with the organization's internal trust. Stakeholder sustainability orientation interestingly did impact positively the sustainability practice of exploitation though conversely with exploration in this study. Exploitation was also observed to have a mediating effect on market orientation and innovation performance. Both exploration and exploitation had mediating impacts, highlighting their significance in impacting innovation performance. The findings suggest the prominence of the pursuit of exploitation from the Indian context, and its positive impact on the triple bottom line through innovation performance, which reaffirms the importance for organizations to pursue sustainability agenda. An organization-wide approach with a clear market-oriented strategy is crucial for the success in undertaking sustainable innovation. This requires a renewed focus on sustainability practices and a conducive organizational internal trust environment to take forward the sustainability agenda which importantly is aligned with the market orientation to positively impact the triple bottom line. The research contributes to the field of sustainable innovation and provides a basis for organizations in terms of bridging the sustainability gap. It further contributes to the literature by theoretically providing a holistic framework which examines the relationships of stakeholder sustainability orientation, market orientation, exploration and exploitation regarding innovation performance and its eventual impact on the triple bottom line from the sustainable development perspective. The research will help to confirm that the pursuit of a sustainability agenda is indeed worthwhile for organizations.

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P.V. Gopi Krishna

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ABBREVIATIONS

Abbreviations	Equivalence
R&D	Research and development
SDG	Sustainable development goal
WCED	World Commission on Environmental Development
CII	Confederation of Indian Industry
STI	Science, technology, and innovation
IIF	Inclusive Innovation Fund
STIP	Science, Technology and Innovation Policy
GNP	Gross National Product
WTO	World Trade Organization
GOI	Government of India
GIR	Global Innovation Roundtable
IT/ITES	Information technology and services sector
GDP	Gross Domestic Product
WIPO	World Intellectual Property Organization
GII	Global Innovation Index
GERD	Gross Expenditure on Research & Development
OL	Organizational learning
SEXP	Sustainability exploration
SEXL	Sustainability exploitation
SSO	Stakeholder Sustainability Orientation
MO	Market Orientation
OIT	Organization’s Internal Trust

SCS	Sustainability Champions Significance
IP	Innovation Performance

CHAPTER 1

INTRODUCTION

Over the years, innovation has become the crucial driver that is instrumental for economic development policies from a developing country perspective. The developments of technology and innovation are considered to have a crucial role in contributing to economic growth. There is large evidence that both technology and innovation are the key factors which make most governments develop subsidy schemes towards the enhancement of research and development (R&D) through organizations, thereby increasing public-private partnerships (Vollenbroek, 2002).

The rational basis is provided by the argument of the failure of markets and their associated resources in research and development which eventually is borne by some of the stakeholders only while the advantages impact the diverse actors and the whole society. These advantages can be analyzed in terms of their capabilities, competitive capacity, and enhanced prosperity. Despite this rationale it is common that across countries there is a growing awareness that innovation should not just provide economic strength but is the basis for providing a quality environment. This confirms the important rationale for countries to take a sustainable development orientation in their drive to foster innovation performance.

Innovation for a long period was regarded in economic theory to be an isolated technological invention, which research showed as being created exogenously. However, that said, the evolutionary research on innovation and knowledge economies with the new growth theories has seen innovation regain its prime place in explaining the success and failure of regional and national economies within economic development theory. The nations or regions have realized the need to see innovation as the key to enhancing their competitiveness and thereby increasing economic prosperity, which should not be considered as an end in itself but as a way of safeguarding competitiveness, which is crucial in the globalized world of today. Therefore, there is a need to move from the traditional short-term approach of profit

orientation to a more holistic approach that appropriately balances “social,”, “environmental,”, and “economic” challenges for the ongoing generations and those of the future. Therefore, for a society to achieve sustainable development it has to do so with corporate support, namely from the private sector, which crucially is a driving force of the economy (Bansal, 2002).

Recent times have shown the impacts that climate change and environmental problems have had on economies, which often have the potential to cause large losses leading to systemic risks in often unknown and different ways. Innovation and technology transfer are considered to be the most important instruments and mechanisms towards mitigating the negative impacts of environmental risks and resource usage. This calls for organizations to enhance their sustainability agenda regarding product exploitation and production processes that are unique to the organization adopting them and incorporated through their life cycle, contributing to reduced environmental risk, pollution, and efficient usage of resources (Kemp & Foxon, 2007), effectively enhancing the competitive advantage of the organization (Wagner, 2005). Therefore, it is a challenge for the developing countries in comparison to their developed counterparts to achieve and maintain the balance between environmental and economic performance. Additionally, it is important to note that there has not been adequate research on developing countries with regards to “sustainable innovation” measures and the “sustainability performance” of their business practices (Dong & Shi, 2010).

Moving the agenda forward, in the year 2015 the UN General Assembly witnessed 193 countries agreeing and adopting the 2030 Development Agenda, which are to be achieved through the 17 sustainable development goal’s (SDG) and their 169 associated targets. The agreement importantly highlights the urgent need to address the challenges posed by climate change. and that the 2030 Developmental Agenda has appropriately put forward SDG9, which calls on nations to “build a resilient infrastructure in the endeavor to promote inclusive and sustainable industrialization towards fostering innovation” (United Nations, 2016).

The “UNWCED” definition regards sustainable development as the process of change where the direction of investments, utilization of resources, the development of technologies, as well as changes within institutions are created uniformly for the

future and the present needs (United Nations World Commission on Environment and Development, 1987). The eventual goal for "sustainable development" is to integrate "social,", "environmental," and also the "economic" influences based on the different patterns of production and consumption within the development agenda, which is essentially designed towards long-term sustainability. This balanced integration of the sustainable development agenda should be brought about in discussion with all stakeholders involved (Sharma, 2003).

Countries often in their drive for enhanced economic growth fail to appropriately address the factors that weaken the same and this calls for a holistic approach to understanding the determinants that promote innovation and technology diffusion, aiming towards sustainable regional development and ensuring its competitiveness in today's globalized world. Without which interventions from a policy or a socio-economic perspective would be unable to achieve their desired results as witnessed over the years.

India has strategically identified innovation as the priority towards ushering in inclusive development. This requires the need for setting up the requisite investments in assets, which are knowledge based and that nurture research and development through the practices of sustainability and enhancing intellectual property. This from the policy perspective requires improving the environment for sustainable innovation across the society. India's performance on the Global Innovation Index has seen its rank fall from the 23rd to a current dismal 76th in the 2014 ranking. The reasons attributed to this performance arise from the following challenges it faces: to strengthen graduate education and research at universities, the need to ensure quality research, and to provide equality of the access to education. The gross innovation index (GII) report 2014 stated the popularity of innovation and its novel practices need to be targeted at upgrading organizational competencies and developing an environment that supports innovation, which are important components in boosting competitiveness.

This shows the growing need for a clear focus towards enhancing innovation capacity and providing a balance between the practices of exploration through competitive excellence and exploitation through collaborative excellence. This brings forth the prominence of the notion of the ambidexterity of innovation, cross-sector

partnerships in R&D, and a sustainable development policy direction. This research looks at taking an inside-out approach towards understanding innovation from a sustainable development perspective. There is potential towards filling the knowledge gap by the contributions to overcoming the market inefficiencies and significantly improving innovative performance. Market orientation can often become a significant antecedent towards acknowledging the role of a broader ecosystem for the success of innovation. The role of such collaborative mechanisms within the framework of innovative processes for emerging markets has not been adequately researched and this research aims to fill the knowledge gap. The Indian case scenario makes it a perfect candidate for undertaking this research and the challenges and problems are further outlined in the following section and in Chapter 2.

This research, therefore, comes at an opportune time when the significance of taking a sustainable development perspective is gaining prominence. It is important to take cognizance of the fact that local efforts towards driving both environmentalism and economic growth are not mutually exclusive. Instead, they fall steadfast alongside the innovation performance. This provides organizations with the impetus of reduced development costs requisitioned by integrating environmental protection and measures to conserve energy in their investments. This requires a revolutionary change of approach by organizations, from a knowledge management point of view towards engaging in what is referred to as “ambidextrous learning.” This constitutes “exploitation,” which enhances the present knowledge and enables increased reliability with effectiveness and “exploration,” which creates new knowledge towards enhancing the flexibility and novelty (Atuahene-Gima, 2005; O'Reilly & Tushman,2004; March. 1991).

The research looks to counter the literature gaps and aims to establish an empirical link from a dynamic capabilities perspective between sustainability practices of exploration and exploitation, with innovation performance assessed by its effect on the “triple bottom line.” It additionally looks at the potential towards filling the gap by the contributions to overcoming the market inefficiencies for enhancing innovative performance. Market orientation can often become a significant antecedent for acknowledging the role of a broader ecosystem for the success of innovation. The role of such collaborative mechanisms within the framework of innovative processes

for emerging markets has not been adequately researched and this research aims to fill the knowledge gap.

The research looks to study the sustainability practices of sustainability exploitation and exploration towards empirically establishing its impact on innovation performance with the "triple bottom line" dimensions of environmental, social, and economic goals from the sustainable development perspective. This research provides the theoretical underpinnings from the literature review, where the concepts are defined with regards to the context of their linkages amongst the sustainability practices with innovation performance. The conceptualization of the strategic framework that fosters Innovation performance from a sustainable development perspective is envisaged.

The public investment towards science along with basic research is the driving force for the development of ICT and state of the art technologies and thereby fostering innovation. It is evident that many of the high-tech commercial successes and basic innovations with significant social impacts have had their origins in public research. Innovations such as the Internet did not create competitive market processes, but were the outcome of research funded by the government conducted in government laboratories, industries, and universities. It was R&D that was mostly within government programmes, and therefore guiding and supporting the institutions of higher education, with requisite benefits to nurture innovation. Hence the need for supporting research requires the priority given to it by many governments, towards the objective of safeguarding public knowledge to make sure that the envisaged results are achieved from the research supported with public funds.

The ecological concerns are growing in significance with regard to global development as they mostly affect the vulnerable populations of the planet. Innovation and technology transfer are regarded as among the instruments and mechanisms towards reducing the negative impacts of our everyday activities (UNWCED, 1987).

This is a pertinent aspect of this research, as it specifies the underlying need for organizations to recognize the need for a sustainability agenda. This therefore makes it crucial for organizations, be they either in the public or private sector, to incorporate a sustainable development orientation.

Sustainable development as a thematic area has existed since the 1980s. It is however only recently that sustainable development has gained prominence. The "Brundtland report," brought out in 1987 by the "World Commission on Environmental Development" put forth the definition of "sustainable development" with the notion that regarded development as satisfying the needs of the current generation and not forfeiting the needs of generations to come (WCED, 1987).

The effective handling of environmental concerns with the promotion of green products of innovation has become an important prerequisite for their ecological efficiency. Taking these important perspectives, the research aims to analyze the relationships of sustainable development and to understand the capabilities that nurture innovation. It is important to realize that local efforts towards driving environmentalism and economic growth are not mutually exclusive; instead they fall steadfast alongside their innovation capabilities. This provides businesses with the impetus of reduced development costs by integrating environmental protection and measures to conserve energy in their investments.

This revolutionary change of approach calls for organizations from a knowledge management perspective to pursue ambidextrous learning: one where their exploitation goes beyond the current knowledge towards enabling a greater reliability and effectiveness; and exploration which enables new knowledge to be enhanced and remains flexible (Atuahene-Gima, 2005; O'Reilly &Tushman, 2004). This concurrent approach of exploration and exploitation has been hypothesized towards improving organizational capability for better performance (Rothaermel & Alexandre, 2009; Lin, Yang & Demirkan. 2007; He& Wong. 2004). This research looks to counter the gap in the literature and aims to establish an empirical link from a dynamic capabilities perspective between sustainability and innovation performance assessed by the impact on the triple bottom line.

1.1 Research Objectives

Essentially the research objectives are threefold. The first objective aims to understand how firms effectively pursue sustainable innovation and how such

innovation impacts their performance regarding the triple bottom line. The second objective aims to conceptualize the strategic framework that outlines the determinants towards nurturing innovation from a sustainable development perspective. Finally, the third objective is to establish an empirical link of "sustainability practices" with innovation performance through the pursuit of "sustainability exploitation" within the organizations current competences and sustainability exploration" for new areas of opportunities.

1.2 Scope of the Study

The approach to this research looks at the determinants of innovation capabilities from three dimensions under the realm of the dynamic capabilities theory. They are namely the "path," the "positions," and the "process" leading to their subsequent outcomes. The dynamic capability is a useful theory for this empirical study as it aims to achieve the sustainable development perspective to innovation which has dynamic reconfigurations of the organizations capabilities in accordance with the environmental changes (Teece, Pisano & Shuen, 1997). The constructs would fall into each of the categories and provide a basis towards assessing their impact on the dependent variable of innovation performance.

The "paths" refer to the alternatives available to a firm, which are strategic (Teece et al., 1997) and comprise their dependencies of the path taken and includes an external driver of innovation capability. This namely is the stakeholder sustainability orientation. The theoretical framework is guided by the notion that the existence of a market for sustainable products and services is the much-needed impetus for the organization's pursuit of innovation related to sustainability.

The "positions" refer to the resources that are available to an organization and entail the specific requirements of intellectual property, technology, customers, and their external relation with suppliers and other networks. The research takes the theoretical framework of having three constructs represent the position variables that are considered to be the antecedents for the sustainability of innovation. They are: i) a sustainable market orientation; ii) intra-organizational trust; and iii) the sustainability champion significance. These intangible resources of the organization strike relevance

on the basis of impacting managerial decision making and organizational strategy related to their pursuit in the ever-dynamic and evolving markets. Hence the role of internal resources is a crucial element for the long-term strategic vision that is focused on sustainability. Their eventual impact on innovation performance is a contribution of this research.

The "processes" (Teece et al., 1997) are largely defined as the routines which shape the way a firm does its business. The organizational processes are expected to have the roles of coordination/integration, learning, and reconfiguration. This as the research would suggest becomes a competitive advantage for the organization. This is detailed in the literature and the research considers the role of sustainability practices of "exploration sustainability" and "exploitation sustainability" as the processes which form the strategic differentiator towards positively impacting innovation performance.

The pursuit of sustainability practices is not just a financial predicament but one with the purpose of limiting the impact on the environment and implementing social change. In essence it leads to the development of new creative ideas and directions and the capacity towards implementing them. This helps to provide a positive impact on the organization's innovation performance. This becomes the outcome and is therefore crucial in understanding the role of sustainability practices and their interplay with the path and position variables towards understanding their impact on creating a strategic competitive advantage and impact on innovation performance.

The sustainable development perspective will be assessed under the impact of sustainability practices, namely: i) "sustainability exploration" and ii) "sustainability exploitation." Sustainable development is regarded as the enabler of innovation. The constructs are reinforced under this research where the sustainability practices do provide significance with a positive relationship and predicts innovation performance. The variables are essentially looked at from an "ecological efficiency" point of view, which considers the sustainable development orientation as a niche towards having a competitive advantage rather than an additional cost burden. The research additionally looks to explore the role of ambidexterity guided by the combined pursuit of sustainability practices of exploitation and exploration in innovation performance.

These dimensions together are analyzed towards eliciting the determinants and coming up with a strategic framework that fosters innovation performance, taking a sustainable development perspective.

The contribution of the research is threefold. The first is the aim to expand the knowledge of innovation under the emerging perspective of sustainability. The literature provides limited light on sustainable development per se. This joins the few empirical studies on innovation capabilities from the sustainability perspectives, thereby providing the basis for sustainable development. Secondly this research explores innovation by employing the theoretical basis of the dynamic capabilities theory. This takes forward the "resources-based view," which perfectly fits this context since the processes involved in sustainable development are predominantly and require new perspectives over the traditional approach to innovation. Finally, the research provides managers and policymakers with a roadmap and a theoretical basis towards the determinants of innovativeness from the policy perspective under the realm of sustainable development. An attempt has been made to understand the capacity for innovation from a policy perspective by identifying the determinants and conditions that nurture the same from a social systems and policy-impact perspective. The endeavor therefore is to provide a basis for innovation to effectively to achieve environmental, social, and economic objectives.

1.3 The Basis for taking the Indian Context

India has often been considered as a "hotbed of innovation" (Nielsen, 2014). Recently there has been a growing interest by national and state government's towards providing increased investments for promoting innovation incentives by way of R&D subsidies, grants, incentives, and the design of innovation support policies. The innovation literature, across the recent decades, has had many studies to look at contextual factors and their role in the organization's innovativeness and the impact on innovation performance through R&D collaborations. Finding the similarities in the approaches of a developed country to match those of fast-emerging counties such as India would not be conclusive as there are significant implications for the innovation outcome. This would be pertinent when looking at the innovation

outcomes of organizations, especially with their firm-level data (Tripathy, Sahu & Ray, 2013). Considering the significance of organization-level innovation, the government of India has created state innovation councils and sectoral innovation councils with a roadmap towards promoting inclusive growth, encouraging both the central and state governments for making the organizations competitive globally and having the capacity to respond to the local needs of the sectors and states (National Science and Technology Management Information System, Department of Science and Technology, GoI, 2011). Although the different policy interventions by the government of India have fared badly in the Global Innovation Index and were ranked very low, this in a way could reflect the low innovation capacity of Indian organizations. This makes it pertinent to understand the true factors or determinants that indeed have impacted innovation performance when looked at from a sustainable development perspective. It is also observed that India has over the years performed badly in an increased number of indicators pertaining to the social and environmental aspects. This requires an approach that does not just address the innovation from the economic standpoint but importantly also considers the social and environmental perspective while looking at innovation from the sustainable development perspective as envisaged under the research.

1.4 Research Question

Moving forward the research puts forth the following central question:

1.4.1 What are the determinants that foster innovation performance from a sustainable development perspective?

The research further provides the basis to elicit the capabilities required to nurture the sustainability practices of sustainability exploration and sustainability exploitation for a broader understanding of innovation performance and the impacts from the economic, social, and environmental perspectives. This research importantly provides policymakers with not just a theoretical vision, but with a practical understanding through the lens of sustainable development.

1.5 Benefits of the Study

This research aims to fill the gaps in previous research by attempting to systematically analyze innovation considering the "sustainability dimension" under the realm of sustainable development. The research aims at finding the determinants that nurture innovation considering the capabilities paradigm. This research looks at this through the lens of the dynamic capabilities theory towards defining the determinants and conditions which will help to achieve innovation capability from a sustainability perspective. This provides the research with novelty by providing both an empirical and theoretical basis to better understand the responses to the environment and its changes by developing a strategic framework which helps redefine the fragmented innovation systems, which are a characteristic of developing countries. This helps assess and encourage the need for pro environmental behaviors in innovation which are looked at from a sustainable development perspective.

This research importantly contributes by providing organizations with a strategic and holistic approach towards achieving sustainable innovation. The research findings help reaffirm the benefits for organizations to pursue the sustainability agenda and understand the impact on innovation performance by considering the economic, social and environmental attributes.

The dissertation is the first empirical study that analyzes the role of sustainability through the practices of exploration and exploitation. This importantly helps organization reconfigure their processes towards positively impacting innovation performance through the triple bottom line. The research importantly provides a holistic approach towards understanding the impact of the organizations capabilities on sustainable innovation.

This research empirically assesses innovation performance through its impact on the "triple bottom line. The framework clearly identifies the antecedents to innovation performance and helps to expand the domain of sustainability from an organizational or corporate perspective. The research puts forward the significance of having an organization-wide approach towards undertaking innovation from the sustainable development perspective. The empirical analysis clearly reaffirms the need for having a market-oriented strategy that is crucial for the success of a

sustainable innovation undertaking. The subsequent trust environment of the capabilities within the organization is again crucial, towards fostering innovation and mitigating any trust deficits. This research contributes to the literature in assessing the role of organizations internal trust in the pursuit of sustainable innovation.

From the theoretical perspective this research contributes to the dynamic capabilities framework which has both descriptive and normative ramifications by bridging the sustainability gap towards fostering innovation performance. This research will be among the few studies that look at explaining the capabilities at an organizational level towards pursing the sustainability agenda. This is assessed through the sustainability practices and their eventual impact on the organization's triple bottom line. The research contributes to the knowledge domain by successfully attributing the determinants that contribute to an organization's competitive advantage, making it the core focus of the strategic analysis. The dynamic capabilities theory helps provide an integrated and holistic approach towards understanding the new attributes of sustainable innovation and their impact on innovation performance through its triple bottom line. This research provides a novel application of the dynamic capabilities framework, which will help organizations obtain a competitive advantage in dynamic environments through the pursuit of the sustainability agenda. This will be among the few studies that take the theoretical approach to dynamic capabilities towards successfully assessing the impact on innovation from the sustainable development perspective. This contributes to the literature by understanding the role that the "stakeholders' sustainability orientation", "market orientation", and "organizations internal trust" have on the organizations sustainability practices of exploration and exploitation and their impact on sustainable innovation in dynamic environments.

The research successfully utilizes the dynamic capabilities theory to clearly outline the determinants that enable organizations to achieve sustainable innovation through their stakeholder orientation paths, and market and organizational trust positions, as well as the processes of sustainability practices of "exploitation" and "exploration." The research on confirming the positive impact on the triple bottom line will help organizations change their perceptions and enhance their uptake of the sustainability agenda. Therefore, the research will help guide organizations through

the effective application of the dynamic capabilities theory towards positively impacting their innovation performance, when looked at from a sustainable development perspective. In conclusion the research helps to emphasize the importance of organization-level innovation, and the determinants outlined in the research will help nations realign their focus on sustainable innovation towards enhancing corporate involvement, inclusive growth, and sustainable development.

1.6 Organization of Dissertation

This study consists of six chapters. Chapter 1 introduces the research objectives, the scope of the study, the basis for using the Indian context, the research questions, and the benefits of the study. Chapter 2 details the innovation in India, outlines India's policy scenario towards innovation, identifies the dominant sectors in India's growth, and the problem and challenges faced by India. Chapter 3 reviews the literature on related theories, approaches, and concepts towards constructing the conceptual framework and its hypotheses. Chapter 4 explains the methodology of the research with the research design, population and sampling procedure, data collection, variable definitions, scales, measures, data analysis methods, and the ethical measures used. Chapter 5 provides the sample characteristics with their descriptive statistics, the results of the factor analysis, and the regression analysis and path analysis of the models. Chapter 6 provides a summary and discusses the results of the tested hypothesis, the mediating effects, and recommendations and implications from a practical, policy, and research perspective, and ends with the conclusions of the study.

CHAPTER 2

THE INDIAN CONTEXT OF INNOVATION

2.1 Innovation in India

India as a fast growing economy in central and southern Asia, with over 1.2 billion people and with a GDP of $1.8 trillion for fiscal year 2014, is a heterogeneous market with very diverse needs (Confederation of Indian Industry,2014). To be successful in catering to the market requires solutions tailor made and customized according to the needs of the target market segment. The Indian market therefore provides a perfect platform for organizations to achieve a higher market share through the creation of innovative solutions in line with the consumers and market needs.

In the globalized context Indian organizations are required to reorient their research and development (R&D) based innovation for achieving a competitive advantage towards facing the competition from technology products from advanced nations in both the international and local markets (OECD, 2010). The R&D activities in India have typically been government driven and the private sector has not made significant investments in R&D. India, though having achieved success with human resources, has been slow with a low orientation of research and the requisite technology inputs for the industry.

2.2 India's Policy Scenario Regarding Innovation

Over the years India has focused on innovation as a priority. The national strategy titled "Decade of Innovations 2010-20" aims to strengthening science, technology, and innovation (STI) capacities, with the overarching objective to enhance the gross expenditure on "research and development (R&D)" to 2% of the GDP by 2020. This innovation focus was reaffirmed by the recent launch of the

"Make in India" initiative, which targets the strengthening of manufacturing. The initiative looks at capitalizing on existing competitiveness in export-oriented activities. This requires increased investment in R&D, technologies as ICT, data, designs, skills development, and the branding and creation of new organizational processes. This calls for improving framework conditions for enhancing the private investment in innovation which could be a cost effective approach for policymakers to take with the focus well-organized products and labor markets and the availability of capital. Policy must enable the environment for organizations to experiment and take advantage of growth opportunities to achieve the desired rewards.

India's 12th Five-Year Plan (2012-17) aims to target growth for inclusive development. The National Innovation Foundation has targeted innovators from the grassroots, and has established the Inclusive Innovation Fund (IIF), which expects to fund the "bottom 500 million" and support enterprises developing innovative solutions. With this focus India declared the period 2010–20 as the "Decade of Innovation" with the establishment of the "National Innovation Council." The "Science, Technology and Innovation Policy" of 2013 (STIP,2013) put forth by India looked at including other perspectives that impact innovation in the Indian context, from financial and human resource inputs to R&D and enhancing the commitment of the industry to innovation.

India as a successful global hub for offshore IT services and industry, and clearly identifies the benefits and economic advantages that innovation brings along. The need for investing in innovation and importantly upgrading the processes across the value chain helps boost productivity, impacts socially with the enhancement of job opportunities, and strengthens economic growth. India has taken measures for correcting the situation through policies such as the "science and technology policy," growing spending on R&D, and the establishment of institutions and projects towards increasing the interactions with industry. However, that said, there is still a long way to go to be in line with the developed world and investing around 2-3% of its GNP in R&D, protecting intellectual property, and most importantly fostering innovation and ushering in a product innovation culture. This importantly calls for clearly addressing the barriers to innovation performance which is crucial for reaping the benefits of innovation.

India has predominately had R&D spending in the public sector, accounting for 80% of the total spending and the remaining 20% within the private sector. The nations R&D spending as mentioned earlier has also stagnated in the past recent years, but the country has also seen a growth with patent filing by organizations during the period 2005-2011. This could be attributed to changes in the Indian patent policy in line with the agreement under the WTO on trade-related intellectual property rights (Ambrammal & Sharma, 2014). The Indian organizations were ideal subjects for the research as the National Innovation Act 2008 had India targeting the goal to become one amongst the most capable knowledge-based economies. Like the other emerging economies, the Government of India (GoI) also put forth quite a few innovation support policies such as the National Innovation Policy 2008, and the Decade of Innovation 2010-2020, which were aimed at providing the organizations and industry sector with a much-needed stimulus (National Science and Technology Management Information System, Department of Science and Technology, GoI, 2011). The focus on firm-level innovation also had the Indian government go ahead with the creation of the State Innovation Councils and Sectoral Innovation Councils towards ushering in inclusive growth, thereby fostering inclusive innovation through enhanced stakeholder interactions towards making organizations globally competitive and having the capacity to respond to the needs of the states and sectors. This also meant enhancing the linkages of knowledge entities with organizations. This led the government of India to develop the Global Innovation Roundtable (GIR) towards promoting collaboration for innovation both nationally and internationally.

The introduction of the notion of innovation is rather recent, with its consideration in the "Science and Technology Policy" (STI) in 2003 with the purpose of enhancing the infrastructure of national R&D towards building a "national innovation system." Innovation here implies the scientific and technological solutions that were effectively implemented within the society and its economy. However, the recent STI Policy 2013 is regarded as the most comprehensive policy to date. The policy aimed at growing the "science and technology system" and renewed the focus on innovation. This reinforces the need to look at science, technology and innovation as interrelated and integrated concepts for value creation. The policy focuses on the

creation of inclusive systems that stimulate mechanisms that support business models that are scalable and foster entrepreneurship with supportive incubators. The policy was aimed at enhancing academic-industry linkages and recognized the low levels of research and development in Indian organizations. There are not many studies that have tried to understand innovation from the sustainable development especially while focusing on an inclusive approach. This makes it pertinent for the envisaged research to understand the determinants that foster innovation across the organizations in India.

2.3 The Dominant Sectors in India's Growth

The manufacturing and the information technology and services sector (IT/ITES) are by far the dominant sectors of India. The manufacturing sector grew by 8.9% for the period 2004-05, and this sector has always remained the engine of economic growth for India. The Indian economy has certainly witnessed a transformation in the last three decades with the spectacular performance of the service sector, which contributes to around 50 percent of the GDP.

It is important to sustain a knowledge-based economy with a well-supported and growing manufacturing economy. The sectors of IT/ITES and pharmaceuticals have competed globally, employing around 2% of the of the population and contributing to the economy. However, that said, a major part of the population, around 60%, remain dependent on the agricultural sector, contributing less than one-quarter of the nation's GDP. The capability enhancement of Indian organizations in the long term depends on production efficiency. Production efficiency, for its part is dependent on innovation, research and development, which bring forth the capacity to develop sustainably and adapt new technologies to their strategic advantage.

The R&D expenditure across the major industrial groups of the Indian industry is outlined in Table 2.1 for the period between 1991 and 2006. As observed the highest growth rate of 50% was in the technology sector. This was followed by the manufacturing segment of pharmaceuticals with 39% growth in R& D expenditure.

This clearly indicates that the focal sectors for fostering innovation would need to include the manufacturing and IT/ITES sectors amongst others.

Table 2.1 Average growth rate of R&D expenditure across major segments

Industry Group	**Industrial Sector**		
	1991-2000	*2000-2006*	*1991-2010*
Metallurgical Industries	13.14	7.74	17.44
Fuels	14.18	14.42	26.42
Electrical and Electronic Equipment	11.49	9.24	16.37
Telecommunication	12.94	9.05	22.01
Information Technology	76.85	21.63	50.21
Chemicals	18.16	3.41	15.40
Drugs and Pharmaceuticals	24.89	34.96	38.83

Source: Department of Science & Technology, Government of India, 2000- 2011

2.4 The Problem and Challenges

Countries often in their drive for enhanced economic growth fail to appropriately address the factors that weaken the same and this calls for a holistic approach to understanding the determinants that promote innovation and technology diffusion aiming towards sustainable regional development and ensuring its competitiveness in today's globalized world. Failing which interventions from the policy perspective or socio-economic perspective would otherwise be unable to achieve their desired results, as seen over the years.

India has strategically identified innovation as the priority towards ushering inclusive development. This requires the need for setting up the requisite investments in assets that are knowledge based and that nurture research and development through practices of sustainability and enhancing intellectual property. This from the policy perspective requires improving the environment for sustainable innovation across the society of India. The national strategy of the "Decade of Innovations 2010-20" highlights the commitment to strengthening science, technology, and innovation (STI)

capacities, towards enhancing the gross expenditure for R&D to 2% of the GDP by 2020. The recently-launched "Make in India" initiative reflects India's aim to increase its manufacturing capabilities. However, that said, the challenges remain, such as the low business expenditure on R&D, and the development of human resources to uphold the STI capacities. This reiterates the need for an environment that fosters innovation from a sustainable development perspective, where organizations are given the incentive to invest in innovation and move up the value chain to increasing productivity and growth. The economic advantage of innovation does have India as a leading example by being the global hub for IT industry and its related services. The stagnating growth rates however call for the strategy to be rejuvenated with enhanced investments in R&D, technologies and bringing in new organizational processes that promotes private investment in innovation.

This need for sustainable development seeking to ensure knowledge and benefits created through innovative activities reaches the society as whole across India. This calls for the equity in the innovation capacities across the regions that could be strengthened through the public and private sector collaborations within the innovation system. India does excel in its capacities at "frugal innovations," producing high-quality products using existing technologies and reaffirming their strength in exploitation practices. This shows India's success with incremental innovation, but there is a growing need to focus and support breakthrough innovations through exploration practices and creating new platforms that foster sustainable innovation.

India spends around 0.90% of its GDP on R&D and demonstrated a very high compound annual growth rate from 2008 to 2012 (Westmore,2013). The R&D spending of India in the public sector accounted for 80% of the total spending and 20% by the private sector.

The spending has been stagnating over the years and requires a renewed focus. The Government of India, realizing the need to support Indian industries, created many initiatives to support innovation such as National Innovation Policy 2008 and the Decade of Innovation 2010-2020 towards providing an innovative push for firms across sectors and industry (National Science and Technology Management Information System, Department of Science and Technology, GoI, 2011). Reiterating

the importance of innovation at the firm level the Government of India outlined a roadmap comprising the creation of State Innovation Councils and Sectoral Innovation Councils targeting inclusive growth and innovation. This was aimed at supporting central and state governments, universities and R&D institutions, and laboratories in the endeavor to be competitive globally and adequately responding to the local needs of the enterprises of their respective states and sectors (National Science and Technology Management Information System, Department of Science and Technology, GoI, 2011).

The survival of Indian enterprises in the global competition, requires enterprises to increase their technological knowledge base and improve their innovation capabilities. At the same time, as Indian organizations strive to move themselves up the value chain the importance of the production of innovative products, the enhancement of their innovation capabilities, government policies to support innovation and external knowledge sources become significantly important.

An important indicator for gauging innovation is the Global Innovation Index, which is often used as a reference. INSEAD in 2007 launched the Global Innovation Index project jointly with the World Intellectual Property Organization (WIPO) and Cornell University. This annual ranking is an index which surveyed 143 countries of the world on the basis of 81 specific indicators towards analyzing innovation capabilities and results.

From a South Asian perspective India has also witnessed and faced serious problems and challenges such as imbalances in income and growth of wage, a low level of literacy and poverty, and inflow of foreign investment across different states and regions. This is in addition to the sometimes entrenched problems such as lack of product innovation culture among firms and the weak links between research and development institutions and universities and the industry, which still exist. India has to effectively tackle these problems if it wants to achieve its ambition of being a developed economy. Liberalization on its own would not suffice for India to achieve its full potential for innovation.

This would require an overhaul of its knowledge economy and the interactions of its industry and community. The change in the research culture requires a strategic focus on nurturing innovation towards enhancing the capabilities and the institutions

pillars. The human capital would need to be effectively guided towards a knowledge economy and contribute positively to its innovative capacity. India unlike the other BRICS economies are inherently faced with challenges of innovation; namely, sustaining high innovation capability and equity of access.

This is evident from table 2.2, which provides a snapshot of its performance in the Global Innovation Index, which has seen its rank fall from the 23rd to a current dismal 76th in the 2014 ranking. The reasons attributed to this performance arise from the following challenges it faces: to strengthen graduate education and research at universities, the need to ensure quality, to provide equality of access. The gross innovation index (GII) report 2014 stated the popularity of innovation and its novel practices need to be targeted at upgrading organizational competencies and developing an environment that supports innovation, which are important components in boosting competitiveness.

This shows a growing need to focus on enhancing innovation capacity and providing a balance between exploration through competitive excellence and exploitation through collaborative excellence. This brings forth the prominence of the notion of the ambidexterity of innovation, public-private partnerships for R&D, and a clear sustainable development policy direction.

Table 2.2 GII of India 2007-2014

Year	Score*	Rank
2007	3.57	23
2008-09	3.44	41
2009-10	3.1	56
2011	34.52	62
2012	35.7	64
2013	36.17	66
2014	33.7	76

Source: Global innovation index report, 2007 – 2014

* For the period 2007 - 2010 the max score is 7 and then on from 2011 the score is between (0-100)

The dismal performance is weighed by its inherent weakness in its institutional pillars, namely the strength of the political system, the facilitating environment for starting a business, as well as human capital and research. This performance was despite an increase in Gross Budgetary Support to R&D by 30% over the previous 5-year plans and an annual growth rate of about 20-25% being maintained over the 11th plan period. This, as outlined in Figure 2.2 and Figure 2.3, clearly shows the existence of the realization gap over the years.

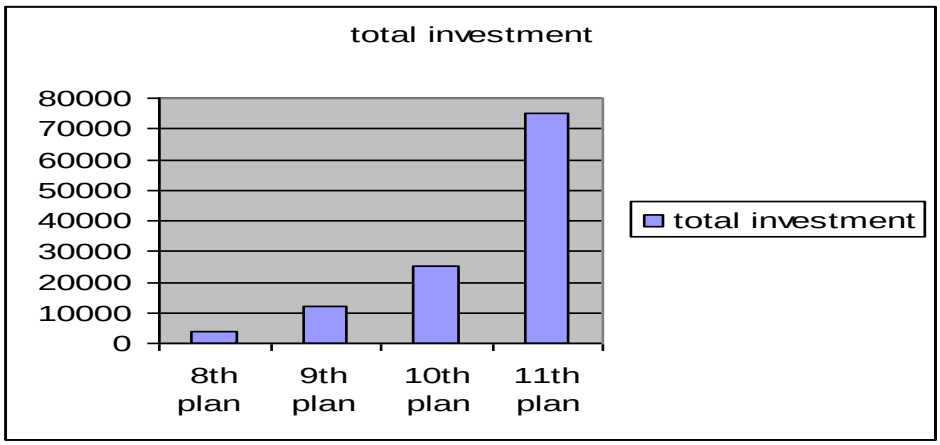

Figure 2.1 Public Investment in to R&D in India

Source: Research and development statistics report, Government of India, 2006-2012

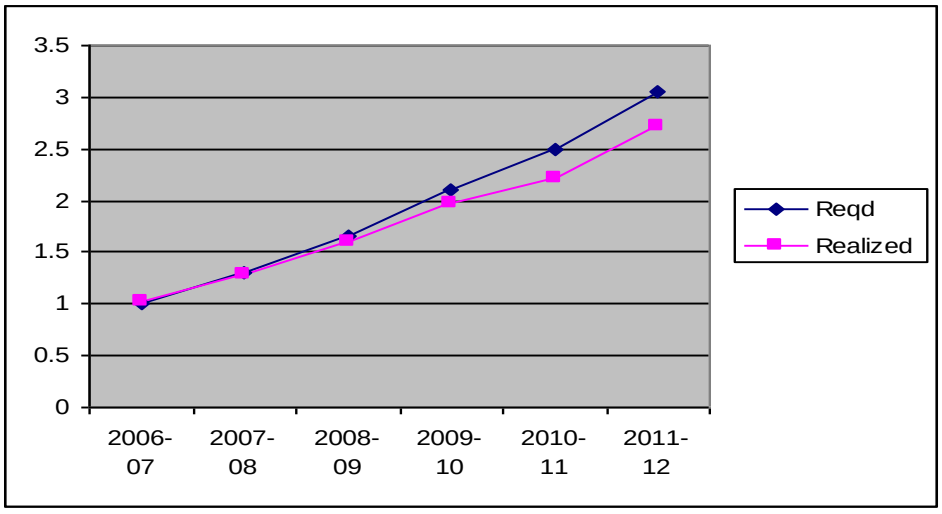

Figure 2.2 The realization gap

Source: Research and development statistics report, Government of India, 2006-2012

The picture gets clearer while considering the Gross Expenditure on R&D (GERD) distribution by sector of performance and reveals different patterns across Asian countries as shown in Table2.3.

Table 2.3 GERD by sector of performance (as percentage of total) in countries

	Government	Business Enterprise	Higher Education
Australia	13,7	58,3	25,1
Brazil	21,3	40,2	38,4
Brunei Darussalam	91,6	2,3	8,4
Cambodia	25,3	12,1	11,8
Canada	10,4	54,1	34,9
China	19,2	72,3	8,5
France	16,1	63,0	19,7
Germany	13,9	70,0	16,1
India	66,0	29,6	4,4
Indonesia	96,2	3,7	13,7
Italy	13,2	50,9	32,6
Japan	7,8	77,9	12,6
Korea	11,7	76,2	10,7
Lao PDR	50,9	36,9	12,2
Malaysia	5,2	84,9	9,9
Myanmar	..	..	..
New Zealand	27,3	42,7	30,0
Philippines	18,6	58,6	21,3
Singapore	12,2	66,8	21,6
Thailand	17,2	40,9	38,3
United Kingdom	8,3	64,2	25,2
United States	10,6	72,6	12,9
Vietnam	66,4	14,5	17,9

Source: OECD, 2011 (Note: 2007: Japan, Singapore, Korea, New Zealand, Brazil, China, Germany, India; 2006: Thailand, Malaysia, Australia, 2009: Canada; 2008: France, Italy, United Kingdom, United States; 2004: Brunei Darussalam, 2005: Indonesia, Philippines; 2002: Viet Nam, Lao PDR, Cambodia)

R&D is mainly performed in the government sector in Brunei Darussalam, India, Indonesia, and Lao PDR. In contrast, the business sector performs a large share

of R&D in countries with the highest R&D intensities: Malaysia, Singapore, and Thailand. The higher education sector performs a significant share of research and development in Thailand and less in the Philippines, Singapore, and Vietnam.

Looking at the developed countries such as the United States, the business sector there performs a large share of R&D and this is a scenario shared by countries such as Germany, Korea, and Japan. This underlines the success of innovation from the perspective of sustainability which contributes to the strong performance of their private sector and business enterprises. The initiative to move towards exploration practices that promote breakthrough innovation along with the inherent strengths in incremental innovation or exploitation practices is the key to the success in nurturing sustainable innovation.

The inferences clearly indicate that things are not working as they were envisaged in India, and the drive for innovation calls for the creation of collaborative research programs that provide a lasting impact through the promotion of ambidextrous learning within the very structure of the innovation systems.

This brings about the need for nurturing innovation with the right environment both from policy and socio-economic perspectives to understand the effectiveness in the strategic communities in terms of their distinct technological niches and providing the much-needed push for innovation across business enterprises and reversing the trend in India, as indicated in Figure 2.4 above.

The OECD figures clearly show the need for India to improve and reveal the innovation challenges it faces and has itself in the bottom half of most indicators, as shown in Figure 2.5 below. This clearly shows the growing need for enhancing R&D innovation across organizations.

This research looks at taking an inside-out approach to understanding innovation from a sustainable development perspective. There is potential for filling the gap through the contributions to overcoming the market inefficiencies and significantly improving innovative performance. Market orientation can often become a significant antecedent towards acknowledging the role of a broader ecosystem for the success of innovation. The role of such collaborative mechanisms within the framework of innovative processes for emerging markets has not been adequately researched and this research aims to fill the knowledge gap. This from a dynamic

capabilities perspective is crucial in a fast changing environment. This requires taking a holistic view where the paths, positions and processes constituting the sustainability practices of sustainability exploitation and exploration are looked at towards empirically establishing their impact on innovation performance or the bottom line dimensions of social, environmental, and economic goals by taking the sustainable development perspective. The unit of analysis was the organization. Organizations for the research were selected from the state of Karnataka which has seen the government focus a lot on innovation strategies and is regarded as the prospective innovation hub of India.

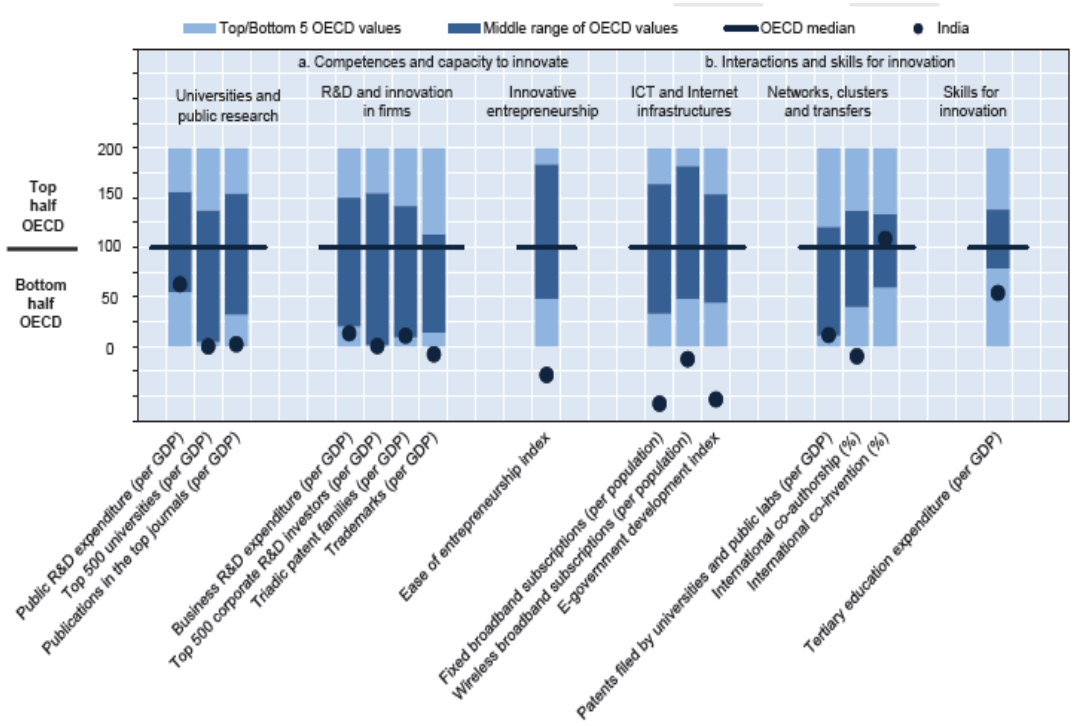

Figure 2.3 Normalized Index of Performance relative to OECD median values

Source: Science, Technology and Industry outlook,2014: 361.

The state has over the years retained itself as the frontrunner of innovation. The selected organizations were members of the chambers of commerce and came from across the industry classifications of manufacturing, accounting/auditing/ financial/leasing/consultancy, information technology (IT) and IT services, education/

research institutions, hotels/travel/tourism, satellite/telecom/ electronics, agribusiness/ biotechnology and others, as outlined in Figure 2.6. The organizations have striven to imbibe innovative strategies through the impetus provided by the government. However, their eventual effectiveness from the sustainability perspective is what this research importantly endeavors to analyze.

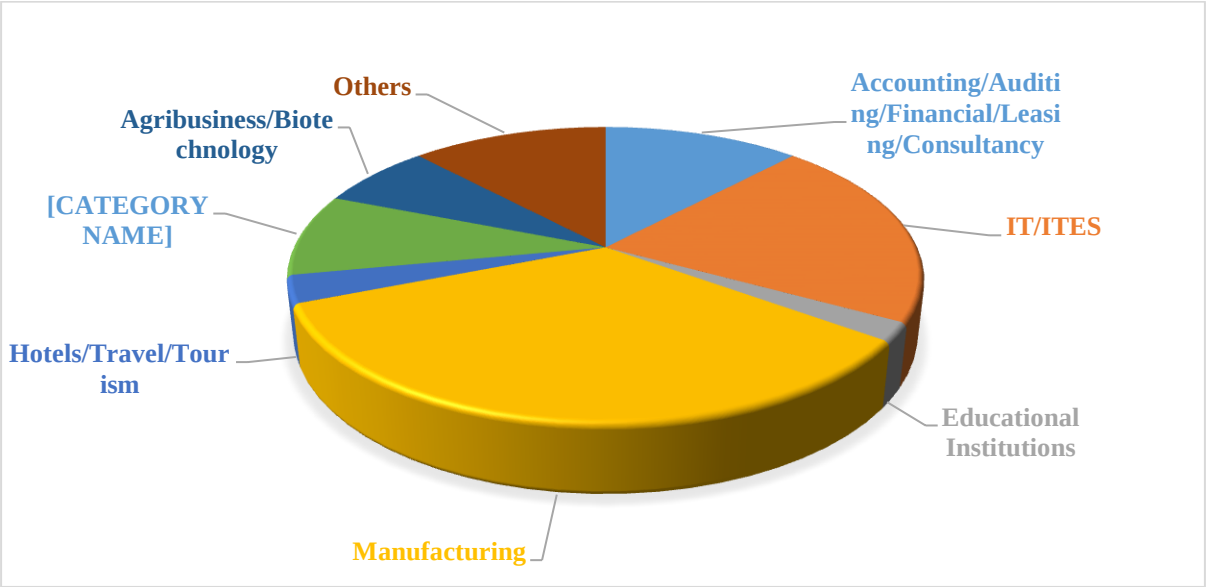

Figure 2.4 Classification of organizations

Source: Confederation of Indian Industry, 2014

2.5 Conclusion

The policy scenario of India has indeed recognized the much-needed focus for innovation and importantly understanding this from at the firm-specific level. The efforts of the government have not turned out to provide the expected results. There is no doubt that India is fast becoming the preferred destination for housing innovation centers (Bowonder et al., 2006). However, this requires the organizations to importantly enhance their innovation capabilities and expand their knowledge base. Today's ever-changing dynamic environment requires organizations to pursue sustainable innovation. Requiring an organization to scale up and move higher in the

value chain, and this makes it important for organizations to understand the dynamic capabilities required for fostering innovation performance. Organizations need to identify with sustainable and inclusive innovation by developing the capability of effectively implementing a sustainability agenda towards effectively delivering the benefits of sustainable development across Indian society. Taking this perspective forward, the following chapter reviews the literature and the conceptual framework.

CHAPTER 3

LITERATURE REVIEW AND FRAMEWORK

In an environment where increasing rates of change often pressure organizations, the need to innovate helps them to remain competitive in a dynamic environment. Innovation is crucial to the organization's competitive advantage which is regarded as the driving force for organizational performance (Dutta, Narasimhan & Rajiv, 2005; Geroski Machin & Reenen, 1993). This research takes sustainable development from a sustainability perspective, which has been considered as the crucial business factor by different stakeholders of the firm, comprising customers, shareholders, policymakers, and the representative communities (Sheth, Sethia & Srinivas, 2011; Epstein & Roy, 2003). The sustainability agenda also has an important bearing on providing the wider societal good (Crittendon, Ferrell, Ferrell & Pinney, 2011).

The chapter reviews the literature on the resource-based view, which forms the underlying basis of the dynamic capabilities theory, concepts of innovation, its performance, and its role in sustainable development. It further explains the variables considered to be the antecedents of sustainable innovation; namely, stakeholders' sustainability orientation, sustainable market orientation, organizations' internal trust, and the sustainability champions significance. The process variables of the sustainability practices of exploitation and exploration, helps establish their impact on innovation performance empirically under the "triple bottom line" dimensions of "environmental," "social," and "economic" goals from the sustainable development perspective.

The chapter outlines the theory development for the conceptual framework through the lens of the "dynamic capabilities theory," and subsequently leads to the research hypotheses.

3.1 Resource-Based View of the Firm

The resource-based view suggests that the basis for competitive advantage inherently lies in its resources and in the way an organization "structures, bundles, and leverages those resources" (Connelly et al., 2011). The resource-based theory essentially deals with the origins of competitive advantage and superior performance (Amit & Schoemaker, 1993; Michalisin et al., 1997; Barney et al., 2011), where the intangible resources are the focal concern while taking account of "performance variation" (Galbreath & Galvin, 2006). The resource-based view tries to explain the differences of performance based on the internal organizational level factors and the impacts of innovation as an organization's specific resource is often dealt with in the strategy literature. The organizations success is associated with its capability to create and maintain its competitive advantage and this is dependent on the resources available and the manner in which it is utilized (Conner, 1991). It was Lippman and Rumelt (2003) who highlighted the importance of this notion from a business strategy view, as it deals with "creation, manipulation, administration, and deployment of specialized resource combinations" and calls for research to be conducted under different settings and countries. The resource-based view provides a clear insight for sustainability by conveying the practices that could provide organizations with a competitive advantage and better manage their resources and effectively renew them in due course. This view requires limited assumptions regarding strategic behavior (Lockett & Wild, 2014). Since the 1980's, the strategy focus of the resource-based view was from Edith Penrose's seminal work, which gave it an academic basis (Takahashi, 2015). Penrose, in her research on the interconnections of strategy and business history, helped identify competitive advantages from internal sources, which was importantly based on "path dependency" and "resource heterogeneity" (Lockett & Wild, 2014). Barney suggested that resources could comprise assets that could be both tangible and intangible, including capabilities, processes of the organization, their knowledge attributes, and information on how the organization is typically managed (Barney, 2001). These help organizations to effectively strategize and enhance their efficiency.

It is in recent times that sustainable development has become a focus in business, and the issue of sustainability has hindered organizations' capability in creating value. This need had many researchers call for a "dynamic and sustainable" view of the firm which was deemed appropriate (Rodriguez et al., 2002). The resource-based view defined sustainability through the practices that provided the much-needed competitive advantage taking the competence perspective, but it was the dynamic capabilities theory that helped further strengthen the sustainability needed by considering the capabilities that are required in a changing environment and marketplace, which made it the perfect fit for the research. Additionally, the theories of market orientation and organizational learning also guided the research while considering the processes of the sustainability practices of exploration and exploitation, which are proposed and detailed under the conceptual framework.

3.2 Innovation and its theoretical basis

In establishing and retaining a competitive advantage, it is crucial for companies to have a process of integrating, accessing, and sharing the knowledge areas with regards to technology, business processes, and others that are spread out both within and outside the company through its networks (Grant and Baden-Fuller, 2004). This entails understanding a methodology that details the management of the innovation and technology diffusion that are used in the integration of the knowledge in its diversity, be it in the real or virtual world, for developing new products and business models.

The origins of diffusion theories clearly explained the adoption of technological changes as outlined by Everett Rogers. Significant research has been conducted on innovations in industrial and service settings as found in the literature, and there has also been a growing interest in innovations with regards to public service and policy, with the predominant focus on the educational and healthcare fields (Nutley and Davies,2000).

Everett Rogers in his book on the diffusion of innovation (Rogers, 1962) reviewed the existing ideas, which were summarized in the findings of the research, on the diffusion of innovation and articulated the typology of diffusion research,

which focused on the innovation process. Eight categories of research were essentially identified and outlined as stated below.

3.2.1 The identification of innovations at an early stage: Here the early knowledge ideas of innovation are to be in line with the complete social systems.

3.2.2 The different rates of innovation adoption within the social system: Looking at the patterns of diffusion with the focus on the nature of innovation

3.2.3 Innovativeness: This essentially focuses on the characteristics of both individuals and organizations, which were considered to be innovative.

3.2.4 Opinion leadership: The opinion leader's role and change agents who take the lead in diffusion.

3.2.5 Networks of diffusion: These look at the different social interrelatedness of actors within their system based on which diffusion is analyzed.

3.2.6 Adoption rates in different contexts within social systems: This tries to explain the uptake based on the characteristics and contexts embedded in the social system.

3.2.7 Communication channels: Communication channels were noted to be crucial for the process of diffusion, under the various categories of prospective adopters.

3.2.8 Innovation consequences: This assessed the potential impacts as innovation diffusion in social systems.

A more pragmatic approach was taken by Wolfe (1994), who argued the importance of distinguishing between the research of innovation streams that are based on the conceptual differentiation as follows:

3.2.9 Diffusion Patterns: The focus was essentially on the patterns of acceptance or intake of new ideas across the population of likely adopters. The combined adoption over time was represented by an s-shaped curve, which initially shows a slow uptake, then becomes more rapid, before it tapers off (Fischer and Carroll, 1988). The fundamental unit of analysis here is the innovation under this stream.

3.2.10 Organizational innovativeness: The research identified the determinants of organizational innovativeness and the unit of analysis was the innovative behavior being analyzed. What often gets ignored are the innovation

changes within the adoption and innovation process, while the focus is typically on the decisions for adoption instead of its implementation as such (Downs and Mohr, 1976).

3.2.11 Process theory: Here the focus lies on the processes that individuals and organizations consider for innovations being effectively implemented. The unit of analysis was the process of innovation. Each takes a different approach to the conceptualization of innovation and the diffusion process and provides his or her own insights and drawbacks.

3.3 Innovation Performance and the Triple Bottom Line

The importance of innovation has not only been attributed under the resource-based view, but its origins go back to "classical economic thought" (Kamasak, 2015). The sustainability and innovation literature helps to define sustainable innovation as the generation, acceptance, and effective implementation of innovation that inherently concerns social equity and environmental integrity without sacrificing economic prosperity. This is referred to as the "triple bottom line." Innovation activities and processes have become the crucial growth driver, and those countries that do not adopt the new technologies will not grow as fast as those that have. This requires that organizations have a complete idea about the innovation antecedents for increasing innovation performance (Kamasak, 2015). Rouse and Daellenbach (2002), taking the resource-based perspective considered knowledge, technology, routines, strategy, structure and culture as crucial for innovation performance. Terziovski (2010) established a theoretical framework adopting definitions of innovation that were integrative in nature. This was put forward by Freeman (1982) and Bessant and Tidd (2007), whose model comprised innovation strategy, the customer's and the supplier's relationship, formal structure, and technological capabilities and innovation culture as the independent constructs that predict innovation performance. Butlin and Carnegie (2001) put forth innovation performance antecedents as follows: an ambitious business agenda, a clear purpose, and closeness to the customer, leadership, organizational culture, systems, infrastructure, skills, and human resources. Felin and Hesterly (2007) for their part regarded innovation performance to be linked with

knowledge and the actions taken by the individuals that manage this knowledge. In today's business scenarios organizations have begun to include and address the multiple stakeholder sustainability concerns through an array of innovation efforts, and this research is timely in terms of understanding how the sustainability processes impact the broader innovation performance outcomes, also known through the triple bottom line, which includes the social and environmental aspects, as well as the financial performance (Elkington, 1997).

The innovation literature, along with the theory of dynamic capabilities, provide several internal factors which may contribute to the enabling of sustainability, which includes a market orientation that brings about the sensitivities of the stakeholders and goes beyond competitors and customers (Crittendon et al., 2011). Sustainability is found to have been understood with the process variables of sustainability exploration and sustainability exploitation, which helps contribute to innovation performance by impacting the "triple bottom line." The framework for this research was guided by the dynamic capabilities theory. Young and Tilley (2006) put forth the notion that the business approach for sustainability has moved from pollution control towards socio-efficiency and eco-efficiency. The inherent fact is that the economic benefits are aligned with environmental performance pursued with measures for the reduction of resource consumption and minimization of waste and social performance by way of minimizing negative and maximizing positive social impacts. The case for the strategic focus on sustainability has for long dealt with the links between environmental, social practices and corporate sector's economic performance (Salzmann, Steger & Ionescu-Somers, 2008). This research aims to provide clarity regarding achieving a competitive advantage and fostering the growth of innovation performance. Innovation from the dynamic capabilities perspective, tries to empirically reaffirm the roles of the path, position and processes and the evenPortertual contribution of sustainability practices and their subsequent impact on Innovation performance looked at with its effect on the "triple bottom line." This detailed further under the conceptual framework.

3.4 The Sustainable Development Perspective for Innovation

In 1983 the "United Nations World Commission on Environment and Development" (WCED) provided a mandate for sustainable development which formed the basis of the ''Brundtland report'' (WCED, 1987), defining the concept and its applications. The late 1990's the understanding of the concept was built on the "three pillars of sustainability,'' namely the economic, environmental, and social objectives where the definition focuses on the coupling of environment and development aspects. ''Our Common Future'' referred to as the Brundtland report, focuses on the seven ''strategic imperatives:" i) rejuvenating growth, with the change in its the quality; ii) handling the needs that are essential; iii) ensuring a sustainable population level; iv) increasing and conserving the resource base; v) reorientation of technology and risk management; vi) merging the environment; and vii) decision making economics. These have been the basis of the sustainable development agenda, as part of the UN policy, which has evolved over time to become more environmentally focused. The key issue concerns the promotion of shared responsibility amongst the diverse actors in government and society and the inclusion of the environmental dimension in the core policy areas. The three pillars approach constitutes the environmental, economic, and social dimensions of sustainability that mutually reinforce one another. Needless to say the interpretation of sustainable development is one that decision makers interpret in different ways, considering the openness to every context. ''Sustainable development'' is pertinent in the social and political discourse. The development and implementation of innovation policies are by far a challenging task that importantly deals with regional development. This is more so in the case of less favorable locations that need innovative firms and their implementation frameworks. This has led to the importance of policy making that takes a more holistic and strategic approach to sustainable development.

Porter and Van der Linde presented their argument that organizations must develop innovation capability through the creation of innovative solutions that are environmentally friendly (Porter & Van der Linde, 1995). This could be achieved by taking the right path, positions and processes as envisioned under the dynamic capabilities approach, which is what this research tries to reaffirm empirically. This is

despite the limited evidence, which is based on methodological rigor towards supporting the sustainable development orientation (Terziovski & Guerrero. 2014). Organizations have indeed responded and also more importantly have profited through emerging "environmentalism" as the crucial value for society (Ottman & Reilly, 1998). "Green marketing" has emerged as a growing innovation opportunity. There is a debate however on the effect on their bottom line. The notion of "going green" gives a competitive and strategic advantage by providing low costs and importantly the differentiation of products (Polonsky, 2001). It is evident from the recent years that environmentalism asserted itself as a crucial factor in innovation. Sustainable innovation is indeed a growing force that drives change in business and society (Larson, 2000). It has the potential to transcend and transform markets and their products, technology, as well as identifying their area of entrepreneurial opportunity. That said, organizations need to have the capabilities and knowledge to develop "green" products, and to identify and capitalize on the diverse opportunities they bring about. Gomes, Kruglianskas and Scherer (2011) brought out the need for looking at management practices that were aligned with sustainable development, typically comprising practices which dealt with the competitiveness of organizations and their impact on innovation performance. These practices were looked at as influencing the capacity for innovation and providing value to products based on social and environmental needs. This approach highlighted the need for a socio-environmental and economic focus but did not entirely look at the organization's process level interventions for nurturing innovation.

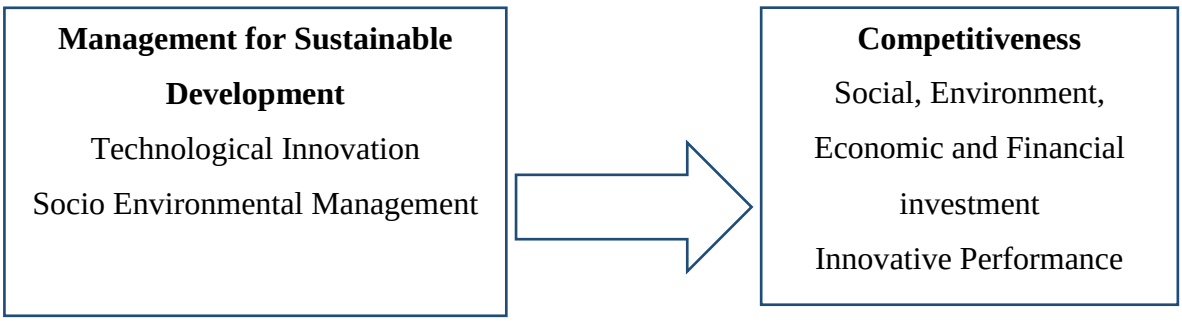

Figure 3.1 The Research Model

Source: Adapted from Gomes et al, 2011: 124.

There have been qualitative research studies done across different industries, where often the practical and theoretical understanding of integrating environmental and social issues into organizational strategies is put forth. Sustainable development is considered to be the change process, where the resources are exploited, with the investments movement towards development of technologies, with changes for institutions created in line with both current and future needs (Banerjee, 2002). The organization's environmental orientation was apparently focused on the commitment to environmental protection, internal values, standards of ethical behavior, environmental responsibility, and external stakeholders' perceptions towards responding to the demands of the stakeholder in line with the need for sustainable development. The future areas of research identified by them were the emerging areas of i) social sustainability, the ii) analysis of the sustainability practices in different industry contexts, and iii) the stakeholder's role in the path towards a sustainability-required focus.

An environmentally-friendly approach when driven bottom-up helped companies save huge amounts of monetary resources (Hart, 1997). Most companies fail to take the opportunity and recognize the benefits of the strategy linking sustainable development. This requires organizations to incorporate sustainability agenda into their innovation process. The sustainable development orientation (SDO) was proposed as a construct providing a model outlining the relationships between SDO and business success (Goldsmith & Samson, 2002), and the construct essentially helped described the extent to which organization culture is effective in meeting social, economic, and environmental needs, and this importantly provides the strategic direction of the business.

The approaches to sustainable development was considered to occur across three levels in the organization: culture, strategy, and practice, which are essentially directed by the sustainability orientation.

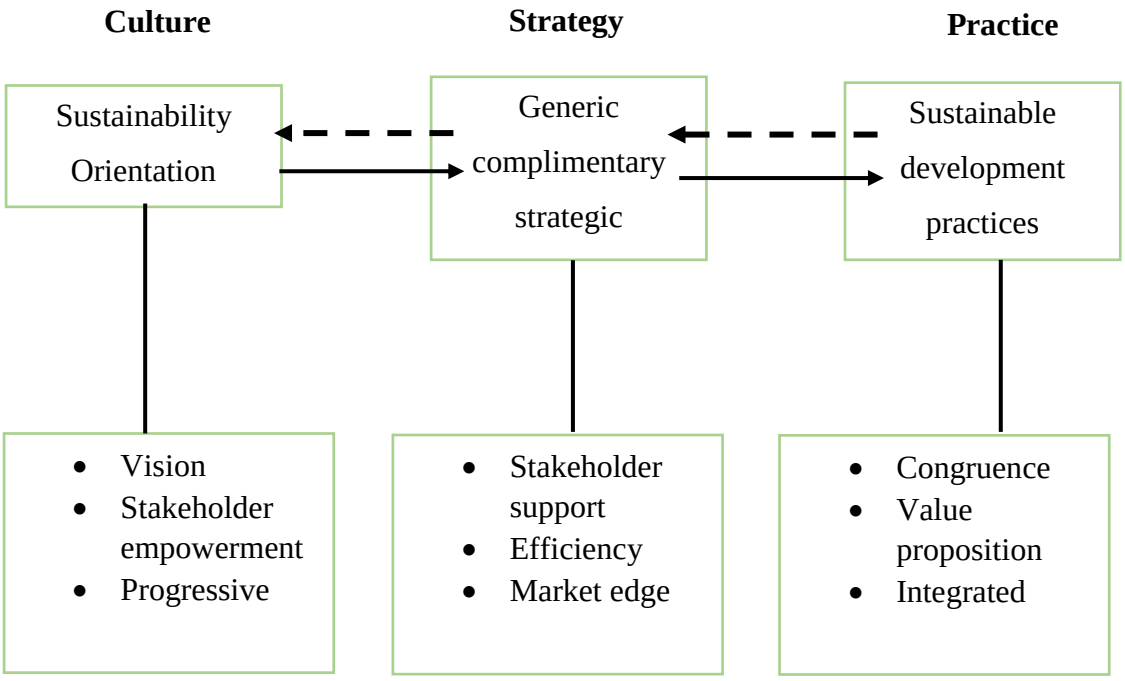

Figure 3.2 The Sustainable Development Approaches
Source: Goldsmith & Samson, 2002; 47.

The European Commission importantly considered eco-innovation to be linked to sustainability (European Commission,2007): "Eco-innovation is any form of innovation aiming at significant and demonstrable progress towards the goal of sustainable development, through reducing impacts on the environment or achieving a more efficient and responsible use of natural resources, including energy." Taking this notion Carrillo Hermosilla, del Río, and Konnola. (2010) presented a more concise definition considering "sustainable innovation" to be the factor that improves "sustainability performance." This in essence is the effectiveness and outcome of the innovation performance, which considers the economic, social, and ecological criteria.

Sustainable development requires a transformation within the processes (Boon and Wagner, 2009). Incremental innovation is related to the processes and products related to existing "consumption" and "production" systems, which by itself cannot provide an optimal solution for sustainable innovation (Frenken et al., 2007, Larson,

2000). Sustainable innovations from the sustainable development perspective go beyond the normal innovations both at the product and process level by positively impacting the triple bottom line (Charter, Gray, Clark, and Woolman, 2008). This goes further than the concept of eco innovation by including the social objectives and provides the more holistic perspective of "sustainable development that considers both the long term and short term sustainability objectives (Boon et al., 2013). Hence the processes with sustainability considerations are required to be integrated into the organization's systems (Charter and Clark, 2007). It is keeping with this perspective that the research looks to identify the role played by the intervention of sustainable practices under the constructs of sustainability exploration and sustainability exploitation enumerated below. Further, the novelty that this research provides is to analyze and provide the empirical ground towards sustainable development led by the combined pursuit of sustainability exploration and sustainability exploitation from the sustainable development perspective and its effect on innovation performance.

3.5 Exploration and Exploitation

Today's competitive world and the fast-changing environment make innovation a crucial capability for surviving competition. Organizations importantly need to pursue exploration, which helps provide the much-needed competitive advantage, but that said it would have to also consider exploitation for innovation to keep pace with the changes in the environment. Achieving the correct balance is always a challenge where an overt focus on exploration can threaten the organization with financial volatility, while too much exploitation could make the organization lag well behind its competitors (Lin, McDonough, Lin and Lin, 2012). This requires organizations to thrive at both and overcome them towards achieving the strategic challenge. Therefore, the capability to simultaneously exploit the current competences as well as searching for new opportunities under the ground-breaking research of Duncan (1976) came to be referred to as organizational ambidexterity. The concept has become popular over the years as ambidexterity has continuously been found to have benefited innovation (Raisch, Birkinshaw, Probst & Tushman, 2009) and making it pertinent to analyze this notion under this research. The ambidexterity

theory essentially counters the view of exploration and exploitation tradeoffs and offers ways in which organizations could equally excel in both of these activities with similar dexterity (Raisch et al., 2009).The essence of ambidexterity from the organization's perspective concerns its capability to simultaneously deal with situations of conflict and contradiction such as adaptation and organizational alignment, incremental and radical change, flexibility and efficiency of manufacturing, and the formation of strategic alliances (Tushman & O'Reilly, 1996). Hence "Exploitation" as well as "exploration" are considered as focal dimensions of organizational "ambidexterity."

The components of organizational ambidexterity, namely exploration and exploitation (EE), are grounded in organizational learning (OL) theories. Though there is not a universal theory of organizational learning (Easterby-Smith, 1997; Fiol & Lyles, 1985), organization theory research does provide distinctions for the design of structures for efficiency and innovation.

Huber suggests that there not much as a substantiated theory with regards to organizational learning and there is growing need and chances for filling the many gaps (Huber, 1991). This research tries to understand how organizations can effectively manage organizational capabilities towards fostering innovation. This advances the understanding of the relationships between exploration and exploitation and innovation. It also understands how sustainability practices affect the innovation performance of the firm. This research is both theoretical and empirical in nature and provides a detailed analysis. The research proposes a framework for understanding the determinants fostering innovation performance, which is aligned across the distinctions that capture the synergy of sustainability exploration and sustainability exploitation.

The ambidexterity hypothesis of Tushman and O'Reilly (Tushman, Reilly, 1996) considered that ambidextrous organizations attain a competitive advantage through continuous innovation, which could be both radical or incremental, which was a view shared by He and Wong as well (He & Wong, 2004). A knowledge gap does exist with regards to the evidence provided in understanding the roles played by exploration and exploitation in promoting innovation capabilities. Tushman et al. (2006) studied the interrelationships across organizational design and the streams of

innovation, concluding that ambidextrous designs of organizations often provide innovation outcomes better than others. He and Wong (2004) also recognized the significance of innovation outcomes by measuring the outcomes of innovation as the intensity of process and product innovation, but apparently did not establish an empirical link with any of the two measures of ambidexterity and innovation.

March (1991) presented his analysis of learning activities, which included experimentation-oriented, variation-seeking, and risk laden activities aligned under exploration and exploitation. It was March's view that aimed at defining exploitative learning denoted by exploitation as the refinements of current knowledge and skills for product development, as well as explorative learning regarded as the search for knowledge in new areas for product development, which was a view shared by Benner and Tushman (2003).

It was argued by March that towards overcoming the changes in the environment, organizations importantly need to balance exploitation and exploration. There is a problem when having more of both, where too much exploitation would provide the inertia, and increased exploration results in efficiency reduction (Levinthal & March. 1994). Both exploration and exploitation des often provide competing rationalities, while "exploitation" is linked with efficacy, refinement, and a clear direction, and "exploration" provides divergent thinking and continuous experimentation with apparent flexibility (March, 1991). However, that said, an organization's survival would depend on its capacity to concurrently handle both exploitation and exploration (Raisch et al., 2009), which is considered under its ambidexterity.

The relationships between both exploration and exploitation is competitive in nature (Gupta, Smith & Shally, 2006). This competition over resource shortages, which are in conflict over the routines within the organization (March, 1991). On the flip side, exploration and exploitation could both become complementary and support each other (Katila & Ahuja. 2002). Integration basically constitutes finding opportunities and putting forward the relationships and complementariness of exploitation and exploration. Therefore, differentiation and integration are the two dimensions of focus for organizational innovation. He and Wong distinguished exploitation from exploration based on whether indeed organizational innovation was

aimed at enhancing current product-market domains and taking new positions (He & Wong 2004). On the other hand there are researchers that suggest that no learning happens in exploitation since organizations are just reutilizing their current knowledge.

Hence it is purported that exploration only provides for learning heading to innovation. Interestingly when an organization is attempting to do nothing but the mere replication of past actions, it consequently accumulates experience towards going through the learning curve, in an incremental manner. Both exploitation and exploration are considered important approaches for the organization to utilize, search for, and create organizational knowledge. Different outcomes of innovation require innovation with different types of activities. With both exploitative and explorative activities, organizations aim to achieve the accumulated experiences of learning to provide the efficiency of organizations.

Organizations often are engaged in many activities for solving problems (Katila and Ahuja (2002). Katila and Ahuja linked "search depth" with exploitation categorized by the usage of existing knowledge. While "search scope" linked exploration to the manner in which organizations explored for new domains of knowledge. Exploitation and exploration could inhibit innovation despite organizational learning helping development. The competence trap may be led by exploitation because of the tendency to maintain the current strengths and exploration could lead to a failure trap owing to the continuous risks taken and thereby certainly affecting the organizational learning.

Therefore, in order to avoid competence and failure traps a combination of both activities are required (Levinthal & March, 1993; Liu, 2006; March, 1991). Researchers have been keen to identify competitive advantages and opportunities with regards to "corporate environmentalism" and if indeed they exist (Prajogo, Tang & Lai, 2012). The literature shows that the greening of operations from the sustainability perspective has benefited the organization's operations with regards to innovation, productivity, and the reduction of costs (Iraldo et al., 2009).

3.6 Sustainability practices of sustainability exploration and sustainability exploitation

The research takes the concepts of both exploitation and exploration towards understanding the construct of sustainability practices under the theme of sustainable development. These essentially stem from the concept of sustainability, which according to Dyllick and Hockerts (2002), constitutes the following elements: i) the organization that is sustainable considers the economic, social,, and environmental aspects that are in line with the "triple bottom line" concept; ii) strategy solicits a longer term business perspective that is formed on the basis of stakeholders' needs in the present and the future; and iii) the organization that is sustainable are not merely profit centric.

That said, it is important to understand the circumstances under which such sustainability practices are to be engaged for them to be effective and equally essential to differentiate them on the basis of the knowledge domains. The stakeholder's involvement is keying the organization's operations and direction of focus and needs to be reiterated as this leads to a proactive environmental response and subsequent improvement in the performance of the environment (Rasi, Abdekhodaee, & Nagarajah, 2014). Both the concepts of "sustainability exploitation" and "sustainability exploration" are associated with organizations that wish to succeed in both the improvement of their current products (regarded as derivative innovation performance) and new product production (regarded as breakthrough innovation performance). Organizations should be able to be involved in both innovation activity types (De Visser et al., 2010). From a sustainability perspective, organizations are expected allocate resources for the requisition of products and services that are sustainable. Considering this notion, an organization must develop and exploit competencies that will enable the capacity for creating new avenues for improving sustainability for current products to achieve competitive advantage (Pujari, Wright & Peattie, 2003). Two of the types are "sustainability exploration" and "sustainability exploitation," which are enumerated below, are defined under the research model of Maletic et al., 2014a.

3.7 Sustainability exploitation

The literature provides the theoretical arguments which are found to confirm the notion that the exploitation concept could be utilized for sustainability, as Maletic et al. outlined under their research framework, as shown in Figure 8 (Maletic et al., 2014a). Maletic et al. considered an organization's performance to comprise the constructs of innovation performance, environmental performance, and social performance. The perspective of sustainability exploitation practices, require organizations to accomplish gradual improvements towards effectively addressing the concerns of reductions in resources such as water, materials, and the energy used, as this is coupled with the enhancement of productivity (Stone, 2006).

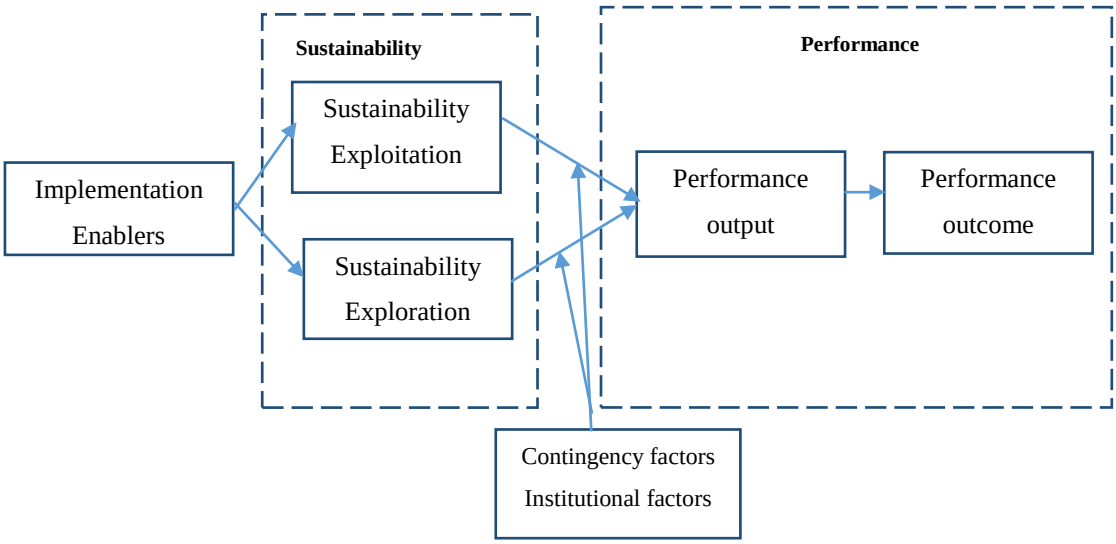

Figure 3.3 The Research Model
Source: Maletic et al, 2014a: 188.

Hence the key principle of the sustainability practices of exploitation is to increase the performance of sustainability and to enhance their inherent innovation capabilities (Wagner, 2010, Schaltegger and Wagner, 2006). The inclusion of stakeholders and their needs is the very first step for sustainability (Seuring and Gold, 2013), which many studies regard as the driver of sustainability performance (Asif et al., 2010; Searcy, 2011). The approaches that have been employed by organizations to

focus on the issues of corporate sustainability towards enhancing their sustainability practices were many. The need therefore is for the diverse approaches to be monitored with appropriate performance measurement systems (Searcy, 2011), and this is again an integral part of sustainability exploitation practices. Additionally, Cote et al., (2009) have suggested that sustainability exploitation from an operational perspective aims to increase the organization's capacity to apply economical and low cost solutions to solving the issue of sustainability. Exploitation could therefore be defined as the organization's ability to enhance sustainability performance by ongoing incremental improvements, which the organizations undertake towards effectively addressing the concerns of the key stakeholders and contributing to improvements in productivity. This could involve changed offerings of products and services, adopting new operating practices that are technological, organizational, or market-oriented, or creating new skills and competencies.

3.8 Sustainability exploration

Organizations often require a clear focus for innovation, especially when the exploration of new areas is in a position to contribute to sustainable business management. The notion of sustainability-related innovation has recently gained popularity mainly because of looking at effective ways to achieve product developments through a manner that is sustainable (Hallstedt et al., 2013). From a business perspective the focus has been on linking sustainability with innovation (Wagner, 2008). Previous studies on sustainability exploration practices have reflected the processes of innovation, product innovation, and sustainability-oriented learning. In the product-market domain, it could be argued that organizations allocate resources for knowing the stakeholder's needs and their expectations, which could be linked with development in their early stages be it for new products or services (Polonsky & Ottman,1998). Innovations in the manufacturing process do evolve fresh solutions for sustainability (Rennings et al., 2006) that can be attributed to the agenda of sustainability exploration. Sustainability exploitation and sustainability exploration practices are regarded as interlinked with the domain of knowledge distance. The challenge persists with maintaining the balance or the concurrent pursuit of both

sustainability exploration and sustainability exploitation. This is more pertinent when sustainability exploitation consists of local searches, which add to the organization's existing sustainability capabilities, and on the other hand when sustainability exploration goes well beyond the local scope of new avenues and innovative capacities (Van Kleef & Roome, 2007). Both types of sustainability practices of exploitation and exploration often have more to do with knowledge building or learning towards enhancing the processes for capability building instead of concrete measures with regards to processes and products (Li et al., 2008).

In the globalized world of today most organizations pursue sustainability without having a clear focus or a strategy for the long term; this eventually hinders their overall mission or envisaged plan. This research takes the essence of sustainability from the sustainable development perspective, which is looked at from the perspective of the dynamic capabilities theory. The fact remains that today organizations realize the importance and growing pertinence of sustainability, which is often the strategic differentiator that stands out in the environment that is competitive. This theory of Teece, et al. (1997), is influenced by the works of Schumpeter (1942), Prahalad and Hamel (1990), Nelson and Winter (1982), and Hayes, Wheelwright and Clark (1988). This theory has gained relevance from the fact that it addresses the exploitation of the organization's competencies in the fast changing or dynamic environment, as is the case for sustainability.

3.9 Dynamic Capabilities

The dynamic capabilities approach perfectly suits the context of this research, which is regarded as an extension of the resources-based view where the processes involved in pursuing sustainable innovation are dynamic and call for new directions over those considered under traditional innovation. It advocates that organizations could build upon their internal firm-level advantages towards enhancing their effectiveness and efficiency. The definition of Teece, Pisano, and Shuen (1997) was modified by Eisenhardt and Martin (2000) towards defining the organizations capabilities and their strategic routines through which organizations achieved their new configurations of resources in their environments of developing and changing

markets. That said, the dynamic capabilities view does mention the difficulty of replicating the performance and behavior of organizations. The dynamic capabilities in the view of Eisenhardt and Martin (2000) were the antecedent organizational and strategic routines based on how managers allocated their resources, obtain and remove resources, amalgamate and recombine them towards the creation of strategies that created new value (Pisano, 1994, Grant, 1996). Teece et al. considered dynamic to the changing environment of the growing technology changes and market forces that ensure their "feedback effects" on the firm. This research takes the stance that for firms to be successful the focus needs to be on achieving a competitive advantage through sustainability under the theme of sustainable development, which has become a necessity and not an option. This requires organizational capabilities and their efficiency to be unique to each organization, and to be aligned along its resource base. Hence the focus needs not be only on the competition but more on the development of the organizations own competitive advantages. This is line with the very essence of the dynamic capabilities approach. It takes the resource-based view strategic approach by effectively utilizing the organization's assets and resources in a dynamic market environment that is pertinent to the characteristics of today's business environment. Both the resources that are internal and external requirements of the organization, along with the functional competencies, need to be appropriately aligned with the changing environment.

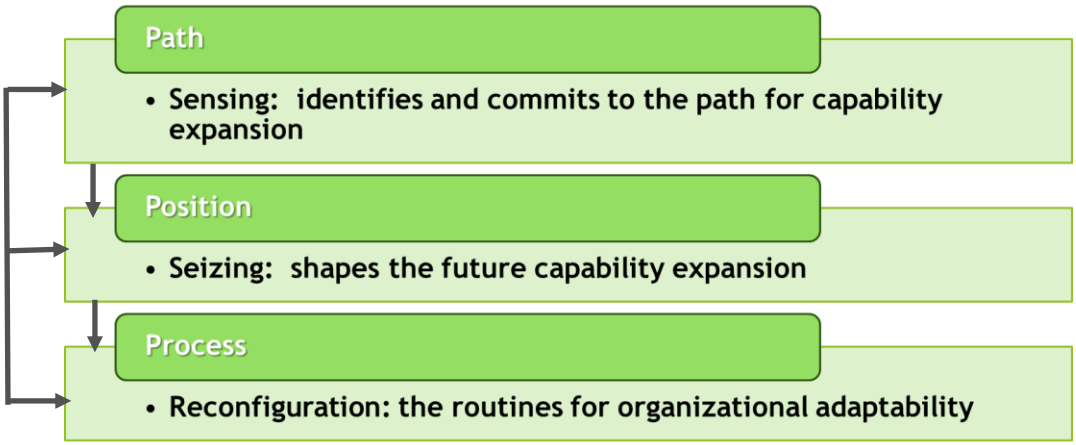

Figure 3.4 The Dynamic Capabilities Framework

Source: Adapted from Teece, 2007:1320.

Eisenhardt and Martin (2000) noted that the resource-based view was not effective and its difference from the dynamic capabilities framework lay in its emphasis of the two core aspects, namely the "dynamic," which indicates the capacity to regenerate competencies and are aligned with the changing environment. And the other being the "capabilities," which outline the strategy's role in the integration, adaptation, and reconfiguration of both aspects in dynamic environments. Maintaining a strategic advantage is the key and often is a challenge during unpredictable time periods. Sustainability therefore is regarded as the crucial goal of organizations (Closs et al., 2011), which is pertinent in today's changing business environment.

The dynamic capabilities foundations are essentially segmented according to the following capacities: (i) to be able to sense and build on the different opportunities and likely threats: "sensing;" (ii) to capitalize upon the available opportunities: "seizing"; and (iii) by the enhancement, combination, and when required the reconfiguration of the organization's tangible and intangible assets towards building and maintaining its competitive advantage: reconfiguration/transforming (Teece, 2007). The theory appropriately guides this framework from the fact that it provides the basis for organizations achieving their competitive advantage within the dynamic market environment. The sustainability context is approached through the constructs of sustainability practices; namely, "sustainability exploitation" and "sustainability exploration" (Maletic et al., 2014). Teece et al. outlined the path, positions, and processes for organizations performance (Weidner, 2013).

3.10 Conceptual Framework

The determinants of innovation from the dynamic capabilities perspective comes as three dimensions in the dynamic capabilities theory. They are the "path," the "positions," and the "process" leading to their subsequent outcomes. The dynamic capability is a useful theory for this empirical study as it aims to achieve the sustainable development perspective on innovation, which has dynamic reconfigurations of the organizations capabilities in response to the changing environments (Teece et al., 1997). The "paths" refer to the alternatives available to a firm, which are strategic (Teece et al., 1997), and comprise their dependencies of the

path taken as a driver of innovation capability. The "positions "refer to the resources that are available to an organization and entail the specific requirements of intellectual property, technology, customers, and their external relation with suppliers and other networks. The "processes" (Teece et al., 1997) are largely defined as the routines that shape the way a firm does its business. The organizational processes are expected to have the roles of coordination/integration, learning, and reconfiguration. Under the theory of dynamic capabilities, Teece (2007) classified organizational sources of innovation and manufacturing according to the provision of sustainable advantage through the requisition of dynamic capabilities. Towards taking a holistic view of the capabilities, the present research looks at the overall dimensions of the paths, position and the processes under the specific foundations of these dimensions, which are built around the three key capacities that need to be garnered, enhanced, and subsequently attained. They are: i) sensing, ii) seizing, and iii) Reconfiguration or transformation (Teece, 2007). The conceptual framework of the research takes the approach of Wiedner (2013) further, and includes research variables that fall into each of the categories to better understand and provide the basis towards assessing their impact on the dependent variable of innovation performance.

3.10.1 Sensing: This typically identifies and provides the basis of the commitment to the path taken towards capability expansion. This helps provide a competitive advantage (Amit & Schoemaker, 1993) and enables superior performance. These capabilities could be considered as buyer-supplier relationships, customer relationships. Sensing could be considered as a strategy that aligns with "creation, manipulation, administration, and deployment of specialized resource combinations" (Lippman & Rumelt, 2003) in line with the stakeholders' needs towards bridging the sustainability gap. The variable of stakeholder sustainability orientation would come under this capability and under the theoretical framework it is guided by the notion that the existence of a market for sustainable products and services is the much needed impetus for the organizations' pursuit of innovation related to sustainability.

3.10.2 Seizing: This is essentially the position that organizations take to shape future capability expansions. It forms the basis for competitive advantage, which inherently lies in its resources and in the way the organization "structures, bundles,

and leverages those resources" (Connelly et al., 2011) with its roots in the resource-based view. This entails a market orientation for sustainability, which has a focus on the market needs and requirements and the interests of the primary and secondary stakeholders to thrive and adapt to the external environment to pursue the sustainability agenda (Hult, 2011; Kohli & Jaworski, 1990; Hunt and Morgan, 1995; Rasi et al., 2014). Sensing could also be looked at from the cultural perspective by identifying the climate of trust within the organization, which could be attributed to the positive expectations regarding the sustainability drives (Baumgartner, 2009; Huff & Kelley, 2003, Kramer, 1994, Gillespe, 2003). The research takes the theoretical framework of having three variables represent the seizing capability and which are considered to be the antecedents of the sustainability of innovation. They are i) a sustainable market orientation, ii) intra-organizational trust, and iii) the sustainability champion significance. These intangible resources of the organization gain relevance on the basis of impacting managerial decision making and organizational strategy which are relevant in the ever-dynamic and evolving markets. Hence the role of internal resources through the positions is a crucial element for the long-term strategic vision that is focused on sustainability. Understanding the eventual impact of the intangible resources on innovation performance is a contribution of this research.

3.10.3 Reconfiguration: These processes are the routines for organizational adaptability, which are employed by organization to understand the changes that are in technologies and their markets, and also transform the organizations in line with the changing environments of competitiveness. This would require a continued scanning, benchmarking, and an effective evaluation of markets and their competitors, and obtaining the transforming capacities of their configuration processes towards retaining their strategic advantage (Teece et al., 1997). The need for a "dynamic and sustainable" view of the firm appropriately guided this research from the fact that it provides the basis for organizations to achieve a competitive advantage within a market environment that is dynamic (Rodriguez, Ricart, & Sanchez, 2002). The sustainability context is approached through the variables of sustainability practices; namely, sustainability exploitation and sustainability exploration (Maletic et al., 2014a). This research outlines the capabilities and competencies that are dependent on the processes, and guided by the positions and paths that are focused along the

required capabilities as detailed under the conceptual framework towards achieving sustainable innovation performance. The view of the dynamic capabilities theory, detailed above, guided the application of the constructs as outlined under the conceptual framework (in Figure 9). Innovation and sustainable development are regarded as the drivers of development and are importantly linked and sustain each other with a relationship that has been reconciled (Bouglet and Joffre, 2012). This research taking this basis regards sustainability as the driver of competitive advantage, and goes further by looking at the sustainability practices of sustainability exploitation and sustainability exploration as the important processes for understanding the organization's sustainability agenda.

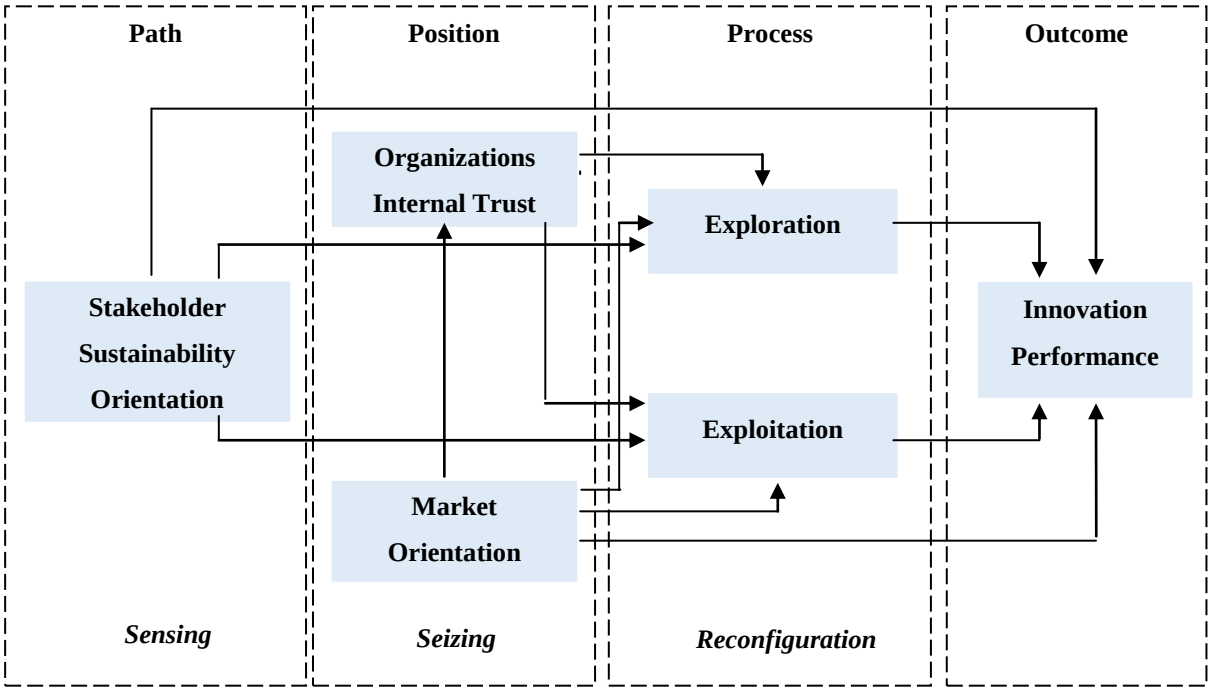

Figure 3.5 The Conceptual Model

The sustainable development perspective is assessed under the impact of the processes of sustainability practices; namely i) sustainability exploration and ii) sustainability exploitation. The variables of this research through sustainability practices provide significance by their positive relationship, and also predicts' innovation performance. The variables are essentially looked at from an "ecological efficiency" point of view, which considers the sustainable development orientation as

a niche towards having a competitive advantage rather than an additional cost burden. The research additionally looks to explore the role guided by the combined pursuit of sustainability practices of exploitation and exploration in innovation performance. These dimensions together were analyzed towards eliciting the determinants and coming up with a strategic framework that fosters innovation performance taking the sustainable development perspective. The conceptual framework importantly looks at the direct impact of sustainability practices on innovation performance through the triple bottom line using the implementation enablers or the capability driver variables of stakeholder sustainability orientation. The variable essentially takes the customers' perspectives, which are regarded as the sensing capacity that guides the path for organizations to focus and to identify different opportunities in the environment. The seizing capacity is understood as the variables of "market orientation," the "organization's internal trust," and the role of the "sustainability champions" significance, which guides organizations to seize upon the opportunities identified. Further, the process reconfiguration variables of the sustainability practices of "Sustainability Exploitation" and "Sustainability Exploration" (Maletic, 2014a) shape the way in which organizations perform, which is line with Weidners and Maletic et al.'s model. The pursuit of sustainability practices is not just a financial predicament but one with the purpose of limiting the impact on the environment and implementing social change. In essence sustainability practices leads to the development of new creative ideas and directions and the capacity for implementing them and helps to provide a positive impact on the organization's innovation performance. Innovation performance is the outcome which is crucial for understanding the role of sustainability practices and their interplay with the path and position variables towards understanding their impact on creating a strategic competitive advantage and an impact on the innovation performance.

Today's organizations have started to realize, albeit gradually, the importance and growing significance of sustainability. The capability for pursuing sustainable innovation would eventually be the strategic differentiator that stands out in the competitive environment. Sheth et al. (2011) mentioned the lack of a strategic approach towards tackling the issues with regards to sustainability. This research through the approach enumerated above looks to address this gap by utilizing the

dynamic capabilities theory, which essentially emphasizes the importance of the exploitation of internal and external competencies that are specific to the organization and that help it adapt and react to the changes that are dynamic with regards to its environment (Teece et al., 1997), as in the case of sustainability.

This is important for understanding the effectiveness of the sustainability agenda and helps to maintain competitiveness through the enhancement, combination, and reconfiguration of the organization's tangible and intangible assets towards building and maintaining its competitive advantage (Teece, 2007). The most important determinants of innovation performance in the view of Rouse and Daellenbach (2002) were routines, knowledge, strategy, technology, structure, and culture. This research framework understands routines as the processes and culture by the trust existing within the organization framework. Felin and Hesterly (2007) postulated that innovation performance was linked to the knowledge and actions of the individuals managing the knowledge and confirming the role of the sustainability champions. Han et al. (1998) presented a systematic framework towards testing the "market orientation and innovation-performance" chain. Therefore, it is confirmed that most of the pertinent innovation-related constructs have been included as prospective independent variables under the theoretical model. The constructs in some cases were sourced directly from the literature, while others were adapted or created on the basis of the extant literature.

3.11 Variable relationships and Hypothesis

Each of the variables and their relationships are further detailed below, leading to postulating their subsequent hypotheses.

The dependent variable this research took was innovation performance. The organizations are expected to have a complete understanding of the innovation antecedents in order to enhance their performance (Kamasak, 2015). The determinants of innovation performance as considered by Rouse and Daellenbach (2002) are strategy, routines, technology, knowledge, and structure and culture. This research framework takes routines as the processes through the sustainability practices of exploitation and exploration undertaken within the organization and are worthy of

inclusion in the framework. Innovation looked at through the dynamic capabilities framework would regard innovation performance as an organization's capacity to generate new value offerings by way of new products or services, with the adoption of processes that are new, technologies, management changes, or a market-focused approach, or associated with the creation of new skills and competencies (Miles et al., 1978). Innovation by itself is embodied by a wide scope of activities such as producing new tangible value propositions or by the creation of new processes for conducting business. The eventual purpose of innovation would be the provision of customer value in line with the market needs, which are provided as new services or new products. This from a sustainability context would bring about changes to the processes in the organization. Innovation from the sustainable perspective should not be just looked at from the financial or economic points of view towards taking up sustainability-related projects. This research takes innovation performance as a multidimensional construct, which constitutes the measures of economic prosperity outlined by its financial and market performance, social equity, and environmental integrity, which is otherwise called the triple bottom line.

Economic performance indicates that the organizations often have prioritized the profit maximization in their endeavor towards providing returns to its stakeholders, which has been found to be unsustainable over the long term. This requires performance to be multi-dimensional, taking cognizance of the financial aspect and where the organization maintains the economic agenda while taking the position of sustainability as a business goal that positively impacts the environment, social, and economic aspects (Sheth et al., 2011)

Social performance constitutes the social equity principle towards ensuring that the whole of society has equity in its access for resources and opportunities (Bansal, 2005). This follows the central definition of "'sustainable development," which recognizes that the basic requirements or needs of the present and future generations must be met (WCED, 1987). This thereby considers not just basic needs but also includes good quality of life such as education, healthcare, enhanced competence, skills, etc.

Environmental performance considers the inclusion of the environment in the innovation process and is a well-documented approach. The environmental integrity

(Bansal, 2005) in principle ensures the responsibility towards making sure that the activities of humans do not destroy the land, air, and water resources. The sustainable development principles help organizations to imbibe practices towards ensuring that the natural environment is not compromised. This research, while taking the sustainable development perspective, identifies innovation performance from a holistic view, combining the outcomes of sustainable innovation, which reveals the importance of these dimensions in regard to the triple bottom line.

The Independent Variables considered were i) customer sustainability orientation ii) market orientation; ii) the organizations internal trust; and iii) the sustainability champion's significance. "Sensing" refers to the strategic alternatives that are available to a firm (Teece et al., 1997), which comprise their path dependencies and include the external driver of innovation capability to be included. This is the customer sustainability orientation, which incorporates the customer's views on sustainable development agenda. The theoretical framework therefore provides the existence of a market for sustainable products and services, which gives the much-needed push for organizations' agenda of sustainable innovation. This provides the opportunity for organizations to go beyond the narrow challenges to the broader goals of the social, environmental, and economic agenda. Hence, the research includes the crucial independent variable or the path variable of customer sustainability concern.

3.11.1 Stakeholder Sustainability Orientation

It is always a challenge to understand why organizations conduct themselves in ways that are not socially, environmentally, and economically responsible (Bansal, 2005) and the dynamic capabilities theory supports well the filling of this gap and provides a direction and focus for organizations to adapt to a fast-evolving or dynamic environment. Diamantopoulos et al. (2003) researched the role of socio-demographics in terms of describing "green consumers," and even though it does not include the other dimensions of the "triple bottom line" it does consider the customer as a crucial stakeholder and the need for knowing his or her orientation as a driver for sustainable innovation. The stakeholder sustainability orientation therefore is a crucial factor in identifying the direction that organizations take towards being environmentally and socially responsible.

The stakeholder sustainability orientation is defined as the organization's awareness of the stakeholder's orientation or the customer's desire for products which are indeed environmentally and socially responsible. This helps understand the customer's perspective towards sustainability and his or her preferences, thereby enabling organizations to understand the needs and demands of the stakeholder. It is a known fact that today customers consider environmentally- and socially-friendly products and services in their purchases (Closs et al., 2011).

Diamantopoulos et al. defined the environmental consciousness construct as constituting the knowledge of green issues, or the preferences for and attitudes toward environmental quality, and behavior that is environmentally sensitive (Diamantopoulos et al., 2003). Environmental consciousness could be attributed to having strong awareness of the harmful impacts of irresponsible consumption. This makes stakeholders to expect responsible actions from the organizations they are loyal to. Taking the construct of customer sustainability concern (Weidner, 2013) serves as an important driver of organizational processes focused on sustainable innovation. This positive relationship suggests that firms pursue these initiatives towards interpreting the needs among stakeholders in the marketplace. The customer role is an important driver for sustainable innovation to succeed, be it for developing new products, allocation of changes within the supply chain, or the enhancements in the marketing of its products and services. The theoretical framework suggests that once this understanding is established, firms pursue the processes of sustainability practices of sustainability exploration and exploitation to achieve the perceived needs of the consumers and stakeholders. There is a need for better understanding of the systems and factors that address sustainable practices (Flannery &May, 2000). Asif et al. (2013) suggest that it is important to identify stakeholder demands, which then need to be incorporated into the processes of business requiring an approach that is systematic and made effective by planning, resource management, and designing effective processes towards ensuring continuous improvement. Based on the stated literature the hypotheses below are suggested.

Hypothesis 1: The stakeholder sustainability orientation has a significant positive correlation with the exploration of sustainability and is a significant predictor of exploration.

Hypothesis 2: The stakeholder sustainability orientation has a significant positive correlation with the exploitation of sustainability and is a significant predictor of exploitation.

Additionally, research has consistently maintained a positive relationship amongst the customer's capital and innovation performance and (Kamasak, 2015) it has become clear that entrenched relations with suppliers and customers always could provide superior advantages to firms in getting strategic information and knowledge for innovation performance. This formed the basis for the next hypothesis.

Hypothesis 3: The stakeholder sustainability orientation has a significant positive correlation with innovation performance and is a significant predictor of innovation performance.

"Seizing" as put forth by Teece refers to the resources that are available to an organization, be they tangible or intangible (Teece et al., 1997). This could entail the current specific technologies, intellectual property, requisite assets, and their customer base, and also include relations with external stakeholders. The research takes the theoretical framework of having three constructs represent the position variables and that are considered to be the antecedents of the sustainability of innovation. They are the following: i) market orientation; ii) the organizations internal trust; and iii) the sustainability champion's significance. These intangible resources impact their management's decisions and the organizational strategies undertaken as part of pursing the sustainable development agenda. This therefore helps with the understanding of the role of internal resources through their positions, which is a crucial element for the long-term strategic vision that is focused on sustainability. The eventual impact on innovation performance aims to be the contribution of the envisaged research.

There may be many types of resources that impact competitive advantage, including the resources for human capital, resources for the organization's physical

requirements, monetary resources, and resources with regards to technology and intangible marketing resources (Slotegraaf et al., 2003). This theoretical framework takes the three constructs towards representing the position variables: a sustainable market orientation, intra-organizational trust, and the influence of a sustainability champion.

Sheth et al. (2011) presented the notion that the missing element of sustainable innovation is the presence of a viable strategy, which is for the long-term and which requires taking cognizance of the internal environment. The internal resources, or positions, considered in this research, such as a sustainable market orientation, organizations internal trust, and the influence of a sustainability champion are vital elements in the pursuit and acceptance of a long-term strategic vision focused on sustainability. A better comprehension of their roles and understanding with regards to how the organizations pursue them alongside the sustainability practices they follow is a contribution of the research.

3.11.2 Market Orientation

In Figure 7, the conceptual framework shows the relationship between paths and processes and the interactions with the positions. The first position variable is a sustainable market orientation, which requires that organization better understand the needs of the markets and their environments, both external and internal, in order to effectively contribute to the process of the sustainability practices of exploration and exploitation, eventually leading to predicting innovation capability.

The notion of market orientation was put forth by Kohli and Jaworski, who defined it as the dissemination and responsiveness to market intelligence across the entire organization (Kohli & Jaworski, 1990). Market orientation has often been conceptualized under different perspectives: (Kohli & Jaworski, 1990) whether they are considered as a set of activities (Hunt and Morgan, 1995) or as resources, or from the perspective of organizational culture (Narver & Slater, 1990, Hurley & Hult, 1998, Day, 1994; Deshpande et al, 1993).

“Market orientation” as defined by Narver and Slater is the organization culture which requisitions the appropriate behaviors for the creation of value for their consumers and thereby leading to the business performances being successful (Asker, 1988; Kohli & Jaworski, 1990; Kotler, 1984). The sustainable market orientation is a

strategy towards focusing on the market needs and requirements and the interests of the different customers and stakeholders, who are concerned with the environmental, social, and innovation capabilities towards achieving sustainable innovation.

The market orientation concept regards the sustainable market orientation as a strategic approach towards effectively meeting the requirements of the target markets more efficiently than their competitors. This is often a long-term objective, which brings challenges through sustainable innovation. This is reaffirmed by the notion that organizational learning is fostered by the combination of culture and climate towards enhancing the value of customer in a dynamic market. The critical challenge is to thrive by having the ability of learning faster than competitors, which eventually becomes a driver of the competitive advantage that is sustainable (Slater and Narver, 1995).

The research builds on this notion by regarding the drive for sustainability as a value creator and a strategic niche that enhances its innovation capability and impacts the process of the sustainability exploration and sustainability exploitation.This reiterates the importance of involving the stakeholder's perspective in the operations of the organization, as this can lead to a positive impact on the response to the environment and subsequently towards better environmental performance (Rasi et al., 2014). Seuring and Gold (2013) were of the view that pressures from the external environment and the benefits set by both primary and secondary stakeholders are the start for organizations to pursue sustainability agenda. This validates the overlooked role of market orientation in the "exploration" and "exploitation" strategy (Kyriakopoulos & Moorman, 2004) and calls for a market orientation that is cognizant of the pressures from the relevant stakeholders, which could be successfully attributed to a proactive response towards innovative sustainability practices which could lead to the hypothesis below.

Hypothesis 4: A sustainable market orientation has a significant positive correlation with the exploration of sustainability, and market orientation is a significant predictor of exploration.

Hypothesis 5: A sustainable market orientation has a significant positive correlation with the exploitation of sustainability, and market orientation is a significant predictor of exploitation.

The relationship between market orientation and innovation performance is important from an organizations strategic perspective. Han et al., 1998 presented a systematic framework towards testing the "market orientation and innovation-performance" chain. The association of market orientation performance relationship has been looked at as a positive relationship by Narver and Slater (1990), Ruekert (1992), and Slater and Narver (1994a). Zaltman, Duncan, and Holbek (1973) proposed a framework for implementing innovations, supported with the requisite intelligence gathered towards enhancing the performance and brought out the notion of “market orientation-innovation-performance." The engagement of market orientation and innovation, towards affecting organizational performance and enhancing the organization’s innovativeness was studied by Han et al. (1998). This reiteration of the inclusion of innovation performance as a construct for the identification and reconciliation of irregularities with regards to the market orientation significance is important for understanding the supposed market orientation-performance relationship, and this enhanced the strategic importance of the research. This research, guided by the literature, led to the hypothesis below.

Hypothesis 6: A sustainable market orientation has a significant positive correlation with innovation performance, and market orientation is a significant predictor of innovation performance.

Additionally, there are a significant number of studies that have focused on the concept of "market orientation" with the aim of understanding its effect on corporate culture (Greenley 1995; Kohli and Jaworski 1990; Narver and Slater 1990; Slater and Narver 1994a). Piercy (1995) underlined the need for the orientation of the markets to be dependent regarding the capacity of their human capital in order to implement strategic plans. The market orientation fundamentally establishes the basis of organizational behavior with regards to the organization’s constituents. For market orientation to be successful, it requires the understanding of the employee’s value,

which is crucial for a market-oriented company (Kohli and Jaworski, 1990). Taking this perspective forward, this research looks to understand market orientation and its impact on the culture component of the organization's internal trust. The impacts are represented by the levels of trust that exist internally amongst the crucial stakeholders namely, their human capital with regards to work competency from a sustainable development or sustainability perspective. This led to the hypothesis below.

Hypothesis 7: A sustainable market orientation has a significant positive correlation with the organization's internal trust, and market orientation is a significant predictor of the organization's internal trust.

The two other variables hypothesized in this research to impact the relationship between paths and processes are the organization's internal trust and the significance of sustainability champions.

3.11.3 Organization's Internal Trust

The second position variable considered is trust. The internal relationships in the literature for innovation have generally focused on studying the inter-functional intra-organizational integration; this is looked at from the existing communication as well as the cooperation across departments. This would include the organizational climate, which is an important aspect in terms of making an organization productive and effective (Nakata et al., 2008). It is therefore important that the interconnections between the departments of organizations and functions go well beyond the basic actions of cooperation as well as communication, and need to be of a social or relational nature which also equally plays a crucial role (Rodrıguez et al., 2007).

As Huff and Kelly have stated "Trust is the inclination of a party or the trustor towards being vulnerable towards the actions of the trustee or the other party based on the understanding that the trustee would perform the task that was crucial for the trustor, regardless of its capacity to monitor and control that other party" (Huff and Kelley, 2003). Internal trust from the organization's perspective is the climate of trust within the organization; this could be positive expectations based on the roles, experiences, and interdependencies and relationships that individuals have amongst their numerous organizational members (Huff and Kelley, 2003).

The research infers that the organization's internal trust is an essential requirement for the effectiveness and efficiency of processes and thereby impacts the innovation performance of the organization. Organizations needs to accommodate the change brought about with sustainability drives and the need for the internal climate to be friendly rather than hostile. Innovation is supported by an environment of trust amongst the employees, the trust in one another and their experiences for enhancing work efficiency (Nakata et al., 2008). Inter-organizational trust builds the foundation for enhanced teamwork and helps to provide organizational commitment, which is a much-needed requirement when bringing about sustainable innovation. This reinforces the importance of intra-organizational trust as a crucial element for an organization that is involved in sustainable innovation.

Pinto and Pinto (1990) have argued that when the organizational processes are congenial and devoid of any technical or interpersonal problems, the team members approaching projects would take them positively with trust more than if they were approached with projects having difficulties or personnel problems. The trust that is present within the relationship would be nurtured by variables such as the satisfaction with the groups with good camaraderie, high cooperation that exists amongst them, and conflicts within the relationship (Rodrıguez et al., 2007). Nakata et al.'s definition of intra-organizational trust that comprises the three components of trust is indeed pertinent to this research. This was regarded as the expectations positive in nature that workers within their organization have about each other's capabilities, motives, and actions. Trust consists of affective, often cognitive, and specific moral dimensions, and describes the organization members' perceived intent and behaviors (Nakata et al., 2008).

The organizational learning with a sustainability focus (Molnar and Mulville, 2003) requires not just the development of a sustainability vision but calls for the need to recognize the bottom-up value of innovations, and educating the management in sustainability policies as well as cultural values, thereby incentivizing the development of novel initiatives and importantly rewarding the quantity and quality of these initiatives (Espinosa & Porter, 2011). This builds the ground for the role of trust in the capacity of management and across the organization processes as an organization culture, thereby bringing about cultural change towards promoting

sustainability exploration and exploitation processes. Many researchers have stressed the need for change in culture, which is key in the effective implementation and pursuit of sustainability practices, which could be immensely helped with an environment devoid of any trust deficits (Baumgartner, 2009, Bonn and Fisher, 2011; Fairfield et al., 2011; Maletic et al., 2014). Putting it differently, without intra-organizational trust, the uptake of sustainability practices of exploration and exploitation would just not be feasible. That is in line with the conceptual framework, which regards intra-organizational trust to be crucial in incorporating sustainability initiatives and which leads to the following hypothesis.

Hypothesis 8: The organization's internal trust has a positive correlation with sustainability exploration and the organization's internal trust is a significant predictor of sustainability exploration.

Hypothesis 9: The organization's internal trust has a positive correlation with sustainability exploitation and the organization's internal trust is a significant predictor of sustainability exploitation.

The position variable of the sustainability champions' significance was not considered in this research based on the fact that the sample did not provide adequate significance for the construct under the envisaged model and was found contributing to composite reliability issues. The reasons will be further outlined in Chapter 6 based on the analysis of the results obtained.

"Capability reconfigurations" are as defined broadly as the routines that shape the way a firm does its business (Teece et al., 1997). In Teece's view, organizational processes are considered to have three roles, namely coordination/integration, learning, and reconfiguration, which are often difficult to replicate. This, as the research would suggest, becomes a competitive advantage for the organization. The evaluation of markets and their competitors and the ability to transform become important characteristics in obtaining a strategic advantage through the reconfiguration processes. As detailed in the literature this research considers sustainability practices of "sustainability exploration" and "sustainability exploitation

“as the crucial processes that forms the strategic differentiator towards positively impacting and predicting innovation performance.

3.12 The notions of Exploration and Exploitation

The research takes the exploitation and exploration issues in analyzing the construct of sustainability practices under the realm of sustainable development. That said, it is important to understand the circumstances under which sustainability practices are to be engaged for it to be effective. The importance of involving all stakeholders within the organization’s operations needs to be reiterated as this leads to a proactive environmental response and the subsequent enhancement of environmental performance (Rasi et al., 2014).

Sustainability exploitation and sustainability exploration are both concepts that are connected mainly across the two value chain domains of technology with regards to product development and manufacturing and marketing with product markets. The need to excel in both would require the organization to be involved with different types of innovation activities (De Visser et al., 2010). From a sustainability aspect, organizations are required to devote their resources to the requisition of new sustainable products or services. Organizations’ develop and exploit their competencies towards enabling the capacity to make improvements for the sustainability of existing products which could eventually provide a competitive advantage (Pujari et al., 2003). This product-market theme would require organizations to allocate resources towards aligning their focus towards the emerging needs of stakeholders and their choices as well as integrating them into the early stages of service or product development (Polonsky and Ottman, 1998). This from the manufacturing perspective, would make process innovations as new sustainable solutions (Rennings et al., 2006) which could be attributed to the contributions of sustainability exploration. Additionally, we could also consider sustainability exploitation and its inherent dimensions from an operational perspective, are requisitioned to provide organizations with the ability to have solutions that are economical in terms of solving the issues of sustainability (Cote et al., 2006). These particular dimensions of sustainability practices are strongly fit within the concepts of

exploitation and exploration which are considered under sustainable development and are further analyzed in this research towards predicting innovation performance.

The relationship amongst sustainability practices with organizational performance has been considered by researchers to be positive, thereby indicating that organizations could enhance their competitiveness and concurrently support sustainable development (Wagner, 2010; Koo et al., 2013). We could infer that the organization has the opportunity to address sustainable development while improving efficiency, increasing the rate of innovation and the reduction of costs and enhancing profitability (Schaltegger, and Wagner, 2006, Koo et al., 2013). Therefore, we could establish that increases in the extent of sustainability practices would have sustainability exploitation and sustainability exploration move towards increased economic performance (Wagner, 2010), increased innovation performance, increased environmental performance, and increased social performance (Weber, 2008). This provides the basis for the following hypotheses.

Hypothesis 10: The exploration for sustainability has a significant positive correlation with innovation performance and exploration is a significant predictor of innovation performance.

Hypothesis 11: The exploitation for sustainability has a significant positive correlation with innovation performance and exploitation is a significant predictor of innovation performance.

3.13 Conclusion

In today's business scenarios organizations have begun to include and address multiple stakeholder sustainability concerns through an array of innovation efforts, and this research is timely in terms of understanding how sustainability processes impact the broader innovation performance outcomes, also known through the triple bottom line, which consists of social aspects, environmental aspects, as well as financial performance. This research will help to provide a strategic approach through the "dynamic capabilities theory," which emphasizes the importance of the

exploitation of internal and external competencies which are specific to organizations and that will help them adapt and react to the changes that are dynamic in the environment. The research looks at sustainability practices through the constructs of sustainability exploration and sustainability exploitation, which are considered crucial for enhancing the performance of innovation. Further, the research takes a nuanced approach to understanding how firms can manage their sustainability practices in line with the stakeholders and market needs in fostering innovation performance.

CHAPTER 4

METHODOLOGY

Here in this chapter the research setting, scale, and measures of the constructs, the sampling frame, and the details on the samples and respondents considered in this study are outlined. It further details the questionnaire development, and how the constructs were planned to be operationalized, followed by an outline of the survey procedure, including the steps utilized to enhance the response rates. In the conclusion the data analysis techniques and procedures used in the hypothesis testing are further enumerated.

4.1 Research Design

The research towards testing the framework conducted a mixed mode surveys through an online administered questionnaire and mail survey that were run across two phases, which aimed to provide the appropriate results for this dissertation. The sampling method, which was probability-based, was utilized with survey responses forming the sampling frame. The mixed-mode approach was also considered towards enhancing the response rate (Dillman, 2007). A questionnaire survey provides the accurate representation of factual reality through the effective administration of the research instrument and this is the frequently-used descriptive design in strategy research (Gatignon and Xuereb, 1997). Its advantage lies with having more information collected from diverse respondents which could significantly be economical when you factor in the amount of information it gathers (Kerlinger and Lee, 2000). What is more pertinent is that often research on the combined pursuit of exploitation and exploration has been of a conceptual nature. This survey research aimed to give a clear interpretation and understanding with regards to the sustainability processes achieved through these dual innovation strategies, the

business process determinants and interactions, and the organizations consequences taken from the viewpoint of top management towards understanding the organizations strategic decision-making process. The use of perceptual measures vis-à-vis the objective measures provides results that show statistically significant correlations, and hence perceptive measures could indeed be regarded as reliable indicators (Pearce et al., 1987). The operationalization of this research in essence captures the perspectives and beliefs of management in their strategic decision making. A questionnaire does bring certain disadvantages, with the most significant issue being the typically low response rate. This was countered with the methods promoted by (Dillmanet al,2008) discussed later in the dissertation. We further move on to detail the methodology used in the data collection with the explanation of the construct measured in this research.

4.2 Population and Sampling Procedure

There are 1,412 organizations affiliated with the Bangalore Chamber of Commerce and the Federation of Karnataka Chambers of Commerce and Industry and a using a probability based-random sampling approach a respondent population of 225 was confirmed. These were organizations predominantly focused on innovation as envisaged by their chambers and expected from the policy of the state government under the national innovation policy.

The sampling approach was aimed at achieving a random sample that effectively represented the major constituents of the population, which would help the researcher provide estimates of the perceptions and outcomes of the larger population. The respondents targeted in this study were top management, namely the CEO, the chairman, presidents or vice-presidents, and managers or researchers of R&D at the organizational level. Typically, on the basis of the conceptual framework the respondents were expected to know well the organization, its functions and departments, thereby being aware of the organization's innovation strategies, the characteristics of their organization and internal processes, and importantly having information about the performance. Towards ensuring this balanced view the respondents were limited to these individuals from the upper management of the organization. The organizations were predominantly from Bangalore in the state of

Karnataka, which has seen the government focus a lot on innovation strategies and is regarded as the prospective innovation hub of India, with its presence of many organizations and SME firms across diverse sectors, which made it a suitable selection for India. The member organizations were affiliated with the "Federation of Karnataka Chambers of Commerce and Industry" and the Bangalore Chamber of Industry and Commerce. The member organizations were mailed and directly invited to participate with the consent of the chambers and the overview of the population is provided in Table 2. Based on the organizations approached under two waves, first the organizations were mailed the questionnaires and requested to submit their responses, and the second wave subsequently targeted the non-respondents and were directly contacted individually in order to enhance the response rate. The researcher sent the first reminder e-mail two weeks after sending the initial survey, and the follow-ups were diligently approached during the second wave, which was scheduled across the total data-collection period of a span of four months.The net result of the follow ups was 103 responses in the second wave in comparison to the initial 64 responses received in the first wave. The sampling frame essentially constituted those organizations that undertook the survey; a summary of the sample frame and rates of response is provided in Table 2 below.

Table 4.1 The Respondent Population and Response Rates

Survey Phases	Respondent Population	Completed Response Sample Size	Response Percentage
First wave	81	64	79%
Second wave	144	103	72%
Total	225	167	74%

4.2.1 **Sample size**

The need for having an adequate sample size was important to eventually validate the results and making them reliable. The confirmed respondent population of

225 required a sample size of 143 at a 95% confidence level and a 5% margin of error. Additionally, the sample size, though small, would need to have a minimum number of samples for analysis utilizing the structure equation model, as outlined by Bollen, 1989. The sample size under consideration had to be in line with the number of parameters. Therefore, the sample amount was proportional to the parameter number. Weiss (1972) and Lindeman, Merenda and Gold (1980) have suggested that the ratio between the sample number and the parameters considered be 20 to 1. Hence this research with 6 parameters and the expected sample was 120; hence the final sample size of 163 suited the considered sampling approach. A total number of 167 completed responses were obtained and there were not many missing values based on the design of the instrument, which ensured that missing values would not enable the respondents to complete the survey. Four individuals did not provide the correct responses based on the appropriate categorization provided and indicated no involvement in sustainable innovation activities. Therefore, the final sample size stood at 163 duly-completed responses after removing the incoherent responses. The final response rate was 74%, which implied the chance of a non-response bias to be lower.

4.2.2 **Data Collection**

Towards testing the proposed framework, the data collection was essentially collected across two phases. The first phase entailed a small pre-test of the questionnaire to assess its clarity, structure, length, and ease of use. Twelve business associates and experts within my network were requested to participate. They were asked to complete the survey online and were then interviewed with questions based on the content, length, and language used and the clarity of the questions and answers. On the basis of the feedback, the survey instrument was revised before use in the final phase and this helped enhance the face validity of the questionnaire. This second phase of the data collection was conducted in two waves which constituted visual and aural communication so as to assure better response rates. The first wave was through the email, providing the option of both the online survey and the questionnaire provided as an attachment. The second wave targeting the non-respondents was utilized to follow up with telephone calls seeking the responses to the survey and

providing reminders and this helped to enhance the response rates (De Leeuw, 2005). The point to be clarified was that the visual method was the basic approach utilized with the online survey and the follow-up was reinforced through the telephone reminders in the second wave, which also ensured avoiding the possibility of measurement differences. This helped to enable data cleanup, and facilitated a better response.

4.3 Instrument Characteristics

The process involved the inclusion of the scales being considered and the operational definitions of the variables were outlined and subsequently their respective measures were explained and presented with their scales.

4.4 Scale Usage

The scales were selected based on their relevance to the study, and also established their success in previous research with regards to their reliability and validity. As regards the scale format, a 7-point Likert scale was used across all the constructs mentioned below and was used for eliciting the responses from the executives. This made it convenient for all the respondents to understand and to enhance the response rate and effectively analyze the variances. Towards ensuring the continuity and fluidity in the instrument, this format was maintained throughout the instrument and provided a good understanding of the variances. Each of the scales is detailed in the following section.

4.5 Definitions and Construct Measures

The variables are clearly defined in Table 4.2 in order to help understand them in accordance to the literature review towards having the same understanding which formed the basis for adapting the questions. This enabled the respondents to be in line with the researcher's understanding of the question and helped enable the receipt of valid responses. The construct measures are then subsequently outlined.

Table 4.2 Definitions of Variables

Variable	Definition/ Meaning
Stakeholder Sustainability Orientation Source: (Closs et al., 2011;Weidner, 2012)	The organization's awareness of its stakeholders' perspectives by looking at the customers' preferences and desires for products and services in a socially and environmentally conscious way. This forms the important basis for organizations to position their initiatives in response to the very needs and demands of the stakeholder.
Market Orientation Source: Hult , 2011; Kohli and Jaworski, 1990	An organization's achievement of market-based sustainability by its strategic alignment of the market-oriented needs and wants of customers alongside the interests of multiple stakeholders concerned environmental, social and economic dimensions of innovation performance.
Organizations Internal Trust Source: Huff and Kelley, 2003; Nakata et al., 2008	The climate of trust within the organization; this could be the positive expectations based on their roles, experiences, and interdependencies and relationships that individuals have amongst their numerous organizational members
Sustainability Champions Source: Cronin Jr. et al. 201; Frost and Egri ,1991	The individual or group of individuals of the organization who lead the implementation of sustainability initiatives. They are crucial to acquire buy-in from others within the organization and provide a value proposition, thereby keeping the innovation ideas alive and thriving.
Exploration Source: Klewitz and Hansen, 2014; Wagner, 2008; Maletic et al, 2014a	This is defined as the practices that reflect the process innovation through environmentally-friendly solutions and product innovation through new products or services, which also reduces the negative environmental and social impacts. This develops the capabilities and competencies for "sustainability-related innovation."
Innovation Performance Source: Liao et al., 2009; Schumpeter., 1938	The "organizations ability to create new value propositions by offering new products and services, adopting new operating practices, that are technological, organizational, or market-oriented, or creating new skills and competencies." This multidimensional construct from a sustainable development perspective consists of the measures of economic prosperity outlined by its financial and market performance, social equity, and environmental integrity, which are referred to as the triple bottom line."

4.5.1 Stakeholder Sustainability Orientation

Stakeholder Sustainability Orientation was selected towards defining and eliciting the customer sustainability awareness, which was regarded as the organization's knowledge of the customer's desire for products and services that are environmentally and socially friendly. This research looks at variables impact based on the perspective of the targeted customer preferences or their alignment with sustainability, which was brought out previously by Diamantopoulos et al. (2003) and Wiedner (2012), who tested a similar concept of environmental consciousness and customer sustainability awareness. The scale was adapted and expanded towards taking the perspective of its impact on sustainability and innovation capabilities and utilizing a similar format for the entire questionnaire.

The scale concentrated on the key attributes of social and environmental consciousness, which are listed below.

Table 4.3 Measures for Stakeholder Sustainability Orientation

Stakeholder Sustainability Orientation
To what extent does your organization's targeted customers believe in each of the following:
Preservation of the environment is one of the most important issues facing society today (SSO1).
Organizations can be profitable while addressing environmental and sustainability issues and impact their innovation performance (SSO2).
How often do your organization's targeted customers engage in the following activities?
Choose an environmentally-friendly alternative product or service if one of a similar price is available (SSO3).
Choose an environmentally-friendly alternative product or service regardless of price (SSO4).
Investigate the environmental effects of products or services prior to purchase (SSO5).
To what extent do your organization's targeted customers believe the following ?
Organizations need to be responsive to the needs and issues of the customers (SSO6).
Firms can be profitable while addressing environmental-friendly technologies and processes and helping the community (SSO7).

Table 4.3 (Continued)

Stakeholder Sustainability Orientation
How often do your organization's targeted customers engage in the following activities?
Choose a socially-friendly alternative product or service if one of a similar price is available (SSO8)
Choose a socially-friendly alternative product or service regardless of price (SSO9)
Try to discover the social and environmental compliance of products and services prior to purchase (SSO10)

4.5.2 Market Orientation

The original scale of Narver and Slater (1990) was used to test the dimensions under market orientation; namely long-term focus, competitor orientation, inter-functional coordination, and profit orientation, as well as customer orientation. This research measured market orientation from the sustainability perspective based on the definition mentioned earlier. The adapted version of the Wiedner scale was utilized in the research and was further adapted towards matching the questionnaire format for the same.

Table 4.4 Measures for Market Orientation

Market Orientation
In our organization, we consider and balance what our customers need with the following:
Environmental concerns of other stakeholders (such as shareholders, governments, the public) (MO1)
Social and economic concerns of other stakeholders (MO2)
Sustainability concerns of other stakeholders (MO3)
In our organization, we strive to meet the needs of our customers while considering the following:
Environmental concerns of other stakeholders (such as shareholders, governments, the public) (MO4)
Social concerns of other stakeholders (MO5)
Sustainability concerns of other stakeholders (MO6)

4.5.3 Organizations Internal Trust

Inter-organizational trust aimed at understanding the positive expectations that workers across organizations have regarding each other's abilities, and their motives and actions (Huff and Kelley, 2003). The scale of Nakata et al., (2008) was used as it suited the context of this research.

Table 4.5 Measures for Organizations Internal Trust

Organizations Internal Trust
Employees throughout the organization:
Are competent at their jobs (OIT1)
Uphold professional work values (OIT2)
Are skilled and knowledgeable in doing their work (OIT3)
Really care and are concerned for each other (OIT4)
Are close enough to freely share ideas, thoughts, and feelings (OIT5)
Invest emotionally in the employees' work relationships (OIT6)
Enjoy and like one another (OIT7)
Do what is right rather than convenient (OIT8)
Deal with each other fairly and justly (OIT9)
Treat one another with dignity and respect (OIT10)

4.5.4 Sustainability Champions Significance

The variable of the sustainability champions significance considers the individual or a group of them to be crucial to the implementation and institutionalization of policies within the organization, and this is important for acquiring the favorable response for uptake across the organization and this is crucial for the organization (Drumwright, 1994). This construct was measured using the scale developed by Chandy and Tellis (1998), which was adapted towards obtaining the significance of these sustainability champions.

Table 4.6 Measures for Sustainability Champions Significance

Sustainability Champions Significance
In your organization, how important are the following individual's roles in sustainable innovation?
Product managers have an important role to play in sustainable innovation. (SCS1)
Senior managers have an important role to play in sustainable innovation. (SCS2)
Champions have an important role to play in sustainable innovation. (SCS3)
What is the extent to which you agree or disagree with the following statements?
Top managers in our organization are frequently the most passionate champions of ideas related to sustainable innovation practices (SCS4).
Product champions wield considerable clout in this organization (SCS5).
The champions have a crucial role in introducing organizational policies (SCS6).

4.5.5 Sustainability Practices

This research considers the current literature and management practice by enhancing the empirical validation of the distinction between sustainability exploration (SER) and sustainability exploitation (SEI) practices enumerated earlier. This research goes further towards ascertaining the role of these practices in the application of learning processes that inculcate the notions of sustainability under the theme of sustainable development. This in essence is what both the sustainability exploration and sustainability exploitation brought to the research, confirming that their pursuit is a mode of ensuring a positive impact on innovation capabilities. Using the construct scales of Maletic (2014b), this research looked to empirically validate the use of the processes of sustainability practices and to provide insights into how the exploration and exploitation concepts could be applied to the organizational sustainability and their impacts on innovation capabilities. In the literature on corporate sustainability the argument is put forth that organizations capable of pursuing sustainability have superior capabilities to perform and enhance their survival over the long term (Wagner, 2010). Though different studies have

investigated the benefits obtained economically from such sustainability initiative, only some have looked at their impacts on innovation performance.

Table 4.7 Measures for Sustainability Exploration

Sustainability Exploration
To what extent do you agree or disagree with the following statements?
The organization makes improvements to radically reduce environmental impacts of products' and services' life-cycles (SEXP1).
We regularly make adjustments to existing products and services to reduce negative environmental and social impacts (SEXP2).
The organization undertakes regularly business-process reengineering with a focus on green perspectives (SEXP3).
We acquire innovative environmental-friendly technologies and processes (SEXP4).
The organization continuously strengthens employees' knowledge and skills to improve the efficiency of current sustainability practices (SEXP5).
The organization is characterized by a learning culture stimulating sustainable innovation (SEXP6).
The organization upgrades the employees' current knowledge and skills (SEXP7).
We search for external sources of knowledge in our search for innovative ideas related to sustainability (e.g partners, customers, and research institutions) (SEXP8).

Table 4.8 Measures for Sustainability exploitation

Sustainability exploitation
To what extent do you agree or disagree with the following statements?
We always respond to existing stakeholder issues in a regular/systematic way (SEXL1).
The organization constantly evaluates its external environment to uncover issues of importance to key stakeholders (customers, suppliers, and local communities) (SEXL2).
The business processes are flexible, allowing us to achieve high levels of responsiveness to key stakeholders' needs and demands (SEXL3).
The organization involves key market stakeholders (customers and suppliers) early in the product/service design and development stage (SEXL4).
We make use of appropriate tools and techniques to reduce the variability of key processes (SEXL5).
We have established key performance indicators to determine if the organization is meeting sustainability goals (SEXL6).

4.5.6 Innovation Performance

Innovation by itself is embodied by a wide scope of activities such as producing new tangible value propositions or by the creation of new processes for conducting business. Innovation from a sustainable perspective does not just consider the financial or economic aspects as the reason for undertaking sustainability-related projects. The scales utilized were adapted from Zhou et al. (2005), Bansal (2005), and Wiedner (2012) considering the economic and environment and social perspectives. This research then regards innovation performance as a multidimensional construct which consists the measures of environmental integrity, social equity, and economic prosperity, which is otherwise known as the triple bottom line. These measures took into consideration the social performance, economic performance, and environmental performance (Maletic et al., 2014b), which is in line with the objective of this research.

Table 4.9 Measures for Innovation Performance

Innovation Performance
Economic performance:
The organization has introduced more innovative products and services than our main competitors during the last 3 years (IP1).
Our new products and services are perceived by our customers as innovative (IP2).
The speed of adoption of new technology is faster than at our main competitors. (IP3).
The innovative products and services have increased the market share during the past three years (IP4).
Social performance:
The employee relationships have strengthened the social links during the past three years (IP5).
The employees' motivation has increased during the past three years (IP6).
Environmental Performance:
The efficiency of the consumption of raw materials has improved during the past three years. (IP7).
The percentage of recycled materials has increased during the past three years with sustainability practices (IP8).
The resource consumption (thermal energy, electricity, and water) has decreased (e.g. per unit of income, per unit of production) during the past three years (IP9)

4.6 Data Analysis Methods

The research data analysis comprised the descriptive statistics, their reliability estimation, the factor analysis, correlation analysis, and finally the path analysis performed using computer statistical packages. The approach of the path analysis best suited this research towards examining the correlation between the variables as hypothesized.

Towards confirming the measurement model an exploratory factor analysis (EFA) using popular computer statistical program was performed. The EFA was

aimed at verifying the factor structure, using a principle component analysis. In all of these instances, the analysis was set to only retain the factors that were attributed with an eigenvalue greater than1.0. Additionally, when the analysis came out with more than one component, the factor solution was also rotated with the Varimax procedure towards maximizing the variance.

Confirmatory factory analysis (CFA) is based on the utilized theoretical framework outlined for the research, whereby the measurement models are tested towards verifying the hypothesized structure of the constructs. Cronbach's alpha was used for testing if the constructs were indeed reliable and had an acceptable fit determined with preferably alpha> .7 (Nunnally, 1978). The common technique to check if the constructs are valid for the model or not along with the robustness check and multi collinearity diagnoses is the method of confirmatory factor analysis.

Reliability analysis establishes the required conditions of validity, as well as checks for the homogeneity of items that are used to measure a variable and to make sure that the item scores are found free from the measurement errors and the internal-consistency is estimated through Cronbach's alpha or the alpha coefficient (Pedhazur and Schmelkin. 1991).

Factor analysis was also used regardless of the fact that the scales that were used in the current research were already tested, as the research looked to analyze the results from an Indian perspective, and this would help cross-validate the measures using the current research study's sample and towards testing the validity of the items. Factor analysis is often used for analyzing the structure that exits for the set of items or their indicators. It is a group of analytical techniques that are aimed at the identification of factors and dimensions that form the basis of the relations amongst the observed variables, which are the indicators to define the construct. Factor analysis is considered to be a reduction technique that removes redundancy from a set of correlated variables and helps to identify the underlying constructs. Factor loadings help with the determination of the items that meaningfully correlate alongside the factor that is studied. A higher factor loading indicates greater relationships of the indicator with the factor and the more suitable the indicator or item is with regards to the factor. This research aimed to consider factor loadings of > .5, which is considered meaningful (Pedhazur & Schmelkin, 1991).

Pedhazur and Schmelkin (1991) regards the “Principal Component Analyses” (PCA) as the method for factor extraction, and the Varimax procedure for rotation would be used. It extracts both the variance that is found unique to the indicator and the respective error variance. Thus, indicators loading high for a particular factor would be correspondingly lowly loaded on other factors.

Correlation analysis found the presence of both positive and negative associations between the variables assigned under the research using the correlation coefficient (r). A correlation analysis helps to examine and identify the association between two variables and/or if the two variables of interest have an observed covariance. The correlation coefficient or r could be from -1 to + 1. A perfect positive correlation is shown by the correlation coefficient r being +1, and an r of -1 indicates a negative correlation; and the case in which it is 0 it suggests that no relationship exists between the two variables considered. This research hypothesized that there was a significant positive correlation with customer sustainability concern, sustainable market orientation, Intra-organizational trust and sustainability champions significance and each of the variables of Sustainability exploitation, Sustainability exploration, and the dependent variable of innovation performance.

Regression analysis examined if indeed the independent variables were found to predict the dependent variables. Regression analysis (RA) helps to describe the relationship amongst two variables and it also importantly provides the measures of variance, thereby allowing the researcher to do an accuracy assessment where the criterion variable is predicted by the regression equation. RA is considered for the prediction analysis measuring the degrees of relationships amongst the concerned criterion variables and predictor variable. In this research the hypothesis was that customer sustainability concern, sustainable market orientation, intra-organizational trust, and sustainability champions (predictor variables) significantly predict sustainability exploitation, sustainability exploration, and innovation performance (criterion variables). And sustainability exploration will significantly predict innovation performance and finally, that sustainability exploitation will significantly predict innovation performance. A p-value of 0.5 or less would be regarded as the criterion for deciding the significant prediction’s extent or its degree.

Subsequently the path analysis approach was found to be best suited for identifying the correlations hypothesized in the research towards testing the causal paths amongst the variables that were hypothesized. The maximum likelihood estimation technique was used to find the path coefficients and their model fit. Multiple regression analysis also does the same, estimating the path coefficients, but with maximum likelihood it does the estimation simultaneously (Kline, 2005). Using the maximum likelihood estimation all of these parameters within the model were computed together and it is iterative where the estimates were continuously calculated. In Maximum Likelihood the error terms of the different exogenous variables are taken into consideration. Therefore, maximum likelihood estimation has been found to be a popular method for estimating the model-fit. The models paths were tested with the maximum likelihood estimation method for confirming the goodness of fit indices, and the CMIN statistics were used to confirm the goodness of fit. Amongst many of the indices to test goodness of fit, this research considered three popular indices; namely, GFI or the "Goodness of Fit Index," NFI or the "Normed Fit Index," and the CFI or the "Comparative Fit Index," which were considered for estimating the goodness of fit (Tabachnick & Fidell, 2001; Cope, Harju, & Wuensch, 2000; Kline, 1998). On the basis of the path analysis literature (Mertler & Vannatta, 2005), customer sustainability concern, sustainable market orientation, intra-organizational trust, and sustainability champions are regarded to be variables that were exogenous. Exogenous variables identify the independent variables that bring about distinct causes. The specific causes comprise of both the intermediate and intervening variables while on the other hand variables that are endogenous often do have clear and specific causes and comprise the intermediate, intervening and also the dependent variables. Taking this in to consideration sustainability exploitation, sustainability exploration, and innovation performance were regarded as endogenous variables. The variables of customer sustainability concern, sustainable Market orientation, intra-organizational trust, and sustainability champions were examined as variables that were independent, with innovation performance being the research dependent variable. Nevertheless, the intermediate variables of sustainability exploitation and sustainability exploration were planned to be tested as independent and dependent variables. A computer statistical program was utilized to test the

hypothesized models. Mertler and Vannatta (2005) noted that it is acceptable to have a variable that is endogenous in one situation which becomes a variable that is exogenous in another situation under the same model. This research however intends to innovation performance as the sole dependent variable.

4.7 Tests for Mediation Effects

Additional analysis was done to confirm the mediation analysis, which was performed to "indirectly assess the effect of a proposed cause on some outcome through a proposed mediator" Preacher & Hayes, 2004). The SOBEL tests were performed in order to examine the mediating effects. Preacher and Leonardelli's (2003) guidelines were adhered to in order to conduct the SOBEL tests and to determine the mediation effects. The two steps of the analysis were: (i) an unstandardized coefficient estimation for the association between the independent variable and mediator (a), and the standard error associations (Sa); and (ii) the association between the mediator and the dependent variable identified by the unstandardized coefficient (b), and the standard error association (Sb). The scores were obtained using regression analysis. The "SOBEL calculator," which followed Preacher and Leonardelli (2003), was utilized for estimating the SOBEL test statistic for mediation effects. The first step towards the data analysis looked at confirming the measurement model and testing its reliability. This was done through reliability estimation using Cronbach's alpha technique.

4.8 Reliability Estimates

At the outset the reliability estimates for the entire set of variables, namely stakeholder sustainability orientation (SSO), market orientation (MO), the organizations internal trust (OIT), sustainability champions significance (SCS), sustainability exploration (SEXP), sustainability exploitation (SEXL), and innovation performance (IP), were computed using Cronbach's alpha technique. Table 4.10 provides the results of the analysis.

Table 4.10 Reliability scores

Variable	Cronbach's alpha coefficient
Stakeholder Sustainability Orientation	0.803
Market Orientation	0.745
Organization's internal trust	0.905
Sustainability champions significance	0.712
Exploration	0.778
Exploitation	0.770
Innovation performance	0.717
Reliability of all variables	0.937

As indicated in Table 4.10 stakeholder sustainability orientation has an alpha score of .803, Market Orientation has an alpha score of .745, organization's internal trust has an alpha score of 0.905, sustainability champions significance had the lowest alpha score .712 amongst the variables exploration, exploitation had alpha scores of .778 and .770 respectively, and finally Innovation performance had an alpha score of .717. Cronbach's alpha used for testing the constructs was indeed found to be reliable and within the acceptable fit determined with the preferable alpha of >0.7 (Nunnally, 1978) and this confirmed its validity so that the factor analysis could be proceeded with.

4.9 Ethical Considerations

The standard ethical guidelines of Fontana and Frey (2003) were followed for this study:

1) The respondent's identity was not to be revealed. Answers to the survey were strictly confidential and all answers across all survey participants were aggregated without identifying individuals or their businesses. Only general information such as demographic details was collected.

1) The respondent was never harmed or disturbed physically, emotionally or in other way.

2) Institutional approval was duly obtained prior to beginning the data collection.

4.10 Conclusion

This chapter described the scale and measures used for the constructs, the study population, and outlined the questionnaire development and how the constructs were operationalized, followed by the survey procedure. The data analysis techniques for testing the hypotheses of the study was confirmed, and reliability tests using Cronbach's alpha for composite validity were performed to confirm the validity and if the hypotheses were in line with the research objectives. Chapter 5 enumerates the analysis of the data and the results obtained.

CHAPTER 5

RESULTS AND FINDINGS

The analysis was comprised mainly of three stages. The first stage went towards conducting an exploratory factor analysis. This was followed by the second stage that constituted a confirmatory factory analysis. The third stage conducted the testing of the structural model and hypotheses using the path analysis approach and confirming the model fit. At the outset the characteristics of the sample were ascertained, followed by the data analysis stages and the subsequent results of the analysis.

5.1 The Sample Characteristics

The demographic variables were analyzed in order to understand the characteristics of the sample. Three variables were considered for the analysis, namely the age of organization, size of the organization, as well as type of industry. Organizations of different sizes could always exhibit different characteristics as well as resource allocations.

Larger organizations often do have sufficient resources towards managing development activities for new products in comparison to smaller ones. The research also looked at the percentage of time spent in the pursuit of sustainable innovation by other organizations.

The measurement of the age of the organization considered the years since its establishment. The other aspect was identifying the profile of the respondents by asking about their primary function and position within their organization and the organization's primary industry. The sample characteristics are provided in Table 13 below.

Table 5.1 The Sample Characteristics

Question	Function	Percentage
What is your primary function in your organization	Marketing	3.7
	Product Development	7.4
	Finance	2.5
	General Management	49.7
	Research & Development	21.5
	Operations	9.2
	Others	6.1
	Classification	**Percentage**
What is your organizations primary industry	Accounting/Auditing/Financial/Leasing/ Consultancy	2.5
	IT/ITES	23.9
	Educational Institutions	1.2
	Manufacturing	50.9
	Hotels/Travel/Tourism	1.2
	Satellite/Telecom/Electronics	7.3
	Agribusiness/Biotechnology	5.5
	Others	7.4
	Age	**Percentage**
How many years has your organization been in operation	1-4 years	12.9
	5-10 years	4.3
	More than 10 years	82.8
	Size	**Percentage**
How many employees does your organization employ	Less than 100	19.0
	100-499	18.4
	500-1999	27.0
	2000-4999	14.7
	>10000	20.9
	Position	**Percentage**
What is the level of the position you hold	Manager	13.5
	Director	11.0
	Senior Management	49.7
	Owner/CEO	25.8
	Time Spent	**Percentage**
In the last two years approximately what percentage of your organization's time was spent on sustainable innovation	Less than 20%	30.1
	21-40%	44.2
	41-60%	10.4
	61-80%	4.3
	Over 81%	11.0

5.2 Descriptive Statistics

The responding organizations came from across the industry classifications of manufacturing,accounting/auditing/financial/leasing/consultancy,information,technology (IT) and IT services, educational / research institutions, hotels/ travel/ tourism, satellite/telecom/electronics, agribusiness/biotechnology, and others.

A 7-point Likert scale was used to seek the responses which ranged from the minimum level 1 (strongly disagree) to the maximum level 7 (strongly agree). The mean scores of the variable are shown in Figure 8 under the descriptive statistics. The results indicated that the mean score of the items for each variable showed general agreement, which ranged from 5.90 with regards to market orientation to 5.30 with regards to the sustainability exploration. The sustainability exploitation and innovation performance had general agreement, with the means of 5.87 and 5.81, and the stakeholder sustainability orientation had a mean agreement of 5.47.

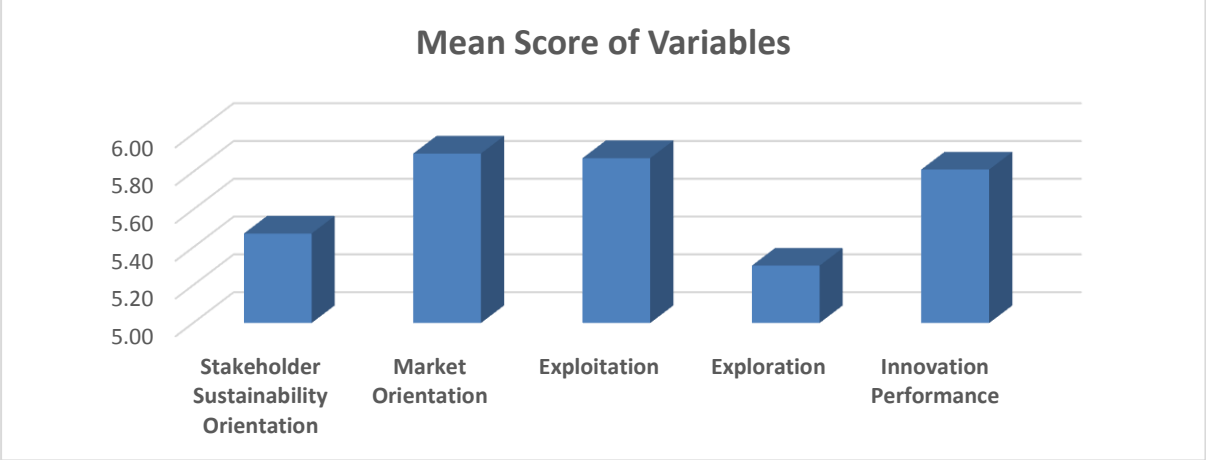

Figure 5.1 Mean Score of variables

Table 5.2 shows the mean, standard deviation, and correlation amongst the variables. As shown, the standard deviations ranged from .95 to 1.12, thereby showing a fair degree of variance with regards to the responses. Multicollinearity is considered a problem when the independent variables are correlated highly with each

other. The correlation of well above the 0.8 range would indicate a multicollinearity problem (Hair et al., 1998), affecting the determination of the contribution. All of the correlation coefficients of the variables ranged from 0.46 to 0.78 at the 0.01 level of statistical significance. Additionally, towards confirming if multi-collinearity was a concern for the sample, the respective VIF values were computed. All of the values were below the cut-off value of 10, confirming that multicollinearity was not a problem and that the analysis could continue. The descriptive statistics constituted the respondents that took the survey, including the scores, and the mean and standard deviations for all the items.

Table 5.2 Mean, Standard Deviation, and Correlations

	Mean	SD	1	2	3	4	5
1. SSO	5.47	0.96	1				
2. MO	5.90	1.06	.78**	1			
3. OIT	5.91	0.98	.47**	.66**	1		
4. SEXP	5.30	1.05	.81**	.72**	.62**	1	
5. SEXL	5.87	0.95	.41**	.54**	.36**	.46**	1

**. Correlation is significant at the 0.01 level (2-tailed).

The two leading functions from which the respondents essentially were constituted were those of general management at 50% and research and development and development at 22%. The organizations were predominately from the two main industrial sectors of manufacturing at 51%, and information technology and enabled services (IT/ITES) at 24%. The respondents as envisaged were also mainly from senior management at 50% and owners/CEO at 26%. This confirmed that the sample was able to provide quality data that would be required towards achieving the research objectives. The other interesting aspect was that 44% of the organization across the two-year period spent 21-40% of time on sustainable innovation, followed by over 30% that responded as spending less than 20%. The implications of the research findings are described in Chapter 6 and further details of the descriptive statistics are provided in in the Appendix.

5.3 Factor Analysis Results

The factor analysis was conducted though the scales used in the current research were already tested in previous research, and it was desired to reaffirm the factors again in the current research setting. The objective was to analyze the results from an Indian perspective as this would help cross validate the measures using the current research sample towards testing the validity of the items.

The "Kaiser-Meyer-Olkin" (KMO) test of sampling adequacy is often conducted to establish if the data sets are adequate in meeting the perquisites for the factor analyses (Andersen & Herbertsson, 2003). The criteria of Kaiser and Rice (1974), considered a KMO value below .50 as unacceptable and disregarded, a value above .60 is considered acceptable, the value above .70 is effective in the mid-range, the value above .80 is considered very good, and finally the value above .90 is regarded as excellent. In testing the sample of the current research, the KMO score for the items combined was .848. Looking at the seven variables of the research separately, the results of the separate KMO tests were the scores for the stakeholder sustainability orientation variable of .814; for the market orientation the score was .790; organizations internal trust had a score of .878, for exploration and exploitation it was a score of .749 and .755 respectively, and for the innovation performance variable the score was .785. The sustainability champions significance variable had the lowest score of .730. Therefore, taking the combined and individual score well within the accepted range of Kaiser and Rice's (1974) criteria, the sample did indeed meet the requisites of the factor analysis.

A factor analysis was subsequently performed to verify the structure of the factors in the research setting using principle component analysis. In all cases, the analysis was set to only retain factors with an eigenvalue greater than 1.0 and the responses at item level were analyzed for identifying the underlying patterns. The protocol considered in a factor analysis is to use the principal component analysis" (PCA) as a default and to rotate the loading matrix to achieve orthogonal factors using varimax rotation. The factor analysis objective is to identify the items that are easily interpretable with factor loadings >.30 under one factor under the assumption that the items are factorable. The purpose of using the PCA (De Coster, 1998) is to identify

the small number of important components that are attributed to the variability that are found with many measures. This is regarded as a data-reduction procedure that is based on the measured responses and works with their information.

The six variables in the research study had a factor analysis conducted and analyzed accordingly with the endeavor of extracting and identifying the items that were easily interpretable with high factor loadings under one factor. The "sequential item selection approach" proposed by Anderson and Gerbing (1988) was followed whereby multi-dimensional scales are developed by initially defining preliminary scales with their item-total correlations and exploratory factor analysis, and confirmatory factor analysis assessed the uni-dimensionality of scales; and eventually the reliability of the scales for internal-consistency was assessed. Wille (1996) also supported a sequential approach that initially analyzes the internal-consistency, which is followed by the convergent and discriminant validity analysis.

After having confirmed the alpha scores for the item scales under the reliability analysis, the next step was undertaken to examine convergent and discriminant validity, using exploratory factor analysis. The subscales discriminant validity was examined and improved by identifying and removing, one by one, the items that were found loading significantly on more than one factor. Simultaneously the subscales convergent validity was examined and enhanced by identifying and removing, one by one, the items which failed to load significantly on any given factor. These two criteria were followed in the evaluation and those that did not satisfy the criteria were removed until none of the items violated the convergent validity; this strategy ensured that the EFA not only satisfied the criteria but that their content was in line with the theoretical constructs that they were intended to measure.The factor loading is an important basis to determine the items that have correlations that are meaningful with the factors that are being examined. The research typically preferred factor loadings > .7 though a loading of .5 or more was regarded to be usable (Pedhazur & Schmelkin, 1991).

5.4 Stakeholder Sustainability Orientation (SSO)

Using the above strategy, the first variable of stakeholder sustainability orientation had items SSO4, SSO7 and SSO10 retained and the percentage of variance was identified. The factor loading increased from a low loading of .27 to a maximum loading .82 when all 10 items were included in each selected factor loading at .76, .80 and .86 when the final 3 items were retained, as shown in Table 15. The results from the exploratory factor analysis confirmed that these items and the rest were removed due to their low factor scores or cross-loadings. The analysis of the output showed that the first component/factor explained around 70% of the variance of the stakeholder sustainability orientation variable. The items that were retained captured the essence of the stakeholder's environment focus. The measures consider the customer's views, such as the choice of environmentally-friendly alternative products or services regardless of price, the notion that firms can be profitable while addressing environmentally-friendly technologies and processes, and towards helping the community they try to discover the social and environmental compliance of products and services prior to purchase. All three variables clearly indicated the customer's environment and sustainability focus and loaded as one component/factor. This reaffirmed the sentiments of environment and social commitment that were also prevalent in the Indian customers and would need to be recognized by the organizations for taking the sustainability agenda forward. This demonstrated that even the customers of a developing country recognize the importance of taking the sustainable development perspective.

5.5 Market Orientation (MO)

The next variable of market orientation had items MO1, MO2 and MO4 retained. The factor loading increased from a low loading of .65 to a maximum loading of .74 when all 6 items were included in each selected factor loading at .76, .79 and .82 when the final 3 items were retained, as indicated in Table 15. The minimum eigenvalues explained more than 62% of the variance. The items that were retained captured the essence of the markets environmental focus. Further, all three

items of market orientation outlined the organizations objective to meet and balance the customers' needs in relation to the environmental concerns of other stakeholders (such as shareholders, governments, and the public), meeting the social and economic concerns of other stakeholders and striving to balance these customers' needs while also considering the environmental concerns of other stakeholders. This identified that the loadings under a single component/factor essentially was the underlying "market focus," which the organizations had to consider while taking into consideration the competitive strategy to undertake to achieve sustainable innovation. This reaffirmed the notion that the organizations did indeed recognize the importance of market orientation as clearly identified from the results.

5.6 Organizations Internal Trust (OIT)

Under the variable of organizations internal trust, the items retained were OIT1, OIT2 and OIT3 retained. The factor loading increased from a low loading of .61 to a maximum loading .82 when all 10 items were included in each selected factor loading at .79, .80 and .89 when the final 3 items were retained, as shown in Table 15. The exploratory factor analysis confirmed that these items and the rest were removed due to their low factor score or cross-loading. The results showed that the minimum eigenvalues explained more than 70% of the variance. The items that were retained which loaded under one component/factor showed that the variable captured the essence of "work competency." Additionally, all three items of market orientation showed that employees across the organization were competent at their jobs, were upholders of professional work values, and were skilled and knowledgeable in doing their work. This is crucial for success and for innovation to thrive, as it requires the internal organization's trust environment with regards to its capabilities, and skills were considered to be positive and to significantly impact innovation performance.

5.7 Exploration (SEXP)

The variable of exploration from the sustainability perspective had the three items of SEXP3, SEXP4 and SEXP5 retained and the percentage of variance was explained.

The factor loading increased from a low loading of .56 to a maximum loading .76 when all 8 items were included in each selected factor loading between .73, to .83 when the final 3 items were retained, as indicated in Table 15. The minimum eigenvalue results accounted for more than 77% of the variance. All six variables of market orientation loaded under a single component/factor. The items that were retained under the variable and loaded under one component essentially captured the essence of the new "sustainable process focus." The items indicated that organizations undertook regularly "business process reengineering" with a focus on green perspectives, acquired innovative environmentally-friendly technologies and processes, and organizations continuously strengthened their employees' knowledge and skills to improve the efficiency of current sustainability practices. The results also showed that organizations pursuit towards exploration did not just consider the economic perspectives by ensuring returns from the acquisition of environmentally-friendly technologies and reengineering their business processes; they also considered the importance of social aspects while enhancing the knowledge base of its employees.

5.8 Exploitation (SEXL)

In the case of the variable of exploitation from the sustainability perspective the items SEXL1, SEXL3, SEXL5 and SEXL 6 were retained. The factor loading increased from a low loading of .63 to a maximum loading .76 when all 6 items were included in each selected factor loading between .64 to .80 when the final 3 items were retained, as indicated in Table 5.3. All four items under the variables of exploitation loaded under a single component/factor and captured the essence of the organization's existing sustainability responsiveness. The items that were retained under the variable identified the organization's consideration of always responding to existing stakeholder issues in a regular/systematic manner. The organization's business processes were reaffirmed to be flexible, allowing them in their view to achieve high levels of responsiveness toward key stakeholders' needs and demands. The organizations confirmed the use of appropriate tools and techniques to reduce the variability of key processes. Finally, the organizations confirmed the use of key

performance indicators to confirm the achievement of the sustainability goals. These factors therefore reaffirmed the organizations' focus on establishing the sustainability focus in line with the market and consumer needs accordingly.

The variable of sustainability champions significance was considered for exclusion as all the items were cross-loaded across the factors resulting in low factor loadings, and their inclusion affected the convergent validity criteria (providing a CR value below .7) and impacted the model fit when subsequently performing the CFA. The reason for this could be the fact that the items questions were probably confusing to the respondents with regards to their outlined functions, thereby bringing about the inability of the variable to provide significance to validate their inclusion in the model and it was eventually dropped.

5.9 Innovation Performance (IP)

The final dependent variable of innovation performance had items IP2, IP3, IP5, IP6 and IP7 being retained. The factor loadings increased from a .45 to .66 range when all 9 items were included to above the .63 to .72 range when the 5 items were retained, as indicated in Table 5.3.

Table 5.3 Summary of Factor Analysis

Variables	**Initial Results**		**Final Results**	
	No Items	Loading range	No Items	Loading range
Stakeholder Sustainability Orientation	10	.27 - .82	3	.76 - .86
Market Orientation	6	.65 - .74	3	.76 - .82
Organizations Internal Trust	10	.61 - .82	3	.79 - .89
Exploration	8	.56 - .76	3	.73 - .83
Exploitation	6	.63 - .76	3	.64 - .80
Innovation Performance	9	.45 - .66	5	.63 - .72

The researcher would like to point out that innovation performance here was considered to as combined factor under sustainable innovation, which included the environmental, social, and economic perspectives. The results were reaffirmed as items loaded under one component. This captured the essence of "sustainable innovation," which in effect assessed the "triple bottom line" impact on innovation performance. The items represented the combined effects of the economic, social (represented by two items each), and environmental aspects (represented by one item). The overall summary of the factor analysis results is outlined in Table 5.3. The organizations from the economic perspective confirmed that their consumers regarded their new products and services as innovative. Their new technology adoption in the organization was faster than that of their competitors, affirming their competitive advantage. Further, from the social perspective the organizations during the past three years found their employee relationships to have strengthened the social links and that the employees' motivation had increased. Importantly the environmental perspective reaffirmed that the efficiency of the consumption of raw materials had improved during the past three years. This could lead to the inference that the impact on innovation performance positively affected the triple bottom line.

Next, a confirmatory factor analysis was conducted in line with the conceptual model after the poor loading items and items that cross-loaded with other constructs were removed in order to ensure a reliable model fit. The eventual CFA results that were comprised of the six variables showed that the model had a very good fit with a chi-square = 2.766, d.f. =2, $p < .001$; CFI = .999; NFI = .997; GFI = .994, and the RMSEA = .049.

For confirming the model fit the path analysis approach was utilized in order to outline the correlation matrices and to better understand the hypothesized relationships of the research and to test the causal paths amongst the variables. The measurement model constituting the variables is presented in Figure 5.2.

The "maximum likelihood" (ML) estimation method was used as the basis to confirm the model fit and the estimation of the path coefficients. Kline (1998) argued that though multiple regression analysis helps to do the same, ML estimates the path coefficients simultaneously. All the parameter estimations in the model were computed at the same time and were calculated repetitively. Additionally, in the ML

the error terms are considered for estimation of the unobserved exogenous variables and ML is considered to be the widely-used estimation method for model fitting. The statistical program typically tests the path models because it comprises the ML estimation method and also helps to analyze and provide the goodness of fit indices. The structural model was used to depict the hypothesized relationships. A structural model helps to outline the hypotheses put forth by the researcher, representing the causal hypotheses (Kline, 1998). The structural model specifies the very start for the path analysis approach. The reduced model is essentially the outcome of the analysis (Ingram, Cope, Harju, and Wuensch, 2000). This model is also called the over-identified model. Towards testing the goodness of fit amongst the hypothesized model/structural model and the independent model, this research utilized the CMIN statistics.

Using the basis of the path analysis literature (Mertler & Vannatta, 2005; Garson, 2007) the characteristics of the variable Stakeholder Sustainability Orientation is considered an exogenous variable. The exogenous variables were considered to be independent variables that did not have clearly-specific causes. While the endogenous variables were those variables that had explicit causes and comprised both the intermediate variables and the dependent variable. In this research, market orientation, organizations internal trust, exploration, exploitation, and innovation performance were regarded as endogenous variables. Stakeholder sustainability orientation, market orientation, organizations internal trust, exploration, and exploitation were examined as the independent variables, and innovation performance was examined as the dependent variable. However, the research looked at exploration and exploitation as the intermediate variables, which were examined as both the independent and dependent variables. The computer statistical program was used to test the hypothesized models. The direct and/or indirect effects of stakeholder sustainability orientation, market orientation, organizations internal trust, exploration, exploitation, and innovation performance was examined using the path analysis approach. The following relationships were analyzed: (1) the direct correlation between stakeholder sustainability orientation and the sustainability practices of exploitation and exploitation as well as innovation performance and organizations internal trust; (2) the correlation between market orientation and organizations

internal trust; (3) the correlation between market orientation and the sustainability practices of exploitation and exploitation; (4) the correlation between organizations internal trust and the sustainability practices of exploitation and exploitation; (5) the correlation between exploitation and innovation performance; and (6) the correlation between exploration and innovation performance.

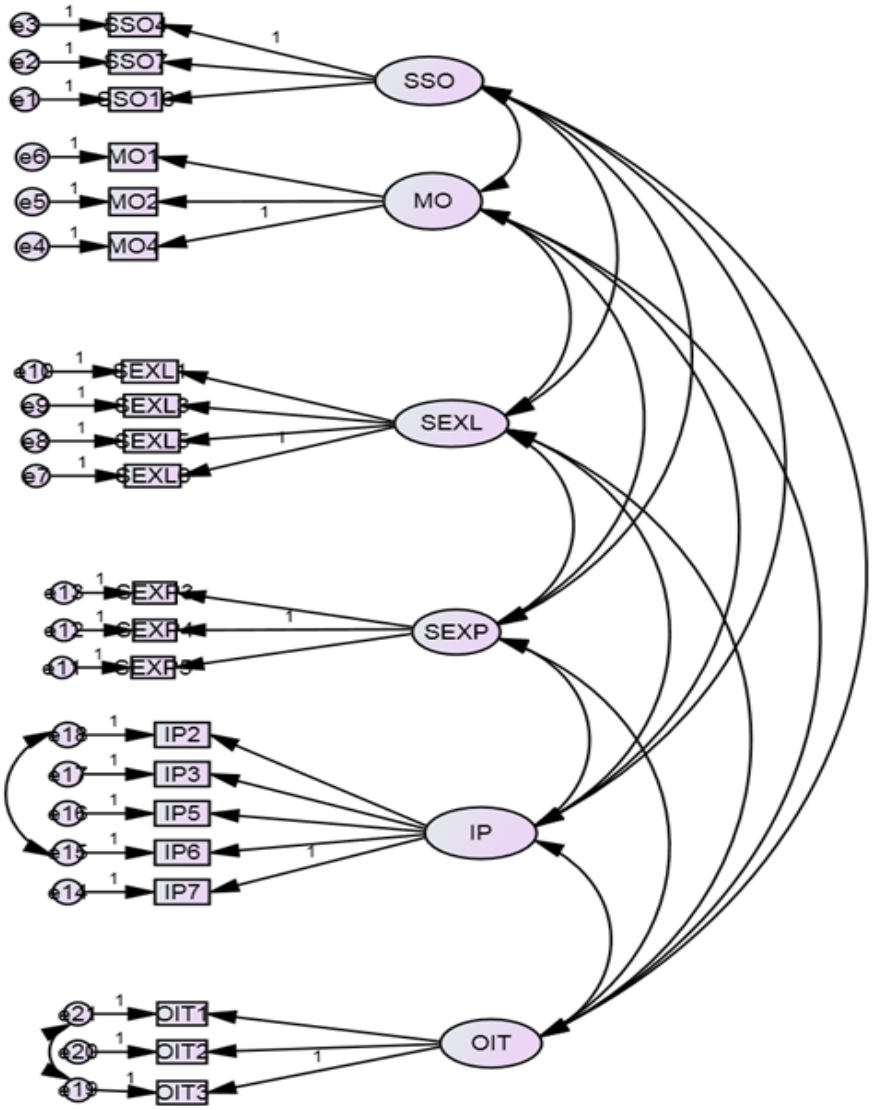

Figure 5.2 The Measurement Model

5.10 The Comparative Fit Indices

The goodness of fit of the path models was confirmed using the "comparative fit indices," A comparative approach used the goodness of fit indices, which places the model of interest or what is considered the estimated model somewhere along a continuum; this continuum is one that has at one end the independence model, which is the model having unrelated variables, and on the other end is the saturated model or what is called the full model (Tabachnick & Fidell, 2001). Though there are many indices for having the goodness of fit tested, the "Normed Fit Index" (NFI), the "Comparative Fit Index" (CFI), and the "Goodness of Fit Index" (GFI) are the three indices that are popular for estimating the model's goodness of fit (Tabachnick & Fidell, 2001; Ingram, Cope, Harju, & Wuensch, 2000; Kline, 1998).

5.11 Regression Analysis Results

The predictability of the independent variable or the predictor variable on the criterion variable (Kachigan, 1991) was examined. The stakeholder sustainability orientation, market orientation, and organizations internal trust were examined as the predictor variables, and both exploration and exploitation were examined as both predictor and criterion variables, and innovation performance was examined only as a criterion variable.

Given the fact that the sample size was small, a p-value of 0.05 or less was considered as the criteria to decide if the degree of prediction was significant. The results of the regression analysis are provided in Table 5.4. With the basis of the dynamic capabilities theory it was suggested that the organization paths that help sense the environment directly impact the internal processes. In this case, it was hypothesized that an organization's perception of the environmental and social concerns amongst its consumers, or the stakeholder's sustainability orientation, would serve as the antecedent of its processes; namely, exploration and exploitation. The organization's positions that seize the opportunity based on the prevailing environment are the variables that constitute resources that are tangible and intangible available to the firm and also impact the processes of exploration and exploitation.

The conceptual framework had the variables of market orientation and the organization's internal trust. Finally, the processes of sustainable exploitation and exploration impacted innovation performance and this led to the outcomes of the triple bottom line.

Table 5.4 Summary Table of Regression Analysis

Model	Estimates	P Value
Exploration <--- Stakeholder Sustainability Orientation	-.071***	.001
Exploitation <--- Organizations Internal Trust	.049	.197
Exploration <--- Organizations Internal Trust	-.005	.959
Organizations Internal Trust <--- Market Orientation	.659***	.001
Exploitation <--- Market Orientation	.698***	.001
Exploration <--- Market Orientation	.607***	.001
Exploitation <--- Stakeholder Sustainability Orientation	.241***	.001
Innovation Performance <--- Stakeholder Sustainability Orientation	.102	.182
Innovation Performance <--- Exploration	.047	.367
Innovation Performance <--- Exploitation	.390**	.01
Innovation Performance <--- Market Orientation	.346**	.01

***Significant at the p<.01 level*

The stakeholder sustainability orientation was found to be a significant predictor of exploitation at the p< .001 level of significance and had a positive correlation with exploitation, and hence Hypothesis 2 was supported. Exploration was strongly predicted by market orientation and had a positive correlation with it, and hence Hypothesis 4 was supported. Further, market orientation was again found to be a significant predictor of exploitation at the p< .001 level of significance and also had a positive correlation with exploitation and therefore Hypothesis 5 was also supported. Market orientation was again found to be a significant predictor of

organizations internal trust at the p< .001 level of significance and also had a positive correlation with market orientation; hence hypothesis 7 was supported. Additionally, the impact of market orientation significantly predicted innovation performance and had a positive correlation with innovation performance at the p< .01 level of significance and hence Hypothesis 6 was supported. Exploitation was again a significant predictor of innovation performance at the p< .01 level of significance and exploitation had a positive correlation with exploitation and hence Hypothesis 11 was supported. The stakeholder sustainability orientation was not found to be a significant predictor of exploration and had a negative correlation with exploration and hence Hypothesis 1 was not supported. On the other hand, stakeholder sustainability orientation did not significantly predict innovation performance and had an r value of .102, and hence Hypothesis 3 was not supported. The organization's internal trust was not found to be a significant predictor of exploration and had a negative correlation with exploration and hence Hypothesis 8 was not supported. On the other hand, the organization's internal trust was again not found to be a significant predictor of exploitation and had a positive correlation with exploitation and hence Hypothesis 9 was not supported. The correlation between exploration and innovation performance was found not to be significant and had a negative correlation with exploration and hence Hypothesis 10 was not supported.

5.12 Path Analysis Results

The structural model essentially is used towards depicting the relationships that were hypothesized. A structural model is a model that outlines the hypotheses put forth by the researcher towards representing the causal hypotheses (Kline, 1998). The specification of the structural model is the very start for the path analysis approach. Towards testing the goodness of fit amongst the hypothesized model/structural model and the independent model, this research utilized the CMIN statistics. The path analysis and the results are presented in three parts: the first is a description of the structural model and then the results of the path analysis are depicted by the reduced model, and a model fit summary of each of the models is presented. The first model was hypothesized toward examining the relationships among the stakeholder

sustainability orientation (SSO), sustainability exploration (SEXP), sustainability exploitation (SEXL), and innovation performance (IP). The second model looked at understanding the relationship between market orientation (MO), sustainability exploration (SEXP), sustainability exploitation (SEXL), and innovation performance (IP). The third model was hypothesized to examine the relationships between the organization's internal trust, sustainability exploration (SEXP), sustainability exploitation (SEXL), and innovation performance (IP). The final model examined the hypothesized relationships among stakeholder sustainability orientation (SSO), market orientation (MO), the organization's internal trust (OIT), sustainability exploration (SEXP), sustainability exploitation (SEXL) and innovation performance (IP). The reduced model is understood using a computer statistical program for analysis, and the model fit data were used to better interpret the results and to individually analyze the role of the SSO, MO, OIT variables with regards to the model specified.

5.13 Structural Model 1

The structural model, as shown in Figure 5.3, shows the relationship between the stakeholder sustainability orientation (SSO), sustainability exploration (SEXP), sustainability exploitation (SEXL), and innovation performance (IP).

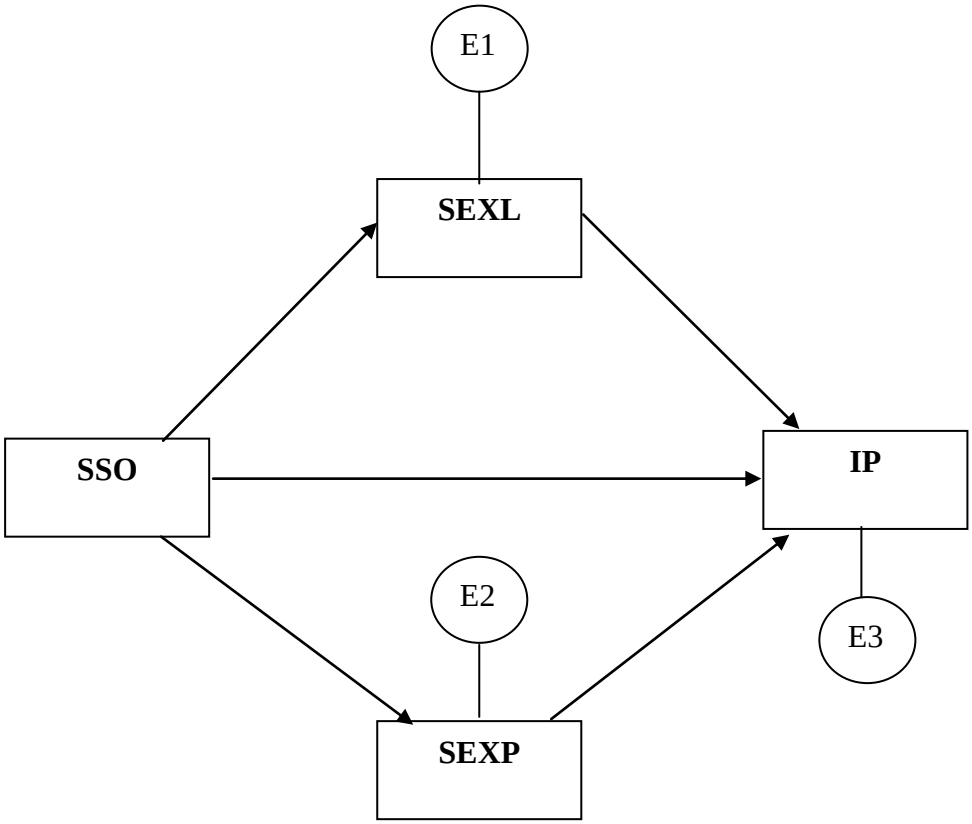

Figure 5.3 Structural Model 1

The basis of the model was looked at under the assumption that there was a positive correlation between a) stakeholder sustainability orientation (SSO) and exploration (SEXL), b) stakeholder sustainability orientation (SSO) and exploitation (SEXL), c) exploration and innovation performance (IP), and d) exploitation and innovation performance (IP). The direct and indirect or mediated effects were examined for the model.

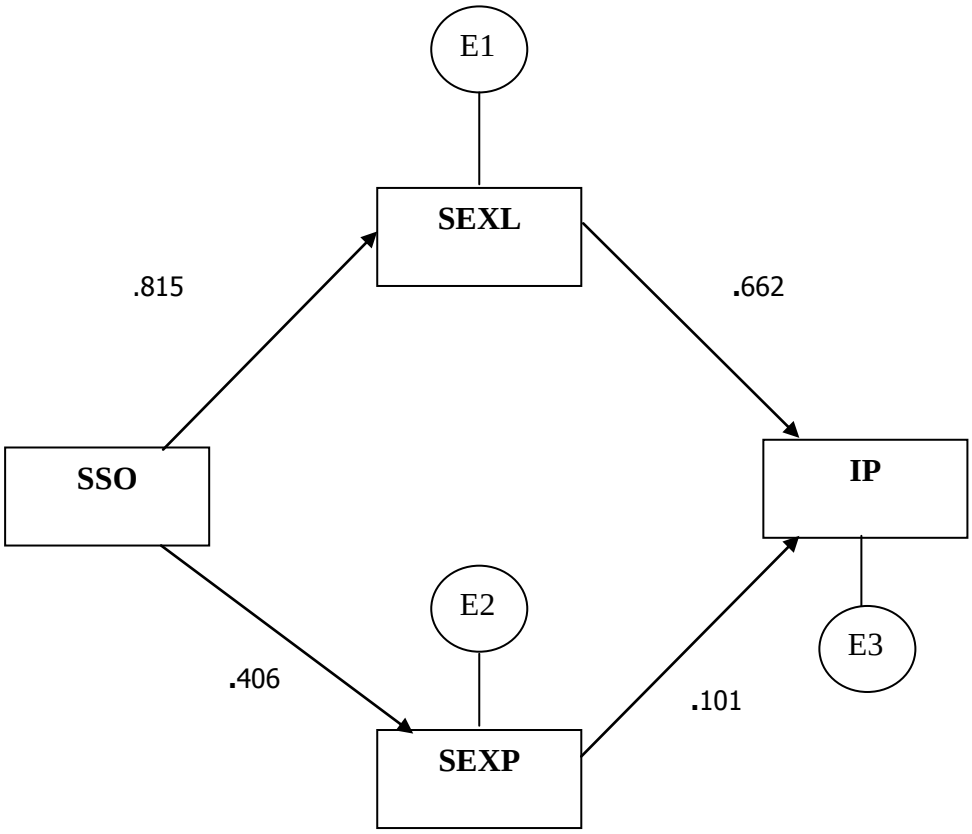

Figure 5.4 Reduced Model 1

The reduced model is shown in Figure 5.4 below and shows the positive significant relationship between the stakeholder sustainability orientation and sustainability exploration and the standardized regression coefficient of .406 at p< .001. The relationship was positive between the stakeholder sustainability orientation and sustainability exploitation and was significant with a standardized regression coefficient of .815 at p< .001. There was no direct significant relationship between stakeholder sustainability orientation and innovation performance. A positive relationship was observed between exploration and innovation performance, which was significant with the standardized regression coefficient of .101 at p< .05. A positive relationship was also observed for exploitation and innovation performance, which was significant with the standardized regression coefficient of .662 at p< .001.

The CMIN statistics for the model fit were looked at with the values for "Goodness of Fit Index "(GFI), the "Normed Fit Index" (NFI), and the "Comparative Fit Index" (CFI), which were calculated and are shown in the in the Appendix.

Model 1 had a GFI value of .971. The criterion as suggested by Cope, Harju, and Wuensch (2001) is that a GFI value of .90 and above is required for the model to be considered a good fit. The NFI value was .975 and the criterion as suggested by Tabachnick and Fidell (2001), considered an NFI value of greater than .90 as indicative of a good-fitting model. The CFI value of the model was .977. Hu and Bentler suggested that a CFI value greater than .95 is indicative of a good-fitting model (Tabachnick & Fidell, 2001). All three indices suggested that the tested structural model was a good fit. However, the relationship between stakeholder sustainability orientation and innovation performance was found to be mediated by sustainable exploration. The SOBEL test was performed using the SOBEL calculator (Preacher & Leonardelli, 2003) in order to confirm the mediation effects. The mediation effects of exploration on stakeholder sustainability orientation and innovation performance and also tested the mediation effects of exploitation on stakeholder sustainability orientation and innovation performance. The guidelines as outlined in the methodology chapter were outlined by Preacher and Leonardelli (2003) towards calculating the SOBEL test statistic. The SOBEL test for the statistic for the mediating effects of exploitation on stakeholder sustainability orientation and Innovation Performance was 9.29, which was found to be not significant at ($p< 0$). The SOBEL statistic was then calculated to determine the mediation effect of exploration on stakeholder sustainability orientation and innovation performance. The SOBEL test statistic for this relationship was 1.96; the score was significant ($p< .05$). This suggested that exploration had a mediating effect on stakeholder sustainability orientation and innovation performance and the SOBEL test scores confirmed the mediation in the model.

5.14 Structural Model 2

The Structural model as shown in Figure 5.5 showed a relationship among the organization's internal trust (OIT), sustainability exploration (SEXP), sustainability exploitation (SEXL), and innovation performance (IP). The basis of the model was looked under the assumption that there was a positive correlation between (a) an organization's internal trust (OIT) and exploration (SEXL), b) organizations internal trust (OIT) and exploitation (SEXL), c) exploration and innovation performance (IP), and d) exploitation and innovation performance (IP). The direct and indirect or mediated effects were also additionally examined for the model.

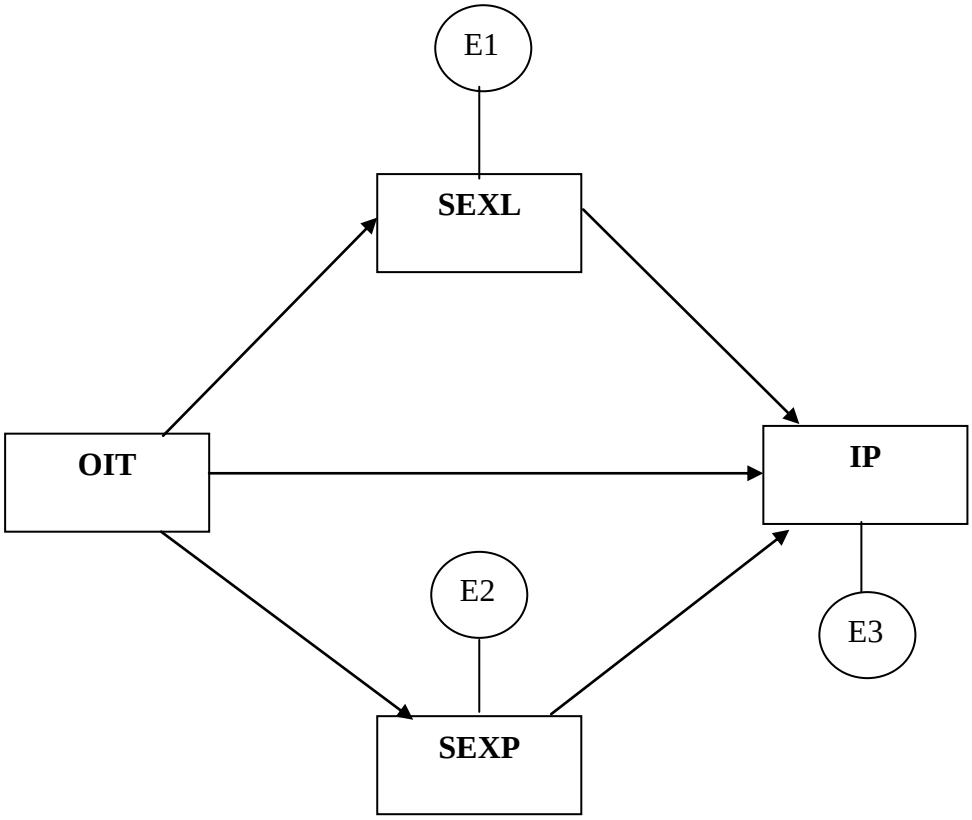

Figure 5.5 Structural Model 2

The reduced model is shown in Figure 5.6 below and shows a positive relationship between the organization's internal trust and sustainability exploration as significant, with a standardized regression coefficient of .363 at p< .001. The

relationship was positive between the organization's internal trust and sustainability exploitation and was significant with a standardized regression coefficient of .622 at p< .001. The research assumed that the relationship between the organization's internal trust and innovation performance was not directly significant. A positive relationship was observed between exploration and innovation performance was not significant with the standardized regression coefficient of .108. A significant positive relationship was observed for exploitation and innovation performance, which was significant with the standardized regression coefficient of .780 at p< .001.

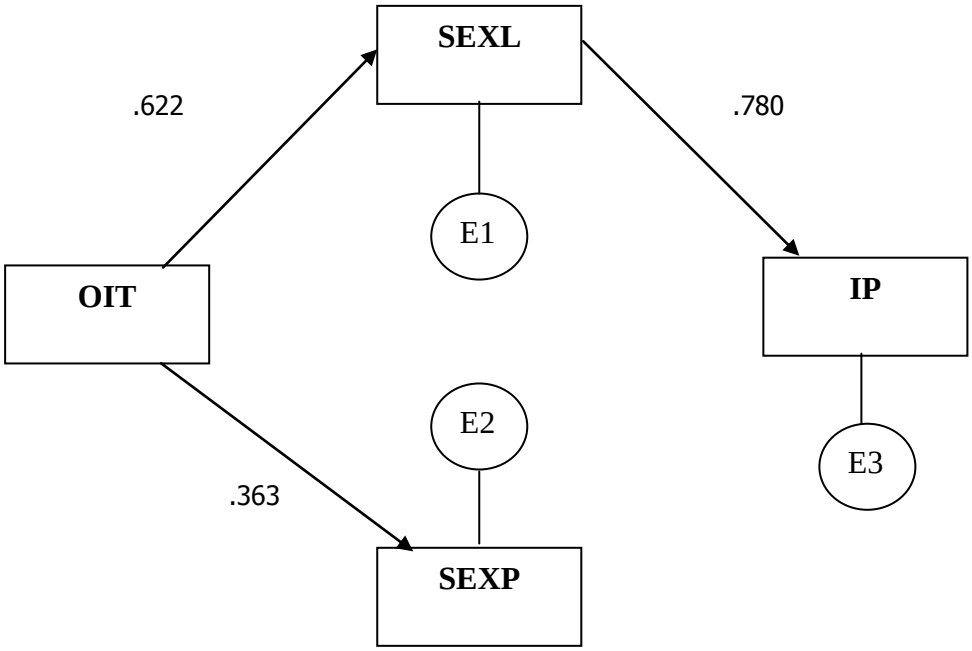

Figure 5.6 Reduced Model 2

The CMIN statistics for the model fit were looked at with the values for "Goodness of Fit Index" (GFI), the "Normed Fit Index" (NFI), and the "Comparative Fit Index" (CFI), which were calculated and are shown in the Table 18 in the appendix. Model 1 had a GFI value of .951. The criterion as suggested by Cope, Harju, and Wuensch (2001) is that a GFI value of .90 and above is required for the model to be considered a good fit. The NFI value was .941 and the criterion as suggested by Tabachnick and Fidell (2001) considered an NFI value of greater than

.90 as indicative of a good-fitting model. The CFI value of the model was .946 which was good and together all the three indices suggested that the tested structural model was a good fit. The relationship of the organization's internal trust and innovation performance was interestingly found to be mediated by sustainable exploration. The SOBEL test was performed using the SOBEL calculator (Preacher & Leonardelli, 2003) for confirming the mediation effects. The SOBEL tests were performed to analyze the mediation effects of exploration on organizations internal trust and innovation performance and also tested the mediation effects of exploitation on the organization's internal trust and innovation Performance. The guidelines as outlined in the methodology chapter were outlined by Preacher & Leonardelli (2003) towards calculating the SOBEL test statistic. The SOBEL test for the statistic for the mediating effects of exploration on the organization's internal trust and innovation performance was 2.06, and the score was significant ($p < .05$). There was no mediation effect of exploitation on the organization's internal trust or innovation performance which was suggested by the non-significance under the SOBEL test statistic. This suggested that exploration had a mediating effect on the organization's internal trust and innovation performance and the SOBEL test scores confirmed the mediation in the model.

5.15 Structural Model 3

The structural model as shown in Figure 5.7 shows the relationship between the market orientation (MO), sustainability exploration (SEXP), sustainability exploitation (SEXL) and innovation performance (IP).

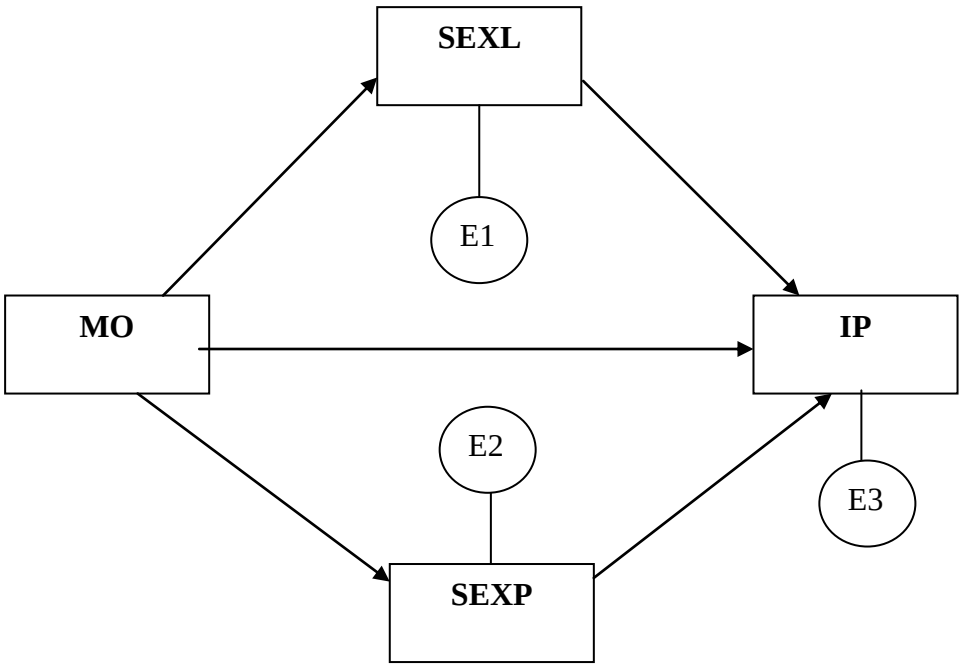

Figure 5.7 Structural Model 3

The model was examined under the assumption that a positive correlation existed between (a) market orientation (MO) and exploration (SEXL), b) market orientation (MO) and exploitation (SEXL), c) exploration and innovation performance (IP), and d) exploitation and innovation performance (IP). The direct and indirect or mediated effects were also examined for the model. The reduced model is shown in Figure 5.8 below and shows a positive relationship between market orientation and sustainability exploration and as significant, with a standardized regression coefficient of .363 at $p < .001$. The relationship was positive between market orientation and sustainability exploitation and was significant with a standardized regression coefficient of .622 at $p < .001$. The research assumed no direct significant relationship between market orientation and innovation performance. A positive relationship was observed between exploration and innovation performance and was not significant, with the standardized regression coefficient of .108. A significant positive relationship was observed for exploitation and innovation performance, which was significant with the standardized regression coefficient of .780 at $p < .001$.

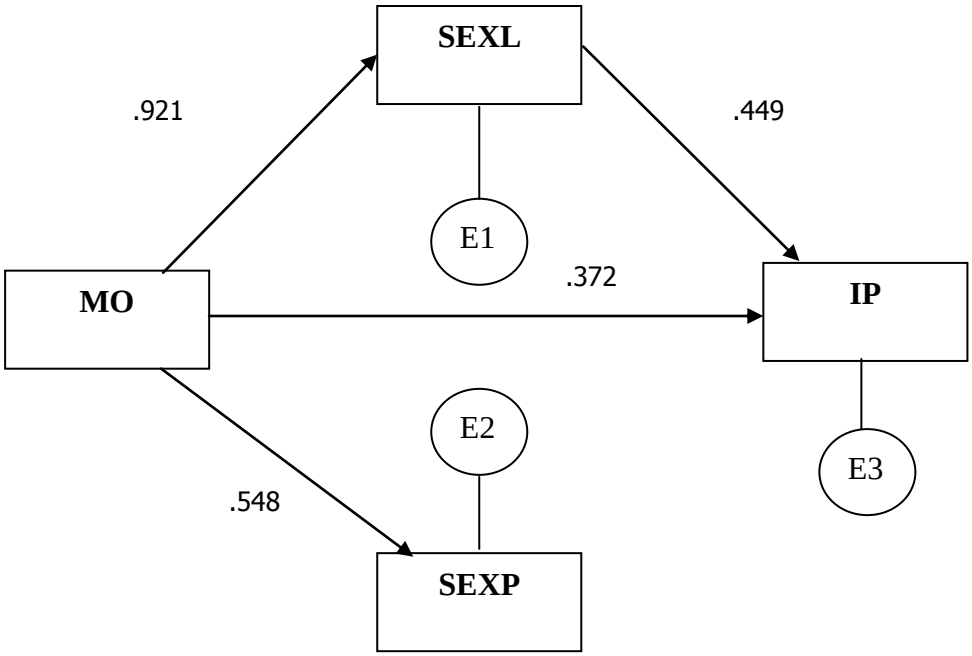

Figure 5.8 Reduced Model 3

The CMIN statistics for the model fit were looked at with the values for the Goodness of Fit Index (GFI), the Normed Fit Index (NFI), and the Comparative Fit Index (CFI), which were calculated and are shown in the Table 20 in the appendix.

The model had a GFI value of .991. The criterion as suggested by Cope, Harju, and Wuensch (2001) is that a GFI value of .90 and above is required for the model to be considered a good fit. The NFI value was .994 and the criterion as suggested by Tabachnick and Fidell (2001) considered an NFI value of greater than .90 as indicative of a good-fitting model. The CFI value of the model was .996 and as Hu and Bentler suggested, a CFI value greater than .95 is indicative of a good-fitting model (Tabachnick & Fidell, 2001). All three indices suggested that the tested structural model was a good fit.

The relationship of market orientation and innovation performance was found to be mediated by sustainable exploitation. The "SOBEL calculator" was used for performing the SOBEL test (Preacher & Leonardelli, 2003) towards confirming the mediation effects. The SOBEL tests were performed to analyze the mediation effects

of exploration on an organization's internal trust and innovation performance and also tested the mediation effects of exploitation on organizations internal trust and innovation performance. Following the guidelines as outlined in the methodology chapter and as suggested by (Preacher and Leonardelli, 2003), the SOBEL test statistic was calculated. The SOBEL test for the statistic for the mediating effects of exploitation on market orientation and innovation performance was 7.93, and the score was significant ($p < .001$). There was no mediation effect of exploration on market orientation, and innovation performance was non-significant under the SOBEL test statistic. This suggested that exploitation had a mediating effect on market orientation and innovation performance and the SOBEL test scores confirmed the mediation in the model.

5.16 Structural Model 4

Amongst all the models 1, 2, and 3, only market orientation had a direct relationship with innovation performance amongst the other exogenous variables. The exogenous variable of stakeholder sustainability orientation, the organization's internal trust, and market orientation had a significant correlation with exploration and exploitation. The structural model was the final model, as shown in Figure 5.9, and tests the relationships among stakeholder sustainability orientation (SSO), the organization's internal trust (OIT), market orientation (MO), sustainability exploration (SEXP), sustainability exploitation (SEXL), and innovation performance (IP).

The hypothesized model showed the variables stakeholder sustainability orientation, market orientation, and the organization internal trust as having a correlation with exploration, exploitation, and innovation performance. The relationships of exploration with innovation performance and also of exploitation with innovation performance was analyzed. Further, the direct relationships of stakeholder sustainability orientation and market orientation with innovation performance were tested. The direct and indirect or mediated effects were examined for the model.

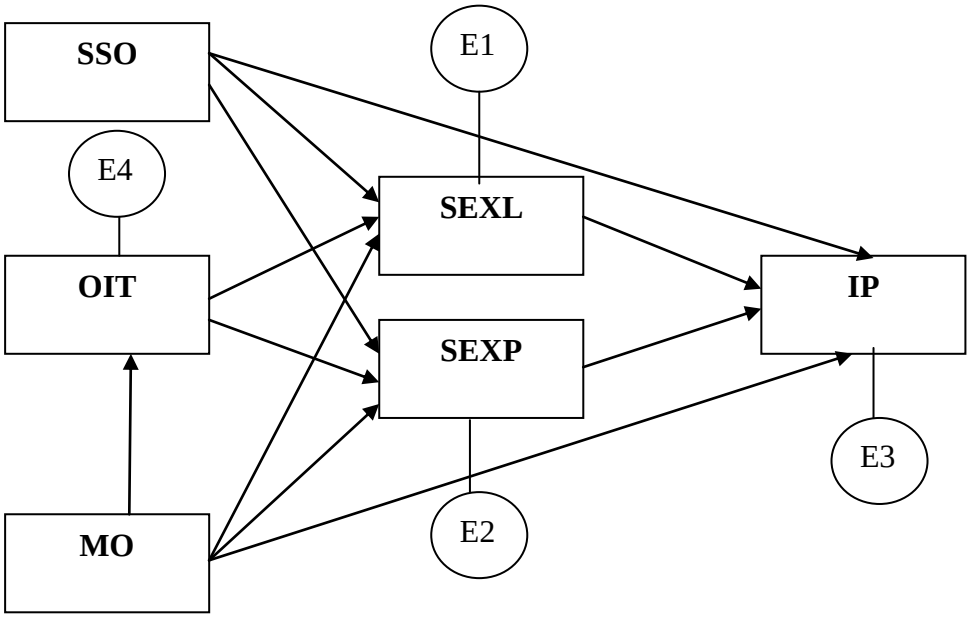

Figure 5.9 Structural Model 4

The reduced model is shown in Figure 5.10 and shows the outcome of the results and indicates a negative relationship between Stakeholder sustainability orientation and sustainability exploration, which was significant with a standardized regression coefficient of -.071 at p< .001. The relationship between market orientation and sustainability exploitation was positive and significant with a standardized regression coefficient of .698 at p< .001 and the relationship was also positive and significant between market orientation and sustainability exploration with standardized regression coefficient of.607 at p< .001. The R2 value of exploration 30.3% and that of exploitation was good at 87.0%. The relationship was positive between market orientation and the organization's internal trust and was positive and significant with a standardized regression coefficient of .659 at p< .001 and an R2 value of 43.5% was observed.

There was no direct significant relationship between exploration and innovation performance. However, a positive relationship was observed between exploitation and innovation performance, which was significant with the standardized regression coefficient of .390 at p< .05. A positive direct relationship was also observed for market orientation and innovation performance, which was significant

with the standardized regression coefficient of .346 at p< .001. An R2 value of 69.4% was observed for innovation performance. The CMIN statistics for the model fit were looked at with the values for the Goodness of Fit Index (GFI), the Normed Fit Index (NFI), and the Comparative Fit Index (CFI), which were calculated and are shown in the in the appendix.

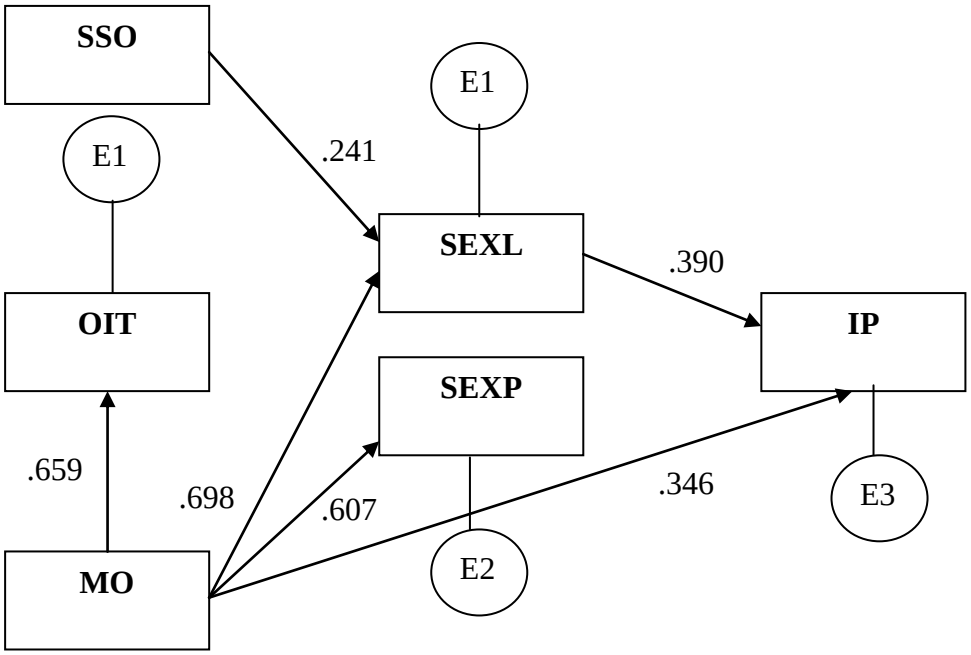

Figure 5.10 Reduced Model 4

Model 4 had a GFI value of .990. The criterion as suggested by Cope, Harju, and Wuensch (2001) is that a GFI value of .90 and above is required for the model to be considered a good fit. The NFI value was .994 and the criterion as suggested by Tabachnick and Fidell (2001) considered an NFI value of greater than .90 as indicative of a good-fitting model. The CFI value of the model was .997. Hu and Bentler suggested that a CFI value greater than .95 is indicative of a good-fitting model (Tabachnick & Fidell, 2001). Overall all three indices suggested that the tested structural model is a very good fit.

The SOBEL tests earlier performed had already confirmed the model's mediation effects of exploration on the organization's internal trust and innovation performance and a mediation effect of Exploitations on market orientation and

innovation, and a mediation effect of exploitation on stakeholder sustainability orientation and innovation performance was also confirmed. The SOBEL tests therefore confirmed the mediations in the model and their relationships will be discussed further in the following chapter.

5.17 Conclusions

This chapter detailed the results from the factor analysis, the correlation and regression analysis, and the subsequent path analysis, and the confirmation of the mediation effects. This provided very insightful information about the relationships among the variables involved in the study. The first three models showed the impacts of independent variables through the sustainability practices of exploitation and exploration on innovation performance. This has helped to provide a deeper understanding of the impacts of the variables from the perspective of the research.

The theoretical models were observed to satisfactorily fit the empirical data, thereby supporting the construct validity. All of the variables—stakeholder sustainability orientation, market orientation, and the organization's internal trust showed a positive correlation with exploration, exploitation, and innovation performance. The results of the reduced model 4 showed a significant positive relationships of market orientation with both sustainability exploitation as well as sustainability exploration. The R2 value of exploration was 30.3% and that of exploitation was good 87.0%. The relationship was positive and significant between market orientation and the organization's internal trust. There was no direct significant relationship established between exploration and innovation performance though a relationship that was positive was observed between exploitation and innovation performance. A direct significant positive relationship was established for market orientation and innovation performance.

The models established the mediation effects of exploration on the organization's internal trust and innovation performance and also the effect of exploitation on innovation performance and market orientation. The mediation effect of exploitation on stakeholder sustainability orientation and innovation performance

was also duly confirmed. The following chapter entails detailed discussions, conclusions, recommendations, and implications for future research.

CHAPTER 6

DISCUSSIONS, CONCLUSIONS AND RECOMMENDATIONS

This chapter has four sections. The first section provides the summary, followed by the discussion, which evaluates in two parts the findings from the context of the capabilities affecting innovation performance and the impact of innovation from the sustainable development perspective, looking at them from the Indian context. This is further substantiated by looking at each of the hypotheses and their related findings, which were grouped under those that were supported and not supported in the research. The next section provides the recommendations and implications from the perspectives of the research contribution, policy, and practices. The final section provides the conclusions of this research in terms of bridging the sustainability gap and taking the sustainable development agenda forward.

6.1 Summary

The research objectives were threefold. The first objective aimed to understand how firms effectively pursue sustainable innovation and how such innovation impacts their performance in relation to the triple bottom line. The second objective aimed to conceptualize the strategic framework, which outlined the determinants towards nurturing innovation from a sustainable development perspective. Finally, the third objective was to establish an empirical link of "sustainability practices" with innovation performance through the pursuit of "sustainability exploitation" within their current competences and "sustainability exploration" for new areas of opportunities. The conceptual model developed was tested through statistical analysis with the approach of a survey research. The unit of analysis was the organization selected from the state of Karnataka, which has seen the government focus a lot on innovation strategies and is regarded as the prospective

innovation hub of India. The population constituted organizations predominantly from manufacturing, IT/IT enabled services, as well as finance, hotels and tourism, satellite/telecom/electronics, and others. From the sample frame of 225 organizations which undertook took the survey a total of 163 organizations eventually constituted the sample with a good response rate of 74%. The quantitative analysis included reliability estimation, factor analyses, followed by a confirmatory factory analysis, regression analysis, correlation analysis, Sobel's test and path analysis using a computer statistical program. The research used a questionnaire as the survey tool for the data collection from the sample, which represented the target population. The respondents targeted in this study were top management; namely, ceo, chairman, presidents or vice presidents, managers or researchers at R&D at the organizational level. The questionnaires were adapted from previous studies and pertinent research. The causal relations between the variables of stakeholder sustainability orientation, market orientation, the sustainability practices of exploration, and exploitation on the innovation performance were examined utilizing these methods. This research acknowledged the sustainability gap and presented a conceptual framework that helped to identify the determinants towards fostering innovation performance and explained the relationship with sustainability practices through the pursuit of existing competencies being exploited and new opportunities being explored from a sustainable development perspective. Their eventual impact on innovation performance was assessed through the lens of the "dynamic capabilities" theory (Teece et al., 1997). Keeping in line with the notions of the dynamic capabilities theory the conceptual framework identified the three "classes" of factors towards explaining organizations sources of competitive advantage which were the following: i) the path search, which is important for aligning with the stakeholders' needs and obtaining the capability of adapting to the dynamic environmental changes through "sensing;" ii) the positions that help organizations enhance their efficiency by identifying and "seizing" the available opportunities; and iii) the processes that were outlined towards affecting the organizations "capability reconfiguration" importantly impacting innovation performance. The sustainable development perspective regarded as the enabler for innovation was assessed under the impact of sustainability practices; namely i) sustainability exploration and ii) sustainability exploitation. Market

orientation directly impacted innovation performance and also had a strategic significant relationship with organizations internal trust. stakeholder sustainability orientation impacted positively the sustainability practices of exploitation and exploration under this study. The prominence of the pursuit of exploitation from the Indian context was identified and its positively impacting the “triple bottom line” through innovation performance was duly confirmed and reaffirmed the importance of organizations pursing the sustainability agenda. All the variable did somewhere or the other did impact sustainable innovation, thereby confirming that the pursuit of the sustainable development perspective was indeed found to be worthwhile for organizations.

The research results essentially identified the significance of the position variable of market orientation, which had a direct impact on innovation performance. Market orientation also had a strategic significant relationship with the organization’s internal trust. Stakeholder sustainability orientation interestingly did impact positively the sustainability practice of exploitation though conversely with exploration under this study. Exploitation was also observed to have a mediating effect on market orientation and innovation performance. Both exploration and exploitation had mediating impacts, hence highlighting their prominence. The pursuit of exploitation in the Indian context was more prominent from the results. The impact on the triple bottom line through innovation performance was confirmed and reaffirmed the importance of pursing the sustainability initiatives. All the variables as shown in the models confirmed the impacted sustainable innovation or innovation performance from the perspective of the triple bottom line. This reaffirmed the pursuit of the sustainable development agenda as being a worthwhile initiative for organizations.

6.2 Discussion

The central research question was related to identifying the determinants that foster innovation performance from a sustainable development perspective. The research has essentially tried to understand innovation performance, not just according to the “economic” impact but also according to the “social” and “environmental” dimensions or the organization’s triple bottom line. The novelty of

the research lies in the fact that it brings the combination of a developmental approach to sustainability along with the business strategic approach through the dynamic capabilities to provide a practical basis for an organization's uptake of sustainable innovation. It further provides the basis to elicit the capabilities required to nurture the sustainability practices of sustainability exploration and sustainability exploitation for a broader understanding of their requisite impacts on innovation performance taking the economic, social, and environmental perspectives. The approach to this research looks at the determinants of sustainable Innovation capabilities from three dimensions under the approach of dynamic capabilities. They are outlined utilizing the dynamic capabilities framework under the requisite capacities of "sensing," "seizing," and the "reconfiguration" of the processes leading to their subsequent outcomes.

6.3 The capabilities affecting innovation performance

The theoretical framework suggested that organizations pursue the processes of sustainability practices of sustainability exploration and exploitation to achieve the perceived needs of the consumers and stakeholders. The research helps to provide a practical basis for understanding the implementation of the sustainability agenda. There is a need for better understanding of the systems and factors that address sustainable practices (Flannery & May, 2000) and the research has been able to do just that. Asif et al., (2013) suggests that it is important to identify stakeholder demands which then need to be incorporated into the processes of businesses requiring an approach that is systematic and s made effective by planning, resource management, and designing effective processes towards ensuring continuous improvement. The role of stakeholder sustainability orientation on both the sustainability practices of exploitation and exploration was confirmed. This was identified under Model 1 and Model 4 while taking the Indian context, where the focus by organizations on understanding the sustainability orientation of its consumers was crucial for implementing the sustainability agenda towards aligning the path for having the capability to sense their sustainability needs. The direction of the impact of the uptake of the sustainability practices was dependent on this and this was clear from the fact that stakeholder sustainability orientation was found to have a

positively significant relationship with exploitation and the converse with exploration. Organizations in India predominantly are aligned to the sustainability practices of exploitation as this is cost effective and is less risk oriented. Therefore, the predictive capacity for exploration where larger levels of innovation focus are required was lacking in the Indian context, which calls for the pursuit of sustainability exploration practices as being a necessity for the eventual success of sustainable innovation. The other factor was the capability to seize opportunities though market orientation, which was found to impact innovation by having a direct relationship and positively impacting both exploration and exploitation as observed in Model 3 and Model 4. The predictive capacity of market orientation on innovation performance had certainly enhanced the organization's capacity from an Indian perspective to confirm the uptake of sustainable innovation. The results confirmed the general overall consensus that exists within organizations but eventually the capacity of implementation could be a stumbling block for its effectiveness. The levels of trust that exist internally within the crucial stakeholders of the organization—namely their human capital with regards to work competency from a sustainability perspective—were duly confirmed in the research. This confirmed the significance of the social aspect on innovation performance and this aspect was further reinforced through the Organization's Internal trust, which effectively provides the capability to enable an effective consideration of the sustainability practices across the organizations in India. This requires an enhanced knowledge base and champions to implement and provide the buy-in for the sustainability agenda. The findings confirmed that the significant positive relationship of the organization's internal trust with market orientation identified the importance of organizations pursuing their capabilities in tandem towards with the effective uptake of sustainability practices as identified in Model 4. Their significant relationships with exploration and exploitation when looked at om Model 2 confirmed their importance in the Indian context. The relationship of market orientation with the organization's internal trust was an important learning for organizations to pursue innovation, as this helped them fill the implementation gaps towards the effective inclusion of the sustainability practices. This in the Indian context required a change in culture towards focusing not merely from the economic perspective in the short term but for the long term through effectively pursuing and

incentivizing exploration practices. This reiterated the importance of organizations taking the path aligned by the capacity to sense the stakeholder's orientation in tandem with the capacity to seize opportunities through and a clearly-focused market orientation and enhanced organizational internal trust environment towards effectively implementing sustainable agenda. Hence the variables were confirmed as the key drivers for sustainable innovation

6.4 Impact of innovation from the sustainable development perspective

This research looked to identify the role played by the intervention of sustainable practices under the constructs of "sustainability exploration" and "sustainability exploitation" enumerated earlier. The novelty this research provides was to analyze and provide an empirical ground towards establishing the achievement of sustainable development led by the combined pursuit of these sustainability practices through their effect on innovation performance across the triple bottom line, providing the foundations for sustainable development. The sustainability practices of exploration and exploitation took the model of Gomes et al. further by providing the process management aspect for technological, environmental, social, and economic-resource efficiency. This from the researcher's perspective provided the basis for understanding the interplay between the different stakeholders of the organization towards creating ecological, social, and economic value. This helps to provide a model that establishes a link between the organization and sustainable production and consumption (Boons et al., 2013). The innovation activity and processes have become crucial growth drivers and those countries that have not adopted the new technologies will not grow as fast as those that have. This requires organizations to have a complete idea about the innovation antecedents for increasing innovation performance (Kamasak, 2015) and this implies the need to reconfigure the processes towards achieving sustainable consumption and production. The findings showed that the sustainability practices have clearly under the Indian context had a significant positive relationship with sustainability exploitation, which have organizations focusing more on incremental and frugal innovations. This organizational approach has contributed to the decline of the innovation performance of India, and this requires the

environment to provide incentives towards taking risks instead of making the organizations risk averse. The research findings through their positive impact on the "economic," "environmental," and "social" parameters of innovation performance have confirmed the benefits of sustainable development. Additionally, the direct relationship of "market orientation" with "innovation performance" confirmed the existence of sustainability awareness across the organizations of India, therefore making the uptake of the sustainable innovation a feasible reality. That said, organizations in India require to have the processes of both exploration and exploitation to be in tandem towards enhancing dynamic capabilities and competitiveness. The eventual benefits of innovation on the triple bottom line would require the Indian organization to have a focused approach to sustainable development. This suggests that organizations have the capability and opportunity to address sustainable development while improving efficiency, increasing the rate of the innovation and the reduction of costs and enhancing profitability (Schaltegger, and Wagner, 2006; Koo et al., 2013). The findings on the mediation effects of exploration on relationship of organization's internal trust and innovation performance, exploitations mediation effect on market orientation and innovation, as well as the mediation effect of exploitation on stakeholder sustainability orientation and innovation performance reaffirmed the role of both sustainability practices in the pursuit of sustainable development in India. The research reaffirmed that the pursuit of a sustainable development agenda is indeed a worthwhile initiative for organizations and as the findings indicated, it is indeed an effective and feasible proposition for enhancing the innovation performance of a developing country such as India. The research questions were described and analyzed through eleven research hypotheses. In the following sections, the results concerning the research questions and each of the hypotheses, both supported and unsupported, are further discussed individually.

6.5 The Hypotheses Supported

6.5.1 Hypothesis 2: According to hypothesis 2, stakeholder sustainability orientation had a significant positive correlation with exploitation for sustainability and was a significant predictor of exploitation. stakeholder sustainability orientation and sustainability exploration had a positive significant relationship with a standardized regression coefficient of .241 at $p < .001$. The hypothesis was supported and this confirmed the line that Maletic (2014) took, purporting the consideration of a broader stakeholder orientation for exploitation and exploration as tested above to succeed. The fact that organizations would predominantly seek to have incremental changes towards taking forward the sustainability agenda seems to satisfy that proposed stance of the hypothesis.

6.5.2 Hypothesis 4: According to hypothesis 4, Sustainable Market orientation had a significant positive correlation with Exploration for sustainability and Market orientation was a significant predictor of Exploration. Sustainable Market orientation and Exploration had a positive significant relationship with a standardized regression coefficient of .607 at $p < .001$. The hypothesis was supported, and this confirmed the line of Maletic (2014), which validated the overlooked role of market orientation in the exploration strategy (Kyriakopoulos & Moorman, 2004) and suggests the consideration of market orientation towards the pursuit of exploitation and exploration for the effectiveness of the sustainability practices. Leading to a positive impact on the environmental response and, subsequently, towards a better environmental performance (Rasi et al., 2014). Seuring and Gold (2013) were of the view that pressures from the external environment and the benefits set by both primary and secondary stakeholders are the start for organizations to pursue the sustainability agenda. This calls for a market orientation that is cognizant of the pressures from the relevant stakeholders, which could be successfully attributed to a proactive response towards innovative sustainability practices.

6.5.3 Hypothesis 5: Hypothesis 5 stated that the sustainable market orientation had a significant positive correlation with exploitation for sustainability and that market orientation is a significant predictor of exploitation. Again sustainable market orientation and exploitation had a relationship that was positive and significant, with a

standardized regression coefficient of .698 at p< .001. The hypothesis was supported and this confirmed the stance of Maletic (2014), validating the overlooked role of market orientation and the exploitation strategy (Kyriakopoulos & Moorman, 2004) as explained above, which suggests the consideration of market orientation for exploitation and exploration as being crucial for the effectiveness of sustainability practices.

6.5.4 Hypothesis 6: Hypothesis 6 was outlined as part of the suggested structural model, which suggested that a "sustainable market orientation" has a significant positive correlation with innovation performance, and that market orientation is a significant predictor of innovation performance. A sustainable market orientation and innovation did have a positive significant relationship with the organization's internal trust with a standardized regression coefficient of .346 at p< .01. The hypothesis was therefore supported. The increased interest in the relationship between market orientation and innovation performance stresses their importance from an organization's strategic perspective. Han et al., 1998 presented a systematic framework towards testing the "market orientation and innovation-performance" chain. The association of market orientation and performance relationship has been looked at with a positive relationship by Slater and Narver (1994a), Ruekert (1992), Narver and Slater (1990), and Zaltman, Duncan, and Holbek (1973) who proposed a framework for implementing innovations, supported with the requisite intelligence gathered towards enhancing the performance and bringing out the notion of the "market orientation-innovation-performance." The role of "market orientation" and innovation in effecting organizational performance and enhancing the organization's innovativeness was studied by Han et al. (1998). This reiteration of the inclusion of innovation performance as a construct towards the identification and reconciliation of irregularities with regards to the market orientation significance was important for understanding the supposed market orientation-performance relationship, and this enhanced the strategic importance of the research. This research confirmed the approach of the literature, which led to the acceptance of the hypothesis.

6.5.5 Hypothesis 7: Hypothesis 7 was outlined as part of the suggested structural model and stated that sustainable market orientation has a significant positive correlation with the organization's internal trust and market orientation is a

significant predictor of the organization's internal trust. A sustainable market orientation and the organization's internal trust did have a positive significant relationship with the organization's internal trust with a standardized regression coefficient of .659 at p< .001. The hypothesis was therefore supported. There are a significant number of studies that have focused on the concept of "market orientation" with the aim of understanding its effect on corporate culture (Greenley, 1995; Kohli and Jaworski, 1990; Narver and Slater, 1990; Slater and Narver, 1994a). Piercy, (1995) underlined the need for orientation of the markets to be dependent on the capacity of their human capital to implement strategic plans. The market orientation fundamentally establishes the basis of organizational behavior with regards to the organization's constituents. Kohli and Jaworski (1990) clearly stated that for market orientation to be successful it requires the understanding of the employees value, which is crucial for a market-oriented company. Taking this very perspective forward, this research looked to understand this through the impact of market orientation on the cultural component of the organization's internal trust. This was represented by the levels of trust that existed internally amongst the crucial stakeholders; namely the human capital with regards to work competency when taking a sustainable development or sustainability perspective, which was duly confirmed.

6.5.6 Hypothesis 11: This hypothesis stated that exploitation for sustainability has a significant positive correlation with innovation performance and that exploitation is a significant predictor of innovation performance. Exploitation did have a positive significant relationship, with a standardized regression coefficient of .390 at p< .001. This confirmed the extant literature backing for enhancing the performance of innovation. This clearly emphasizes the need for understanding how organizations manage their sustainability practices towards fostering innovation performance and the balance still remains a challenge. Based on the analysis and the overwhelming proof, the research shows that exploitation still continues to be the preferred mode of ushering in the benefits of innovation performance.

6.5.7 Hypothesis 1: According to hypothesis 1, stakeholder sustainability orientation has a significant positive correlation with exploration for sustainability and is a significant predictor of exploration. The results of the research found that there was a negative significant relationship, with a standardized regression coefficient of

.071 at $p < .001$, between stakeholder sustainability orientation and exploration in the cumulative model. However, the stakeholder sustainability orientation's and exploration's direct relationship did have a significant and positive relationship when looked at individually with the other endogenous variables of exploitation and innovation performance. The correlation between stakeholder sustainability orientation and exploration was weak when looked together with the variables in the final model and this validated its inclusion in the conceptual model. Therefore, hypothesis 1 was partially supported. This would not imply that all of the respondents rejected the relationship but could be interpreted that the factor when looked at in the realm of sustainability through sustainable innovation could not be clearly attributed because of the low levels of explorations within the organization. This fact could be confirmed by the responses, where 44% of the respondents conveyed that their organizations spent 20-40% of their time on sustainable innovation. Therefore, the negative correlation for exploration, where larger levels of innovation focus are required, was lacking in the Indian context, which calls for the pursuit of sustainability exploration practices as a necessity for the eventual success of sustainable innovation.

6.6 The hypotheses not supported:

6.6.1 Hypothesis 3: According to hypothesis 3, Stakeholder Sustainability Orientation was to have a significant positive correlation with Innovation performance and is a significant predictor of innovation performance. Research has consistently maintained the positive relationship amongst customer capital and innovation performance and (Kamasak, 2015) it became clear that entrenched relations with suppliers and customers always could provide superior advantages to firms in getting strategic information and knowledge for innovation performance. This formed the basis for the hypothesis and according to the results of the correlation analysis, Stakeholder Sustainability Orientation did not have a significant correlation with Innovation performance and similarly, the regression analysis results showed that the direct relationship over time did not motivate their impact on innovation performance and the hypothesis was not accepted.

6.6.2 Hypothesis 8: This hypothesis states that the Organization's internal trust has a positive correlation with Sustainability Exploration and the Organization's internal trust will be a significant predictor of Sustainability Exploration. The results of the research identified no significant relationship between the Organization's internal trust and exploration within the cumulative model. However, the direct relationship between the Organization's internal trust and Exploration did have a significant and positive relationship when looked at individually with the other endogenous variables of Exploitation and Innovation performance, as observed in model 2. Though the hypothesis was not accepted, the relationship was validated and the sample response would likely indicate that under the context of exploration the direct relationship would not exist, taking account the correlations with the other factors. The organizational learning with a sustainability focus (Molnar and Mulville, 2003) would require not just the development of a sustainability vision but calls for the need to recognize the value of bottom-up innovations, and educating the management in sustainability policies as well as cultural values, thereby incentivizing the development of novel initiatives and importantly rewarding the quantity and quality of these initiatives (Espinosa and Porter, 2011). This builds the ground for the role of trust in the capacity of management and across the organization's processes as an organization culture, thereby bringing about cultural change towards promoting sustainability exploration and exploitation processes.

6.6.3 Hypothesis 9: This hypothesis states that the Organization's internal trust has a positive correlation with Sustainability Exploitation and an Organization's internal trust will be a significant predictor of Sustainability Exploitation. The results of the research found that there was no significant relationship between the Organization's internal trust and exploitation in the cumulative model. However, the direct relationship between the Organization's internal trust and Exploitation did have a significant and positive relationship when looked at individually with the other endogenous variables of Exploitation and Innovation performance when observed in model 2. Though the hypothesis was not accepted, the inclusion and relationship were validated and the sample response was a stronger correlation under the context of exploitation. Researchers have all stressed the need for change in culture, which is key towards the effective implementation and pursuit of sustainability practices,

which could be immensely helped with an environment devoid of any trust deficits (Baumgartner, 2009, Bonn and Fisher, 2011; Fairfield et al., 2011; Maletic et al, 2014).

6.6.4 Hypothesis 10: This hypothesis states that Exploration for sustainability has a significant positive correlation with Innovation performance and Exploration would significantly predict Innovation performance. The results of the research found that the relationship between exploration and innovation performance was not significant in the cumulative model and the hypothesis was not accepted. However, Exploration did have a significant and positive relationship when looked at individually with the exogenous variables of Stakeholder Sustainability Orientation and the endogenous variables of exploration, exploitation, and innovation performance in Model 1.

The fact that sustainability exploitation and sustainability exploration are both concepts which connected mainly across the two values chain domains of technology that was related to product development and manufacturing and marketing with product-markets. The need to excel in both would require the organization to be involved with different types of innovation activities (De Visser et al., 2010). This need not be the case based on the sample response, which could shift the focus along one mode. This from a sustainability point of view, would require organizations to devote their resources to requisition new sustainable products or services. Organizations while developing and exploiting their competencies towards enabling the capacity to make improvements for the sustainability of existing products could eventually create a competitive advantage (Pujari et al., 2003). This from the product-market perspective would require organizations to allocate resources towards aligning their focus towards the emerging needs of stakeholders and their choices as well as integrating them into the early stages of service or product development (Polonsky and Ottman, 1998). The manufacturing perspective would have the process innovations bring about new sustainable solutions (Rennings et al., 2006) which could be attributed to the contributions of sustainability exploration. Additionally, we could also consider sustainability exploitation and its inherent dimensions from an operational perspective are requisitioned to provide organizations with the ability to have solutions that are economical to solve issues of sustainability (Cote et al., 2006).

These particular dimensions of sustainability practices are strongly firmed up within the concepts of exploitation and exploration which is considered under the theme of sustainable development and further analyzed in this research towards predicting innovation performance. The relationship amongst sustainability practices with organizational performance have been considered by researchers to be positive, thereby indicating that organizations could enhance their competitiveness and concurrently support their sustainable development (Wagner, 2010; Koo et al., 2013). We could infer that the organization has the opportunity to address sustainable development while improving its efficiency, increasing the rate of innovation and the reduction of costs and enhancing profitability (Schaltegger & Wagner, 2006; Koo et al., 2013). Therefore, we could establish that increases in the extent of sustainability practices would have sustainability exploitation and sustainability exploration move towards an increased economic performance (Wagner, 2010), increased innovation performance, increased environmental performance, and increased social performance (Weber, 2008).

6.7 Mediating Effects

The results of the mediating effects with the SOBEL statistic determined the mediation effect of exploration on stakeholder sustainability orientation and innovation performance in Model 1. The SOBEL test statistic score for this relationship was 1.96; the score was significant ($p < .05$). This suggested that exploration had a mediating effect on Stakeholder sustainability orientation and innovation performance and the SOBEL test scores confirmed the mediation in the model. The mediating effects of exploration on Organizations Internal Trust and Innovation Performance was 2.06, and the score was significant ($p < .05$) in the case of Model 2. While in Model 3 the SOBEL test for the statistic for the mediating effects of exploitation on Market Orientation and Innovation Performance was 7.93, and the score was significant ($p < .001$). That said, regarding the results of the final model 4, which included all 6 variables, the Sobel test static reconfirmed the mediating effects of exploitation on Market Orientation and Innovation Performance with a score of 3.15, which was significant ($p < .001$). According to the results of the research it was

observed that all four models had instances of intervening variables mediating the relationship between the independent variables and the dependent variable.

6.8 Recommendations and Implications

This research is among the few empirical studies that have looked at sustainable innovation and the impact on the triple bottom line. This from a theoretical perspective helps bridge the sustainability gap towards fostering innovation performance. The framework clearly identifies the antecedents to innovation performance and helps to expand the domain of sustainability from an organizational or corporate perspective. The research puts forward the significance of having an organization-wide approach towards undertaking innovation from the sustainable development perspective. The empirical analysis clearly reaffirms the need for having a market oriented strategy, which is crucial for the success of undertaking sustainable innovation.

The research recommends the need to address the stakeholder's sustainability concern, which is important for achieving sustainable innovation. Its pursuit through the sustainability practices of exploitation and exploration from an organizations strategic perspective forms the basis of building a competitive advantage. Organizations need to recognize the significance of the determinants of innovation performance as outlined in this research if they are to achieve success with their sustainability initiatives.

The research recommends the need for a conducive organizational internal trust environment which aligns with the market orientation to positively impact innovation performance. Organizations need to recognize that this trust is dependent on the dynamic capabilities which they develop with their adherence to stakeholder concerns and the market's orientation towards fostering innovation.

The research clearly proves the sustainability practices impact on the triple bottom line, which are dependent on the organization's wide orientation, which is crucial for bridging the sustainability gaps. This is required for the efficient and effective pursuit of sustainable innovation, which builds competitive advantages while bringing about the desired returns in the appropriate frame of time. A conducive

environment is needed for the sustainability agenda to bring in positive returns for the organization, which impacts not just its economic but social and environmental parameters as well. This over a period of time from the capabilities perspective would certainly be a strategic advantage, which becomes a necessity more than a mere option for the organization.

6.8.1 Policy Implications: From the Indian perspective, as identified by the empirical results, organizations focused on taking incremental steps to imbibe sustainable innovation. This confirmed by the significance of exploitation over exploration. This interestingly also from the contextual basis also subdues the significance of champions, who predominately would promote innovation through exploration. This calls for the policy interventions to promote the push for sustainability exploration practices that would match the nation's excellence in "frugal innovation" and ensure the move up the value chain with more "breakthrough innovations." The following is recommended:

1) The government would need to further enhance the allocation for research and development which has more or less stagnated over the years.

2) The performance of India in innovation clearly indicates the need for government to have a renewed focus on sustainability exploration practices in their national innovation policy to help organizations have the capability to move up the value chain.

3) The government would need to provide a fresh impetus by creating a conducive environment for promoting the enhancement of private sector investment in sustainable innovation. This could be through special subsidy schemes that enable technology transfer.

4) The government needs to have policies that facilitate collaboration through public- private partnerships. This could be done with increased allocations for research and development that are realized with cross-sector partnerships. This would also positively influence the market environment and stakeholder orientation towards effectively promoting the sustainability agenda.

5) The government should implement policy that takes a holistic approach across sectors towards promoting innovation. This would require institutions and their supporting organizations to have the requisite feedback to regularly evaluate

the implementation of sustainable innovation to be effective in dynamic environments.

6.8.2 Practical Implications: The research stresses the importance of a holistic perspective for the effective pursuit of sustainable innovation. This research clearly outlines the importance of having a market-oriented approach aiming to address the stakeholders concerns and needs for implementing sustainability initiatives. This following is recommended:

1) Organizations need to focus on building their trust environment within the organization to foster innovation where the organization promoting the sharing of ideas and pursuing projects with risk are rewarded.

2) Organizations need to be aware of the target market with a clear market orientation, considering the concerns of the organizations' stakeholders with regards to sustainability initiatives towards positively impacting innovation performance.

3) The organization must importantly foster the pursuit of sustainability practices by assessing the impact on the triple bottom line. The empirical findings have clearly shown that organizations that focus on economic, social, and environmental factors do positively impact innovation performance. This builds the ground for the pursuit of sustainable development agenda by organizations, and requires a better understanding of their sustainable innovation processes.

4) This research helps provide the helps organizations identify the dynamic capacities and their impact on innovation performance. It recognizes their market-orientation capabilities towards maximizing the organization's congruence with the requirements of its various stakeholders.

5) This research enhances the knowledge about sustainable innovation, which could provide top management with the basis for improving sustainability practices and policy recommendations towards enhancing innovation performance.

6) Organizations are required to use a combination of developmental approaches to sustainability along with the business strategic approach through the dynamic capabilities to provide a practical basis for an organization's uptake of sustainable innovation.

6.8.3 Research Implications: This is amongst the few empirical studies which examine innovation performance and its impact on the triple bottom line. The research identified the antecedents of stakeholder sustainability orientation, market orientation, and the organization's internal trust. The significance of the processes of sustainability exploitation and exploration under the context of sustainable development was confirmed, which has not been adequately assessed in the literature. This dissertation importantly contributes to the field by highlighting the processes involved in sustainable innovation and their eventual impact on the triple bottom line from the sustainable development perspective. The research also contributes also from a theoretical viewpoint by providing both a development and strategic business perspective for the uptake of sustainability agenda towards fostering innovation. The following research implications are provided:

1) The contribution with a holistic framework that assesses sustainability from the dynamic capabilities perspective reaffirms the positive impact on social, environmental, and economic performance. This makes it pertinent for looking at other antecedents that could better fit the research model.

2) The research's key contribution therefore is providing an empirical basis for identifying the determinants that foster innovation performance from the sustainable development perspective. Going beyond traditional innovation to better understand the impacts on sustainable innovation and the triple bottom line.

3) The novelty of the research lies in its important theoretical contribution to the body of knowledge of sustainable innovation, by providing a holistic approach that brings the combination of a developmental approach to sustainability along with the business strategic approach through dynamic capabilities perspective to provide a practical example for an organization's uptake of sustainable innovation.

4) The research contributions also comprise the fact that the role of the sustainability practices (of exploration and exploitation) in sustainable innovation from a process view has been directly analyzed through its impact on innovation performance from a triple bottom line perspective. This process-based approach effectively helped the research to bridge the sustainability knowledge gap in organizations and for nations from a broader policy perspective.

5) The research was cross-sectional in nature and future research could look at a specific sector for industry-specific implications. Future research could look at analyzing sustainable innovation projects from a specific industry perspective across their different stages to get a detailed understanding of the impacts of sustainable innovation.

6) The research confirms the importance of the context of sustainable innovation and the impact of sustainability practices. The products and services could be understood in more detail with a qualitative approach that could include in-depth interviews with senior management and focus group discussions towards understanding their notion of implementing the sustainability agenda from a sustainable development perspective. The sample size of this study was limiting the SEM analysis under certain instances of significance, and future studies could indeed look at a larger sample size. There is indeed scope for streamlining the methodology with a targeted approach devoid of the constraints of acquisition time, as email yield negligible response rates.

6.9 Conclusions

The research aimed at ascertaining the determinants that nurture sustainable innovation using the capabilities paradigm. This research looked at this through the lens of the dynamic capabilities theory towards defining the determinants and conditions that achieve innovation capability from a sustainability perspective. The study examined the relationship among stakeholder sustainability orientation, market orientation, the organization's internal trust with the process variables of exploration, exploitation, and their eventual impact on innovation performance.

The detailed analysis helped conclude that Market orientation directly impacted innovation performance. Market orientation does also have a strategic significant relationship with organization's internal trust. Also interestingly stakeholder sustainability orientation did indeed impact positively exploitation though conversely with Exploration in this study. The prominence of the pursuit of exploitation in the Indian context was identified, and hence we could conclude that

the focus towards exploitation of existing capabilities did eventually impact the success of sustainable innovation.

The research importantly confirms the impact on innovation and identified the antecedents to impact the triple bottom line through innovation performance. The research also helped to reaffirm the fact that the sustainability practices of exploitation and exploration from the sustainability perspective, as two sets, were indeed interdependent. The main proposition to obtain the balance of the practices of exploration and exploitation to be in line with the orientation of their stakeholders and environments is always a challenge specific to their environmental context, as observed in the research findings. The research confirms the basis for the pursuit of sustainable innovation by organizations, and for future research to attribute this outlook as a competitive and strategic advantage for organizations to pursue both in the short and long term.

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APPENDICES

Appendix A

Tables and Figures

Descriptive Statistics

Selected Variable	N	Mean	Std. Deviation
Stakeholder Sustainability Orientation 1 (SSO4)	163	4.85	1.09
Stakeholder Sustainability Orientation 2 (SSO7)	163	6.17	0.84
Stakeholder Sustainability Orientation 3 (SSO10)	163	5.40	0.95
Market Orientation 1 (MO1)	163	5.96	0.98
Market Orientation 2 (MO2)	163	5.77	0.97
Market Orientation 3 (MO4)	163	5.96	1.22
Organizations Internal Trust 1 (OIT1)	163	5.81	0.85
Organizations Internal Trust 2 (OIT2)	163	5.96	1.01
Organizations Internal Trust 3 (OIT3)	163	5.96	1.08
Exploitation 1 (SEXL1)	163	6.10	0.93
Exploitation 2 (SEXL3)	163	5.71	0.94
Exploitation 3 (SEXL5)	163	6.01	1.02
Exploitation 4 (SEXL6)	163	5.67	0.90
Exploration 1 (SEXP3)	163	5.06	1.22
Exploration 2 (SEXP4)	163	5.07	0.98
Exploration 3 (SEXP5)	163	5.78	0.94
Innovation Performance 1 (IP2)	163	5.76	1.33
Innovation Performance 2 (IP3)	163	5.80	1.21
Innovation Performance 3 (IP5)	163	5.66	1.03
Innovation Performance 4 (IP6)	163	5.90	1.16
Innovation Performance 5 (IP7)	163	5.94	0.85

Model Fit Indices for Structural Model 1

Structural Model 1	GFI	NFI	CFI
Default model	.971	.975	.977
Saturated model	1.000	1.000	1.000
Independence model	.452	.000	.000

Model Fit Indices for Structural Model 2

Structural Model 2	GFI	NFI	CFI
Default model	.951	.941	.946
Saturated model	1.000	1.000	1.000
Independence model	.515	.000	.000

Model Fit Indices for Structural Model 3

Structural Model 3	GFI	NFI	CFI
Default model	.991	.994	.996
Saturated model	1.000	1.000	1.000
Independence model	.409	.000	.000

Model Fit Indices for Structural Model 4

Structural Model 4	GFI	NFI	CFI
Default model	.990	.994	.997
Saturated model	1.000	1.000	1.000
Independence model	.323	.000	.000

Appendix B

Questionnaire

Innovation from a sustainable development perspective or sustainable innovation is the generation, acceptance, and implementation of a new or improved innovation that incorporates a general concern for social equity and environmental integrity, without sacrificing economic prosperity.

The innovation could be new or improved product or service, or a new or improved process anywhere in the business, such as in the supply chain, manufacturing, or distribution. From this perspective please answer the following questions with respect to yourself and the organization you are representing and tick the appropriate section/number.

Section 1

1	Has your organization pursued sustainable innovation in the last three (3) years?				**Yes**	**No**
2	In the last two years approximately what percentage of your organizations time was spent on sustainable innovation?	**Less than 20%**	**21-40%**	**41-60%**	**61-80%**	**over 81%**

Section II

3	To what extent does your organizations targeted customers believe in each of the following:						
	Strongly Disagree			**Some what**			**Strongly Agree**
The environment preservation is one of the key issues facing society today	**1**	**2**	**3**	**4**	**5**	**6**	**7**
Organizations can be profitable while addressing environmental and sustainability issues and impact their innovation performance	**1**	**2**	**3**	**4**	**5**	**6**	**7**
4	How often do your organizations targeted customers engage in the following activities?						
	Strongly Disagree			**Some what**			**Strongly Agree**
Choose the environmentally friendly alternative product or service even if one of similar price is available	**1**	**2**	**3**	**4**	**5**	**6**	**7**

Choose the environmentally friendly alternative product or service regardless of Price that is offered	**1**	**2**	**3**	**4**	**5**	**6**	**7**
Look in to the environmental effects of products or services prior to purchase	**1**	**2**	**3**	**4**	**5**	**6**	**7**
5	To what extent do your organizations targeted customers believe the following?						
Organizations must be responsive to the needs and concerns of the customers	**1**	**2**	**3**	**4**	**5**	**6**	**7**
Organizations can be profitable while pursuing environmental-friendly technologies and processes towards helping their community	**1**	**2**	**3**	**4**	**5**	**6**	**7**
6	How often do your organizations targeted customers engage in the following activities?						
Choose the socially friendly alternative product or service if one of similar price is available	**1**	**2**	**3**	**4**	**5**	**6**	**7**
Choose the socially friendly alternative product or service irrespective of the cost involved	**1**	**2**	**3**	**4**	**5**	**6**	**7**
Looks in to the fulfilment of the social and environmental conformity of products and services prior to purchase	**1**	**2**	**3**	**4**	**5**	**6**	**7**
7	In our organization, we consider and balance what our customers need with the:						
Environmental concerns of other stakeholders (such as shareholders, governments, the public)	**1**	**2**	**3**	**4**	**5**	**6**	**7**
Social and economic concerns of other stakeholders	**1**	**2**	**3**	**4**	**5**	**6**	**7**
Sustainability concerns of other stakeholders	**1**	**2**	**3**	**4**	**5**	**6**	**7**
8	In our organization, we strive to meet customers' needs while also considering the:						
Environmental concerns of other stakeholders such as shareholders, governments, the public	**1**	**2**	**3**	**4**	**5**	**6**	**7**
Social concerns of other stakeholders	**1**	**2**	**3**	**4**	**5**	**6**	**7**
Sustainability concerns of other stakeholders	**1**	**2**	**3**	**4**	**5**	**6**	**7**
9	The following statements relates to the trust environment that exists within in your organization about one another's abilities, actions, and motives. Employees across our organization::						
	Strongly Disagree			**Some what**			**Strongly Agree**
Are competent at their jobs	**1**	**2**	**3**	**4**	**5**	**6**	**7**
Uphold professional work values	**1**	**2**	**3**	**4**	**5**	**6**	**7**

Are skilled and knowledgeable to do their work	**1**	**2**	**3**	**4**	**5**	**6**	**7**
Really care and are concerned for each other	**1**	**2**	**3**	**4**	**5**	**6**	**7**
Are close enough to freely share ideas, thoughts, and feelings	**1**	**2**	**3**	**4**	**5**	**6**	**7**
Invest emotionally in the employees work relationships	**1**	**2**	**3**	**4**	**5**	**6**	**7**
Enjoy and learn from one another	**1**	**2**	**3**	**4**	**5**	**6**	**7**
Do what is correct rather than being fast for convenience	**1**	**2**	**3**	**4**	**5**	**6**	**7**
Deal with each other in a fair and just manner	**1**	**2**	**3**	**4**	**5**	**6**	**7**
Treat one another with dignity and respect	**1**	**2**	**3**	**4**	**5**	**6**	**7**
10 In your organization, how important a role do the following individuals play in sustainable innovation:							
Product managers have an important role to play in sustainable innovation	**1**	**2**	**3**	**4**	**5**	**6**	**7**
Senior managers have an important role to play in sustainable innovation	**1**	**2**	**3**	**4**	**5**	**6**	**7**
Champions have an important role to play in sustainable innovation	**1**	**2**	**3**	**4**	**5**	**6**	**7**
11 What is the extent to which you agree or disagree with the following statements?							
Top managers in our organization are commonly the most enthusiastic champions of ideas concerning sustainable innovation practices	**1**	**2**	**3**	**4**	**5**	**6**	**7**
Product champions hold a lot of power in this Organization	**1**	**2**	**3**	**4**	**5**	**6**	**7**
The champions play an important role in introducing organizational policies	**1**	**2**	**3**	**4**	**5**	**6**	**7**

Section III

12 To what extent do you agree or disagree with the following statements:							
	Strongly Disagree			**Some what**			**Strongly Agree**
The organization makes improvements to radically reduce environmental impacts of products and services' life-cycles	**1**	**2**	**3**	**4**	**5**	6	**7**
We regularly make adjustments to existing products and services to reduce negative environmental and social impact	**1**	**2**	**3**	**4**	**5**	**6**	**7**
The organization undertakes regularly business process reengineering with a focus on green perspectives	**1**	**2**	**3**	**4**	**5**	**6**	**7**

We acquire innovative environmental-friendly technologies and processes	**1**	**2**	**3**	**4**	**5**	**6**	**7**
The organization continuously strengthens employees' knowledge and skills to improve efficiency of current sustainability practices	**1**	**2**	**3**	**4**	**5**	**6**	**7**
The organization is characterized by a learning culture stimulating innovation for sustainability	**1**	**2**	**3**	**4**	**5**	**6**	**7**
The organization upgrades employees' current knowledge and skills	**1**	**2**	**3**	**4**	**5**	**6**	**7**
We search for external sources (e.g. partners, customers and research institutions) of knowledge in our search for innovative ideas related to sustainability	**1**	**2**	**3**	**4**	**5**	**6**	**7**
13 To what extent do you agree or disagree with the following statements:							
We always respond to existing stakeholder issues in a regular/systematic way	**1**	**2**	**3**	**4**	**5**	**6**	**7**
The organization constantly evaluates its external environment to uncover issues of importance to key stakeholders (customers, suppliers and local communities)	**1**	**2**	**3**	**4**	**5**	**6**	**7**
The business processes are flexible, allowing us to achieve high levels of responsiveness toward key stakeholder needs and demands	**1**	**2**	**3**	**4**	**5**	**6**	**7**
The organization involves key market stakeholders (customers and suppliers) early in the product/service design and development stage	**1**	**2**	**3**	**4**	**5**	**6**	**7**
We make use of appropriate tools and techniques to reduce the variability of key processes	**1**	**2**	**3**	**4**	**5**	**6**	**7**
We have established key performance indicators to determine if the organization is meeting sustainability goals	**1**	**2**	**3**	**4**	**5**	**6**	**7**
14 The statements below relate to the innovation performance looked at from across the three dimensions of Economic performance, Social Performance and Environmental performance. Please indicate the extent to which the statements characterize Innovation performance in your organization							
	Strongly Disagree			**Some what**			**Strongly agree**
During the last 3 years the organization has introduced more innovative products and services than	**1**	**2**	**3**	**4**	**5**	**6**	**7**

our competitors							
Customers regard our new products and services as being innovative	**1**	**2**	**3**	**4**	**5**	**6**	**7**
New technology adoption in our organization is faster than at our competitors	**1**	**2**	**3**	**4**	**5**	**6**	**7**
During the last three years the market share of our innovative products and services has increased	**1**	**2**	**3**	**4**	**5**	**6**	**7**
During the past three years the employee relationships in our organization have strengthened the social links	**1**	**2**	**3**	**4**	**5**	**6**	**7**
During the past three years the employees' motivation has increased	**1**	**2**	**3**	**4**	**5**	**6**	**7**
The efficiency of the consumption of raw materials has improved during the past three years	**1**	**2**	**3**	**4**	**5**	**6**	**7**
During the past three years the percentage of recycled materials has increased	**1**	**2**	**3**	**4**	**5**	**6**	**7**
During the past three years the resource consumption (thermal energy, electricity and water) has decreased (e.g. per unit of income, per unit of production)	**1**	**2**	**3**	**4**	**5**	**6**	**7**

Section IV:

15	What is your primary function in your organization? (Tick one)		**Marketing**		**Manufacturing**
			IT		**Product Development**
			Procurement		**Finance**
			Sales		**General Management**
			Research &Development		**Operations**
			Others		
16	What is your organization's primary industry? [Tick one]		**Accounting & Auditing/Financial/ Leasing Consultancy**		**HR/ Training/ Management /Marketing**
			Agribusiness & Biotechnology		**Legal/Intellectual Property/ Tax Consultants**
			Associations		**IT/ITES**
			Banking/Insurance		**Logistics /Transport**
			Educational/Research Institutions		**Manufacturing**
			Hotels/Travel/Tourism		**Satellite/Telecom /Electronics**
			Trading		
			Others		

17	Please indicate how many years your organization been in operation				**Less than one year**
					1 - 4 years
					5 - 10 years
					More than 10 years
18	How many employees does your organization currently employ		**Less than 100**		**2000 – 4999**
			100 - 499		**5,000 – 9,999**
			500– 1999		**>10,000**
19	What is the level of the position you hold? [Tick one]		**Staff**		**Manager**
			Director		**Senior Management**
			Owner/CEO		**Others**

20	If there is anything you would like to tell us, regarding the challenges or the suggestions you may have, please use the following space for that purpose

Thank you for your valuable inputs and taking the time to support this research

Appendix C

Letter to organization

At the outset I would like to introduce myself, my name is Gopi Krishna, a Doctoral Candidate at the National Institute of Development Administration (NIDA), Bangkok and am currently undertaking my dissertation research entitled "The Determinants towards fostering Innovation Performance from a Sustainable Development Perspective". The research objectives are essentially to understand how firms effectively pursue sustainable innovation and how such innovation impacts its performance on the triple bottom line. And also aims to establish the empirical link between sustainability practices and Innovation performance.

The participation in the survey helps organizations identify their dynamic capabilities and the impact on their innovation performance. As well as recognize their market-orientation capabilities towards maximizing the organizations congruence with the requirements of its various stakeholders. This research would enhance the knowledge about sustainable innovation, which could provide the top management with the basis towards improving sustainability practices and policy recommendations towards enhancing innovation performance. In exchange for completing the survey I shall be happy to provide you a copy of the results which can be availed on request. I would like to assure that the responses of the member organizations participating in this study shall be strictly confidential and the answers across all survey participants would be aggregated without identifying individuals or their businesses.

It is my firm belief that organizations as yours, have over the years provided the much needed impetus and focus on Innovation. The research instrument constitutes a brief questionnaire which consists of straightforward questions where the respondents could indicate their choices from the perspective of their organization. I would seek

the valuable support of Industry leaders as you, which would be critical for the success of this survey and of the envisaged research. The survey may be taken easily online by clicking on the web link (Online Survey Click Here) or by giving your valuable inputs in the PDF file attached. I would humbly request receiving your valuable response towards the timely completion of the envisaged research.

Your support to this research is truly valued and very much appreciated and I look forward to your esteemed organizations valuable feedback towards achieving a successful research outcome.

Thanking you for your support

With Best Regards
Gopi

Gopi Krishna P.V
Doctoral Candidate
National Institute of Development Administration (NIDA)
Bangkok, Thailand
Ph: +66 2524 6424; Mob: +66 812526922

Appendix D

Approval Letter

No. 0526.02/1868

Graduate School of Public Administration
National Institute of Development Administration
Bangkapi, Bangkok, 10240 THAILAND
Tel./Fax (662) 374-4977

March 28 , 2016

The President
Bangalore Chamber of Industry and Commerce
Bangalore, Karnataka-560002

Dear President,

On behalf of the Graduate School of Public Administration at the National Institute of Development Administration (NIDA) in Thailand, I am writing this letter to request your kind permission and cooperation for Mr. Gopi Krishna to collect data among your member organizations.

Mr. Gopi Krishna is currently a Ph.D. candidate in the international Ph.D. Program in Development Administration and is working on his doctoral dissertation titled

"The Determinants towards Fostering Innovation Performance from a Sustainable Development Perspective".

The research objectives are essentially to understand how firms effectively pursue sustainable innovation and how such innovation impacts its performance on the triple bottom line. As well as establishing the empirical link between sustainability practices and innovation performance through the pursuit of the sustainability exploitation of existing competences and sustainability exploration of new opportunities.

The research sample consists of the members of your esteemed organization which over the years have provided a much needed impetus and focus on innovation. We therefore seek the valuable support of the Chamber of Commerce and its constituent members which is critical for the success of Mr. Gopi Krishna's survey and research endeavor.

Please be assured that any information obtained from the member organizations participating in this study shall be strictly confidential and the answers across all survey participants will be aggregated without identifying individuals or their businesses.

Should you require additional information regarding the research project, please contact Mr. Gopi Krishna directly by e-mail (pvgk04@yahoo.co.in) or phone (+66812526922).

Your support to this research project is truly valued and very much appreciated.

Sincerely,

Pairote P. Narakul

Assistant Professor Pairote Pathranarakul, Ph.D.
Dean
Graduate School of Public Administration
National Institute of Development Administration

BIOGRAPHY

NAME	Gopi Krishna P.V
ACADEMIC BACKGROUND	Master of Business Administration, Calicut University, Department of Commerce & Management Studies, India (2001) Kozhikode, Kerala Bachelor of Science, Zamorins College, Calicut University, Kozhikode, Kerala, India (1993)
PRESENT POSITION	Coordinator Sponsored and Contracted Projects Unit Asian Institute of Technology (AIT), Bangkok
PROFESSIONAL EXPERIENCE	Over 20 years of progressive experience, having worked for both corporate and academic institutions in all phases of administration and project management and has a master's in business administration and systems management. Prior to his assignments at AIT he worked at the Indian Institute of Management Kozhikode and was actively involved in the design and delivery of the Asia's first Synchronous

e-Learning Programme in Executive Management Education, he has worked with organizations like Rhone Poulenc and Ramsys Technologies and has also been an independent Consultant.

ACADEMIC CONFERENCES

"Bridging the Sustainability Gap towards fostering Innovation Performance: A Conceptual Framework" paper presented at the International Conference on Marketing, Technology and Society, 2016 India

"Administrative Reform: The paradigm shifts towards a civil society based governance perspective" paper presented at the EROPA conference, 2014, Vietnam