

**KNOWLEDGE INTERACTIONS, ORGANISATIONAL
ISOMORPHISM AND INNOVATION PERFORMANCE
OF FIRMS IN INDUSTRIAL CLUSTERS**

A Study of SMEs in Indian Footwear Clusters

*A Doctoral Dissertation Submitted in Partial Fulfillment of the Requirements for the
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DOCTOR OF PHILOSOPHY

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MANAGEMENT

BY

MOHEMMAD NASEEF P

Reg. No: 15MBPH14

Under the supervision of

PROF. P. JYOTHI



**SCHOOL OF MANAGEMENT STUDIES
UNIVERSITY OF HYDERABAD
HYDERABAD-500046**

DECLARATION

I, Mohemmad Naseef P, hereby declare that this thesis entitled “***Knowledge Interactions, Organisational Isomorphism and Innovation Performance of Firms in Industrial Clusters: A Study of SMEs In Indian Footwear Clusters***” in fulfillment of the requirements for the award of Degree of Doctor of Philosophy in Management Studies, is the outcome of an original study, free of plagiarism, undertaken by me, under the supervision of Prof. P. Jyothi, Dean and Professor, School of Management Studies, University of Hyderabad.

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CERTIFICATE

This is to certify that the thesis entitled “*Knowledge Interactions, Organisational Isomorphism and Innovation Performance of Firms in Industrial Clusters: A Study of SMEs In Indian Footwear Clusters*” submitted by **Mr. Mohemmad Naseef P**, Registration No. **15MBPH14**, in partial fulfillment of the requirements for the award of Doctor of Philosophy in **School of Management Studies, UoH** is a bonafide work carried out by him under my supervision and guidance as prescribed under PhD ordinances of the University.

This thesis is free from plagiarism and has not been submitted previously in part or in full to this University or any other University or Institution for the award of any degree or diploma.

Below are the details of Publications, Conferences & Coursework pursued during PhD.

A. Journal and Book Chapters Published

- a. Naseef, M., & Jyothi, P. (2019). Policy for Performance: Towards Integrating Entrepreneurial Ecosystem Approach on Co-operative Framework—The Case of Coir Co-operatives in Alappy. *International Journal of Rural Management*, Sage Publications 15(2), 218-243. [SCOPUS]
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B. Conferences and Workshops

- a. Presented paper entitled “Gender, Financial Empowerment and Business Venture Propensity” at Conference on Excellence in Research and Education (CERE) held at IIM, Indore on May 3-5, 2019.
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- c. Presented paper entitled “Competitiveness or survival? : Questions on prioritising the objectives of governmental initiatives for SME development A study on coir co-operative societies of Alappay District, Kerala” at Two day National Seminar on Innovations and Sustainable Growth in Business Management :Opportunities and Challenges conducted by Department of Management Studies ,MANUU ,Hyderabad on 26-27 February 2018.
- d. Attended 4-day workshop on Advanced Econometrics for social science research using R conducted by School of Management Studies, University of Hyderabad, from March 29 to April 1, 2019.
- e. Attended Workshop on “Introduction to Systematic Reviews and Meta-Analysis” at School of Medical Sciences, University of Hyderabad, from 5-7 February 2018.

- f. Attended 10-day National Level Workshop on Statistical Analysis for Business Research at Department of Management Studies at Pondicherry University from March 15-24, 2017.
- g. Attended 3-day workshop on OPEN ERP at School of Management Studies, University of Hyderabad, from December 11-13, 2015.

Further, the student has passed the following courses towards fulfilment of the coursework requirement for PhD:

Course Code	Name	Credits	Pass / Fail
1. MS-826	Quantitative Methods	3	Pass
2. MB-804	Entrepreneurial Management	3	Pass
3. EG-829	Academic Writing for Doctoral Students	3	Pass
4. MB-207	Research Methodology	3	Pass
5. MB-805	Service Operation Management	3	Pass

Research Supervisor

(Prof. P. Jyothi)

Dean, School of Management Studies

(Prof. P. Jyothi)

DEDICATION

To my dear parents, I owe this thesis to you. I owe my dreams to you.

My Dad left us when I was just fifteen years old. He sent us to the best schools despite his meagre income as a primary school teacher. He was an active social worker who prioritised education over everything. I would not have reached this prestigious university from my small village in Kerala if not for the foundation he has built.

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ABSTRACT

Among the various strategies for regional entrepreneurial development, industrial cluster development programs bear greater significance. An industrial cluster is a geographic concentration of interconnected businesses, suppliers and other related institutions in a particular field. It is defined as a “geographically proximate group of firms and associated institutions in related industries, linked by economic and social interdependences” (Porter, 1998).

The broader objective of the present study is to explore how firm’s involvement in industrial cluster activities and subsequent knowledge interactions help them achieve innovation performance. Grounded on the theories such as population ecology theory, social conformity theory, social contagion theory and knowledge-based view of the firm, the study attempts to propose and test a comprehensive theoretical framework to explain how the degree of involvement in cluster activities influence the innovation performance of small firms located in cluster ecosystems. The model investigates the relationship between a firm’s industrial cluster involvement and its incremental innovation performance through the intermediate processes of organisational isomorphism and organisational learning.

To test the proposed theoretical model, data were obtained through survey method employing structured questionnaires. Data were collected from 496 footwear manufacturing firms located in major footwear clusters of India such as Agra, Kolkata, Chennai and Calicut. Data were subjected to demographic analysis and mediation analysis using SPSS and Process Macro, and structural equation modelling using AMOS.

TABLE OF CONTENTS

TITLE PAGE	i
DECLARATION	ii
CERTIFICATE	iii
DEDICATION	vi
ACKNOWLEDGEMENT	vii
ABSTRACT	viii
TABLE OF CONTENTS	ix
LIST OF TABLES	xiv
LIST OF FIGURES	xv
LIST OF ABBREVIATIONS	xvi
CHAPTER 1: INTRODUCTION	1
1.1 Background: Small business and the pursuit of competitiveness	1
1.2 Introduction to the study	3
1.3 Broad research area	5
1.4 Industrial clusters: An Overview	7
1.4.1 The Concept	7
1.4.2 Evolution of the concept	7
1.4.3 Definitions	10
1.4.4 The outcomes of Industrial clustering	11
1.5 Industrial Clusters in India	13
1.6 Other key concepts under study	14
1.7 Motivation for the study	16
1.8 Problem Statement	17
1.9 Research Questions	19
1.10 Objectives of the Study	20
1.11 Scope of the Study	21
1.12 Major Contributions of the Study	22
1.12.1 Theoretical Formulation	22

1.12.2 Practical Application	23
1.13 Organization of this study	24
CHAPTER 2: LITERATURE REVIEW	26
2.1 Industrial clusters: The Concept	26
2.2 Researching Industrial clusters : A holistic view	38
2.3 Evolutionary Economic Geography	29
2.4 Networking, social capital and flow of knowledge.	34
2.5 Innovation and firm level performance.	45
2.6 Research Gaps	62
2.6.1. Calls for attention to broadening the theoretical understanding of the cluster phenomenon	62
2.6.2 Measurement issues in the existing literature	64
2.6.3 Lack of cluster studies in the context of India	67
CHAPTER 3: THEORY AND HYPOTHESES DEVELOPMENT	69
3.1 Small firms and knowledge acquisition	69
3.2 Industrial clusters as a knowledge ecosystem	71
3.3 Isomorphism as a learning mechanism in industrial clusters	73
3.4 Theories	79
3.4.1 Classical agglomeration theory	79
3.4.2 Porterian cluster theory	80
3.4.3 Social contagion theory	81
3.4.4 Theory of social conformity	83
3.4.5 Population ecology theory	85
3.4.6 Knowledge based view of the firm	86
3.5 Hypotheses Development	86
3.5.1 Industrial cluster involvement and innovation performance of firms	86
3.5.2 Industrial cluster involvement and organizational learning	88
3.5.3 Industrial cluster involvement and firm's isomorphic behaviour	89
3.5.4 Organisational isomorphism and organizational learning	91
3.5.5 Organisational learning and innovational performance of firms	92

3.5.6 Mediation hypothesis	93
3.6 Conceptual Framework	94
CHAPTER 4: RESEARCH METHODOLOGY	96
4.1 Research Typology	96
4.2 Research Philosophy	97
4.3 Research approach	100
4.4 Methodological choice	102
4.5 Research Strategy	103
4.6 Time Horizon	104
4.7 Data Collection	104
4.7.1 Sampling frame	105
4.7.2 Mode of administration	107
4.7.3 Preparation of questionnaire	108
4.7.4 Deciding the type of questionnaire and method of administration	108
4.7.5 Operationalization of constructs	109
4.7.5.1 Industrial cluster involvement	109
4.7.5.2 Mimetic isomorphism	110
4.7.5.3 Normative isomorphism	111
4.7.5.4 Organisational learning	111
4.7.5.5 Incremental innovation	112
4.7.6 Form of response to each question	112
4.7.7 Question wording	113
4.7.8 Question sequence	115
4.7.9 Questionnaire layout and physical characteristics	115
4.7.10 Re-examination and revision of questionnaire	115
4.7.11 Questionnaire pretesting	116
4.7.12 Data entry of the completed questionnaire	120
4.8 Data Analysis	120
CHAPTER 5: DATA ANALYSIS AND INTERPRETATION	122
5.1 Response rate	122

5.2 Firm profile	123
5.3 Descriptive Statistics	125
5.4 Exploratory Factor Analysis (EFA)	131
5.4.1 Results of the Exploratory Factor Analysis	133
5.4.1.1 Data adequacy	134
5.4.1.2 Communalities	134
5.4.1.3 Total variance explained	136
5.4.1.4 Scree plot	138
5.4.1.5 Rotated component matrix	139
5.5 Confirmatory Factor Analysis	143
5.5.1 Reliability	145
5.5.2 Convergent validity & Discriminant validity	146
5.5.3 Model fit indices	148
5.6 Common Method Bias (CMB)	150
5.7 Structural Model Evaluation (SEM)	153
5.8 Mediation Analysis	158
5.8.1 Mediation effect of organizational learning	158
5.8.2 Serial mediation effect of organizational isomorphism and organizational learning in the relationship between industrial cluster involvement and incremental innovation	160
CHAPTER 6: DISCUSSION & CONCLUSION	165
6.1 Discussion	165
6.1.1 Relationship between industrial cluster involvement and incremental innovation performance of firms	165
6.1.2 Relationship between industrial cluster involvement organizational learning of firms	167
6.1.3 Relationship between industrial cluster involvement and normative isomorphism	167
6.1.4 Relationship between industrial cluster involvement and mimetic isomorphism	168
6.1.5 Relationship between normative isomorphism and organizational learning	169
6.1.6 Relationship between mimetic isomorphism and organizational learning	170
6.1.7 Relationship between organizational learning and incremental innovation	171
6.1.8 Mediation analysis	171

6.2 Theoretical Contributions	172
6.3 Practitioner Implications	174
6.4 Limitations and Future Research Directions	177

LIST OF TABLES

2.1 Overview of the literature on cluster- innovation relationship	58
3.2 Hypothesis	95
4.1 Results of KMO and Bartlett's Test (Pilot study)	117
4.2 Rotated Component Matrix (Pilot Result)	117
4.3 Total variance explained (pilot study)	118
4.4 Construct Reliability values (Pilot Results)	120
5.1 Firm profile	125
5.2 Descriptive statistics	126
5.3 KMO and Bartlett's test	134
5.4 Communalities	135
5.5 Total variance explained	137
5.6 Rotated component matrix	139
5.7 Component coefficient matrix	141
5.8 Construct reliabilities	145
5.9 Convergent validity results	147
5.10 Discriminant validity results	148
5.11 CFA model fit indices	150
5.12 Harman Single Factor test results	151
5.13 SEM model fit indices	156
5.14 Squired multiple correlations	157
5.15 Results of hypothesis testing	157
5.16 Path coefficient for the structural model	159
5.17 Results of the two path mediation analysis	160
5.18 Path coefficient for the structural model	162
5.19 Results of the two path mediation analysis	162
5.20 Path coefficient for the structural model	163
5.21 Results of the two path mediation analysis	163

LIST OF FIGURES

3.1 Porter's Diamond model	80
3.2 Conceptual framework	94
4.1 Research typology	97
4.2 Research process	101
5.1 Firm profile	124
5.2 Screeplot	138
5.3 Component plot in the rotated space	142
5.4 Measurement model	144
5.5 Structural equation model	155
5.6 Simple mediation	159
5.7 Serial mediation-1	161
5.8 Serial mediation-2	163

LIST OF ABBREVIATIONS

AFMEC	Agra Footwear Manufacturers and Exporters Chamber
AGFI	Adjusted Goodness of Fit Index
AMOS	Analysis of Moment Structure
ANOVA	Analysis of Variance
AVE	Average Variance Extracted
CB-SEM	Covariance-based Structural Equation Modelling
CFA	Confirmatory Factor Analysis
CIFI	Confederation of Indian Footwear Industries
CFI	Comparative Fit Index
CLF	Common Latent Factor
CMB	Common Method Bias
CMIN	Chi Square
CR	Composite Reliability
EFA	Exploratory Factor Analysis
EU	European Union
FOOMA	Footwear Manufacturers Association of Kerala
GFI	Goodness of Fit Index
HARP	Heightening Awareness of Research Philosophy
ICI	Industrial Cluster Involvement
IT	Information Technology
II	Incremental innovation
KMO	Kaiser-Meyer-Olkin

LLCI	Lower Limit Confidence Interval
MHRD	Ministry of Human Resource Development
MI	Mimetic isomorphism
MSME	Micro Small and Medium Enterprises
MLE	Maximum Likelihood Estimation
NFI	Normed Fit Index
NI	Normative isomorphisms
OECD	Organisation for Economic Co-operation and Development
OL	Organisational learning
PCA	Principal Component Analysis
PLS	Partial Least Square
RMSEA	Root Mean Square Error of Approximation
SD	Standard Deviation
SISMA	South India Shoe Manufacturers Association
SE	Standard Error
SME	Small and Medium Enterprises
SDT	Self Determination Theory
SEM	Structural Equation Modelling
SPSS	Statistical Package for Social Sciences
TLI	Tucker-Lewis Index
UK	United Kingdom
ULCI	Upper Limit Confidence Interval
UNIDO	United Nations Industrial Development Organisation
USA	United States of America

Chapter 1

INTRODUCTION

This chapter introduces the foundational idea of the thesis – “Knowledge interactions in industrial clusters and innovation performance of participating firms”- and presents an overview of the significant concepts related to the domain, taking into account the possible novelty of the concept to the readers. It further situates the study within the wider ambit of the academic disciplines and proposes the rationale behind the study. In addition, the chapter also highlights the theoretical and practical contributions of the study before concluding with a brief overview of the structure followed in this thesis.

1.1 Background: Small businesses and the pursuit of competitiveness

The past few decades have witnessed a new wave of entrepreneurial activities worldwide, aided by the massive structural changes taking place in the global economy. Various factors, including economic recessions, oil crises, technological advancement, increasing globalisation and the political changes favouring a market-oriented ideology across the globe since the 1970s triggered this phenomenon. This scenario has resulted in disequilibrium and uncertainty, facilitating nursery for new ventures and business opportunities (Bettis & Hitt, 1995). Consequently, now small businesses constitute a significant chunk of economic activities across the globe. They make up over 95% of total enterprises worldwide and account for 60 to 70 per cent of employment in most OECD countries (OECD, 2019).

The phenomenon of globalisation and liberalisation has increased the significance of economies of scale and specialisation in production. Although earlier this was

contemplated only concerning large firms, recent debates show that these notions are transgressing the firm size limitations. As globalisation and the subsequent proliferation of multinational firms have intensified the competition in the local economy, the small firms that constitute 95% of industrial operations are forced to seek ways to sustain and grow. This has triggered the policymakers to devise new strategies to trigger entrepreneurial spirits among the citizens and create a conducive ecosystem to facilitate their growth and development.

Unlike the latter part of the twentieth century, when the narrative of the “trickledown effect” acquired dominance in the policy debates, the relevance of small enterprises in economic development is well recognised now. Earlier, policy interventions in terms of protective regulation, tax incentives and special legislation were formulated to reduce competition and cost in favour of those large ‘national firm champions’ in the assumption that the fruits of the same would be trickling down to the bottom of the pyramid (Reynolds et al., 1999). However, from the early 1980s onwards, the narratives supporting small firms in the industrial economic process started to gain more acceptance (Stevenson & Lundström, 2007). The rationale behind this paradigm shift can be attributed to the realisation that large business corporations’ innate solidity is not compatible with the swift changes in the global business environment, causing mounting unemployment (Rocha, 2013). Thus, the emphasis was shifted to flexible production instead of mass production, regional network-based systems instead of stand-alone firm based systems and established firms to new ventures (Piore & Sabel, 1984). There was a widespread realisation that efforts should be made to facilitate this shift and embrace the changes in the global economy with a positive impact, to create a conducive entrepreneurial ecosystem.

As we have discussed earlier, the phenomenon of globalisation and liberalisation and their progeny ‘free trade market’ have increased the significance of economies of scale

and specialisation in such a way that even the smaller firms cannot shy away. To withstand the market pressure and severe competition, each firm has to engage in cooperative relationships where they can co-operate with each other in some areas and compete in some others. Network-based approaches like industrial clustering facilitate such a conducive environment where firms can engage with their peers to complement their strengths and weaknesses so that the diseconomies of scale and scope can be eliminated to an extent.

1.2 Introduction

Among the various strategies for regional entrepreneurial development, industrial cluster development programs bear greater significance. Industrial clusters are defined as “geographically proximate group of firms and associated institutions in related industries, linked by economic and social interdependences” (Porter, 1998). The academic interest in the study of industrial clusters shares the same historical lineage of small business entrepreneurship. Now both entrepreneurship and industrial clusters enjoy excellent visibility among academic and policy circles owing to their shared historical resurgence and perceived potential in employment generation especially in the context of drastic changes that took place in the institutional, technological and economic environments since the 1970s (Arzeni & Pellegrin, 1997; Bergman & Feser, 1999; Birch, 1979; Creed & Reynolds, 2001; Porter, 1998).

There is a plethora of studies on industrial clusters and their concomitant links to firm performance and regional development. Acknowledging the positive impacts of industrial clusters, various international developmental organisations like Organisation for Economic Co-operation and Development (OECD) and United Nations Industrial Development Organization (UNIDO) etc. have urged the policymakers across the globe to include industrial clustering in their industrial policy agenda (Motoyama, 2008).

Despite the reservation of few, there is a considerable consensus among policymakers and researchers that industrial clusters are sources of innovation and growth. Thus, in the recent past, both policymakers and researchers have contemplated elucidating the determinants inducing innovation amongst the clustered firms (Chandrashekar & Subrahmanya, 2019a). Most of the past studies on industrial clusters attributed the value of clusters in terms of reduced transaction costs due to proximity, especially regarding the accessibility of resources, products, and services. However, though clusters have been conceptualised as a mutual interaction between various actors in proximity to facilitate the connection of value-adding activities (Brown *et al.*, 2007), there is still an apparent dearth of clarity on how, and through what mechanisms the synergic value is conveyed by proximity (Bell *et al.*, 2009; Brown *et al.*, 2007; Knobens & Oerlemans, 2006). Specifically, the impact made by physical proximity on knowledge sharing among clustered firms has always been less explored, notwithstanding the mounting evidence that knowledge creation and organisational learning can enhance the overall efficiency of the cluster and improve the innovative potential of participating firms (Ibrahim & Fallah, 2005; Lai *et al.*, 2014; Malmberg & Power, 2005; Mitchell *et al.*, 2010).

Building on the much-accepted notion of ‘knowledge spillovers’ as a key explanatory factor for innovation effects of industrial clustering, the current study attempts to address this gap by exploring various channels of knowledge interactions within industrial clusters and their impact on organisational learning and innovation performance of participating firms. Unlike most of the earlier studies, where cluster impact was studied by considering mere cluster membership, i.e., taking samples of firms situated in any cluster, the current study uses a separate multi-dimensional construct to measure the involvement of a firm in industrial cluster activities, enabling a more precise empirical analysis.

The latter part of the chapter uncovers the broad research area of knowledge interactions and innovation performance of firms in industrial clusters. It lays down the conceptual background of the study constructs. It then describes the motivation driving this study and presents the problem statement being addressed in this thesis. The chapter also discusses the contributions of the study to the existing body of knowledge in the field.

1.3 Broad Research Area

Innovation is a vital impetus for long-term economic growth as per modern growth theories (Grossman & Helpman, 1990; Freeman & Soete, 1997). From firms to nations, the thrive for improving the capacities for innovation is gearing up the priority charts. Now, clusters are acknowledged as a viable strategy for local industrial development, believing that participating firms would gain performance advantage from the agglomeration facilitated by them. This has triggered a renewed interest among the governments and developmental agencies across the world for promoting the creation and development of cluster (Porter, 1990; Krugman, 1993; Feldman, 2000; Storper & Scott, 1995; Stevenson & Lundström, 2007). The clusters are claimed to have positive impacts on resilience, productivity and innovation (Baptista & Swann, 1998; Treado & Giarratani, 2008; Folta, Cooper & Baik, 2006)

The broader notion of economies of agglomeration (which were first introduced by Marshall (1920) and further emphasised by Arrow (1962), Romer (1986), Porter (1996) and various others) is facilitated by location and industry-specific factors or externalities generated by input-output sharing, knowledge or technology spillovers, and labour market pooling. Firms in the cluster seek sustainable competitive advantage by involving in collaborative actions like vertical cooperation (i.e. supply chain relationships) and horizontal cooperation (i.e. between competitors). A wide spectrum of institutional forms such as business associations, producer consortia and strategic alliances facilitate joint

actions among clustered firms which enhance knowledge exchange through cooperation and collaboration (Foss, 1996).

There is an increasing awareness that disparities across geographical regions in economic performance and growth are a function of a set of relatively immovable resources such as skills, knowledge, organisational and institutional structures whose role has been acknowledged as vital. This realisation has resulted in rekindling territory and space as critical economic factors in the policy debates, motivating various innovation and industrial scholars to study the geographic dimension of innovative activities and its consequences for economic clustering, especially for clusters of small and medium firms. This trend can also be attributed as reactionary to Krugmans' (1991) dismissal of knowledge related factors as a significant agglomeration force (Breschi, 2001).

As a result of various research endeavours and policy experiments across the globe, numerous theoretical frameworks and models have been developed to study the spatial dimension of innovation and its impacts on the clustering of industrial activities. The advocates of the 'system' approach to innovative activities emphasise that innovation is likely to cluster spatially in regions where specialised services, inputs, and other resources required to actualise effective innovation processes are highly congregated (Breschi, 2001). The underlying aspect of this stream of literature is rooted in the notion of 'knowledge spillovers' as the key explanatory variable for the innovation effect of industrial clustering. Unlike Krugman and few other scholars who argue that knowledge flows are either spatially unbounded or unmeasurable in a highly connected world, this stream of literature claims that transmission of knowledge is facilitated more efficiently between spatially proximate agents. Due to the complexity and tacit nature of such knowledge, it can only be transmitted through interpersonal contacts and inter-organisational mobility of employees facilitated through cultural and geographical proximity. Several authors highlighted that

such knowledge tends to spill over and takes time to diffuse across farther distances (Jaffe *et al.*, 1993).

Learning is facilitated through networking and mutual interaction between various actors via formal and informal collaborations, user producer relationships, inter-organisational mobility of experienced and skilled labours, spinoffs of new entrepreneurial firms from established firms, research centres and universities etc. The coexistence of firms within limited geographical proximity facilitates organisational isomorphism, whereby an organisation voluntarily or involuntarily attempts to resemble its peers exposed to similar environmental settings (DiMaggio & Powell, 1983). Clustered firms, which are intrinsically in the same geographical region exposing to similar circumstances, attempt to improve their resource occupancy status for survival and legitimacy. Thus, small and new firms often try to learn from their older and bigger counterparts by mimicking their behaviour and practices (Zhang & Hu, 2017).

1.4 Industrial Clusters: An overview

1.4.1 The concept

Industrial clusters are conceptualised as a concentration of interconnected companies and allied institutions that attain performance advantages through their geographical co-location. It was Micheal Porter, one of the most authoritative voices in strategic management literature, who used the term ‘industrial cluster’ for the first time in his pathbreaking book ‘The Competitive Advantage of Nations’, though the concept of economies of agglomeration was introduced much earlier in the literature by Marshall (1920). These agglomeration economies are enabled by location and industry-specific determinants or externalities generated by input-output sharing, knowledge spillovers, and labour market pooling. The assumption is that clustered firms accrue sustainable

competitive advantage by engaging in collaborative actions like vertical cooperation (i.e. supply chain relationships) and horizontal cooperation (i.e. between competitors) between various actors in the ecosystem.

1.4.2 Evolution of the concept

Clustering, as a competitive strategy, has a long-standing historical foundation. The theoretical foundations of clustering are attributed to Marshallian externalities (Marshall, 1890). Marshall was the first to explain the benefits of agglomeration of related economic activities. He called this concentration of associated firms in a geographical area as ‘industrial districts’ and defined it as “a large number of small businesses of a similar kind in the same locality” (Marshall, 1920). He emphasised that the proximity of firms in a locality would give them advantages in terms of abundantly qualified workers, easy availability of raw materials and knowledge spillovers.

Italian scholars revisited Marshall’s ideas in the 1970s as they explored economic, cultural and social undercurrents of industrial districts and assessed the effects of agglomeration of small firms on their performance. Such studies revealed that in those industries which are predominantly constituted by small firms, firms clustered in specific regions outperformed others and were able to develop niches in the export market and create more employment opportunities. It was also found that such industrial districts were succeeded in carving out their own position in global markets in various traditional product segments such as knitwear, shoes, leather bags, furniture etc. These small Italian firms’ remarkable success attracted greater attention globally as it happened when large British and German companies struggled to survive. This success was realised by the change in the nature of demand towards customised small lots of products. These developments brought a paradigmatic change in the hitherto notions regarding mass production, which

was dominated by multinational firms (Menkveld & Thurik, 1999; Stephen Roper, 1997). This has prompted scholars like Piore and Sabel to suggest specialisation and flexibility as alternatives to the Fordist model of mass production prevailing in the industry at that time (Piore, 1990; Piore & Sabel, 1984). They envisaged clusters as prototypes of flexible specialisation, in which organisational adaptability and production efficiency could be boosted by economies of scale and scope in sectoral and regional settings.

The 1990s witnessed a resurgence of interest among academicians and practitioners on the benefits of agglomeration of economic activities, primarily through Micheal Porter and a few others' pathbreaking works. Micheal Porter reiterated the notion that spatial proximity enhances the competitiveness of clustered firms. He argued that proximity enables the diffusion of information regarding new products and production processes and reduces transactional costs. He emphasised that long-term advantages of competition in a global market highly rely on local characteristics which could not be matched by distant competitors easily (Porter, 1990; 1998). He conceived cluster as an alternate institution of the value chain, stimulating both cooperation and competition. According to him, much of this cooperation would be vertical in the sense that it involves firms from similar or associated industries and local establishments, and such coexistence of cooperation and competition is viable as they ensue in diverse dimensions between differing actors (Porter, 1998).

During the same period, Schmitz (1999) suggested the theory of 'collective efficiency' to complement Porter's cluster – innovation theory. He defined 'collective efficiency' as "the competitive advantage derived from local external economies and joint action, acting as a catalyst for growth". He argued that "clustering opens up efficiency gains that individual enterprises can rarely attain".

1.4.3 Definitions

As it is already mentioned, the literature on the industrial cluster is spread across different domains transgressing the disciplinary boundaries. Different authors attempted to define the concept based on the discipline of their focal interest. Thus there is not yet a generally accepted definition of industrial clusters, prompting certain critics to refer this concept as ‘chaotic’ and ‘ambiguous’. Following are a few of the most popular definitions of industrial clusters relevant to the current study.

One of the comprehensive and widely used definitions of clusters is given by Micheal Porter. He defined industrial clusters as *“geographically proximate group of interconnected companies and associated institutions in a particular field linked by commonalities and complementarities. Clusters encompass an array of linked industries and other entities important to competition ...including governmental and other institutions – such as universities, standard-setting agencies, think tanks, vocational training providers and trade associations”* (Porter, 1998). According to Schmitz (1992) *“A cluster is a geographic and sectoral agglomeration of enterprises”*.

United Nations Industrial Development Organisation (UNIDO) defines a cluster as *“geographical concentrations of interconnected enterprises and associated institutions that face common challenges and opportunities”* (UNIDO, 2020).

Rosenfeld (1997) defines clusters as *“...geographically bounded concentration of similar, related or complementary businesses, with active channels for business transactions, communications and dialogue, that share specialised infrastructure, labour markets and services, and that are faced with common opportunities and threats”*.

Preissl & Solimene (2003) defines “*clusters as a set of interdependent organisations that contribute to the realisation of innovations in an economic sector or industry*”.

Thus, in a nutshell, clusters can be referred to as spatial agglomeration of interconnected firms and allied institutions in a field that engages with each other to reduce cost and improve performance.

1.4.4 The outcomes of industrial clusters

The geographical proximity facilitated by industrial clusters offers competitive advantages to member firms who actively co-operate and compete, as interlinkages between various cluster participants result in synergistic impact (Porter, 1998). The competing firms located inside a cluster will derive agglomeration benefits in terms of reduced costs and will be privileged with resources inaccessible to their competitors who are not situated in the cluster region (Pouder & John, 1996). Firms tend to co-locate in such spatial proximity if the benefits derived from such agglomeration is higher than the cost of locating in that region (Wolter, 2003).

The geographic agglomeration also helps the participating firms by providing technological externalities and additional financial benefits (Belleflamme et al., 2000). As these firms are co-located in a limited locality, the communication between them is reinforced, and the knowledge exchange is intensified (Karaev *et al.*, 2007). Apart from the codified or formal knowledge transmitted easily over various communication channels, tacit or informal knowledge is also transferred somewhat accidentally (Bergman & Feser, 1999). The information that randomly flows within the cluster milieu is converted into a relevant and meaningful context through tacit knowledge (Preissl & Solimene, 2003). This knowledge is a privilege to the cluster firms and thus is a valuable asset to them. It gives

them a competitive advantage as their peers outside the cluster may find it difficult to imitate such intangible assets, unlike the physical and financial assets (Kaplan & Norton, 2004).

Geographic agglomeration reduces the transaction costs as all the stakeholders in the value chain, such as suppliers of raw materials, ancillary units, legal consultants, financiers and other allied institutions, are close to each other. The shorter distances between various actors reduce the transportation cost, which further reduces corresponding insurance cost. Likewise, the easy access to reliable information regarding other firms and the details about their specific competencies within the cluster reduces the cost of obtaining information (Preissl & Solimene, 2003).

The concentration of more firms in a locality will attract more suppliers, business service providers etc., to the region and improve the cluster's collective efficiency by enabling more choice to the participating firms. The evolution of the cluster would facilitate further emergence of specialised training institutions, transport facilities, communal infrastructure etc., in the region. It will also stimulate the establishment of supporting institutions aiming at meeting the specific needs of the cluster members (Karaev *et al.*, 2007)

Clusters often engage in strategic alliances with universities, research institutes and vocational training centres that indulge in producing specific knowledge relevant to the concerned industry. It results in creating a large resource pool in the locality with good knowledge and skillsets suitable for various job roles in member firms. The co-location of firms helps them engage in co-operative relationships to enhance pooled learning and knowledge creation, facilitating knowledge spillover (Wolter, 2003).

A high degree of specialisation is facilitated in the cluster by a high concentration of small firms and various support institutions -both from the demand and supply sides. Likewise, when big lead organisations attract potential cluster participants for providing ancillary supports, they exert an extra demand for further specialisation. This upshot has been stated as “economies of specialisation” (Preissl & Solimene, 2003). Dwivedi *et al.* (2003) identify geographic concentration and sectoral specialisation as a vehicle for achieving collective reputation, making the entry of small and medium firms to various clusters attractive. Precisely, it can be summarised that geographical proximity, strong connections among clustered firms and shared infrastructure can facilitate the creation of an innovative ecosystem (Pouder & St. John, 1996).

Innovation is one of the most cited terms in the cluster literature. It is very much a part of cluster discourse such that the majority of scholars even tend to define clusters in terms of innovation. For instance, Preissl & Solimene (2003) defined “clusters as a set of interdependent organisations that contribute to the realisation of innovations in an economic sector or industry”. Process innovations are more frequent among clustered firms through a high degree of local cooperation with universities and suppliers (Brenner, 2003). Micheal Porter (2000) asserts that clusters can impact competition by enhancing the productivity of clustered firms by inducing innovation in the field and promoting new firms in the region.

1.5 Industrial clusters in India

India houses some of the largest and oldest industrial clusters in the world. These industrial clusters have a significant role in the growth of the small scale manufacturing sector in the country. According to UNIDO, there are more than 400 modern industrial

clusters and almost 2000 artisan based rural industrial clusters in India. It is estimated that these clusters contribute to 60 % of India's manufacturing exports (UNIDO, 1998).

Most of India's industrial clusters are in the traditional manufacturing sectors such as leather goods manufacturing, textile manufacturing, etc. Some of these Indian clusters even constitute 90% of the country's total production output in the concerned product categories, indicating its significance. The knitwear cluster of Ludhiana is an example of such a clusters. Likewise, almost all the jewellery exports of India is from the clusters of Mumbai and Surat. The clusters of Agra, Chennai and Kolkata are world-renowned for high-quality leather products. Nevertheless, most Indian clusters are small in size and mainly deal with handicrafts renowned for their quality and skills the world over.

In line with UNIDO's call for promoting clusters as an industrial development policy, the Ministry of MSME under the Government of India initiated the cluster development scheme in 1982. The objective of the UNIDO cluster development program in India is to contribute to the SME clusters' collective efficiency in various parts of the country and improve their overall performance for sustainable development by aiding communities of small firms and associated institutions in the locality. Many programs were implemented for cluster restructuring and modernisation and for improving the infrastructural capacity of such regions.

1.6 Other Key Concepts Under Study

- **Organisational isomorphism:**

Organisational isomorphism is one of the key explanatory variables in the current study. It refers to organisations' tendency to resemble their peers in the population, who are also exposed to similar environmental conditions in their pursuit of legitimacy and survival. The notion of isomorphism originated in the biological science literature and is

defined as “the constraining process that forces one unit in a population to resemble other units that face the same set of environmental conditions” (DiMaggio & Powell, 1983). According to DiMaggio and Powell, there are three types of isomorphic tendencies organisations used to exhibit, namely coercive isomorphism, normative isomorphism and mimetic isomorphism. Owing to their similarities, Dacin (1997) combined coercive isomorphism with normative isomorphism for easy articulation in the empirical analysis. The current study also follows the same approach and considers normative isomorphism and mimetic isomorphism for our empirical analysis.

- ***Normative isomorphism*** refers to the isomorphic tendencies which originate from informal and formal pressures exerted on firms by other firms in the population on which the focal firm relies. This includes cultural expectations prevailing in society and professionalisation trends that define work methods and conditions.
- ***Mimetic isomorphism*** refers to the tendency of firms to emulate other firms in the population. This form of isomorphism enables firms in learning how to imitate the behaviour or form of their peers whom they perceive as successful examples, in their pursuit of legitimacy (Dacin, 1997; DiMaggio & Powell, 1983).

- **Organisational learning:**

Organisational learning is another key explanatory variable in the current study. It is the process of finding a balance between creating, accessing and transferring information within a firm, enabling each organisational unit to expand their existing knowledge base by adding appropriate knowledge from external sources and creating new additions by themselves (Pfeffer & Sutton, 2000).

- **Innovation performance:**

Innovation performance is the dependent variable in the current study. Here, innovation is referred to “as the embodiment, combination or synthesis of knowledge in original, relevant, valued new products, processes or services” (Luecke & Katz, 2003). Thus, innovation performance of a firm can be understood as the ability of the firm to transform innovation inputs into outputs as well as to transform innovation effort and capability into market implementation (Zizlavsky, 2016). The current study uses the construct ‘incremental innovation’ to measure innovation performance of the clustered firms, considering the peculiar nature of innovation efforts taken by small firms who are the focus of the current study.

1.7 Motivation for the study

Both professional orientation and personal experience motivated this study. The initial thought regarding the current research was conceived in the researcher’s mind when he happened to work in a suburban area where a large number of footwear firms and allied institutions were co-locating within a small vicinity. The realisation that the locality’s industrial map is swiftly changing with new firms and other support services coming up regularly triggered the researcher’s enthusiasm and motivated him to explore the theoretical underpinnings behind this phenomenon. The said locality carved its place in the country’s industrial map within two decades of the inception of the first footwear manufacturing company. It has now become one of the most sought after manufacturing hub for synthetic footwear in India. Most of the new firms were spinoffs of the existing firms, and their peculiar strategies for survival and growth were found very interesting. To study this phenomenon from a strategic management perspective, a journey towards understanding existing cluster theories and literature began. It was found that successful

entrepreneurial firms result from continuous learning and proactive networking, which can be realised from the conducive atmosphere provided by industrial clusters. Clusters provide an ideal support system for smaller and newer firms to learn from their more significant and older counterparts and help them grow and sustain. Engaging in collective actions with their peers help them achieve economies of scale and scope to counter competitive pressures from larger organisations.

While exploring various literature on industrial clusters transgressing the disciplinary boundaries, the concept regarding knowledge interactions within the cluster seemed more exciting and relevant. It prompted the researcher to look for a suitable research problem. The choice of this broader concept to be the core theme of the present study is informed by certain factors. Firstly, it seemed relevant to the current modern industrial society where knowledge and innovation are buzz words. Secondly, its potential for application in different contexts was well acknowledged as the pursuit of competitiveness for small businesses is a top policy agenda across the globe. Thirdly, the review of the literature revealed that there is an apparent dearth of studies on this aspect in the context of developing countries like India, which are thriving for improving their manufacturing sector, realising its potential in generating employment and enhancing exports.

1.8 Problem Statement

Organisations succeed when quality products and services are delivered to consumers or clients at competitive prices. To achieve a maximum performance level, they should be able to tap opportunities and utilise the maximum of their resources efficiently. Small and new firms struggle to achieve this due to their resource constraints even though they constitute a lions' share of economic activities worldwide. They are often forced to

compete with their larger multinational counterparts who enjoy economies of scale and scope. More prominent organisations with excellent research and development infrastructure come up with innovative products at a competitive price and push the smaller firms to the margins. The closure rate among the small firms across the globe is high so that the policymakers are in serious pursuit of strategies to help them sustain and grow.

Industrial clusters help small firms by providing them with a conducive atmosphere to grow and achieve a competitive advantage. They help them surpass their resource constraints and diseconomies of scale and scope by providing them with opportunities to engage in joint actions. They can learn from their peers and improve their innovative performance. However, despite the overwhelming theoretical arguments supporting the positive effect of industrial clusters on member firm's innovation performance, the empirical evidence is still inconclusive (Fang, 2015). Past studies have reported contrasting findings of this phenomenon. Even though most of them highlighted a significant positive effect of clustering on firm-level innovation, there are also studies that have reported insignificant and even adverse effects. The critics of the cluster- innovation hypothesis argue that rather than improving innovation, clusters may even result in jeopardising innovation. They warn that congestion, knowledge leakage and over competition are typical in clusters and may cause lower profits for firms, forcing them to reduce their innovation budgets (Baptista, 1998; Brezis & Krugman, 1997; Myles Shaver & Flyer, 2000).

These contrasting arguments and inconclusive empirical results call for developing a comprehensive analytical framework to explore the nuances of the cluster- innovation relationship. Whether industrial clusters help member firms to improve their innovation performance? If so, how is this relationship being facilitated? What are the channels

through which innovation is being shared between firms? These are some of the pertinent questions this study attempts to address.

The review of the literature reveals that most of the empirical studies emphasised on linking industrial clusters with firm innovation; however, they did not discuss how innovation is facilitated through cluster involvement. This bears significance as both policymakers and researchers have contemplated on elucidating the determinants inducing innovation amongst the clustered firms for devising evidence-based cluster development programs (Chandrashekar & Bala Subrahmanya, 2019b).

Therefore, the current study considers the above-mentioned issues and develops a comprehensive framework for modelling the relationship between industrial cluster involvement by firms and their innovation performance. The study brings in the concept of isomorphism as a strategic mechanism for knowledge acquisition for small firms to pursue competitiveness. This conceptual framework is developed based on the foundations of population ecology theory, social conformity theory, social contagion theory and knowledge-based view of the firm.

1.9 Research Questions

Based on the gaps identified from the extensive review of the literature, the following research questions are made:

- Does industrial cluster involvement help member firms in achieving innovation performance?
- What are the channels through which the relationship between industrial cluster involvement and innovation performance facilitated?

- Does a firm's involvement in the cluster activities influence its organisational isomorphic behaviour?
- Does organisational isomorphic behaviour of a firm influence its organisational learning performance?
- Does organisational learning of a firm influence its innovation performance?

1.10 Objectives of the study

The main objective of the current research is to study how a firm's involvement in cluster activities influences organisational isomorphism, organisational learning and, subsequently, its innovation performance. This broad objective is further subdivided into the following ways for research convenience.

Sub-objectives:

- To study how a firm's involvement in cluster activities influences its normative isomorphic behaviour.
- To study how a firm's involvement in cluster activities influences its mimetic isomorphic behaviour.
- To study how normative isomorphism influences a firm's organisational learning performance.
- To study how mimetic isomorphism influences a firm's organisational learning performance.
- To study how organisational learning influences a firm's innovation performance.

- To study if there is any mediating effect of organisational learning on the relationship between firms' industrial cluster involvement and innovation performance.
- To study if there is any serial mediation effect of mimetic isomorphism and organisational learning in the relationship between industrial cluster involvement and innovation performance of firms.
- To study if there is any serial mediation effect of normative isomorphism and organisational learning in the relationship between industrial cluster involvement and firms' innovation performance.

1.11 Scope of the study

Industrial Clustering has become one of the most vibrant research areas in strategic management and economic geography for the last two decades. A large number of studies addressing various aspects of industrial clusters with similar or dissimilar constructs are being published with a high frequency. This makes it necessary for scholars to objectively define and confine the scope of the research that is being undertaken by them.

The scope of the current study can be defined in terms of constructs, context and content. The study uses the construct 'industrial cluster involvement' for objectively capturing the level of involvement by individual firms in cluster activities. Further, logical reason was made to study only two types of organisational isomorphism, i.e. normative isomorphism and mimetic isomorphism. The study excluded coercive isomorphism due to its overlapping nature with the dimensions of normative isomorphism. Two reasons constrained the study only to footwear clusters. First, being a traditional industry with relatively slower technological change and lower entry barrier, the footwear industry provides a scholar with an ideal setting for exploring the knowledge interactions among

the small firms in the industrial cluster. Second, footwear clusters across the country provide a homogenous sample setting in terms of the product group and are at the same time heterogeneous in terms of cluster evolution stage.

1.12 Contributions of the study

Any research endeavour is valued based on the contribution it makes in advancing the current state of knowledge in the particular domain of enquiry to the next possible level. Progress of scientific knowledge is actualised by systematically building new studies on the ever-growing foundations of existing knowledge. This makes it imperative for any study to position itself in the focal domain of knowledge regarding its theoretical and practical contribution to the body of knowledge before diving into it in detail.

The following section presents the overview of the theoretical and practical contributions of this study.

1.12.1 Theoretical formulation

Theoretically, this study contributes to the existing body of knowledge in multiple ways. First, this study attempts to contribute to the recent academic debates on clusters that show a slow shift towards a new paradigm where industrial clusters are not only viewed in regard to economies of proximity but also as social communities which enable creation and transfer of knowledge. Secondly, it provides a comprehensive perspective of the innovation process in clustered firms. In this regard, this thesis attempts to explain the channels and modes of knowledge transfer within the industrial cluster by integrating multiple theories such as population ecology theory, institutional theory, social contagion theory, social conformity theory and knowledge-based view of the firm. Further, taking note of the consensus among the recent literature which stresses on the idea that not all firms in a cluster are equally involved in local networks (Bathelt et al., 2004; Giuliani, 2007), unlike

most of the previous studies which seek to assess the cluster impacts by considering mere cluster membership of focal firms, this study uses a separate construct namely '*industrial cluster involvement*' for more objective assessment. This study will also be one of the earliest studies in the Indian context where the knowledge interaction in industrial clusters is addressed as there is an apparent dearth cluster studies in developing countries like India.

1.12.2 Practical application

Studies on industrial clusters often attract much enthusiasm from both academia and practitioner circles. As it is a globally accepted strategy for regional industrial development and small business entrepreneurship promotion, the fruits of such research endeavours should be clearly articulated for assisting policy formulation. From a practitioner standpoint, this thesis deals with the involvement of firms in the industrial cluster activities and its impact in terms of firm-level innovation performance. The thesis reiterates that it is not the mere membership in the cluster milieu, but active involvement in the cluster activities that ensure competitive advantage to the participating firms. Being in the cluster locality may help the firm in many ways, but, to derive the maximum benefit the cluster offers, the firm should stay active in the network and engage in joint actions. The policymakers should establish community facilities in the cluster localities to further stimulate the interrelationship between various cluster actors for improving cooperation and achieving synergy. During the field visits to some of India's largest footwear clusters as part of this study, it was found that despite the global acceptance for the products from these clusters, the clusters remain mostly underdeveloped or semi-developed. They possess almost all the physical characteristics of a typical cluster with a critical mass of similar firms and other support service providers in agglomeration. Still, knowledge interaction is minimal among smaller firms. In most of the Indian clusters, the initiative for joint actions

is coming from the trade associations. Though they are beneficial to every actor in the ecosystem, smaller firms are often left out.

1.13 The organisation of the study

The present study consists of six chapters and is structured as follows:

Chapter 1 (Introduction): As an introductory chapter, this chapter presents a brief description of this thesis's main elements. It begins with elucidating the research background, followed by a justification of the primary research objectives, research questions and theoretical and practical contributions. It ends with an overview of the structure of the thesis.

Chapter 2 (Review of the literature: Industrial Clusters): This chapter summarises the current state of affairs about industrial cluster research, analysing both theoretical and empirical studies. It focuses on reviewing the extant literature, beginning with its evolution, definitions, operationalisation and theoretical perspectives. Special attention is given to the stream of literature which focuses on knowledge interactions occurring in clusters. Further, it also specifically explores how existing studies portrayed the impact of industrial clusters on individual firms in terms of innovation performance and competitiveness. The antecedents and outcomes of industrial clusters are thoroughly discussed, and the conceptual and empirical justification for the variables examined in this thesis is elucidated in light of the gaps in the existing literature.

Chapter 3 (Theory and Hypothesis Development): Drawing from the research gaps from past studies, this chapter propounds a research model - a model depicting the relationship between industrial cluster involvement and firms' innovation performance through different channels of knowledge interactions and organisational learning. The chapter begins with a detailed description of various theories on which the foundations of

the current study's conceptual framework are based. Further, the chapter proposes various hypothesis for empirically testing the relationships suggested in the conceptual model.

Chapter 4 (Methodology): The methodology adopted for the study is elaborated in this chapter. The chapter begins with a brief discussion on the current study's philosophical grounding, including the ontological, epistemological, axiological suppositions, guiding the coherence between the proposed research questions and the adopted methodology. A detailed description follows on the operationalisation of the focal variables, sampling plan, research instruments, data collection methods and the tools used for data analysis. Finally, it ends with a discussion on the ethical considerations followed in conducting the research.

Chapter 5 (Data Analysis): The statistical tools and techniques used for data analysis is discussed in this chapter. It also presents the results of the data analysis and their interpretations.

Chapter 6 (Discussion & Conclusion): This chapter presents the study's conclusions and discusses the findings in detail. It also provides the implications and limitations of the present study and ends with directions for future research.

Chapter 2

REVIEW OF LITERATURE

This chapter presents an overview of the current state of knowledge in the area of industrial clustering, focusing on the aspect of knowledge interactions happening within the clusters and its impact in terms of innovation performance of participating firms. The chapter then attempts to identify the research gaps in the existing literature and highlights the research gap that the present thesis intends to address.

2.1 Industrial Clusters: The Concept

Clustering and networking have been accounted for in the literature for more than a hundred years. After a period of relative neglect, the 1990s witnessed a resurgence in research efforts devoted to examining and explaining the clustering phenomena (Malmberg & Maskell, 2002). During the last three decades, it has resurged as one of the significant research agendas of scholars transgressing the boundaries of academic disciplines. Much research and policy thinking has been invested in exploring the factors explaining why a particular type of industries or technologies appear to blossom in specific locations and how this impacts the local economic development.

Although this saga began with the ground-breaking work by Marshall (1920), it was subsequently developed by a long array of notable scholars from Hirschman (1958) and Porter (1990) etc. The pioneering work by Marshall (1920) elucidated the perks of small business firms concentrating in the same localities and explained the advantages of agglomeration economies, and termed such localities as industrial districts. Marshall

recognised labour market pooling, knowledge or technological spillovers, and intermediate demand and supply linkages as the trio of external economies, which leads to local clustering of activities. The idea has been developed later by other economists, such as Hirschman (1958), Perroux (1950), Jacobs (1961), Porter (1991) etc. It is now evident that clusters at least offer SMEs economies of scale and scope. The extant literature in the domain now acknowledges that cooperation between various stakeholders within the cluster networks, in terms of sharing of information, knowledge, technical expertise and resources and other kinds of different joint actions helps them in reducing the transaction costs and improving the competitiveness as well as facilitating an ecosystem for enhanced learning and technical innovation.

Defining Industrial Clusters

Even though numerous studies have been carried out in various countries, it is yet to achieve a standard definition for the concept of industrial clusters. There are as many definitions for clusters as there are types of organisations using the term. There is as well a semantic ambiguity on the concept of the industrial cluster and other related concepts like industrial districts owing to the overlapping of their underlying notions. These two concepts are rooted in the positive effects of spatial agglomeration on a firm's performance (Feser & Bergman, 2000; Porter & Ketels, 2009). Both concepts are used indifferently by some management scholars (E.g. Schmitz, (1995); Bell, (2005); Tallman et al., (2004))

Various authors describe clusters as geographically bounded concentrations of inter-reliant firms with dynamic channels for communication, business transactions and dialogue (Rosenfeld, 1997). According to Porter (1998), "A cluster is a geographical proximate group of interconnected companies and associated institutions in a particular field, linked by commonalities and externalities.". Further, he elaborated this definition by detailing various cluster stakeholders as "Geographic concentrations of interconnected

companies and institutions in a particular field. Clusters encompass an array of linked industries and other entities important to competition. They include, for example, suppliers of specialised inputs such as components, machinery, and services and providers of specialised infrastructure. Clusters also often extend downstream to channels and customers and laterally to manufacturers of complementary products and to companies in industries related by skills, technologies, or common inputs. Finally, many clusters include governmental and other institutions--such as universities, standards-setting agencies, think tanks, vocational training providers, and trade associations.” (Porter, 1998).

In a nutshell, industrial clusters can be identified “as a network of inter-organisational relationships between different actors, such as customers, competitors, suppliers, support organisations and local institutions and others (Piore, 1990), in which geographical proximity and a strong feeling of belonging are primary elements facilitating such relationships, based on norms and values such as trust and reciprocity, among others” (Antonelli, 2000).

2.2 Researching Industrial Clusters: A holistic View

Even though the initial domain of the clustering concept was strategic management, it eventually discovered its position in diverse arenas by amassing theoretical power and adapting and changing accordingly, spanning through a wide range of disciplines (Porter, 1990, 1998). The scholars from interrelated fields like management, economics and geography have made it one of the most dynamic research areas. Notions like industrial districts (Becattini, 1979), innovative milieu (Camagni, 1991), learning regions (Asheim, 1996) and regional innovation systems (Cooke, 2001) are also talking about the same phenomenon to an extent.

Hervas-Oliver *et al.* (2015), in their bibliometric study on clusters, identified five major thematic areas in the industrial cluster literature. It includes evolutionary economic

geography, global pipeline or cluster value chain, cluster taxonomies, innovation & firm analysis and inter-firm networks, social capital & flows of knowledge. Here, this categorisation is further streamlined to have a more vivid and critical view of how the existing literature has marked the underlying dimensions of industrial clustering and to find the locus of research on how this phenomenon has impacted on a regional and firm-level capacity through knowledge spillover and network relations. In the present chapter, the studies are reviewed under the heads of evolutionary economic geography, social capital & flows of knowledge and innovation & firm-level performance. As most studies on clusters are transgressive of this categorisation, they may find their space under one or more of these heads.

2.3 Evolutionary Economic Geography

A broad range of literature has elucidated the reasons behind the cluster existence and illustrated the main features of a ‘developed’ or ‘fully functioning’ cluster. However, innovative outlooks on the long term evolution of clusters are scarce compared to such static approaches and have not attracted much scholarly attention (Menzel & Fornahl, 2010; Trippel *et al.*, 2015). Yet, there were some attempts to explore how clusters are formed, developed and evolved (Frenken *et al.*, 2015; Storper & Walker, 1989). The studies in this line also attempted to address the aspects of cluster declination and how they change their focus to new fields over time (Boschma & Frenken, 2006; Lorenzen, 2005).

The significance of studying the evolutionary aspect of cluster formation lies in the realisation that the aspects and approaches which are accountable for the cluster functioning are not sufficient for explaining their emergence or formation (Bresnahan *et al.*, 2001). Likewise, the examples of declining clusters in various regions of the world point out that the economic benefits arising from cluster dynamics are not perpetual. It is also found that certain aspects which facilitated the development of clusters at a point in

time were found to be causing their decline in a later stage (Martin & Sunley, 2006). All these factors suggest that understanding the underlying aspects of cluster evolution is crucial, as ‘induced clustering’ is becoming a prioritised strategy in the regional industrial development policy charts.

The extant literature on the evolutionary aspects of cluster development shows that every cluster follows a life cycle. Like any firms and markets, clusters also develop, grow and decline. The dominant premise of this cluster life cycle notion is that the clusters change and evolve with apparent development stages (Feldman & Braunerhjelm, 2007). Specific features inducing changes that are presumed to be generalised across cluster populations are the characteristic feature of each phase (Trippel *et al.*, 2015).

Broadly, there are two distinct approaches seen in cluster life cycle literature. The first strand of literature attempts to emphasise on industry-driven explanations, whereas the other focus on process-specific aspects to industrial clustering (Martin & Sunley, 2011). In the industry-driven approach, technological developments are associated with the evolution of clusters. The proponents of this approach believe that the clusters go along the life cycle of their corresponding industries. Accordingly, the significance of cluster is assumed as maximum in the initial growth stage of a technology or industry when ample experimentation is made, and the domain knowledge is not yet standardised or codified (Ter Wal & Boschma, 2011). Process specific or cluster-specific view suggests that clusters evolve not depending on the corresponding industrial development but due to heterogeneity or homogeneity in competencies or cluster-specific institutional or technological lock-ins (Trippel *et al.*, 2015). This view has been endorsed by various scholars such as Pouder & John (1996), Iammarino & McCann (2006), Maskell & Malmberg (2007) etc. Many scholars came up with empirical evidence to show that the cluster life cycle and the corresponding industrial cycle would not be the same. One of the notable attempts in this

line was made by Saxenian (1994). He studied the computer industrial clusters in Boston and Silicon Valley regions and showed that different clusters within the same industrial life cycle could have different growth trajectories.

Various scholars have attempted to explain the different stages involved in the life cycle of clusters. Van Klink & De Langen (2001) listed development, expansion, maturation, and transition as various stages in the cluster life cycle. They also proposed certain critical features to analyse the 'development state' of the cluster, including the level of the strategic relationship, characteristics of the value chain, the cluster dynamics, determinant of success, the co-operative domain and government's role in promoting the clustering process. All these aspects would play a significant role in navigating the cluster through its evolutionary life cycle.

Pouder & John (1996) believe that such navigation through the life cycle of clusters is primarily determined in the clustered firms' prejudiced cognitive attention towards their peers in the cluster milieu. They developed an evolutionary model which differentiates clustered and non-clustered competitors within the same industry. They listed three stages in the life cycle of clusters viz; origination of the cluster, the emergence of the cluster identity, convergence of firms in the cluster and reorientation of the firm. The findings of their study showed that, though in the beginning, economies of agglomeration, manager's mental models and institutional forces may create an innovative ecosystem within the cluster, these same forces would result in creating a homogenous macro culture in the long run. Such a homogenous macro culture would suppress the innovation and reduce economies of agglomeration, which give the clustered firms an edge over their non-clustered firms cease to exist.

Martin & Sunley (2011) also endorses the view that the cluster life cycle would eventually end up in negative 'lock-in' and ultimately results in the decline of the cluster. Here, 'lock-in' refers to the propensity for certain technological domains to get locked on a trajectory, even though alternate (and perhaps more effective) technologies are prevailing. This is often occurred by neglecting the possibilities of entering new growth phases. Maskell & Malmberg (2007) attribute this 'lock-in' effect on the entrepreneur's myopic behaviour towards knowledge acquisition and innovation.

Martin & Sunley (2006), in their subsequent papers, added the concept of 'path dependence' along with 'lock-in' as essential constituents in creating the evolutionary approach to the theory of industrial clusters. A path-dependent process is one whose product develops as an outcome of the process's or system's history. They argue that 'path dependence' and 'lock-in' are space reliant processes, and thus need geographical clarification by invoking the question that why it is that some regional economies lose their dynamism and get locked in their path of development while some other economies can escape this danger, enabling them to reinvent new successive phases of their development.

To explore the nuances of cluster evolution phenomena and understand them for better policy formulations, various scholars have proposed models for the positive evolution of the clusters. In their influential contribution, Menzel and Fornahl (2010) suggested a cluster cycle pattern on how firms join and leave the cluster, the competencies of firms improve and intermingle, and inter-firm connections within and outside the cluster are determined and dispersed along the life cycle of clusters.

A critical review of these different approaches to cluster life cycle reveals that, in a broader sense, every cluster would go through the stages of origination, progression, saturation and decline. Cluster emergence is argued to be partially due to what has earlier

occurred in the region and thereby connects to existing local competencies, institutions and routines (Boschma & Frenken, 2006). Tanner (2011) supported this argument and added that “Even in the case of radical technological development, knowledge production is highly cumulative and builds on pre-existing localised scientific and technological resources”. Scholars who oppose this view suggest that cluster emergence is more or less a matter of chance, and thus it is difficult to predict (Feldman & Braunerhjelm, 2007; Maskell & Malmberg, 2007).

The growth of a cluster is mainly dependent on the lead organisations’ growth and the subsequent entry of new organisations into the cluster family. The growth is facilitated by the innovative activities by the member firms aided by the tacit knowledge available in the ecosystem. The development stage is catalysed by various factors, including local conditions such as skilled labour, suppliers and training institutions, collectively creating a favourable atmosphere for rising industries (Bergman, 2008).

Clusters enter the maturation stage when the average growth rate and the rate of new admissions and exits in the cluster converge with that of the national average. In other words, the economies of agglomeration cease to exist for the participating firms and may even result in increasing the congestion costs. During this stage, innovation activities become stagnant or mere incremental. The processes turn into regular and simpler to imitate anywhere, providing firms with a better trade-off when operating out of the cluster, prompting them to exit from the cluster (Baptista & Swann, 1998). According to Tichy’s (1998) opinion, this stage will witness many firms’ falling, and the cluster networks becoming less potent of external information. Incidence of isomorphism and lock-in effect would be higher during this stage (Grabher, 1993; Hassink, 2010). However, some clusters construct new industrial and sectorial address by renewing themselves by exploiting existing infrastructure and skillsets.

2.4 Networking, Social Capital and Flow of Knowledge

During the initial years since the concept of industrial clusters got reemerged in the economic circles with the writings of Porter and others, most of the studies highlighted the decline in transaction costs and attributed it with the value of clusters (Malmberg *et al.*, 1996). Such an approach fails to identify the benefits associated with collocated firms that are not transferable to a single firm (Malmberg & Maskell, 2002) and often didn't recognise knowledge as a catalyst for national competitiveness and development. The recent popularity of the knowledge-based view of the firm reinvigorated the scholarly interest in clusters' effect on creation, use, and dissemination of knowledge (Mitchell *et al.*, 2010).

The literature on the importance of firm-specific knowledge in competitive strategy has bred quite a few theoretical perspectives (Mowery *et al.*, 1996). The resource-based view of the firm identifies a firm as a collection of resources that are sticky and difficult to imitate and emphasise on protection and deployment of these resources for capturing rents (Wernerfelt, 1984). Another vital theory that contributed to the debates is the theory of dynamic capabilities which stresses the significance of changes in capabilities underneath these resources (Teece & Pisano, 1994). These two theories were significant in contributing to the later development of knowledge-based views of the firm.

The knowledge-based view of the firm undermines that a firm's capacity to generate and disseminate knowledge determines its competitiveness (Conner & Prahalad, 1996; Kogut & Zander, 1992; Spender, 1996). The firms should develop and maintain a routine and channel for knowledge production and accumulation to capitalise this competitive advantage effectively. The new-found enthusiasm in the knowledge-based view of the firm in the context of industrial clustering has triggered many scholars to approach cluster phenomenon through this perspective.

Various researchers who studied industrial cluster phenomenon have recognised specific geographies rich in innovative activities that reap the benefit of the easy flow of knowledge within a cluster than the regions outside it (Dahl & Pedersen, 2004). Spatial proximity has facilitated the benefit of trustful relations, short cognitive distance, common language, easy observation and immediate comparison, enabling easy and efficient transmission of knowledge (Malmberg & Maskell, 2002). One of the factors which are generally credited for facilitating such knowledge flow is the existence of formal and informal networks of contacts that emerged between people within the cluster across organisational boundaries. These communication channels enable knowledge diffusion and give clustered firms some advantage over their peers who are outside the cluster in their pursuit of innovation. A significant portion of cluster literature has focused on various aspects of such network relationships and knowledge interactions occurring in the cluster milieu.

Joining the conversation that is already initiated in the previous section of this literature review would set an ideal starting point for understanding how cluster scholars have engaged on various aspects of knowledge interactions taking place in the cluster. As already pointed out, scholars have argued that the existence of specific knowledge bases in particular localities is one of the fundamental reasons for cluster emergence (Menzel & Fornahl, 2010). Scholars like Ter Wal & Boschma (2011) and Menzel & Fonhl (2010) stressed that firm heterogeneity and localised learning dynamics propel clusters through various phases of life cycles.

Initially, knowledge spillover through formal and informal interactions was identified as just one among many externalities driving industrial cluster phenomenon (Dahl & Pedersen, 2004). The classical works of Marshall (1920) and Krugman (1991) list three sets of externalities crucial in industrial clustering. First of these being economies of

specialisation due to the concentration of similar firms attracting and supporting specialised suppliers. The second externality is economies of labour pooling where the presence of a pool of labour force with specialised skill sets and knowledge base appeals firms to the region, resulting in the creation of more specialised labour. The third externality they talked about is knowledge spillover or technological externalities where information and knowledge located in the cluster flow more easily between various players within the cluster than distant places.

Even though Krugman listed knowledge spillover as a significant force in clustering phenomena, he believed that it would be of significant effect only in specific hi-tech industries and may not be an unavoidable trigger for agglomeration in the conventional clusters. He argued that the knowledge externality aspect is difficult to measure. Thus, the focus should be on other externalities, such as economies of labour pooling and specialisation, which can be appropriately measured. This position of Krugman was contented by a long array of scholars upholding the significance of knowledge interactions in facilitating the clustering phenomenon.

Prominent scholars such as Maskell and Malmberg (1999), Storper (1995), Lawson (1999) etc., have argued that the presence of economies of scale and other kinds of ‘traded interdependencies’ is insufficient for understanding the processes behind geographic clustering of firms. They emphasised the significance of ‘localised capabilities’ and ‘untraded interdependencies’ to show that inter-firm communication, socio-institutional settings and interactive processes of localised learning accelerate the growth and innovation processes (Bathelt & Glückler, 2002; Maskell & Malmberg, 1999).

Various scholars attempted to prove the significance of local knowledge spillover using empirical data from different clusters across the globe. Jaffe *et al.* (1993) used patent

citation data to provide evidence of the extent to which spillover of technology or knowledge is geographically localised. By doing so, they engaged with the conversation initiated by Krugman regarding the significance of localised knowledge spillover and attempted to prove his reservations regarding the measurability aspect wrong, with a possible level of practicality. Martin (1999) claimed that empirical study of the geography of innovation substantiate that localised knowledge spillover is a significant element in the clustering of innovative economic activities. Though spillovers of geographically mediated knowledge and innovation are evidently related in the literature, there is also literature substantiating that geographical colocation does not innately lead to knowledge sharing, transmission and improving innovation (Hassink & Wood, 1998).

It was not only Krugman who dismissed the significance of local knowledge spillover in the clustering phenomenon; scholars like Breschi and Lissoni (2001) also questioned this aspect. They argued that the concept of local knowledge spillover is no more than a hoax. They criticised the hitherto studies which claimed empirical evidence for localised knowledge spillover by arguing that they failed to differentiate between local knowledge flows that take the form of public goods and those that do not. They added that knowledge shared through informal contacts involves comparatively small ideas and argued that the original innovators strictly maintains the strategic knowledge within themselves. Dahl & Pedersen (2004) attempted to empirically test the above claims proposed by Breschi and Lissoni using data from wireless communications cluster from Northern Denmark. Their findings showed that informal contact leads to a remarkable flow of knowledge as engineers from clustered firms admitted that social contacts help them procure diverse knowledge. Unlike Breschi and Lissoni (2001)'s claims, the study showed that the engineers share even firm-specific secret information such as the launching of new products, which are supposed to be protected from competitors.

To get into the nuances of this stream of literature, one needs to understand the different knowledge forms articulated in the cluster domain. Codified knowledge and tacit knowledge are two terms that appear in the cluster literature quite often. The knowledge which can be transmitted in a systematic, formal language is considered as codified or explicit knowledge. In contrast, tacit knowledge denotes knowledge that is difficult to formalise and communicate due to its personal quality (Nonaka, 1994). It is often viewed that codified knowledge has no boundaries, whereas tacit knowledge is restrained to local settings. So the scholars on clusters attribute the presence of such tacit knowledge base in the cluster air as available to all members easily. This is an area of contention where scholars have a contrasting opinion regarding how firms benefit from such knowledge in the cluster air. Some scholars argue that clusters benefit from the voluntary diffusion of tacit knowledge by being in the ecosystem. On the other hand, some other scholars are of the opinion that it needs deliberate efforts from the stakeholders to create as many as channels of knowledge acquisition to benefit from the knowledge available in the cluster ecosystem as well as outside of it.

Thus, it is evident that there is overwhelming support for the claim that the diffusion of non-articulated, sticky, tacit forms of knowledge among firms is facilitated by clusters. However, scholars like Bathelt *et al.* (2004) argue that this spatially embedded knowledge should be integrated creatively with codified and accessible external knowledge to create new value.

Bathelt *et al.* (2004) also have written extensively on various aspects of knowledge interactions in the cluster. They distinguished two types of knowledge acquisition in the clusters and called them ‘local buzz’ and ‘pipeline’. The process of learning among actors embedded in a community by just being there is called a ‘buzz’, and the acquiring of knowledge by deliberately investing in creating communication channels with providers

outside the cluster boundaries is denoted as ‘pipelines’. They claimed that the simultaneity of many pipelines and a higher degree of buzz delivers firms situated in lively and outward-looking clusters, with a series of particular benefits not accessible to outsiders. In other words, in order to capitalise the spatiality of knowledge economies, the firms in the cluster should take proactive measures to build connections not only with other firms in the cluster but also with complementing actors outside the cluster.

Even though formal network relationships via ‘pipeline’ is significant for improving the competitive advantage, the knowledge attained through ‘buzz’ or ‘knowledge in the air’ has its own value, especially for smaller and newer firms in the ecosystem who are thriving for survival and legitimacy. ‘Buzz’ provides specific information relevant to firms and continuous updates of that information and facilitates intended and unintended learning processes through accidental and organised meetings. It encourages the formulation of codes and other institutional arrangements since new knowledge and technologies are conveyed mutually with shared habits and cultural traditions within a particular technology field (Bathelt *et al.*, 2004). Gertler (1995) adds that each agent would benefit from and contribute to the dispersion of such information, news and gossip by just being there.

Despite the reservations of scholars like Krugman and Breschi and Lissoni (2001) regarding the significance of knowledge interactions in industrial clustering, relatively to that of other externalities, the majority of the scholars considered it as a crucial aspect. Studies listed inter-firm mobility of the skilled workforce, spin-offs and formal & informal collaborations are among the major facilitators of information flow within the industrial clusters. Apart from benefitting the tacit knowledge available in the cluster air, firms in the cluster also take deliberate efforts to acquire knowledge from the peers in the ecosystem through formal processes such as alliances and acquisitions.

Networks of interactions have acquired particular importance in recent years due to their presumed significance for learning and innovation. Alliances between related organisations are supposed to promote interactive learning between participating firms by sharing information and knowledge, which is facilitated through trust, shared values, and ways of working (Tracey & Clark, 2003).

Wang & Zajac (2007) argued that to make use of the cluster resources effectively, such alliance relationships with other firms that would complement their resource requirements are necessary. Alliances offer firms a distinctive opportunity to leverage their strengths with assistance from relevant partners. In bringing together firms with different knowledge bases and skills, alliances facilitate unique learning avenues for the partner firms.

The success of such alliance partnerships lies in the capability set brings in by each of the partners into the table. Partners with complementary skillsets and capabilities would create a synergetic impact on the overall performance of each firm. Yang, Lin, & Peng (2011) conducted a study integrating social network perspectives and behavioural learning to examine the selection of alliance partners. The study analysed how firms' alliance learning approaches (exploitation versus exploration) and their relative and joint embeddedness in alliance networks (relative centrality and joint brokerage positions) can interact to catalyse further acquisitions of alliance partners.

Inter-firm learning can be facilitated not only by transferring existing knowledge from one firm to another but also by generating an entirely new set of knowledge through interaction among firms. Both creation and transfer of knowledge require simultaneous receptivity and transparency among the firms (Larsson *et al.*, 1998). If the firms are not transparent, the existing knowledge may not be shared among the partners for the collective

creation of new knowledge. Thus, it can be said that inter-firm learning is a combined product of firm capabilities and their choices of receptivity and transparency (Larsson *et al.*, 1998).

Competition and collaboration are two highly proactive learning strategies for firms to absorb as much new knowledge as possible. Both of these constitute typical characteristics of knowledge interactions in any industrial cluster as the underlying strategic dimension of cluster existence is the synergetic interaction of these two forces. Every firm in the cluster has to achieve high receptivity and absorptive capacity to effectively utilise the knowledge available through cluster interactions (Mowery *et al.*, 1996).

As discussed earlier, even though formal networks in terms of alliances constitute a significant aspect of knowledge interactions in industrial clusters, informal networks also facilitate knowledge creation and transfer in a crucial way (Dahl & Pedersen, 2004). In the context of traditional clusters of small firms, informal networks are more common. Unlike formal alliances, where joint actions are facilitated through legal contracts, the knowledge interactions are purely based on organic bonding between various stakeholders achieved through geographical colocation. One of the critical questions raised by scholars who have reservations regarding the value of the ‘free knowledge’ available in the ecosystem is whether companies who invest heavily in R&D activities allow the leakage of critical knowledge to their peers. It is documented that even if the concerned firms wish otherwise, even critical knowledge is prone to ‘leakage’ in a typical cluster ecosystem (Dahl & Pedersen, 2004). There are also instances whereby firms show a willingness to share valuable information with their peers despite the lack of any contractual binding.

Allen's (1983) idea of "collective invention" gives the rationale behind such generous behaviour. The collective invention is featured by a great degree of innovation and rapid accumulation of knowledge produced by information disclosure among competing agents. The networks formed by groups of individuals with social connections share and disseminate knowledge within them. The idea behind the collective invention is that participation in such communities facilitates the exchange of high-quality knowledge and skill, which in the long run helps the overall development of the industry. Thus the provision of information at a point time is inspired primarily by the anticipation of reciprocity in future in different ways.

By providing knowledge support to smaller and newer firms in the cluster, older or leader organisations are building the long term competitiveness of the regions (Parrilli, 2019). They act as gatekeepers of knowledge in the industrial clusters (Morrison, 2008). They have the potential to promote knowledge dissemination to other small firms through their internal and external knowledge and innovation sources (Parrilli, 2019). This would help them attract a pool of efficient auxiliary support systems, labour pool, raw material suppliers and market to the vicinity. They, often under the auspicious of trade bodies and their own behalf, conduct trade exhibitions and training workshops to motivate and upskill the potential entrepreneurs and provide them with the latest technological know-how of the industry.

There are different mechanisms through which firms acquire knowledge from the cluster ecosystem without entering formal alliance relationships with their older and larger peers. One of such significant mechanisms of knowledge acquisition is organisational isomorphism (Zhang & Hu, 2017). As Hawley defines (1968), organisational isomorphism "is a constraining process in which organisations in a population resemble one another when they face the same environmental conditions". In such a context, the characteristics

of the organisation are modified in the direction of increasing compatibility. They are likely to build network relationships with other stakeholders in the cluster milieu and simultaneously experience competitive and institutional pressures. Network theory suggests that such network positions reap the advantages of information and knowledge flows (Capaldo, 2007; Powell *et al.*, 2005). As the clustering is characterised by the process of isomorphism in which the firms model themselves after other firms, such dissemination of information and knowledge may enable homogeneity in clusters (Tan, 2005).

Scholars have argued that the process of isomorphism and networks are closely associated (DiMaggio & Powell, 1983). The large body of research examining isomorphism resulting from the interconnection of firms includes Greenwood & Hinings (1988), Tolbert & Zucker (1983), Rowan (1982), DiMaggio & Powell (1983) etc. The research work in which isomorphism is viewed as a function of network interrelationships includes Oliver (1988) and Galaskiewicz & Wasserman (1989). Most of these researches have examined the degree of conformance to or control by the state, regulation, laws, or resource flows as a measure of the degree of institutionalisation.

Deephouse (1999) argued that the networks in a cluster trigger both competitive and institutional isomorphism. In the same way, institutional norms and organisational models are facilitated by network ties. The shared history of the cluster actors results in the generation of a collective knowledge base. A wide range of institutional support through network connections may further benefit clustered firms. Network relationships within the cluster enable the development and adoption of best practices and organisational structures, thus increasing institutional isomorphism.

DiMaggio & Powell (1983) proposed three mechanisms through which institutional isomorphism happens: Mimetic, normative and coercive. According to them, coercive

isomorphism generates from political pressure and the problems of legitimacy; mimetic isomorphism is caused due to standard responses to uncertainty, and normative isomorphism is associated with conditions and norms due to professionalisation.

The informal and formal pressures on a firm put forth by depended firms and the societal expectations within which it functions result in coercive isomorphism. Mimetic isomorphism instead implies the emulation of other organisations (Zhang & Hu, 2017). Imitation is promoted by uncertainty. Firms tend to model themselves on other organisation when technologies are poorly understood (March & Olsen, 1976), when goals are not clear, or when the environment generates symbolic uncertainty. Chasing legitimacy and success, the firms tend to imitate the behaviour and form of successful examples through this form of isomorphism (Dacin, 1997). In this way, smaller and newer firms imitate the actions and behaviours of their larger and older counterparts.

The third source of organisational isomorphism arises mainly from professionalisation, which is known as normative isomorphism. Following Larson (1977) and Collins (1979), DiMaggio & Powell (1983) interpret professionalisation “as the collective struggle of members of an occupation to define the methods and conditions of their work, to control ‘the production of producers’ (Larson, 1977), and to create a cognitive base and legitimation for their occupational autonomy”. Dacin (1997) merges normative and coercive isomorphism to suggest that norms or rules can develop as ideologies or cultural theories, or prescriptions about how society functions or should function. Following Dacin (1997), Zhang & Hu (2017) also used the term normative isomorphism to denote both coercive and normative isomorphic pressures exerted on organisations by the forces in the cluster ecosystem.

2.5 Innovation and firm-level Performance

The most popular keywords in cluster literature are innovation and competitiveness. It would be safe to claim that no research work on industrial clusters might not have seen the light of the day without including either of these terminologies. An overarching argument in cluster theories is that clusters promote innovation and competitiveness at various realms. As innovation is considered as a catalyst for long-term economic development as per modern economic growth theories, clusters accomplished to be an essential strategy for developing economies across the globe (Naseef & Jyothi, 2019). Being such an important topic of policy and academic relevance, the innovation impact of industrial clusters were empirically examined by many. Scholars have attempted to investigate the effects of clustering at a regional, country level and firm level.

The extant literature lists various reasons to believe clusters can bring innovation to the firms. Fang(2015) in his meta-analytic review of industrial clustering enumerates various factors which scholars listed as probable reasons why industrial clusters improve the innovation performance of participating firms. First, knowledge spillovers inside clusters as some portion of the knowledge required for innovation is likely to be uncoded and elusive, and it encourages innovation (Feldman 1994; Jacobs 1970, 1986). Second, the deep-rooted specialisation within clusters allows firms to focus on certain specific production processes, which, in turn, encourages innovation in their core competency (Maskell, 2001). Third, firms are put to high pressure to maintain competitiveness when collocated with competitors and improve innovation performance (Burt, 1987; Porter, 1998). Fourth, firms engage in the informal social networks within the cluster, facilitating them with intense co-operation and are encouraged to take more risk which is significant for innovation, since innovative activities necessitate the ability to deal with uncertainty and a large investment (Bathelt, 2002; Bathelt & Glückler, 2002; Feser & Luger, 2003;

Gordon & McCann, 2000). Fifth, high skilled labour is attracted to the clusters with increased creativity, collaboration and communication (Florida et al., 2008; Stolarick & Florida, 2006). Finally, firms achieve more profits and potentially increase their innovative inputs by reducing production costs by minimising information and transportation costs, labour pooling, shared public intermediate inputs etc. (Henderson, 1986; Marshall, 1920; Von Hippel, 2007).

Even though theoretically, it is argued that clusters spur innovation due to these effects, scholars also list specific reasons why clusters may also jeopardise innovation. Scholars like Brezis and Krugman (1993) and Baptista (1998) warn that over competition and congestion that are common in clusters can act as negative externalities and may lower the firm's profits, which in turn results in the reduction of inputs into their innovative activities. Even though knowledge spillover is often credited as the prime reason for cluster innovation, this aspect also has a downside. It is a mere 'knowledge leakage' for the firms who invest heavily in research and development activities. For discouraging a 'free ride' by other firms on their expense, such innovative firms tend to cut their investment in R&D (Jörg Baten *et al.*, 2004; Shaver & Flyer, 2000). The firm's capacity to assimilate outside knowledge is curtailed by "lock-in" effects caused by inelastic relationships and exposure to unvarying information (Boschma, 2005; Moodysson & Jonsson, 2007).

Despite being a popular policy strategy since last two decades, the debates about the effectiveness of cluster-based economic development approach are still active. As the current study looks into the firm-level impact of industrial clusters, this section attempts to review the relevant empirical literature which looked into that aspect in the past. The extant literature is not conclusive about the impact of the industrial cluster on firms' innovation performance, as studies with data from different periods and various countries give mixed and inconsistent results (Fang, 2015).

Most of the empirical studies published so far show a significant positive relationship between innovation performance and industrial clusters (Aharonson *et al.*, 2004; Brenner & Greif, 2006; Fornahl *et al.*, 2011). However, certain studies also report negligible relationships (Jörg Baten *et al.*, 2004; Beugelsdijk & Cornet, 2002; Fitjar & Rodríguez-Pose, 2011). Even a negative association between firm innovation and industrial clusters are reported in some studies (Acs & Audretsch, 1988; Lee, 2009). Likewise, some studies such as those by Hamaguchi and Kameyama (2007), Hornyh and Schwartz (2009) and Fritsch and Slavtchev (2010) report mixed results and suggest that some moderators can alter the magnitude and the direction of the cluster-innovation relationship. The meta-analytic review conducted by Fang (2015) reveal that a positive impact on firm-level innovation could not be achieved by an average cluster. However, he maintains that no absolute verdict can be made to any of the clusters without considering relevant moderators. He warns that if such specific conditions are not considered, policymakers' vigour in promoting clusters might be found to have no impact, or against their noble intention, turn out to have even negative impact. In the following paragraphs, some significant studies which looked into the cluster- innovation relationship is briefly reviewed.

Even though they didn't use the term clusters or industrial district in their study- as it was conducted few years before Porter (1990) introduced the term 'cluster' in the literature, Acs & Audretsch (1988) examined how firm concentration impact innovation output of the firm. They presented a model proposing that innovative output is a function of market structure characteristics and R&D. Using a new measure of innovation, they showed that the frequency of innovations is negatively associated with unionisation and concentration, and positively associated with skilled labour, R&D and the extent to which

large firms constitute the industry. They also found that these determinants have a disparate impact on small and large firms.

Baptista & Swann (1998) examined chances of innovation for firms set in strong industrial clusters against firms situated outside these localities using a database of innovations from the UK. Their findings revealed that a firm has more chances to innovate if own-sector employment in its home locality is strong. However, the impact of strong employment in other industries in the home region does not found to be significant. These results may indicate that amidst many advantages of diversification within the clusters, the effects of congestion outweighs.

Shefer & Frenkel (1998) examined the impact of local innovation milieu on industrial innovation rate using data from Israel. Their findings suggest that agglomeration economies have a significant positive impact on the rate of innovation potential of firms in the electronics industry. However, only a meagre effect is detected in the metal industry, and no such substantial effect is found in the plastics industry. The study thus reinforced the argument that cluster impact is moderated by different industry-specific factors.

Brouwer *et al.* (1999) argued that regional differences matter for firms' innovative behaviour in industrial clusters. Using data on new products announcements from clustered firms in the Netherlands, they found that, rather than process development, firms located in urban agglomeration invest their higher share of R&D to product development than firms located in rural regions.

Feldman & Audretsch (1999) conducted a study to examine whether the specialisation of economic activities or the diversification whereby various complementary activities are brought together in the locality, better encourages innovation. This study bears much significance as it has extended the ongoing debate of specialisation versus

diversification in the context of agglomeration economics using empirical data from US small business administration. The results of the study didn't provide any evidence to support that specialisation encourages innovative output. Rather, it was found that diversity whilst sharing a common science base is more favourable to innovation. The results also show that the intensity of local competition for new ideas is more favourable to innovation than local monopoly.

Love & Roper (1999) contributed to economies of agglomeration literature by providing empirical evidence that the simple Schumpeterian hypothesis that asserts a positive effect of monopoly power on innovation, is inadequate to explain the extent of innovation at the firm level. They suggested that networking between various stakeholders and technology transfer may be essential alternatives to R&D as an input for innovation. The results suggest that smaller firms can surpass their diseconomies of scale using efficient technology transfer and networking to take on their larger counterparts in innovative activities.

Roper *et al.* (2000) used firm-level survey data from the UK to analyse the relative significance of industry concentration, locational factors and technological opportunity in shaping the innovation propensity of the firms. Their results suggest no evidence to support that industry concentration has any significant positive impact on innovation propensity. It was also found that the technological characteristics of the industries, measured in terms of R&D intensity, are significant in a firm's probability to innovate. The results also provide strong support for the significance of technology transfer and inter-firm network. Locational factors also found to have a significant impact on innovation propensity of the firm reflecting the industrial composition of the region, preponderance of small firms, external ownership, and level of R&D activity.

Broberg (2001) analysed whether the regional location is a significant determinant for firms' R&D performance using firm-level R&D data from Denmark. Their findings showed that R&D performances of firms located in urban agglomerations are higher than those firms located elsewhere. It was also identified that non-regional factors including ownership, age and business sector also have a significant impact on firms' R&D performance.

Baptista (2001) argued that externalities encouraging the adoption of new technology are stronger at the regional level and is positively impacted by the proximity of early adopters. Their empirical results verify the significance of inter-firm networking and geography in the process of knowledge diffusion and transfer, suggesting new approaches to technology policy and technology transfer.

Beaudry (2001) explored how a firm's performance is affected by the strength of the industrial cluster in which it is situated, using data from the aerospace industry in the UK. They took total employment level in the firm's sector and employment in other sectors in the region as indicators of cluster's strength. Their findings indicate that firms co-situated with other firms from the same sub-sector demonstrate a strong propensity to develop new products. It was also found that firms co-located with many firms from other sub-sectors do not gain advantage from such agglomeration. Further, their study of relative patenting within and without clusters shows a similar pattern of positive own- sector effects and negative other-sectors effects on patenting.

Sternberg and Arndt (2001) examined the innovation behaviour of European firms in relation to the absolute and relative influence of firm-specific and region-specific factors. The results of the study revealed that a relatively less impact on innovation behaviour is made by the selected region-level variables than firm-level factors. However, it was also

found that intensive innovation co-operation between firms within the region influences the innovative behaviour of the firms the most, affirming the significance of the networking and concepts of network-oriented regional development. It was also found that the proportion of new products is strongly influenced by the presence of technical and scientific personnel in the locality and the proximity of high-quality research institutions.

Wallsten (2001) used a firm-level dataset comprising of the geographic information system to explore the firm-level effects of agglomeration over isolated distances. The study examined whether proximity and clustering with other Small Business Innovation Research (SBIR) firms influence the potential achievement of an SBIR award, which offers research and development grants to small businesses. The results of the study showed that firms co-located with previous SBIR winners have more probability of getting selected for the program, than the isolated organisations, even after controlling for the effects of other firm-level, industrial and regional characteristics.

Beugelsdijk and Cornet (2002) explored the relationship between proximity and innovation and examined how local is the effect of ‘local knowledge’ spillover in this relationship. They tested the hypothesis that nearby firms’ innovative expenditure has a significant effect on a firm’s innovative performance than those by firms that are located far from them. Their results provide no evidence to suggest that proximity promotes industrial knowledge spillovers between firms within the Netherlands. However, the results indicated that distance limits spillovers from universities of technology.

Maurseth and Verspagen (2002) analysed the pattern of knowledge flows by employing patent citations reported in various European regions. Their findings showed that between regions of the same country and regions in spatial proximity, patent citations

happen more frequently. It was also revealed that patent citations occur most frequently in certain regions specialised in industrial sectors linked by technological relationships.

Smith *et al.* (2002) analysed the R&D performance of Danish firms and the impact of regional location on them. They test the urban hierarchy hypothesis that organisations in urban agglomerations are more likely to perform R&D than those in any other region. The evidence is not in support of urban hierarchy hypothesis as the impact of location on both R&D intensity and the probability for undertaking R&D is found to be mixed.

Beaudry & Breschi (2003) examined the innovative performance of firms in strong industrial cluster and firms outside the cluster, using firm-level data from Italy and the United States. The results of the study revealed that clustering alone could not be helpful in innovative performance, but it can have positive effects on firm's innovation potential. The results also showed that strong adverse effects could also generate from the existence of non-innovative firms in a firm's industrial sector.

Using patent and R&D data for European Regions in the 1977–1995 period, Bottazzi & Peri (2003) assessed the influence of research externalities in creating innovation. The study's findings showed that the spillover effect is much localised and exists only within a specific distance.

Van Der Panne & Dolfsma (2003) explored the impact of proximity on knowledge relationship among the hi-tech companies in the Netherlands and found that innovative high-tech activities are not spread geographically according to either relevant localised agglomeration economies or labour market characteristics. These results are in contrast with the popular notions in the agglomeration literature.

Aharonson *et al.* (2004) examined the ways clustered firms take advantage of knowledge spillovers against the firms which are not located in clusters or located in

clusters but not specialised on the firm's domain. It was found that the firms' innovative performance is eight times more when situated in clusters with a strong specialisation in their own domain and such colocation improves the productivity of its own and other firms' R&D alliances. The results also suggest that the advantages a firm derives from collocating with other firms in the same specialisation depend significantly on the other firms' R&D activities and the ability to capitalise on available spillovers.

With particular emphasis on the effect of clustering of firms, Baten *et al.* (2004) assessed the impact of various innovation determinants using firm-level data from the southwestern German state of Baden. The findings showed that both intra-industry and cross-industry externalities positively affect the innovative activities of the firm. However, the results also pointed out that the clusters' congestion costs negatively affect firms irrespective of their size.

Using data from a control group of geographically isolated aeronautical firms and clustered aeronautical firms in Northern Germany, Bönnte (2004) investigated the effect of various forces of agglomeration on employment and innovation. The findings of the study suggest that the knowledge spillovers from neighbouring scientific institutions and public information sources as well as demanding local clients affect a firms' innovative potential.

Mariani (2004) compared firms from different sectors and geographical regions to explore how knowledge spillovers are being utilised for innovation outputs. The study results propose that the new research-intensive industries, such as biotechnology and established research-intensive sectors such as chemicals, are differently affected by their respective regions. Significant innovations in biotechnology are likely to be created by those firms which are technologically specialised and are benefited by knowledge spillovers from the technologically intensive locality. Whereas, in the traditional chemical

sectors, big established firms take advantage of the internalisation of knowledge spillovers within the firm since local knowledge spillovers do not contribute much in creating technological hits.

Sher & Yang (2005) analysed the value chain of the Taiwanese integrated circuit (IC) industry and explored the impact of clustering and innovative capabilities. The findings of the study show that innovative capabilities have a positive effect on the performance of the firm as measured by returns on assets (ROA). The result further revealed that a positive moderating effect is exhibited by low and moderate levels of R&D clustering on the relationship between firm performance and innovative capability. However, the hypothesis that further R&D clustering would eventually diminish the effect of innovative capability on firm performance was not supported.

Bell (2005) examined the relationship among networks, clusters, and firm innovativeness, and suggested that network centrality and clusters improve firm innovativeness. Findings of the study revealed that situating in the cluster ecosystem improves firm innovativeness, even after separately accounting for the impact of network structure. The results also highlighted the differential effects of institutional and managerial ties on firm innovativeness. It is found that centrality in the managerial network ties improves firm innovativeness, proposing that informal communication and friendship networks act as significant sources of novel information which are useful for innovation.

Brenner & Greif (2006) attempted to explore the relationship between geographical agglomeration and firm innovation by analysing the data on the density of firms and employees and the number of patent applications in a region. Their results suggested that local innovativeness rely much on the regional density of firms and employees.

Gulrajani (2006) proposed a theoretical framework to analyse the relationship between technological capabilities of the cluster and firm's innovation performance and empirically tested it using data from a textile cluster from northern India. The findings revealed that technological capabilities of the cluster and linkages between various stakeholders in the cluster have a significant impact on incremental innovation and diffusion of technological knowledge among firms.

Folta *et al.* (2006) examined whether there are incremental returns for firms to situating in industrial clusters using five different firm performance indicators. Their results supported the basic notion of agglomeration theory that firms benefit from clustering and there are increasing return to cluster size. However they also suggested that, as clusters evolve, diseconomies of agglomeration have an increasingly significant impact.

Gilbert & Kusar (2006) examined whether geographic cluster location and knowledge spillovers impact new firm's exploitative and explorative innovative activities. The findings of the study revealed that the firms operating from cluster locations have higher levels of exploitative innovations. However, the results showed no significant difference in the effect of knowledge spillovers on exploitative and explorative innovations.

Baten *et al.* (2007) investigated the innovation impact of clustering using a newly constituted dataset which comprises of information on patents of manufacturing firms functioned at the turn of the 20th century. The results showed that intra-industry externalities are crucial for most firms and inter-industry externalities seem to be important only for small firms. Moreover, their results also showed that firms vary in the type of knowledge base they exploit in their innovative activities.

Beugelsdijk (2007) conducted a study to analyse whether regional features such as the intensity of R&D activities, presence of research institutes and the number of R&D workers in the region affect a firm's ability to achieve innovations. Their findings revealed that the firm-specific determinants of innovation are more significant than a firm's regional environment.

Van Geenhuizen & Reyes-Gonzalez (2007) compared the advantages enjoyed by clustered and non-clustered firms using the data from the Netherlands. Their findings suggested that being in the cluster location has no significant impact on innovation and speed of firm growth.

Niu (2010) conducted a study to analyse how industrial cluster involvement influence organisational adaption of clustered firms using data from USA, China, Taiwan and Sweden. Their findings revealed that industrial cluster involvement and organisational adaptation is significantly related. However, it was also found that type of cluster involvement determines the nature of the adaptation benefits.

Fornahl *et al.* (2011) attempted to explain whether the engagement in collaboration network, R&D subsidy and location impact firm level innovation activities. Using data of biotech firms from Germany, they found that the firm performance is not affected by the number of knowledge connections they have, but by the type of network they are part of. They also found that a significant positive effect can be found when there is some but not too much cognitive distance between network partners located in a cluster.

Niu *et al.* (2014) attempted to model the relationship between industrial cluster involvement, organisational learning and organisational adaptation. Their findings revealed a significant relationship between industrial cluster involvement and organisational adaptation mediated by organisational learning.

Chandrashekar & Hillemane (2018) ascertained the fundamental determinants of clustered firms' innovation performance using data from India. They analysed the role of absorptive capacity in enhancing cluster linkages and thereby improving innovation performance of firms. Their results showed a significant positive impact of absorptive capacity on both extra cluster linkages and intra-cluster linkages which further impact innovation performance. It was also found that those clustered firms which are subsidiaries of firms based outside cluster show a higher innovation performance than by those which are based inside the cluster locality.

Chandrashekar & Bala Subrahmanya (2019) conducted a study in the context of Bengaluru IT cluster in India to discern the factors constituting linkages among clustered firms that differentiate their innovation performance. Their findings suggested that the ability of a firm to integrate to global value chain both horizontally and vertically through extra cluster linkages influences its innovation performance.

Turkina *et al.* (2019) explored how the interplay of firm and cluster characteristics matter in achieving innovation performance. Their findings revealed that connectedness of firms with other high performing firms and research institutes in the cluster moderates their innovation performance and helps them manage the negative effects of cluster location.

Grashof *et al.* (2019) analysed the role of clusters in facilitating firm level radical innovation process by compiling data from various European databases. Their findings reiterated that clusters provide a conducive environment for radical innovations .They also added that radical innovations often happen in the periphery of the cluster where firms tend to show more openness towards external knowledge.

Table 2.1

Overview of the literature on the cluster- innovation relationship

Author	Country	Antecedents	Outcomes	Mediator/ Moderator
Acs & Audretsch (1988)	USA	-concentration firms in the region -R&D -Proportion of large firms in the industry	-total number of innovations	
Baptista & Swann (1998)	UK	-Firm concentration -Employment in the same sector -Employment in the other sector	-Total number of innovations	
Brouwer <i>et al.</i> (1999)	Netherlands	-innovation input (R&D)	-innovation output (new and improved products)	Cluster location
Feldman & Audretsch (1999)	US	-Specialisation -Science based diversity -competition	-Firm innovative activity	
Love & Roper (1999)	UK	-Network intensity -Tech transfer intensity	-No of new/ improved products -Probability of innovating	
Broberg (2001)	Denmark	-Concentration ratio -Distance from industrial centres	-R&D intensity	
Beaudry (2001)	UK	-Strength of the cluster	-Firm growth -Patenting	Subsector as moderator
Baptista (2001)	UK	-Stock of technology adopters in the region - Regional employment	Innovation diffusion	

Roper <i>et al.</i> (2000)	UK	-Industry Concentration ratio -Technology transfer -Locational factors	Innovation propensity	
Sternberg and Arndt (2001)	Europe	-Intensity of inter firm innovation co-operation -Local business climate -Availability of technical qualifications (employees) -Existence of research centres of excellence	-Share of new products relative to turnover	
Wallsten (2001)	USA	-Proximity to existing R&D award winners -No of R&D award winners within radius r -NO of large firms within radius r	-Probability of winning R&D innovation award	
Beugelsdijk and Cornet (2002)	Netherlands	-expenditures on the innovation of firms located in the proximity (measured at various distances) of firm i , excluding firm i 's expenditure -Distance from university	-Average innovation expenditures -Average share of new products in total -Average share of new/improved products in total	
Maurseth and Verspagen (2002)	Europe	-Geographical distance -National borders	Number of patent citations	
Smith <i>et al.</i> (2002)	Denmark	-Industry concentration	Probability of R&D R&D intensity	

		-Proximity to industry centres -independent dummy		
Beaudry & Breschi (2003)	Italy and USA	-Knowledge stock -Regional strength (Sector employment) -Urbanisation	-No of patents	
Bottazzi & Peri (2003)	Europe	-R&D resources employed in the region -Distance between regions	-No of patents	
Van Der Panne & Dolfma (2003)	Netherlands	- Agglomeration index -Knowledge infrastructure -Labor market	-No of hi-tech firms	
Aharonson <i>et al.</i> (2004)	Canada	-R&D expenditure -R&D employees -number of R&D alliances with other firms in the same specialisation	-No of patent applications	
Baten <i>et al.</i> (2004)	Germany	-Cluster participation	-Patent renewal	
Bönte (2004)	Germany	-Proximity -Cluster/not	-Employment -Product innovation	
Mariani (2004)	Europe	-R&D intensity	-Patent citations	Sectors
Sher & Yang (2005)	Taiwan	-innovative capability -R&D clustering	-Firm performance (ROA)	Clustering as moderator
Bell (2005)	Canada	-Managerial centrality -Institutional centrality	- Innovativeness	
Brenner & Greif (2006)	Germany	-No of firms in the region	No of patents	

		-No of employees in the region		
Folta <i>et al.</i> (2006)	USA	-Cluster size -Cluster growth -Firm alliances	-Firm discontinuance -IPOs -Private equity placements -Patenting -Strategic alliances	
Gilbert & Kusar (2006)	USA	-Industry clustering -Knowledge spillovers	-Patents awarded	
Gulrajani (2006)	India	-R&D intensity - Inter firm linkages -Technological capabilities of cluster	-Product changes -Process changes -Firm turnover	
Joerg Baten <i>et al.</i> (2007)	Germany	-employment in innovative firms in the same industry -employment in non-innovative firms in different industries	-Patents	
Beugelsdijk (2007)	Denmark	-R&D intensity -R&D workers in the region -Firm address density -Firm R&D	-% of incrementally changed products	
Van Geenhuizen, M., & Reyes-Gonzalez, L. (2007)	Netherlands	-Location (Cluster/non-cluster)	-R&D effort -Growth	
Fornahl <i>et al.</i> (2011)	Germany	-Inter firm connections -R&D subsidy -Location	-Patent registrations	
Chandrashekar & Hillemane (2018)	India	-Absorptive capacity	-Innovation performance	Degree of cluster linkages as mediator
Chandrashekar & Bala	India	-Degree of cluster linkages	-Innovation performance of firms	

Subrahmanya (2019)				
Turkina <i>et al.</i> (2019)	Europe	-Time in cluster -Firm size -Cluster maturity	-R&D intensity	- Connectedness to highly performing firms - Connectedness to research institutions
Grashof <i>et al.</i> (2019)	Europe	-Cluster dummy -Cluster size -Number of linkages -Number of research institutes	-Radical innovation	

2.6 Research Gaps

The review of the literature in the field of industrial clustering reveals some significant gaps that triggered the motivation for the current study.

2.6.1 *Calls for attention to broadening the theoretical understanding of the cluster phenomenon*

The concept of clusters continues to be subject to doubt and ambiguity, resulting in empirical and conceptual confusion (Bahlmann & Huysman, 2008; Martin & Sunley, 2003). Though the initial works on industrial clusters were mainly focused on the notions of agglomeration economies, the calls for studies grounded on diverse theoretical perspectives motivated researchers to explore this phenomenon through different theoretical lenses.

Throughout the evolutionary journey of industrial clustering as an academic concept since its first introduction in the literature, the scholars mainly focused on transaction cost view to explain cluster externalities. If Marshal was to get credited for

introducing the concept in the economics literature at the turn of the 19th century, Jacobs (1969) reinforced the value of proximity in an economic history perspective and spoke about the ‘inefficiency’ with regards to innovation. The ‘Italian district’ school in the late 1970s reintroduced the Marshallian model and added cultural and social elements into it, marking the beginning of a new era in political economy. Various scholars on Italian industrial districts contributed to this field to introduce the notion of co-operation and competition as taking place simultaneously in industrial clusters. Piore and Sabel (1984) brought this notion to industrial economics literature and proposed regions as a new form of the industrial organisation focusing on flexible specialisation. Then, through GREMI’s works, the notion of innovative milieu and aspects such as path dependence started to gain prevalence in economic geography literature. It rose to prominence as a business strategy with Micheal Porter’s (1990) works who coined the term ‘industrial cluster’ to the agglomeration phenomena. He advocated region as a source of competitive advantage for firms and introduced the ‘diamond model’ for creating clusters. The 1990s also witnessed a parallel shift in the theoretical enquiry on the cluster phenomena where scholars started to study it through the prism of the resource-based view of the firm which later on transitioned to the knowledge-based view of the firm (Maskell, 2001).

The current study on industrial clusters draws upon different theoretical perspectives such as Social contagion theory, Social conformity theory and Population ecology theory to integrate them with the knowledge-based view of the firm to address three aspects:

1. To identify and empirically test how industrial cluster involvement affects the innovation performance of participating firms.

2. To empirically test the various channels through which knowledge interactions are facilitated in the cluster ecosystem and how it affects the innovation performance of the firm.

3. Is isomorphism a feasible mechanism for innovation, especially in the backdrop of arguments that innovation is a function of differentiation?

While social contagion theory and social conformity theory is applied to conceptualise two different types of isomorphic behaviour of clustered firms, population ecology theory gives an overarching theoretical framework for understanding the relationship between industrial cluster involvement and organisational isomorphism. The knowledge-based view of the firm gives a broader theoretical explanation of the significance of knowledge interactions and organisational learning on firm competitiveness. A comprehensive theoretical framework which integrates all these conceptual frameworks grounded on relevant theories is proposed to provide a nuanced perspective on the knowledge interactions by clustered firms in their pursuit for enhancing innovation performance.

2.6.2 Measurement issues in the existing literature

A. in the context of small businesses in industrial clusters.

Despite being hailed as an efficient strategy for small business development, the empirical research on industrial clusters lacks scope for generalisation in the context of small businesses. A review of the extant literature on the innovation impact of industrial clusters reveals various scales researchers used to measure innovation performance at the firm level.

The majority of the studies attempted to measure clusters' innovation impact using firm-level patent registration and citation data. Though patent registration is a good

indicator of the innovative performance of firms, it has certain shortcomings. Several authors have argued that patents can vary enormously in their significance and value (Bottazzi & Peri, 2003). But, in the context of small businesses, such measures have much more severe limitations. Patents are precisely an indicator of innovation performance of hi-tech firms or firms which involve in radical innovation activities. But innovation activities at small firms, especially those in the conventional sectors are not radical in nature but incremental. Incremental innovation involves minor modifications and changes introduced to reinforce or refine existing technologies or products.

In contrast, radical innovations represent significant transformations of existing technologies and products that often make current technologies and products obsolete (Chandy & Tellis, 2000). A vast majority of the small firms in the traditional industries doesn't even file a patent application in their entire lifetime or aim to do so. It doesn't mean they don't bring innovation to their product offerings or production processes. So, measures that use patent data as a proxy for innovation performance neglect a wide range of firms to which clustering is often suggested as a strategy for improving innovation performance.

Incremental innovation helps firms to achieve significant competitive advantage without much cash outlay. Despite this, the concept of incremental innovation has not been a major policy interest or area of research when compared with innovations of a more radical or high technology involvement (Bhaskaran, 2006; Puga & Trefler, 2010). Incremental innovation plays a significant role in mature low- and medium-tech industries present in most traditional manufacturing clusters (Tomás-Miquel *et al.*, 2018). Moreover, incremental innovation is based on contextual knowledge, which is mostly tacit in nature, is a characteristic of typical cluster networks (Becattini 2001). All these calls for studies that consider differences in innovation pursuits of firms and accounts for their incremental achievements in innovation journey, irrespective of the size and nature of the firm. The

current study recognises the distinct features of the focal subjects of the study, i.e., small footwear manufacturing firms from various footwear clusters across India, and identify that measures capturing incremental innovation performance would be an optimal choice in capturing maximum relevant information and estimating their innovation outcome.

B. Measuring cluster participation

The existing empirical approaches in examining the impact of industrial clusters are mostly limited in establishing the link between cluster participation and firm performance by employing estimation strategies that use binary choice options that identify cluster participation by specifying if a particular firm is situated in a cluster locality or not. Such an approach bears certain inherent limitations which have its roots in a long-standing theoretical debate in the cluster literature. Ever since industrial clusters got prominence in strategic management literature, the question of whether firms accrue competitive advantage by just being in the cluster locality alone has been a matter of critical debate. A stream of literature emphasises the Marshallian view of ‘knowledge in the air’ to argue that the tacit knowledge which is available in the cluster locality is accessible to all stakeholders and act as a source of competitive advantage to them. The empirical strategy which identifies cluster participation merely by considering firm location would be adequate if cluster- innovation relationship is theoretically that simple. But various scholars argue that though tacit knowledge available in the cluster is accessible to all stakeholders, firms vary in benefitting from it with respect to the intensity of their social interactions (Gnyawali & Srivastava, 2013). Studies also show that clusters vary widely regarding their innovative outcomes (Aharonson *et al.*, 2008; A. Saxenian, 1994; Schmitz & Nadvi, 1999). In light of these observations and the vital role that recent cluster literature assigns to inter-firm interactions and active involvement in the cluster activities, it is natural to expect that inter-firm differences associated with the intensity of social interactions and involvement in

collective activities within a cluster are significant sources of inter-firm differences in innovative outcomes. Studies using mere cluster location to estimate the cluster effect are thus missing a lot of crucial information resulting in serious measurement issues. This calls for studies that employ a more refined multi-dimensional measure that incorporates all such aspects.

2.6.3 Lack of cluster studies in the context of India

Despite the exponential growth of research works on industrial clusters across the globe, the fact that it has not yet gained proper attention from Indian researchers is intriguing. Till now, major research studies on industrial clusters have been carried out in countries like US, UK, Italy, Denmark, France, Germany, China etc. As the industrial atmosphere in those countries vary significantly with that of the less developed and developing world, especially countries such as India, generalising the inferences derived from such studies to these contexts possess serious limitations. As numerous studies about clusters from developed countries started to flood in, calls for conducting such studies in the context of developing countries have raised from various corners (Schmitz & Nadvi, 1999). This has resulted in the publication of a relatively small pool of empirical studies on SME clusters from developing economies, including India. A recent work by Chandrashekar & Bala Subrahmanya (2019) complements the objectives of the current thesis in certain aspects. However, this domain of research is still in its infancy, as results are necessarily incomplete and inconclusive. Though the academic interest in the domain is growing, our understanding of how industrial clusters function in countries like India remains weak.

India is home to some of the world's oldest industrial manufacturing hubs, especially in traditional sectors such as leather good manufacturing and apparel production.

Most of these clusters comprise thousands of small manufacturing units and are now serving as a significant part of their respective industries' global manufacturing value chain. The government of India has included cluster development in their industrial policy tool kit for a long time, and various projects are being initiated to revamp the existing clusters and induce new clusters. New rigorous empirical and theoretical research inquiries on Indian industrial clusters would help policymakers in formulating more informed and evidence-based strategies while devising cluster development programs.

Chapter Summary

In summary, this chapter presented a detailed review of the existing literature in the domain of industrial clustering. The literature was discussed under three broader thematic areas: evolutionary economic geography, social capital, networking and knowledge interaction and innovation performance. The chapter then elaborated on the significant research gaps in the literature and discussed the research gaps the present thesis addresses.

Chapter 3

THEORY AND HYPOTHESIS DEVELOPMENT

Grounded on the literature on knowledge interactions in industrial clusters, this chapter lays the theoretical and contextual background of the current study. The chapter sets the theoretical foundation by elaborating the key theories guiding this study and integrates evidence from the extant literature on the focal constructs to establish possible links and propose relevant hypotheses for empirical testing.

3.1 Small firms and Knowledge Acquisition

The popularity of the concepts such as knowledge-based economy or knowledge-based society is gaining new momentum day by day. The realisation that the future generations would be knowledge-based and capital accumulation and growth of the economy rest on knowledge development increased the popularity of the concept (Nonaka & Takeuchi, 1995). It is well acknowledged that the value creation in the contemporary economic context is embodied by extensive use of intangible assets such as knowledge and intellectual capital, which often have a higher value than tangible assets (Russell, 2017). Likewise, knowledge or intellectual capital is now accounted for as a significant determinant in an organisation's value creation process, performance improvement, competitive advantage and success (Razafindrambinina & Anggreni, 2017). Mertins & Will (2007) also reiterated this by emphasising that economic growth is now achieved through the "generation, application and exploitation of knowledge".

In the current capitalist global economy which is characterised by severe competition and rapid technological advancements, to sustain and to get the pace of the market, it is imperative for any firm to acquire relevant knowledge, irrespective of the nature and size of their operations (Smedlund & Toivonen, 2007). The knowledge acquisition process is not only matter of significance to large organisations who spend a lot in terms of research and development activities, but also to small and medium organisations which constitute the majority of global business operations (Demartini & Beretta, 2020).

As the SMEs experience severe resource constraints, they lag behind their larger counterparts in terms of tangible assets and capital. At the same time, they also possess a more dynamic and reactive attitude and a high degree of innovative potentials due to their comparatively lesser scale of operations. It is how they exploit their intangible assets to the maximum potential to compensate for their limited tangible assets determines their success in the current knowledge era.

The extant literature concludes that small and medium firms “need appropriate and up-to-date knowledge to compete” as they are often exposed to “knowledge leakage” (Nunes *et al.*, 2006). The literature also suggests evidence for the strong linkages between knowledge acquisition and firm performance. But the critical question here is how such small organisations acquire relevant knowledge in the absence of adequate capital investments in research and development projects? What all are the ways through which such organisations can acquire knowledge or intellectual capital? What governments and other policy organisations can do to facilitate knowledge transfer to small firms?

This is where the question of open innovation comes into the picture. The scholars of open innovation stress the role of external knowledge sources in improving firms’

innovation performance. The significance of the firms' absorptive capacity in facilitating them to “identify, absorb, and make use of external knowledge” is also emphasised while not negating the importance of in-house R&D (Cohen & Levinthal, 1990; Dahlander & Gann, 2010). Open innovation as a concept applies primarily to big organisations where the knowledge is acquired from external sources apart from the in-house R&D channels to achieve economies of scale and scope. However, some aspects of the open innovation concept can be used to address the questions regarding small and medium firms' knowledge requirements. The literature shows that by nature, the root of the external focus of the innovation in small firms lies in personal and social network relationships (Baum *et al.*, 2000; Ceci & Iubatti, 2012; Edwards *et al.*, 2005). Entering into co-operative relationships with other firms would help them overcome their limitations and achieve competitive advantage (Fassoula, 2006). This evokes the significance of knowledge ecosystems where a large number of similar organisations are agglomerated in limited geographical proximity for sharing resources and knowledge in their pursuit of competitiveness and innovation.

3.2 Industrial Clusters as a knowledge ecosystem

Industrial clusters and other similar concepts are laid on the foundations of the core principles of economies of agglomeration and knowledge sharing. The conceptualisation of industrial cluster comprises the dimensions of geographical agglomeration and institutional and inter-firm networks. The theoretical underpinning of the geographical dimension is that the firms agglomerate in a locality to create external economies (Marshall, 1920). The dimension of the inter-firm networks implies formal market-based transactions as well as informal or untraded transactions between various stakeholders (Brass *et al.*, 2004). Porter (1990) describes the ‘traded interdependencies’ as commercial and production links which can be measured in terms of input-output tables. Whereas

‘untraded interdependencies’ “take the form of conventions, informal rules, and habits that coordinate economic actors under conditions of uncertainty” (Storper, 1995). The relationship between governmental and non-governmental firms and the clustered firms in the cluster is covered in the dimension of institutional networks (Saxenian, 1994).

The general claim about industrial clusters and other similar concepts is that geographical proximity facilitates knowledge sharing and triggers interactive learning and innovation. The earlier literature on agglomeration economies suggests that being a member of extensive local networks and similar cultural environment, all the member firms would benefit from such knowledge spillovers. Marshall and other earlier scholars were also of the opinion that only those firms which are within the geographical limits of the ecosystem would benefit from such knowledge, putting ‘space’ on the focus of the agglomeration debate.

This traditional view was later challenged by many scholars, such as Boschma & Kloosterman (2005). They criticised the traditional scholars for overemphasising the role of geographical proximity in the knowledge transfer process. They argued that by overemphasising geographical proximity, scholars overlook the significance of knowledge creation within the firm and overestimate external linkages and alliances as the key sources of knowledge. It was also criticised that, ignoring that firms may differ in their economic power and absorptive capacity, they are often treated as similar (Boschma & Lambooy, 2002; Cohen & Levinthal, 1990).

Whether the location is still a significant determinant for firms’ competitive advantage, or the networks determine the competition more is a fundamental debate in economic geography (Castells, 1996). This question bears significance in an era where, by the advent of communication technologies, the distance between people and places are

largely reduced. Broekel & Boschma (2012) elaborated this debate in terms of the geography of innovation. They discussed it in terms of the ‘concept of space of places’ and the ‘concept of space of flows’. The concept of space of places states that location or place matters for learning and innovation. This concept essentially means that being in the right place or location is what really matters for a firm to acquire competitive advantage. The notion that transfer and dissemination of knowledge is powered by the networks is the key determinant of the concept of space of flow. Thus, it essentially means that being in the right network matters for a firm to achieve competitive advantage.

In industrial cluster literature, the overlapping of the ‘space of flows’ and ‘space of places’ is evident. Knowledge externalities are believed to be accessible for all member firms as the knowledge networks are geographically localised to a great extent. When related and similar firms co-exist in geographical proximity in large numbers, it is inevitable for them to enter into network relationships for their survival and existence. Some firms may be taking a formal route to facilitate knowledge transfer in terms of joint ventures and R&D partnerships. Even without such formal engagements, there would be a spread of tacit knowledge in the air of the cluster ecosystem. As typical industrial clusters encompass wide varieties of relevant actors contributing to the different activities in the corresponding industrial value chain, people in the ecosystem are often updated with the latest innovations and best practices in the industry.

3.3 Isomorphism as a learning mechanism in industrial clusters

Since the last three decades, theorists have been emphasising the processes through which individual firms are influenced by their peers (DiMaggio & Powell, 1983; Salancik & Pfeffer, 1978). One of the important processes through which such influence is facilitated is inter-organisational imitation, which happens when one or more firms emulate

other firms. The past studies on this phenomenon explored specific mechanisms through which such imitation is being facilitated. DiMaggio & Powell (1983) stated that the movement of employees with professional skills and expert knowledge from one firm to another may cause organisations to imitate the practices being implemented in the other organisations. Davis (1991) and Haunschild (1993) revealed that interlocks of directors in the boards of multiple organisations might also direct inter-organisational imitation to particular firms.

This phenomenon of imitating one organisation's best or relevant practices by another organisation comes under the broader theoretical framework of isomorphism. Hawley (1968) is one of the early scholars to describe the phenomenon of isomorphism. He defined isomorphism as "a constraining process that forces one unit in a population to resemble other units that face the same set of environmental conditions". This approach suggests that, at the population level, organisational characteristics are reformed towards improving compatibility with environmental characteristics. Hannan & Freeman (1977) have contributed heavily to extending Hawley's approach. They argued that isomorphism could happen due to selecting out of non-optimal forms from of population of the organisation.

DiMaggio & Powell (1983) is credited for building a strong foundation for isomorphism theory in the organisational context. Following Meyer (1979) and Fennell (1980), they maintained that isomorphism is of two types: competitive isomorphism and institutional isomorphism. Hannan and Freeman mainly concentrated their intellectual endeavours on competitive isomorphism, assuming system rationality that stresses market competition, fitness measures and niche change. DiMaggio and Powell (1983) believed that such a view is more relevant in those fields where open and free competition exists, and it does not adequately represent modern organisations. To address this issue, they

proposed that it should be supplemented with an institutional view of isomorphism, as Kanter (1972) suggested in her article about the agents forcing communes toward accommodation with the outside world.

According to DiMaggio and Powell (1983), there are three mechanisms through which institutional isomorphic change is facilitated, i.e., mimetic isomorphism, coercive isomorphism and normative isomorphism. They also suggest that all these mechanisms have distinct antecedents. The roots of normative isomorphism lie in the issues of political influence and legitimacy. Standard responses to uncertainty bear mimetic isomorphism, and professionalism determines normative isomorphism. They conceived this typology as analytical rather than empirically distinctive. Thus, even though these three types are originated in diverse conditions and may impart different outcomes, they may intermingle in empirical settings.

Institutional isomorphism is a salient feature of industrial clustering. In a way or other, it facilitates a conducive atmosphere for an organisation to learn, sustain and grow. When many similar or related organisations co-exist in a limited geographical area, there is a high chance that they tend to show isomorphic behaviour. All the three above mentioned mechanisms of institutional isomorphism are prevalent among clustered organisations.

The formal and informal pressures exerted on reliant firms by the relied peer firms or the societal norms in which the firm functions causes coercive isomorphism. (DiMaggio & Powell, 1983). It can be felt as persuasion, force, or an invitation to participate in the collective. In some cases, such behaviour is a direct response to regulatory changes mandated by the government. In the context of industrial clusters, it can be evident in the alliance relationship between large 'leader firms' in the industrial clusters and the 'feeder

auxiliary firms' which are dependent upon them. In any typical industrial cluster, one or more large organisations are often denoted as leader firms who outsource some of their activities in the production value chains to smaller auxiliary units located in the same cluster vicinity. In such circumstances, feeder auxiliary firms are supposed to render their products and services as per the technical and quality specifications outlined by the leader firms. For e.g. in the context of the current research, in the Calicut footwear cluster, a company named VKC acts as one of the prominent leader firms. It was the first footwear firm to be established in that region and further resulted in the sprawling industrial area, which now houses 120+ footwear manufacturing firms. VKC, now a forerunner among the footwear manufacturers in India with an annual sales volume exceeding 20 billion rupees, relies on small organisations in their vicinity for outsourcing some of their production activities. In such instances, these firms are expected to render their services as per the stringent quality and design specifications outlined by VKC. Such formal engagements expose smaller firms to the best practices and technologies adopted by industry leaders, facilitating a great learning experience.

The existence of a common regulatory framework also impacts many aspects of a firm's behaviour and structure. The enforcement of standard operating procedures and legitimised norms and structures also happen outside the governmental jurisdiction (DiMaggio & Powell, 1983). In an industrial cluster, apart from such regulatory compliance requirements, firms are often required to follow certain norms and rules issued by authorised trade associations that function on behalf of clustered firms.

Not all isomorphic pressures derive from coercive forces. Uncertainty also acts as a powerful trigger for isomorphic behaviour. It encourages organisations to imitate other organisation. When organisations are ambiguous about their objectives and the environment exerts uncertainty, some tend to model themselves on other organisations.

Such mimetic behaviour help organisations to find solutions for their impending problems with little expenditure. In this way, small organisations imitate large organisations' actions, and new organisations mimic old organisations. This behaviour also helps them to achieve legitimacy in the industry.

DiMaggio & Powell (1983) used the term 'modelling' to denote the mimetic isomorphic process. Firms tend to model themselves after their peers in the field, which they consider more successful or legitimate. In most cases, the modelled organisation may be unaware of the process and often doesn't even desire to be copied by other organisations. Modelling may happen intentionally or unintentionally. Models can be transferred explicitly through institutions like consulting firms or trade unions or can be unintentionally dispersed through employee turnover. Industrial clusters provide an ideal setting for such mimetic isomorphic behaviour. The natural evolution of an industrial cluster in a region can be credited to mimetic isomorphic tendencies to a great extent. When an organisation starts to function in a region and manages to grow and succeed, people in the vicinity tend to emulate their success through similar new ventures. Quite often, the employees from the first organisation, after acquiring the adequate technical know-how, venture out for such entrepreneurial ventures, resulting in the formation of a critical mass of similar organisations in the locality.

For small and medium organisations with resource constraints to engage in research and development activities, mimetic isomorphism is a popular mechanism for knowledge acquisition. Imitating the best practices and product designs of lead organisations by other organisations is common in industrial clusters. As people and organisations are co-existing in the same locality, each actor is exposed to each other to a great extent. This is more prevalent in those industries, which has less incidence of intellectual property rights and

other stringent copyright regulations. A high degree of mimetic isomorphic tendencies results in homogenous organisations in industrial clusters.

According to DiMaggio & Powell (1983), the third source of isomorphic organisational change is normative pressures. It originates from professionalisation. Professionalisation is referred to as the efforts taken by the members of an occupational group collectively to define the conditions and methods of their profession or work. This is done to control the “production of producers” (Larson, 1977) and create legitimisation and cognitive base for their occupational autonomy. Professionalisation triggers isomorphism through two aspects. One among them is standardising formal education in the domain, and the other being the growth and development of professional networks that spread across organisations and facilitate rapid diffusion of new models.

Like any other business organisation, clustered firms are also not immune to normative isomorphic pressures. Instead, they are subjected to such isomorphic pressures from trade associations and chamber of commerce, and other alliances exist inside a cluster to which they are part, in addition to the usual regulatory pressures from the government and other agencies.

In a way, normative isomorphic pressures are similar to that of coercive isomorphism. They overlap with each other in several aspects. Dacin (1997) merged these two forms of institutional isomorphism to suggest that norms and rules can form the basis for cultural theories, prescriptions or ideologies about how a society works or should work. In that respect, whether it is coercive pressure or normative pressure, it acts similarly from an organisation's perspective. Considering this aspect, following Dacin (1997) and Zhang (2017), the current study combines normative and coercive isomorphism for our analytical framework. Thus, in this thesis, two broader types of institutional isomorphism, i.e.

mimetic isomorphism and normative isomorphism, are considered for theoretical formulations and empirical testing.

3.4 Theories

This thesis's central argument is based on the hypothesis that clustered firms engage in knowledge interactions with relevant stakeholders in the cluster ecosystem for achieving competitive advantage. Though the initial studies on industrial clusters were centred on classical agglomeration theory, the call for research from diverse theoretical perspectives motivated researchers to bring in multiple theories to explore the nuances of the cluster phenomena. This section discusses some of the significant classical theories on industrial clusters and then explores various other theoretical perspectives for laying the theoretical foundation for the thesis.

3.4.1 Classical Agglomeration Theory

The research interest on the concept of agglomeration dates back to 1890, with the publication of Alfred Marshall's *Principles of economics*, in which the agglomeration of economic activity was explained using the concept of economies of scale. According to him, agglomeration benefits from three sets of localisation economies, i.e. pooled labour market with specialised skills, availability of specialised services and inputs, and technological spillovers. This triad of agglomeration benefits was the core of any discussion on industrial clusters since then. Early agglomeration theorists tried to explore the benefits of agglomeration economies by analysing its impact on the spatial pattern of economic activity. Weber (1929) introduced agglomeration in location theory by suggesting the reduction of transportation costs. While early theorists focused on the spatial concentration of firms, later studies on industrial clusters analysed various types of association and linkages that exist within industries (Myrdal & Sitohang, 1957).

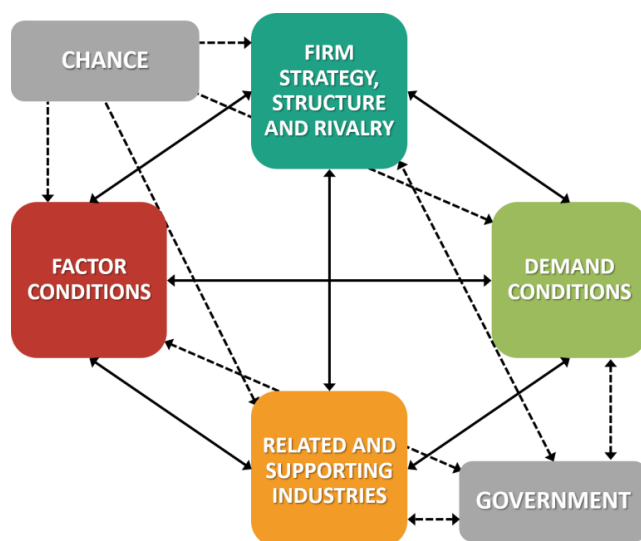
3.4.2 Porterian Cluster Theory

The Competitive Advantage of Nations, published in 1990 by Michael Porter, tried to explain the conditions for a country to achieve competitive advantage in specific business fields. He theorised a diamond of factors that influence the competitive performance of countries (Porter, 1990). Porter's 'Diamond model' is a theoretical framework depicted in a diamond shape, which attempts to explain why companies from some specific regions are able to innovate consistently. He argued that firms' ability to compete at an international level depends on a set of interrelated location advantages that certain industries from specific locations possess. These factors include demand conditions, factor conditions, firm strategy, related and supporting industries and structure and rivalry.

His theory proposed that the functioning of firms in close proximity makes the interaction in the competitive diamond more intensive and effective. Though initially, his theory was conceptualised on the scale of a nation, he later shifted his interest to regions (Swords, 2013).

Figure 3.1

Porter's 'Diamond model'



Apart from these conventional theories on industrial clusters, numerous other theories from various disciplines were also sought to explain the focal arguments in this thesis. Theories regarding social network behaviours are expected to explain how cluster involvement can help firms accrue competitive advantage through mutual learning and interactions.

3.4.3 Social Contagion theory

The origins of social contagion theory lie in psychology. Social contagion happens when individuals' behaviour changes due to their interaction with others (Latané, 2000). Some scholars described this phenomenon as an actor's adoption of behaviour due to their exposure to other actor's attitude, knowledge and behaviour (Van den Bulte & Lilien, 2001). In social contagion phenomena, the behaviour of one or more 'initiator' is spread to an 'imitator'. Extant literature suggests that social contagion is more likely to happen in situations where individuals try to cope with uncertainty (Burt, 1987; Williamson & Cable, 2003). The theory proposes that both internal and external factors trigger the spread of behaviour among actors (Polansky *et al.*, 1950; S. Smith *et al.*, 1964).

Like many prominent psychological theories, social contagion theory is also being sought to explain the behaviour in organisational contexts. The concept of social contagion other than in psychology is most articulated in geography (Cliff & Ord, 1981) and epidemiology (Bailey, 1976) and social network analysis (White *et al.*, 1981). In the current study, we try to probe the possibility of social contagion theory to explain the mimetic isomorphic behaviour of firms in industrial clusters. When a large number of similar organisations co-exist in limited geographical proximity, it is highly likely to have a contagion effect of knowledge, behaviour and attitude across the firms in that locality.

The diffusion of novel ideas and practices are often described to be conditional on how people are brought together by social structure. Innovation is more about embracing risk and uncertainty on costs and benefits. People rely on others to get a socially acceptable understanding of that risk, thus coping with the uncertainty. Social contagion of innovation happens when people co-exist in social structure, relying on each other to cope with the uncertainty of innovation (Burt, 1987).

According to Burt (1987), the interpersonal confluence over which social contagion happens involve one actor, ego, who has not yet embraced a particular innovation, and another actor, alter, who has embraced it. Some aspects of the social structural circumstances of alter and ego make them close to each other, so that ego's assessment of the innovation is sensitive to alter's adoption. Contact, competition and communication are explained as making ego and alter proximate.

Social contagion theory can be used to explain how innovation is being diffused from one firm to another in an industrial cluster setting. In such an ecosystem, people and firms co-locate in close proximity and that alone can facilitate social contagion (Burt, 1987). Closer the physical contact between alter and ego, the chances of alter's adoption of an innovation triggering that of ego will be higher. Just by being in close proximity and witnessing alter's adoption of the innovation, a significant amount of information is transmitted to the ego. However, adoption of innovation always comes with significant cash outlay and associated risks and uncertainty. Being in a cluster ecosystem helps them witness larger successful firms adopting innovative practices and analyse how well they help them achieve competitive advantage. They can not only become aware of the innovation happening in their industry but also can witness the consequences it has for the adopted firms.

3.4.4 Theory of Social Conformity

Most scholars argue that individual behaviour is primarily motivated by various social factors. Extant literature on psychological, social or anthropological studies suggests that social factors tend to produce conformism. Social groups exert pressure on members to behave in a certain way and penalise peoples who deviate from the accepted norms.

Conformity is a type of social influence that involves a shift in behaviour or belief to fit in a social group. This modification in behaviour can be caused by real or imagined group pressure. Crutchfield (1955) defined conformity as “yielding to group pressure”. Such pressures may happen in the form of teasing, persuasion, bullying, criticism etc. The term ‘conformity’ is referred to indicate an alignment of an individual with the majority position either due to the desire for being correct (informational) or by a desire to be liked or to be fit in (normative) or for conforming to a social role (identification).

Conformity was differentiated into three types by Kelman (1958). According to him, the first type of conformity is compliance. It occurs when a person expecting a favourable reception from another person or group, accepts their influence. Thus the induced behaviour makes him be approved or earns him certain rewards and at the same time avoids disapproval or punishment. The second type of conformity is internalisation. It happens when a person accepts influence as the content of the induced behaviour- the ideas and actions of which it is composed are intrinsically rewarding. It involves both public as well as private conformity. As the individual’s belief system becomes mostly indebted to the group's behaviour or belief, this can be considered the deepest level of conformity. The third type of conformity is identification or group membership. When a person needs a self-defining and satisfying relationship with a person or a group, he embraces their influence, thereby identifying with them (Kelman, 1958).

According to Deutsch and Gerrard (1955), people show conformity on the grounds of two reasons. He referred them as normative conformity and informational conformity. In the case of normative conformity, people yield to group pressure as they want to be fit into that group or is afraid of rejection from the group. Normative conformity often involves compliance where an individual adheres to the opinions of the group publicly but reject them in private. Informational conformity happens when an individual is in an ambiguous situation for his lack of adequate knowledge and expects guidance from the group. Informational conformity involves internalisation where a person accepts the group's views and adhere to them as an individual.

Akerlof (1980) and Jones (1984) are among the other few scholars who theorised social conformity. Akerlof points out that the loss of social reputation prevents the aberrations from the accepted social norms, and such reputational effect leads to stable actions. Jones (1984) proposed a conformity model in which utility is contingent on how a person's action differs from the other members of the social group. He argues that this results in the convergence of choice though utility smoothly changes when one diverges from the norm.

The theory of social conformity can be used to explain the normative isomorphic behaviour of firms in the industrial cluster. Being part of the cluster ecosystem and associated trade groups exert normative pressures on participating firms. In their pursuit of legitimacy and survival, new firms try to conform to norms and regulations put forth by corresponding authorities. The small auxiliary firms who supply goods and services to large firms have to comply with the specification standards laid down by the large organisations.

3.4.5 Population Ecology Theory

The population ecology theory is based on the premise that the operation and trajectory of a firm are affected by the environment in which it exists. The theory states that an environment imposes predominant power over the community, and when similar environmental pressures and restrictions are faced by a community, they get adapted to it similarly, finding means to overcome them, and eventually, they achieve identical forms. (Hannan and Freeman, 1986). This theory, later on, becomes the foundation for several other theoretical propositions that continues to guide organisational studies.

One of the significant organisational theories, which has its root in population ecology theory, is the theory of isomorphism. The theory of isomorphism states that firms operating in a common ecosystem or market place eventually will resemble one another. In the context of an industrial cluster, population ecology theory helps us understand the institutional isomorphic behaviour of member firms.

Population ecology theory may also be extended to study the determinants of innovation in organisations. The classical organisational theory approach for understanding the phenomenon of innovation look into internal factors of the organisation, such as incentives and organisational structures that promote or repress innovation. However, the external factors like competition among organisations, external incentives, regulatory framework etc., are analysed in the population ecology approach for understanding the innovation phenomena.

3.4.6 Knowledge-Based View of the Firm

According to the knowledge-based view of the firm, knowledge is considered the most strategically significant asset of any organisation. The exponents of this theory argue that the significant determinants of superior performance and sustained competitive advantage are capabilities and knowledge bases among firms. This theory, which is gaining momentum in the strategic management literature, is built and extended upon the popular resource-based view of the firm (RBV), which was initially proposed by Penrose (1959) and expanded further by scholars such as Wernerfelt (1984), Conner (1991) and Barney (1991) etc.

As per KBV, knowledge is embedded and carried through many entities, including organisational identity and culture, routines, processes, policies, systems, and employees. Competitive and innovative performances are improved only by those firms who continuously strive to secure and update such capabilities and resources.

The knowledge-based view of the firm provides a robust theoretical underpinning for the intellectual capital and organisational learning researchers. The characteristics of most knowledge-based resources are dynamic and intangible, facilitating idiosyncratic development through causal ambiguity and path dependency, which are the foundation of the economic rent creation mechanism in the Knowledge-Based View (KBV) of the firm (Curado & Bontis, 2006). This makes it an ideal theoretical lens to approach the knowledge interaction and organisational learning process in industrial clusters.

3.5 Hypothesis Development

3.5.1 Industrial Cluster Involvement and Innovation Performance of Firms

The literature has well recognised the significance of geography in the diffusion of innovation. It is counted as an essential aspect of the diffusion of innovation theory

(Hägerstrand, 1967). The argument that being in industrial clusters may help firms to achieve innovation performance is based on this spatial aspect of diffusion of innovation theory.

The extant literature lists several reasons to propose the positive relationship between industrial cluster participation and innovation performance of firms. First, as at least some part of the knowledge required for innovation is uncodified and elusive, the spillover of such knowledge in the cluster ecosystem can facilitate innovation diffusion (Audretsch & Feldman, 1996; Feldman, 1994). Second, the high degree of specialisation in the cluster helps the firms concentrate on their limited specialised production processes, exploring potential innovations in their core competency areas (Maskell, 2001; Young, 1928). Third, being in close proximity to rivals exerts competitive pressure on firms and motivates them to improve their innovation performance (Burt, 1987; Porter, 1998). Fourth, as firms in the industrial clusters are in close proximity, they get high chances for engaging in formal and informal linkages, which motivate them to take more risk, which otherwise may not be possible due to a large amount of investment (Bathelt, 2002; Michael Porter, 2003). Fifth, clusters promote creativity by attracting better talents and skilled labour in the ecosystem. Lastly, the economies of externalities, clustered firms enjoy through reduced production costs due to shared infrastructure and minimal transportation costs, help them in improving their profitability, which in turn allow them to invest in more innovative activities (Henderson, 1986; Marshall, 1920; Von Hippel, 2007).

Not all scholars support this popular thesis that clusters spur innovation in the region. As negative externalities such as over competition and congestion are common in clusters, some scholars opined that clustering could also be an impediment to innovation (Baptista, 1998; Brezis *et al.*, 1993). The most striking argument in the cluster innovation thesis, i.e. knowledge externalities spur innovation, was also challenged by some scholars.

They termed knowledge spillover as ‘knowledge leakage’ and argued that it might discourage firms from innovating as other firms may get a ‘free ride’. Another criticism about the cluster innovation theory is that due to rigidity of network relationships in the cluster and the subjection to repetitive information, it may lead to ‘lock-in effect’, which results in restraining a firm's ability to assimilate outside knowledge.

Based on the premises of diffusion of innovation theory and population ecology theory, the current study endorses the popular argument that industrial cluster involvement will help the small and medium clustered firms improve their innovation performance. The study proposes that being in the industrial cluster locality and involving in the industrial cluster activities help a firm to acquire relevant knowledge and improve its innovation performance. To test these assumptions, the following hypothesis is formulated

H1: Industrial cluster involvement is positively related to incremental innovation performance of the clustered firms.

3.5.2 Industrial cluster involvement and organisational learning

As discussed in detail in the previous chapters, one of the prominent notions in the cluster literature is the existence of various knowledge sources in the cluster ecosystem. Knowledge externalities are counted among the reasons why cluster location is considered as a major source of competitive advantage for firms. When organisations interact with their peers collocated in the cluster- ecosystem through formal and informal channels, a sense of trustworthiness is generated, facilitating enhanced knowledge exchange between those firms (Ostrom & Walker, 2003).

Active participation in such networks facilitates the creation of new ideas and innovation by sharing knowledge, not only for new firms but also for mature organisations (Bessant, 2005). Clusters provide a conducive platform for exploiting various knowledge

channels through different institutional mechanisms available in the cluster. Most of the clusters have training institutes and universities in their vicinity specialised in that particular domain. Such institutes also trigger knowledge spillover in the cluster. Interfirm mobility of labours in the locality also acts as a potential channel for knowledge spillover.

The creation and acquisition of knowledge as the source of competitive performance is the key principle of the Knowledge-based view of the firm. Widespread belief in the cluster literature is that firms benefit from knowledge spillover just by being in the cluster location. However, there are also arguments that though firms may benefit from the tacit knowledge available in the cluster air, it depends heavily on how proactively firms engage with the cluster activities to leverage such resources. To test how the degree of involvement in cluster activities by a firm influences its organisational learning performance, the following hypothesis is proposed.

H2: *Industrial cluster involvement is positively related to the organisational learning performance of the clustered firms.*

3.5.3 Industrial cluster involvement and isomorphic behaviour of firms

Population ecology theory, social conformity theory and social contagion theory can together explain how a clustered firm's behaviour is modified by being in a cluster environment. Industrial clusters facilitate such an ecosystem where a large number of similar organisations are exposed to similar restrictions and pressures. To achieve legitimacy and survival, in such situations, organisations tend to behave in a similar manner. This phenomenon of one organisation resembling one another to face similar challenges is termed as institutional isomorphism. Zhang & Hu (2017) argues that clustered forms show institutional isomorphic behaviour as a mechanism for knowledge searching. In line with Zhang & Hu (2017), and on the premises of population ecology theory, the

current study argue that the involvement of a firm in industrial cluster activities would be positively related to its isomorphic behaviour. Unlike Zhang &Hu (2017), who doesn't employ any variable to measure industrial cluster involvement of firms, but just collected data from clustered firms to indicate cluster participation, we used variable ' industrial cluster involvement' to measure the degree of involvement in industrial cluster activities.

We followed Zhang&Hu (2017) to use two categories of institutional isomorphism in our framework: normative isomorphism and mimetic isomorphism. As discussed earlier, mimetic isomorphism refers to the phenomenon where one organisation mimics another organisation's actions and practices for achieving legitimacy and existence. Due to this behaviour, the ideas and best practices of big or old lead organisations in the cluster are often copied or mimicked by a new or small organisation. In the current study using social contagion theory, we analyse the mimetic isomorphic behaviour of firms in the industrial clusters. When many similar organisations co-exist in limited geographical proximity, it is highly likely to have a contagion effect of knowledge, behaviour and attitude across the firms in that locality. To test these assumptions, the following hypothesis is being formulated.

H3 : *Industrial cluster involvement is positively related to mimetic isomorphic behaviour of the clustered firms.*

The theory of social conformity can be used to explain the normative isomorphic behaviour of firms in the industrial cluster. Being part of the cluster ecosystem and associated trade groups exert a high degree of normative pressures on participating firms. In their pursuit of legitimacy and survival, new firms try to conform to norms and regulations put forth by corresponding authorities. The small auxiliary firms who supply goods and services to large firms have to comply with the specification standards laid down

by the large organisations. To test these assumptions, the following hypothesis is being formulated.

H4: *Industrial cluster involvement of a firm is positively related to its normative isomorphic behaviour.*

3.5.4 Organisational isomorphism and organisational learning

The relationship between isomorphism and learning is a well-researched area in cognitive psychology. Researchers overwhelmingly acknowledge the significance of isomorphic behaviour, such as the tendency for imitation, in the human learning process and facilitating our capacity for cumulative culture (Legare & Nielsen, 2015). Like many other psychological and cognitive theories, these aspects of human behaviour are also brought into organisational context, in the scholarly pursuit to understand how organisations learn and behave to external challenges.

Like humans, organisations also try to learn by imitating others. Such isomorphic behaviour is adopted as a strategy by new or small firms to achieve legitimacy. One stream of the literature suggests that the information acquisition of firms and individuals is facilitated by observing each other's actions. It tempts them to imitate their peers' actions that are perceived as successful (Bikhchandani *et al.*). Actors in such communities act similarly with the assumption that similar actions create mutual positive externalities for all the stakeholders involved (Banerjee & Besley, 1990; Katz & Shapiro, 1986).

Even though all these were written in the general industrial scenario, all such claims hold water in the industrial cluster context due to the high incidence of isomorphic tendencies among the clustered firms. The mutual interdependence among the firms in the cluster may result in multiple equilibria such that social norms forms to coordinate the selection of certain particular equilibrium (Kandori *et al.*, 1993). The geographical

proximity facilitated by organisational clusters promote such tendencies and serve as a primary source of their knowledge searching process. Both normative and mimetic isomorphism substantially affect the exploitative and explorative knowledge search of clustered firms (Zhang & Hu, 2017). Though there is a long tradition of studying the antecedents and outcomes of isomorphic strategies in the institutional theory literature, the relationship between organisational isomorphism and organisational learning has not been seen to have empirically tested. In the backdrop of the above theoretical arguments, the current study proposes the following hypothesis for empirical testing.

H5: Mimetic isomorphism of a clustered firm is positively related to its organisational learning

H6: Normative isomorphism of a clustered firm is positively related to its organisational learning.

3.5.5 Organisational learning and Innovation performance

Organisational learning refers to a whole set of processes an organisation undertakes to create and use knowledge for improving competitive advantage. It involves acquiring and sharing appropriate information on customers' needs, changes in the market, competitors' actions, and new technological development for creating new products for achieving competitive advantage above the competitors (Davis *et al.*, 2005). According to Weerd-Nederhof *et al.* (2002), learning is an integral part of innovation. Thus, an organisation committed to learning would likely have the best possible technology that can improve its innovative potential in processes and products (Calantone *et al.*, 2002; Heijs, 2004).

Organisational learning focuses on how the firms adapt to their environments, acquire new knowledge, and realise competitive advantage. It is often viewed as a process

by which firms as collectives learn through interaction with their environments (Kandemir & Hult, 2005). This makes organisational learning a crucial link in the industrial cluster-innovative performance hypothesis. Industrial cluster facilitates such knowledge interaction and provides the firms with a conducive environment for learning and development. To test this assumption, the following hypothesis is proposed.

H7: Organisational learning is positively related to the innovative performance of clustered firms

3.5.6 Mediation hypothesis

As already mentioned in the previous sections of this thesis, the current study's broader objective is to propose and test a comprehensive theoretical framework to explain how the degree of involvement in cluster activities influences SMEs' innovation performance in cluster ecosystems. Grounded on the theories such as population ecology theory, social conformity theory, social contagion theory and knowledge-based view of the firm, Hypothesis 1 to 6 proposes various paths through which each of the focal constructs are connected and provide an overarching framework to model cluster-innovation relationship. For a nuanced understanding of how each of these constructs influences each other and if some of them act as a potential channel through which the effect of industrial cluster involvement on innovation performance is mediated, the following hypotheses are proposed.

H8: Organisational learning mediates the relationship between industrial cluster involvement and incremental innovation of clustered firms.

H9: Mimetic isomorphism and organisational learning mediate the relationship between industrial cluster involvement and incremental innovation of clustered firms.

H10: *Normative isomorphism and organisational learning mediate the relationship between industrial cluster involvement and incremental innovation of clustered firms.*

3.7 Conceptual Framework

The hypothesis proposed in the previous section is diagrammatically depicted as a conceptual framework, as shown in Figure 3.2

Figure 3.2
Conceptual framework

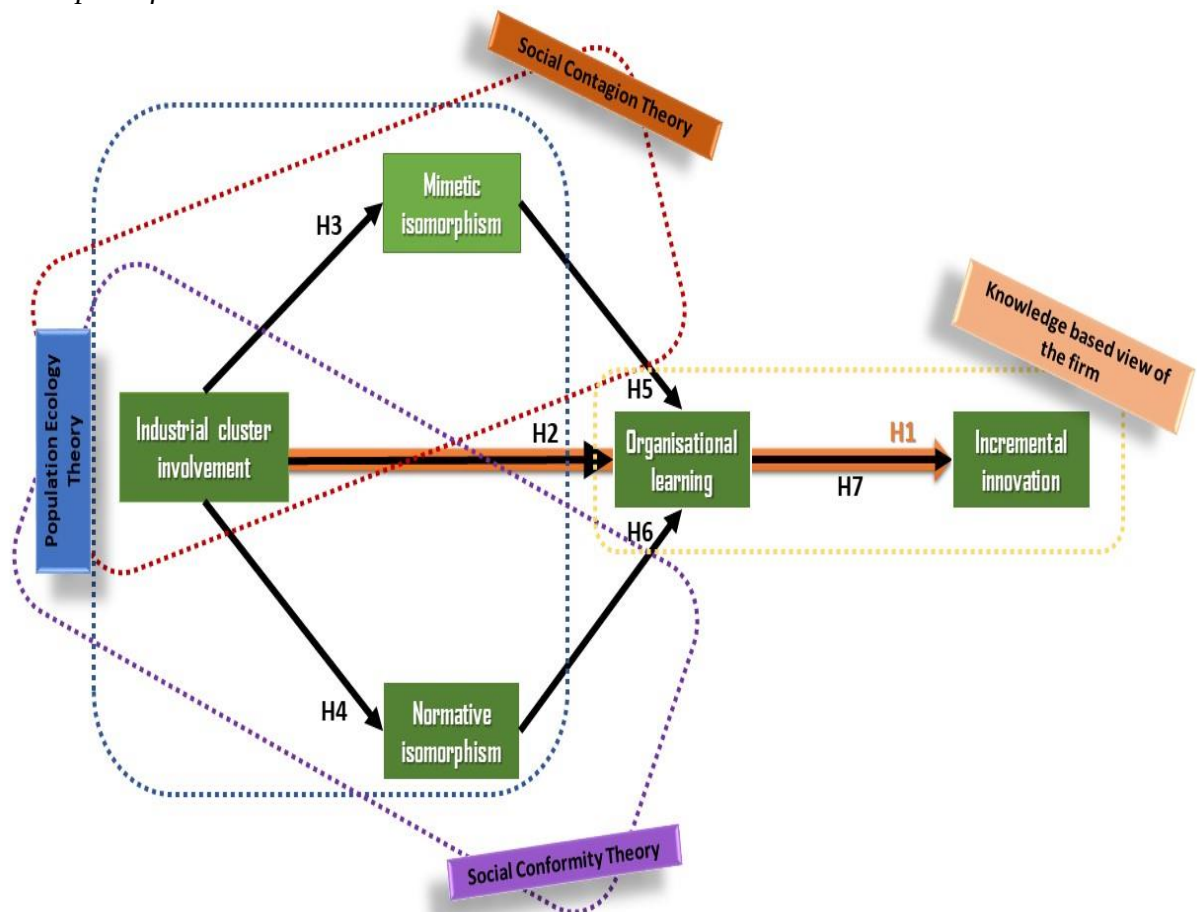


Table 3.1
Hypothesis

Hypothesis	Hypothesised relationship
Hypothesis 1	Industrial cluster involvement is positively related to incremental innovation performance of the clustered firms.
Hypothesis 2	Industrial cluster involvement is positively related to organisational learning performance of the clustered firms.
Hypothesis 3	Industrial cluster involvement is positively related to mimetic isomorphic behaviour of the clustered firms.
Hypothesis 4	Industrial cluster involvement is positively related to normative isomorphic behaviour of the clustered firms.
Hypothesis 5	Mimetic isomorphic behaviour is positively related to organisational learning of clustered firms.
Hypothesis 6	Normative isomorphic behaviour is positively related to organisational learning of clustered firms.
Hypothesis 7	Organisational learning is positively related to incremental innovation performance of clustered firms.
Hypothesis 8	Organisational learning mediates the relationship between industrial cluster involvement and incremental innovation of clustered firms.
Hypothesis 9	Mimetic isomorphism and organisational learning mediate the relationship between industrial cluster involvement and incremental innovation of clustered firms.
Hypothesis 10	Normative isomorphism and organisational learning mediate the relationship between industrial cluster involvement and incremental innovation of clustered firms.

Chapter Summary

The present chapter discussed the literature on knowledge interactions in industrial clusters and how it impacts the innovation performance of member firms. Further, the chapter integrated evidence from the literature to propose a comprehensive framework for the cluster- innovation relationship, grounded on relevant theories for empirical testing.

Chapter 4

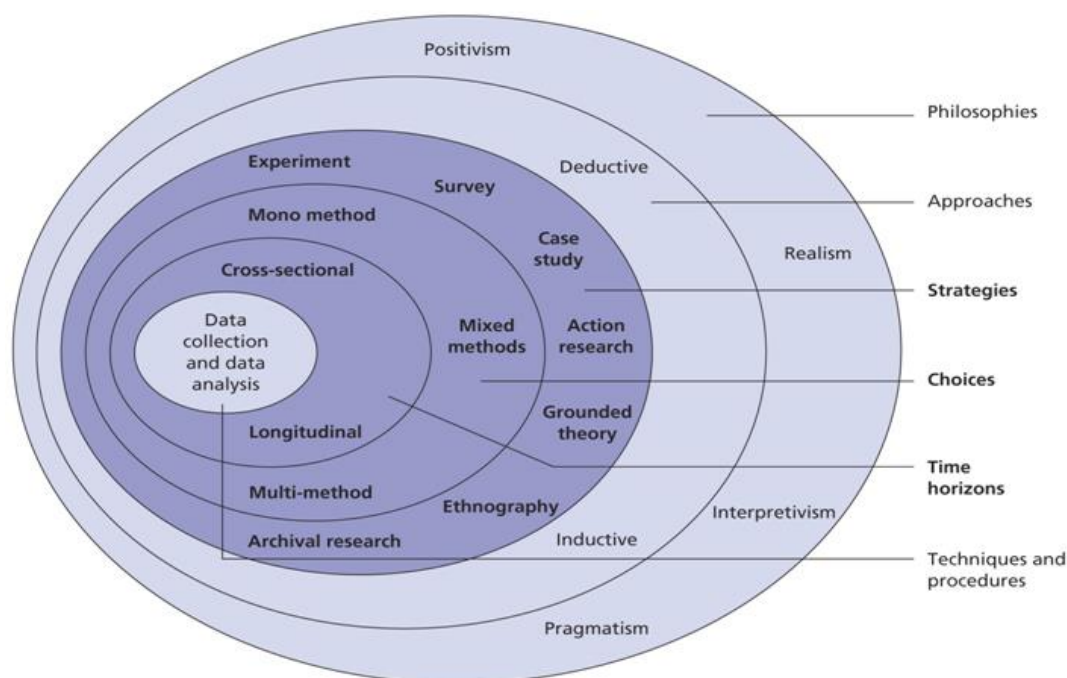
RESEARCH METHODOLOGY

This chapter constitutes a detailed description of the methodology adopted for the present study. It employs a research design as per the research framework proposed by Saunders & Lewis (2012), which illustrates the research paradigm grounded on the philosophical assumptions and rationalises the choice of methods in relations to the research questions. It also addresses the issues of validity, reliability, replicability and generalisability, collectively acting as the litmus test for evaluating social research. The chapter also outlines the sampling framework adopted for the study and the procedure followed in administering questionnaire preparation and data collection. The remainder of the chapter describes the choice of data analysis techniques used in the current study.

4.1 Research Typology

Saunders & Lewis (2012) proposed an ‘onion framework’ to elicit various aspects of the research process, from the formulation of research questions to data collection and analysis. This framework helps the study locate itself in the respective realms of knowledge production by rationalising the choice of methodologies and assumptions adopted across the research locus. The following diagram illustrates different elements that constitute the layers of the onion framework, i.e. research philosophy, research approach, research strategy, choice of methodology, time horizon and collection and analysis of data.

Figure 4.1:
Research typology (Saunders et al.,2012)



The following sections explain each layer of the onion framework to present a vivid picture of the current study's research design.

4.2 Research Philosophy

Research philosophy sheds light on the nature and development of the knowledge about the questions of interest. In the physical sciences, there appears a consensus that the ultimate objective of the research endeavour is to pursue universal explanations. Hence, most science philosophers would agree upon the ends of science even if they have a conflicting view of the means to achieve them. However, the social sciences do not enjoy this degree of consensus. The fundamental disagreement resonates with the primary debate of whether the same kinds of explanatory objectives can be applied for social phenomena as for physical phenomena. It is well accepted that inquiry about social phenomena requires

different standards and a specific conceptual framework based on which social investigation can be carried out (Williams & May, 1996).

In management studies and other such fields of social enquiry, research should be driven by notions about what facilitates an explanation and understanding of the social phenomenon (Keat & Urry, 1982). *Ontology* and *Epistemology* are the two ways of examining it. Ontology deals with the nature of reality, whereas epistemology refers to what makes acceptable knowledge. These concepts are drawn from the seminal work by Burnell & Morgan (1979) in which they postulated four paradigms such as pragmatism, positivism, realism and interpretivism. To carry out solid social research, the research questions and research design choice should be shaped by certain epistemological and ontological assumptions.

According to Shapiro & Wendt (1992), the fundamental questions the researchers confront include whether, by deducing observable facts, the phenomenon of the social world be explained? (Positivism or empiricism); should these explanations be anchored in the self-understandings of people? (Interpretivism) or it should be drawn on whatever it facilitates to alter the state of affairs in the world? (Mirroring both deductivism and instrumentalism). Considering the complexity of the social world, it is quite a difficult task to answer these questions. Building the foundations of the research on the answers to these fundamental questions would ensure the aptness of the methodologies and protocol adopted. As we have already stated, ontology deals with the nature of reality. The vital concern here is to analyse whether social entities can be treated as objective entities which embody reality independent of social actors.

The literature on industrial clusters find its place under the broader umbrella of entrepreneurship and draws upon several disciplines, i.e., from strategic management to

economic geography. As most of the management disciplines, entrepreneurship also has been showing a tendency towards positivism due to the influence of psychology and economics on its evolution. This prompted the scholars in the domain to believe that it is possible to lay claims to natural science's perceived virtues like universality, rationality, value-free knowledge, and objectivity (Leitch *et al.*, 2010). This is not just confined to management studies or entrepreneurship studies but is a part of a more extensive project for bringing in more objectivity in social science research. Thus, the appeals for more objectivist research in entrepreneurship such as those by Davidsson (2003) follow this current trend "of (unthinkingly) adopting methods assumed to be successfully utilised in the natural sciences or somehow thought, on an a priori basis, to characterise proper science" (Lawson, 1999). As a result, entrepreneurship researchers tend to be more focused on defining their object of study (e.g., opportunity recognition, entrepreneurial propensity, innovation performance, etc.) and selecting data collection protocols than their work's underlying philosophical assumptions.

Thus, it is always ideal for researchers to be reflexive about their research project to moderate the choice of philosophical grounding and the actual research process by learning about significant research philosophies and their underlying assumptions (Alverson & Skoldberg, 2000). Isaeva, Bristow and Saunders (2015) proposed an intuitive tool, namely "Heightening your Awareness of your Research Philosophy" or HARP, which helps researchers introspect their values and beliefs regarding the study and rationalise its fit with a specific research philosophy. Realising its significance, this tool is used in the current study to align this research in its philosophical context (Appendix 1).

Using the inferences from HARP evaluation and the critical assessment of different research philosophies, this study is aptly positioned in the positivistic paradigm. Accordingly, the study maintains an objective orientation and uphold that the reality should

be independent of social actors. To realise this objectivity, scientific methods are employed to test and explain cause-effect relationships between focal variables.

4.3 Research Approach

This thesis follows a hypothetico - deductive approach, i.e. the study hypotheses are deduced from the existing body of knowledge in a particular area (i.e., entrepreneurship and industrial clustering in the current research context) and then converted into operational terms. Here, the research begins with developing a theory from the reading of extant literature in the concerned domain and then a research strategy is devised to test that theory. The process of operationalisation helps to facilitate the measures of the concepts under study with maximum possible objectivity.

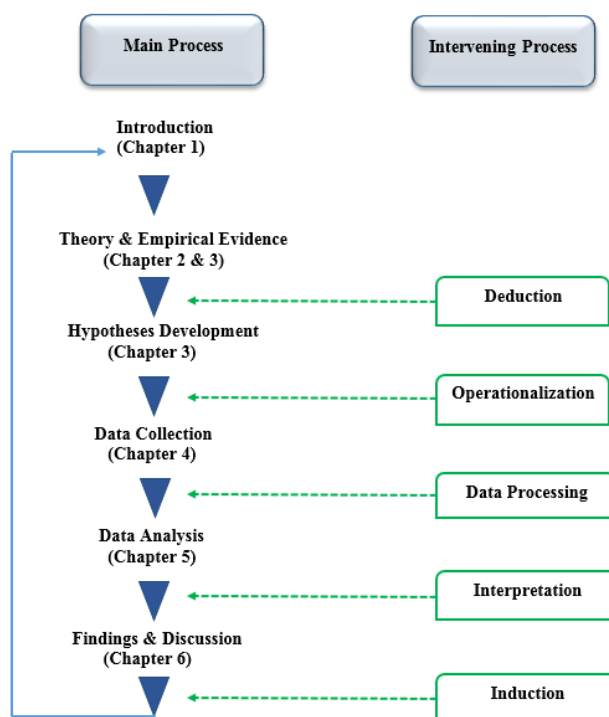
Blaikie & Priest (2019) enumerates six steps involved in the deductive approach:

1. Propose a tentative idea, a hypothesis or set of hypothesis to develop a theory.
2. Drawing from the review of extant literature and delineating the probable conditions in which the proposed theory is anticipated to work, deduce testable proposition(s).
3. Analyse the premises of the proposed argument and the rationale behind it to compare it with prevailing theories to verify that it offers an incremental understanding in the domain.
4. These premises should be tested by collecting relevant data for measuring the study variables and analysing them.
5. The proposed theory is deemed false if the analysis's outcome is not consistent with the set premises and must either be rejected or modified.

6. Likewise, the proposed theory is validated if the results are proven consistent with the set premises.

Deduction possesses certain significant characteristics and steps (Blaikie & Priest, 2019). It begins with the search to elucidate the causal relationships between variables and concepts. Here, the current study wishes to establish the relationship between a firm's involvement in industrial cluster activities and their incremental innovation performance facilitated through various knowledge interactions. After a critical review of the extant literature on industrial clusters, the thesis proposes a relationship between industrial cluster involvement and participating firms' innovation performance. A number of hypotheses are developed, including one that states that firms' innovation performance is significantly more likely to be higher for firms that are more actively involved in industrial cluster activities. To test these propositions, empirical data is collected from firms across India's different industrial clusters and is statistically analysed.

Figure:4.2
Research process (adapted from Bryman, 2012)



4.4 Methodological Choice

The choice of methodology for any research should be driven by research philosophy and approach. It can be either quantitative, qualitative or mixed (Alvesson & Sandberg, 2011). One of the main ways of differentiating between these methods is based on numeric and non-numeric data. The data collection technique or data analysis procedure that involves the generation or usage of numerical data is often referred to as quantitative. Simultaneously, ‘qualitative’ is often seen as synonymous with those data collection techniques or data analysis procedures that involve non-numerical data. This distinction is problematic to an extent as in many disciplines like management, most of the research designs transcend these boundaries and often use both. Here in this research, a significant portion of the data is collected using a standard questionnaire consisting of ‘closed-ended questions’ adopted from existing psychometric scales for measuring respective study variables. This makes the thesis predominantly quantitative, which is ideal for answering the present study’s research questions. Apart from this, the respondents were also asked to answer some ‘open-ended’ questions in their own words. Moreover, some in-depth interviews were also conducted with other relevant stakeholders to delve into the underlying aspects of the phenomenon. This ‘qualitative’ data is also used to complement the research findings and draw certain additional inferences.

The highly structured nature of quantitative research with predetermined data collection techniques makes it ideal for the positivist view. It is generally associated with the deductive approach as the ultimate objective is to test the proposed theory. As we have already discussed, the predominantly quantitative nature of the data collection protocol facilitates the positioning of the current research into a positivist paradigm. Simultaneously, it also enjoys some virtues of the interpretivist philosophy as it uses some non-numerical data and other qualitative attributes.

A quantitative research design may be either of mono method or multi-method. It is referred to as the mono method when it employs a single data collection technique (e.g. questionnaire) and its relevant quantitative analytical procedure. When a research design uses more than one quantitative data collection technique and a corresponding analytical approach, it is termed a multi-method quantitative study. In that sense, the methodology adopted for this thesis is mono-method quantitative research.

4.5 Research Strategy

A research strategy is an overall plan of how a researcher will conduct his/her research project. It bridges the research's underlying philosophy and methodological choice to collect and analyse data (Denzin & Lincoln, 2011). Some of the prominent research strategies include experiment, survey, ethnography, action research, archival research, case study, grounded theory and narrative enquiry.

As it is already discussed, quantitative research is associated with survey research and experimental strategies. The current study uses the survey method as the research strategy. Conducting surveys using questionnaires is very popular in business and management research. It allows the researcher to collect relevant data in a standardised form from a large population in a viable way and enables easy comparison (Saunders *et al.*, 2016).

The survey strategy permits the researcher to collect data suitable for quantitative analysis using inferential and descriptive statistics. This collected data can be used to identify potential reasons for specific relationships between study constructs and make models of these relationships. This strategy helps the researcher to derive findings that are statistically representative of the population if adequate time and efforts are taken to ensure

that the sample is representative, and the data instrument is designed and appropriately piloted, and the response rate is reasonable.

4.6 Time Horizon

The research studies can be categorised into two based on time horizon, i.e. cross-sectional and longitudinal. Cross-sectional research involves collecting data from the respondents at one point of time only, whereas data is collected at multiple time points in the case of longitudinal studies.

Though the current study acknowledges the strengths of the longitudinal research designs, a cross-sectional data collection method was deployed here. This choice is governed by the constraints of data access, time and resource. The current study finds relevant respondents from footwear manufacturers across major footwear industrial clusters in India. As these industrial clusters spread across the country, getting the data collected once is a tiresome task and incurs a lot of time and money. It is evidently unfeasible to carry out the whole data collection exercise multiple times. Apart from this, since the access to owners / senior managers of these firms were contingent, there is always uncertainty regarding future access. Besides, longitudinal studies on small businesses seeking insights into the dynamics of how they grow over time are limited due to high levels of business attrition (Farhat *et al.*, 2017)

4.7 Data Collection

As it is already discussed, the current study employs a survey method for data collection. A survey can be defined “as a method of data collection that utilises questionnaires” (Ghauri & Grønhaug, 2005). A survey is a useful tool for capturing people’s attitudes and opinions (Briman, 2004). The following steps are involved in the conducting of a survey:

- Setting the sampling frame
- Deciding the mode of administration
- Developing relevant questions
- Reviewing the questions and checking the face validity
- Conducting a pilot study and revising questions
- Finalising questionnaire
- Selecting the sample from the population
- Administration of the questionnaire
- Data entry of the completed questionnaires
- Analysis and Interpretation of findings

4.7.1 *Sampling frame*

The current study data were collected from 496 footwear manufacturing firms situated at four major footwear clusters in India. The footwear clusters considered for the study are Chennai, Agra, Kolkata and Calicut. A purposive sampling approach was used for selecting the sample firms from these clusters. Though the study acknowledges the strengths of probability sampling, the choice of purposive sampling was governed by access constraints.

All four major footwear clusters considered for the study spread across the length and breadth of the country. Their modus operandi of administration is distinctively different from each other due to historical and cultural reasons. All these clusters are renowned as significant hubs of footwear manufacturing in Asia. Each of these clusters accommodates hundreds of formal and informal enterprises in close geographical proximity that involves in any of the various activities in the footwear value chain. From tiny industrial units that run from the households' backyard to large export enterprises, their size and scale of operation are also diverse. As the study seeks to answer the pivotal question of whether this cohabitation of firms in proximity triggers knowledge diffusion in

the milieu and facilitates the improvement of innovation performance of the participating firms, we had to get the respondents from each firm who are at the helm of affairs of the respective firms. To draw contours for the sample frame, and facilitate easy comparisons and further analysis, the study selected the sample from those involved in the manufacturing of finished footwear and located in the select cluster's geographical vicinity. The study doesn't consider the auxiliary firms, machinery suppliers, raw material suppliers etc., although they play a pivotal role in the cluster ecosystem. This decision was governed by the realisation that to assess firm-level innovation performance; it would be ideal to have those firms who are into manufacturing and are bound to come up with new products regularly.

In the initial phase of the study, the plan was to consider all varieties of firms located in the footwear cluster that engage in any activities relating to footwear production. But when the pilot study was carried out, it was evident that the activities of most of those firms who are not into the manufacturing of finished products are driven by the demand created by those who manufacture finished products. In other words, most of these ancillary units and suppliers of raw materials and machinery are acting as a feeder to the footwear manufacturing value chain, which is driven by actual manufacturers. Apart from this, it was also felt that if the data is collected from all these varieties of firms, it would be challenging for comparisons and further analysis.

Data were collected from owners/ senior managers of these organisations. Most of these firms are SMEs, and owners themselves often take-up managerial roles for day-to-day activities. The study constructs like industrial cluster involvement, organisational isomorphism, organisational learning, incremental innovation etc., comprise the respondent's perceptions of the concerned organisation and thus best studied by asking the relevant respondents, the owners / senior managers.

4.7.2 Mode of administration

This study deployed a self-administered questionnaire survey for data collection. At the outset, the researcher described the research objectives to the respondents and then the survey questionnaire was administered to them. This introduction provided the necessary background for the study to the respondents and allowed clarifying their queries or doubts. The researcher had visited all these clusters in person, and most of the questionnaires were distributed and collected in person.

While there are sampling and data quality advantages for surveying in person, like a higher response rate and a better rapport between respondent and researcher, it also poses certain disadvantages as it is expensive and time-consuming. Considering this, the researcher also attempted to reach out to maximum respondents by sending the e-mail version of the questionnaire using google forms. Help was sought from several government offices and manufacturer's associations to get the addresses of relevant firms and access them. A visit to the office of the Council for Leather Exports (CLE) at Chennai in this regard was very fruitful as they provided a detailed members directory. Their directory enlisted all the member firms who are engaging in leather or related business activities. From this list, the researcher selected footwear manufacturing firms located at any of the chosen clusters and sent an e-mail questionnaire to them. Before sending the mails, the researcher called the potential respondents over the phone and briefed them regarding the research background and sought their willingness to participate. The offices of the Confederation of Indian Footwear Industries (CIFI), South India Shoe Manufacturers Association (SISMA), Agra Footwear Manufacturers and Exporters Chamber (AFMEC) and Footwear Manufacturers Association of Kerala (FOOMA) helped the researcher throughout the research journey in providing the necessary information and contact points.

4.7.3 Preparation of Questionnaire

The current study adopted the methodology suggested by Churchill and Iacobucci (2002) to develop and validate the survey questionnaire. As per Churchill and Iacobucci (2002), the first step in developing the questionnaire is the specification of information sought. It begins with the determination of questions which is ideal for elucidating the situation. Here, the questions were drawn from the study constructs explained in the conceptual framework presented in chapter 3. These key constructs include industrial cluster involvement, mimetic isomorphism, normative isomorphism, organisational learning and incremental innovation. Furthermore, to get a greater understanding of the respondent profile/enterprise profile, some preliminary questions about their demographic aspects were also added.

4.7.4 Deciding the type of survey questionnaire and the method of administration.

A structured questionnaire mainly comprising of closed-ended questions was used in the study as it is thought to be ideal for addressing the research question put forth by this thesis. It includes a ‘standardised’ and predetermined or identical set of questions. As the current study is descriptive, a structured interview facilitates the identification of general patterns. As the present study’s research design uses a deductive approach for theory testing, the data collected in standardised form using structured questionnaires would make it easier for testing hypothesis or statistical propositions (Saunders *et al.*, 2016). Furthermore, it also allows the researcher to control each questionnaire’s length and ensure that all respondents are exposed to the same stimuli and questions are in the same order for ensuring the maximum degree of uniformity (Saunders & Lewis, 2012).

Saunders *et al.* (2016) suggest two ways of administering the survey questionnaire, i.e. self-administered and interviewer-administered. In the case of self-administered, the

questionnaire is being sent through the internet or post. In contrast, the interviewer-administered questionnaire is usually carried out through face to face / and telephone interview. The present study is predominantly interviewer- administered.

3.7.5 Operationalisation of the constructs

Chapter three of the thesis laid down the theoretical foundation and literature backup for the current study. The conceptual framework and the corresponding theoretical propositions were evolved from the critical review of extant literature. It is significant to operationalise the study variables to test the propositions and facilitate the measurement of the study variables. In simple terms, the operationalisation of the constructs is nothing but the process of transferring theoretical concepts to measurable variables. As single item measures suffer significant drawbacks, all the key study variables under the current study were operationalised as multi-item scales. All these scales were adopted from existing literature and were subjected to language modifications to make it appropriate for Indian conditions. A five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree) was used for each of the key variables.

3.7.5.1 Industrial Cluster involvement

Industrial clusters can be broadly defined as "Geographic concentrations of interconnected companies and institutions in a particular field. Clusters encompass an array of linked industries and other entities important to competition. For example, they include suppliers of specialised inputs such as components, machinery, and services, and providers of specialised infrastructure. Clusters also often extend downstream to channels and customers and laterally to manufacturers of complementary products and to companies in industries related by skills, technologies, or common inputs. Finally, many clusters include

governmental and other institutions--such as universities, standards-setting agencies, think tanks, vocational training providers, and trade associations." (Porter, 1998).

Industrial cluster involvement has been measured using a 14 item scale adopted from Cheng, Niu, & Niu (2014) which is based on the theoretical propositions put forth by Tallman, Jenkins, Henry, & Pinch (2004). Sample items in the scale include "Firms within this industrial cluster often engage in subcontracting with other buyers and suppliers" and "The social network relationship among the companies and labours in this cluster are not based on purely economic or transactional relationships".

4.7.5.2 *Organisational Isomorphism*

Organisational isomorphism can be defined as “the constraining process that forces one unit in a population to resemble other units that face the same set of environmental conditions”. As we have already discussed in chapter 2, three types of isomorphism result from the robust organisational environment: normative, coercive, and mimetic. (DiMaggio and Powell, 1983). But most of the studies highlight one or two types only (Zhang & Hu, 2017). In line with Zhang & Hu (2017) and Dacin (1997), the present study combines normative and coercive isomorphism and splits organisational isomorphism based on market and non-market forces on it as mimetic and normative isomorphism.

The current study operationalises the *normative isomorphism* as “it stems from formal and informal pressures exerted on organisations by other organisations on which the focal firm depends, including the cultural expectations in the society and professionalisation trends that define the condition and methods of work” (Zhang & Hu, 2017b). At the same time, *mimetic isomorphism* indicates the emulation of other firms. It implies that if a focal organisation lacks proper technological understanding, exact functions or goals in an uncertain environment, it might tend to model itself on other firms.

By this, it learns to imitate those firm's behaviour or form, which they perceive as successful examples in the pursuit of legitimacy (Dacin, 1997; DiMaggio & Powell, 1983).

Normative isomorphism has been measured using a six-item scale from Zhang & Hu (2017), which highly depends on the studies of DiMaggio and Powell (1983), Wang (2001), Deephouse (1996) and Lu (2002). The sample items in the scale include "The operation of our firm is influenced by the relevant policies and regulations of the government" and "The restriction strength among peers makes the operation mode of our firm abide by industry regulations".

Mimetic isomorphism has been measured using a four-item scale adopted by Zhang & Hu (2017). This scale measures the three aspects of memetic isomorphism, i.e. trait-based imitation, frequency-based imitation and outcome-based imitation. The sample items in the scale include "The practitioners of the industry often mimic each other" and "Our firm often mimics the benchmarking enterprises in the industry".

4.7.5.3 *Organisational learning*

Organisational learning is associated with "finding a balance between developing, transferring and accessing information within a company, which facilitates each organisational unit to apply appropriate knowledge to its existing knowledge base and to create new additions" (Pfeffer & Sutton, 2000).

Organisational learning has been measured using an eight-item scale replicated from Niu, Miles, & Lee (2014), which consists of items from the scale proposed by Duffy (2000) and Bontis *et al.* (2002). The sample items from the scale include "Our Company frequently acquires information or knowledge from outside the company" and "Our Company receives valuable information or knowledge by benchmarking".

4.7.5.4 Incremental Innovation

Incremental innovation can be defined as “the ability of the firm to improve processes in its existing products and services” (Tomás-Miquel *et al.*, 2018). It has been measured by adapting a seven-item scale by Jansen *et al.* (2006). The sample items on the scale include “reducing the costs of internal business processes is a major goal in your company” and “your firm improves the efficiency of your supplies of products and services”.

4.7.6 Form of response to each question

After operationalising each key study constructs, the next step is to decide the form of response for each question in the questionnaire. The current study uses closed-end questions as it is easier for respondents to answer and takes comparatively less time. Here, the respondents are given ready-made response options to choose from. Their coding and tabulation are direct and straight forward, leaving no room for rater subjectivity. It reduces the data processing cost as respondents are given the choice of selecting only one answer, not multiple answers or option for free writing (Oppenheim, 1992). This method is ideal for quantitative studies like this, as the responses can efficiently be coded and can be used for statistical analysis (Dörnyei & Taguchi, 2009).

There are different types of closed-ended questions. Rating scales, multiple-choice items, numeric items, and checklists- to name a few. Rating scales are the most popular among them. Here, the respondents are required to make an evaluative judgement of the target by selecting one of a series of values arranged as a scale. The different points on the continuum of the scale denote distinct degrees of certain category like attributes, intensity, opinion etc. The most popular scaling technique is the Likert scale (a reference to the inventor Rensis Likert). The Likert scale comprises statements connected to a particular

target (Here, it is the focal organisation and the respective cluster). Respondents are instructed to mark the degree to which they agree or disagree with the given statements by selecting one of the responses ranging from strongly agree to disagree strongly (Dörnyei & Taguchi, 2009)

In the current study, the entire questionnaire was divided into seven parts. The first section of the questionnaire included questions about the company's profile, and each of the remaining six sections had scales of each key study variables. Questions in the first section are either open-ended, dichotomous and multichotomous, and the remaining sections consisted only of rating scale measurements. A five-point Likert scale was used to seek information from relevant respondents regarding all key study constructs.

4.7.7 Question wording

One of the significant concerns associated with the research involving the survey method is the quality of response, as the respondents may misunderstand the questions due to inappropriate or technical wording and phrasing. This prompts the respondents either to skip a few questions or to answer them as per their limited understanding, which ultimately dilutes the quality of the entire research exercise. The current study considered this issue, and efforts were made to ensure that the questionnaire's wordings were kept simple and easily understandable to the target audience.

The current study heavily relied on existing scales for measuring variables. These scales were selected after critical appraisal of all the available choices, and most of them were adopted as such. To maintain the uniformity of the language throughout the questionnaire, some simple changes were made without diluting the scales' originality where ever the need was felt. As the scales were adopted from studies conducted on

different industries, the questionnaire's industry-specific wordings were rewritten concerning the footwear industry.

From the outset, there were concerns about the suitability of using English questionnaire, as the current study attempts to elicit information from firms situating in major footwear clusters across India where English is not the native language. India is well known for its language diversity. All the four clusters considered for the study spread across the length and breadth of the country and speak different languages. Chennai and Calicut situate in the southern states of Tamilnadu and Kerala and speak Tamil and Malayalam, respectively. Kanpur and Agra located in the northern state of Uttar Pradesh, where most of the respondents use either Hindi or Urdu. Kolkata situates in the Eastern state of West Bengal, where people speak predominantly Bengali. Nowhere in these places is English a native language. Apart from this, most of these clusters are traditionally developed and consists of mainly small firms run by less-educated individuals. Within the first few days of the pilot study at Chennai itself, it was evident that the English questionnaire alone can't serve the purpose. To tackle this issue, it was decided to translate the questionnaire into different languages. Subsequently, with the help of language experts, the translated versions of the questionnaire in Malayalam, Hindi and Tamil were prepared (See Appendix 2-5 for different versions of the questionnaire) . Each of these versions was prepared in such a way that the English text was followed by its translation in the local language. It was decided not to prepare the Bengali version of the questionnaire as most of the respondents there understand either Hindi/ Urdu.

For translating the questionnaire, we used the back-translation method. As per this method, one bilingual person translated the English questionnaire to one of the above said local language. Then, another individual, blind to the original, back-translated it. Further,

a third bilingual person compared the original and back-translated English versions. Finally, the required adjustments were made by the consultation of all three individuals.

4.7.8 Question sequence

After deciding the form of response and appropriate wording for the questionnaire, the next step is to set the sequence in which questions are presented. As we have already discussed, the entire questionnaire was divided into six parts in the current study. The first section of the questionnaire included questions regarding the company's profile, and each of the remaining five sections had scales on each key study variables.

4.7.9 Questionnaire layout and physical characteristics

Respondents will be ready to spend their effort and time to fill the survey questionnaire only if they realise that they are contributing to a serious endeavour. One factor which can help to create such an impression is the professional quality of the questionnaire. As we have already discussed, it begins with the questionnaire's tone and content and includes presenting it most attractively. The questionnaire's layout and physical appearance have a critical impact on hooking the respondents to the questionnaire. An appealing physical design not just motivates the respondents to take part in the survey in the beginning, but also effectively ensure its completion. Thus, significant attention was given to the layout, typesetting and other aesthetic aspects of the questionnaire.

Each questionnaire begins with a small paragraph briefing the study's objective and reassuring the respondent's anonymity and confidentiality. The hardcopy of the questionnaire was printed on both sides of the paper to reduce the total number of pages. In the bilingual versions of the questionnaire, each statement was given in English, followed by the corresponding local language. The questionnaire ends with a thanking note for respondents for their active participation in the survey.

4.7.10 Re-examination and revision of the questionnaire

As we have already discussed in section 4.7.7, the questionnaire had to undergo some significant revision process after the pilot study's initial days, which later proved to be vital for the present study. As most of the respondents were owners/ managers of small firms with limited English proficiency and are from a diverse educational background, a decision was taken to prepare bilingual questionnaires to ensure proper understanding of questionnaire content and wording.

4.7.11 Questionnaire pretesting

After the draft questionnaire was prepared, it was given to few relevant individuals, including academicians, industry practitioners, research scholars etc., to seek their feedback. They were requested to raise their queries about uncertainty or confusion related to any statement in the questionnaire. The suggestions were incorporated into the questionnaire after consultation with the research supervisor. E.g. it was advised to include a plain-language description about 'what is a cluster' as the study revolves around that concept, and the word 'cluster' appears at multiple locations in the questionnaire. In some instances, the suggestions were not incorporated into the questionnaire, fearing it may dilute the study's quality. E.g. some industry practitioners commented about the length of the questionnaire and raised the concern that people may hesitate to fill a longer questionnaire. This suggestion was humbly discarded as all the scales used in the questionnaire were crucial for addressing the research questions put forth by the current study. Despite this, to validate the scale in the present study's context, a pilot study was conducted among the target respondents. For the pilot study, data were collected from 124 owners/ managers of footwear manufacturing companies in India. IBM SPSS version 25.0 was used for the data analysis. The pilot study results are discussed as follows.

Table 4.1 shows the results of the KMO and Bartlett's Test. It is found that the result of Bartlett's test of sphericity is significant with $p < 0.001$, with degrees of freedom equal to 780. The Kaiser-Meyer-Olkin (KMO) score is 0.898, that is higher than the prescribed threshold value of 0.5, implying a significant correlation between underlying constructs. Hence, the suitability for further analysis is ensured (Kline, 1994). Principle component analysis (PCA) with varimax rotation was employed to extract the factors, and its results are shown in Table 4.2.

Table 4.1

Results of KMO and Bartlett's Test (Pilot study)

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.898
Bartlett's Test of Sphericity	Approx. Chi-Square	6806.13
	df	780
	Sig.	.000

Table 4.2

Rotated Component Matrix (Pilot Result)

Rotated Component Matrix					
	Component				
	1	2	3	4	5
ICI1	.817				
ICI2	.918				
ICI3	.883				
ICI4	.838				
ICI5	.848				
ICI6	.923				
ICI7	.920				
ICI8	.928				
ICI9	.939				
ICI10	.974				
ICI11	.928				
ICI12	.949				
ICI13	.903				
ICI14	.887				
NI1			.934		
NI2			.926		
NI3			.908		
NI4			.963		
NI5			.935		
NI6			.944		
MI1					.889
MI2					.804
MI3					.818

MI4					.853
OL1		.847			
OL2		.895			
OL3		.934			
OL4		.867			
OL5		.876			
OL6		.945			
OL7		.935			
OL8		.899			
OL9		.876			
OL10		.880			
II1				.919	
II2				.941	
II3				.963	
II4				.952	
II5				.813	
II6				.856	
Extraction Method: Principal Component Analysis.					
Rotation Method: Varimax with Kaiser Normalization.					
a. Rotation converged in 5 iterations.					

Table 4.3 shows that the cumulative variances are 83.55% for all five factors. The unidimensionality of all the study constructs were reaffirmed, as the reported Eigenvalue is greater than 1.

Table 4.3

Total variance explained (pilot study)

Component	Total Variance Explained								
	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	13.290	33.224	33.224	13.290	33.224	33.224	11.701	29.254	29.254
2	7.557	18.892	52.116	7.557	18.892	52.116	8.329	20.823	50.077
3	5.284	13.210	65.326	5.284	13.210	65.326	5.332	13.331	63.408
4	4.641	11.602	76.927	4.641	11.602	76.927	5.067	12.668	76.075
5	2.650	6.626	83.553	2.650	6.626	83.553	2.991	7.478	83.553
6	.671	1.676	85.230						
7	.547	1.368	86.598						
8	.482	1.205	87.803						
9	.444	1.109	88.912						
10	.396	.991	89.903						
11	.369	.924	90.827						

12	.358	.896	91.723						
13	.276	.690	92.413						
14	.252	.629	93.041						
15	.228	.570	93.611						
16	.216	.541	94.152						
17	.206	.516	94.668						
18	.184	.460	95.127						
19	.174	.435	95.562						
20	.165	.412	95.974						
21	.151	.378	96.352						
22	.146	.364	96.716						
23	.139	.347	97.064						
24	.133	.334	97.397						
25	.120	.300	97.698						
26	.114	.284	97.982						
27	.101	.252	98.234						
28	.091	.226	98.460						
29	.084	.211	98.671						
30	.083	.207	98.878						
31	.074	.184	99.062						
32	.065	.163	99.225						
33	.063	.159	99.384						
34	.051	.127	99.510						
35	.047	.117	99.627						
36	.042	.105	99.732						
37	.037	.093	99.825						
38	.033	.082	99.907						
39	.026	.064	99.971						
40	.012	.029	100.00 0						
Extraction Method used: PCA									

The Cronbach's alpha scores that states the internal consistencies of the five constructs are reported in Table 4.4 .

Table 4.4
Construct Reliability values (Pilot Results)

Constructs	Cronbach's alpha
ICI	0.984
NI	0.974
MI	0.883
OL	0.976
II	0.960

4.7.12 Data entry of the completed questionnaire

The filled-in data were entered into Statistical Package for Social Sciences (SPSS) software for analysis after being cleaned and coded in Microsoft Excel. The following section will elaborate on the quantitative data analysis techniques employed in the present study.

4.8 Data Analysis

As the current study examines the interrelationship between multiple independent variables and dependent variables, multivariate data analysis techniques such as structural equation modelling and mediation analysis are used. SEM is suitable for testing models with multiple hypotheses. It involves a series of interconnected procedures including covariance structure analysis, covariance structure modelling, etc., enabling the analysis of inferential data and facilitating the estimation of the model's amount of measurement error. SEM is broadly categorised as Partial Least Square SEM and Covariance based SEM. The current study employs Covariance Based SEM as it is preferable when the study's goal is to test a theory. The choice of selecting CB-SEM is also governed by the fact that the present study uses a relatively big dataset with near-normal distribution, rendering it appropriate.

Chapter Summary

This chapter elaborated the research methodology followed in the current thesis. The chapter has begun with outlining the research philosophy guiding the study and further provided a detailed account of sample, measurement tools and data analysis techniques.

Chapter 5

DATA ANALYSIS AND INTERPRETATION

This chapter discusses the results of the statistical analysis carried out on the collected data for addressing the research questions put forth in the current study. At the outset, it summarises the demographic profile of the respondents who took part in the research and their respective organisations. Further, the descriptive statistics of all the study variables are also presented. It then describes the processes of preliminary screening of data, missing value and outliers' treatment and normality. The remainder of the chapter discusses various methods used in the study for data analysis, including exploratory and confirmatory factor analysis, evaluation of the structural model, mediation analysis etc., along with the detailed interpretation of their results.

5.1 Response rate

The data collection for the present study was carried out over a duration of 13 months during 2018-2019. A total number of 840+ survey questionnaires were administered to owners/senior managers of footwear manufacturing firms situated in various industrial clusters in India. Data collection was done mainly through personal interviews. Even though online questionnaires were also sent to potential respondents, the response rate was too low. Out of the 530 total responses received, 33 were discarded due to incompleteness. Finally, 496 responses were counted as valid and considered for conducting analysis, marking a response rate of 59.16%. This rate of response is adequate

as the recommended average response rate is 52.7% for survey data at the individual level (Baruch & Holtom, 2008).

5.2 Firm profile

The details of the firms surveyed for the study are presented in Figure 5.1 and Table 5.1. These firms spread across various footwear clusters in India, namely *Calicut*, *Chennai*, *Agra* and *Kolkata*. Among the clusters considered for the study, Calicut and Chennai host the most number of firms, i.e. 28.02 per cent and 26.20 per cent, respectively. 22.58 per cent of the firms are from Kolkata, and 23.18 per cent are from Agra. Most of these firms are either registered as partnership firms or as companies. Only 21.16 per cent of them are run by a single owner. In the case of firm size, small firms constitute 45.56 per cent, and the rest is evenly comprised of micro and medium enterprises.

The focal clusters are selected to ensure maximum representation of the footwear cluster map of India in terms of the geographic spread, cluster evolution stage and product type. Agra footwear cluster, which situates in the state of Uttar Pradesh, is an age-old cluster dealing with the manufacturing of different varieties of footwear products predominantly made of leather. It is one of the oldest and largest footwear manufacturing hubs in Asia and acts as a major sourcing hub for multi-national footwear companies. It houses more than 1000 formal or informal companies which deal with any of the activities in the leather footwear value chain.

Like Agra, Chennai- which is in the southern state of Tamil Nadu, also deals with leather footwear manufacturing, especially the manufacturing of leather shoes. It has an important place in the global luxury footwear manufacturing value chain. The Chennai footwear cluster is mainly spread in the suburban areas of Vaniyambadi, Ambur etc. It also

houses more than 1000 formal and informal units dealing with different activities in the value chain.

Kolkata is comparatively a low key cluster when comparing to Agra and Chennai. It is basically an artisanal cluster that is characterised by the incidence of apparent disconnect in output between exporting firms and those firms which is targeting the domestic market. Kolkata has a long history of traditional tanning activities. Even now, it accounts for 60 % of India's leather good exports, such as valet, industrial gloves, and ladies bags which are produced by comparatively larger firms employing more than 50 people. On the other hand, around 4500 small and tiny units produce footwear, mainly chappals aiming at the domestic market. These firms are spread in the areas of Ahmastreet, Kalabagan, Tantibagan, Hatibagan, Raja Bazar, Phoolbagan, Narkeldanga, and Tangra-topsia.

Calicut cluster in the state of Kerala is the newest addition to the footwear map of India. It is just less than three decades old. It has now evolved into a significant hub of synthetic footwear manufacturing in India. There are around 300 footwear manufactures in the suburban areas of Calicut.

Figure 5.1
Firm profile

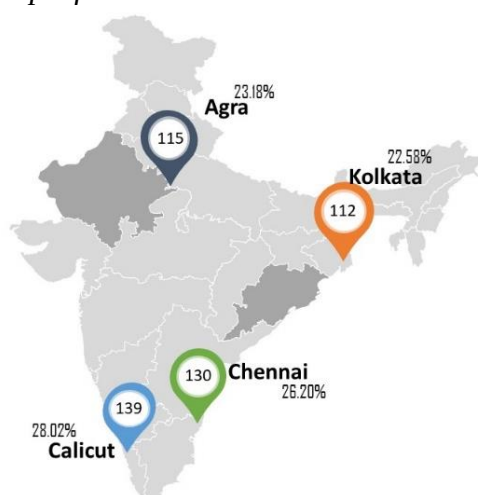


Table 5.1
Firm profile

Firm Characteristics		No of Responses	Per cent
Cluster			
	Chennai	130	26.20
	Calicut	139	28.02
	Agra	115	23.18
	Kolkata	112	22.58
Ownership Pattern			
	Single owner	105	21.16
	Partnership	180	36.29
	Company	211	42.54
Scale of operation			
	Micro	130	26.20
	Small	226	45.56
	Medium	140	28.22
Total		496	

5.3 Descriptive Statistics

The descriptive analysis is carried out to get the summary of sample data and its measures in terms of mean (central tendency), standard deviation (dispersion) and skewness and kurtosis (symmetry). Table 5.2 illustrates the descriptive statistics of the focal constructs in the study, i.e., *industrial cluster involvement*, *normative isomorphism*, *memetic isomorphism*, *organisational learning* and *incremental innovation*. The values of mean, standard deviation, skewness and kurtosis of each item under the aforementioned constructs are presented. Each of these items was measured on a 5 point Likert scale where 1 denotes respondent's strong disagreement with the statement and 5 denotes their strong agreement.

Table 5.2
Descriptive Statistics

Items	Item description	Mean	SD	Skewness	Kurtosis
Industrial Cluster Involvement					
ICI1	“Firms within this industrial cluster often engage in subcontracting with other buyers and suppliers”	3.06	1.087	-.359	-.656
ICI2	“Firms within this industrial cluster often engage in collaboration with other companies in a similar position on the supply chain”	3.00	1.088	-.170	-.622
ICI3	“Firms within this industrial cluster can often focus more on developing their core value and activities”	2.98	1.032	-.207	-.567
ICI4	“This industrial cluster encourages and stimulates more economic activities inside and outside the cluster”	2.94	1.050	-.123	-.658
ICI5	“This industrial cluster allows the participating companies to establish a multiple interlinked relationship with their partners”	2.98	1.082	-.163	-.668
ICI6	“Widespread local product imitation can be observed in this industrial cluster”	2.97	1.053	-.198	-.610
ICI7	“This industrial cluster represents a particular technical competence as a whole (e.g., semiconductor, biotechnology, software [. . .] etc.)”	3.01	1.073	-.134	-.581
ICI8	“Many companies that reside in this cluster share a joint social history”	2.97	1.092	-.099	-.616
ICI9	“Companies in this cluster are located in close geographic proximity to each other”	2.97	1.051	-.215	-.625
ICI10	“The social network relationship among the companies and labours in this cluster are not	3.00	1.046	-.295	-.554

	based on purely economic or transactional relationships”				
ICI11	“There are some or many supportive institutions (e.g., research labs and universities [...] etc.) around the cluster”	2.98	1.030	-.301	-.585
ICI12	“National and/or local governments support the development of this cluster”	3.00	.997	-.327	-.554
ICI13	“Many companies and labours have a shared cultural background”	2.98	1.012	-.210	-.478
ICI14	“infrastructure (e.g., transportation and logistics) are favourable and supportive of participating companies in this cluster”	2.97	1.031	-.342	-.621
<i>Normative Isomorphism</i>					
NI1	“The operation of our firm is influenced by the relevant policies and regulations of the government”	3.23	1.033	-.277	-.486
NI2	“The restriction strength among peers makes the operation mode of our firm abide by industry regulations”	3.16	1.061	-.215	-.636
NI3	“The development process of our firm would be affected by the requirements of important customers or suppliers”	3.15	.984	-.384	-.365
NI4	“The practitioners in the industry have similar education background and working experience”	3.24	.988	-.348	-.419
NI5	“Our firm is willing to participate in technical cooperation to obtain new business knowledge and technology”	3.23	1.009	-.394	-.346
NI6	“Our firm is willing to obtain new business knowledge and technology through the cooperation with university, research institute and government”	3.23	.954	-.297	-.425

<i>Mimetic Isomorphism</i>					
MI1	“The practitioners of the industry often mimic each other”	3.13	1.042	-.268	-.490
MI2	“Our firm often mimics the benchmarking enterprises in the industry”	3.16	1.187	-.343	-.741
MI3	“Our firm often mimics the innovative behaviour of other enterprises in the industry”	3.13	1.181	-.344	-.742
MI4	“Our firm and other members of the industry often have more consistent market reaction behaviours”	3.05	1.069	-.421	-.586
<i>Organizational Learning</i>					
OL1	“Our company frequently acquires information or knowledge from outside the company”	2.90	1.179	-.263	-1.045
OL2	“Our company receives valuable information or knowledge by benchmarking”	2.88	1.158	-.249	-1.011
OL3	“Our company frequently communicates with partners/alliances”	2.89	1.086	-.291	-.894
OL4	“Our company is able to get needed knowledge from contractual relationships from strategic partners”	2.86	1.138	-.237	-.991
OL5	“Our company frequently receives feedback from customers”	2.87	1.157	-.198	-1.006
OL6	“Our company is capable of analysing, categorising or systematising general knowledge and transforming it into specific knowledge”	2.86	1.097	-.312	-.996
OL7	“Our company is able to initiate various experimentations to explore new knowledge”	2.86	1.111	-.211	-.956
OL8	“Our company is able to generate needed knowledge internally”	2.85	1.083	-.258	-.961
OL9	“Our company has formal procedures or departments to develop valuable and useful knowledge”	2.89	1.143	-.254	-.985

OL10	“Our company has informal procedures to develop knowledge”	2.87	1.108	-.307	-.960
<i>Incremental Innovation</i>					
II1	“Our company frequently improves the existing range of products and services”	3.01	1.105	-.322	-.741
II2	“Our firm regularly applies small adaptations to the existing products and services”	3.09	1.171	-.336	-.812
II3	“Improvements in existing products and services are introduced in the local market by our company”	3.10	1.164	-.332	-.803
II4	“Our firm improves the efficiency of your supplies of products and services”	3.09	1.131	-.364	-.762
II5	“Our company increases economies of scale in existing markets”	3.04	1.140	-.268	-.809
II6	“Reducing the costs of internal business processes is a major goal in our company”	3.05	1.124	-.301	-.757

Table 5.2 shows mean values above 3 for all the items of the constructs such as *normative isomorphism*, *memetic isomorphism* and *Incremental innovation* and below 3 for *organisational learning*. The mean values of the items of *industrial cluster involvement* range between 2.97 and 3.06. Though the mean values of all the items of organisational learning are relatively lower, they also fall above 2.5. The standard deviations of the majority of items are a little above 1 except for a few items which have standard deviation slightly below 1. It indicates the respondent’s positive perceptions of all the variables and a similar variation in their responses. In other words, the typical responses of the owners/managers of firms in the industrial cluster towards the questions about their firm’s involvement in the cluster activities and the associated phenomenon were well above the neutral position within the range of ‘agree’ to ‘strongly agree’ indicating a positive

perception. This descriptive analysis gives a broad picture that the firms in the industrial cluster mostly involve in various cluster activities and show normative and memetic isomorphic tendencies. They also show a positive inclination towards organisational learning and innovation performance.

The normality of the collected data is usually analysed by examining two popular statistical measures, i.e. kurtosis and skewness. Kurtosis defines that to how extent the tails of a particular distribution differs from that of a normal distribution. Skewness refers to asymmetry or distortion in a symmetrical bell curve or normal distribution. Practically, Kurtosis measures the extent of 'peakedness' of a particular distribution, whereas skewness measures the degree of symmetry observed in the distribution of the variable. According to Tabachnick & Fidell (2007), typically, if the values of kurtosis lie within the range of ± 3 , it implies that distribution is similar to normal distribution. Further, if the values of skewness are in the range of ± 1 , it shows that the data is marginally skewed, ± 2 indicates that it is considerably skewed, and ± 3 indicate it is extremely skewed implying that the distribution is non-normal (Byrne, 2001; Kline, 2011). In the current study, skewness scores are between 0 and -1, revealing slightly negative skewness of the data. Likewise, the kurtosis measures are in the range of 0 and -2, further demonstrating moderate deviation from normal distribution (mean=0, SD=1, kurtosis=0, skewness=0). One of the potential reasons for the normality of the data being compromised may be acquiescence bias. It is a type of response bias that arises due to the respondents' tendency to positively respond with all the items in the questionnaire provided to them (Purcell, 2014). However, since the incidence of non-normality is moderate, the genuineness of the responses can be assured. It is also well established that though the normality assumption is vital for making an inference, it is not mandatory criteria for establishing the validity of linear regressions and t-tests unless there is an extreme departure from the normality (Kleinbaum *et al.*, 1998).

5.4 Exploratory Factor Analysis

Exploratory factor analysis is one of the most popular dimension reduction technique used in the scale development process. The current study employs only adapted versions of existing scales. It does not attempt to develop new scales, which makes it dispensable to use EFA as a technique of dimension reduction as in a typical scale development process. However, to run structural equation modelling for testing the proposed model, EFA has to be performed as a primary step. It analyses the nature and characteristics of latent constructs and their association with the respective measured variable. Confirmatory Factor Analysis proceeds EFA, which substantiates the factor structure established based on theoretical knowledge. Further, Structural Equation Modelling is conducted to provide all the potential causal relationships between the focal variables. For ascertaining the quality of the model, model fit indices are also calculated.

EFA is a multivariate statistical technique that helps reduce datasets, which consists of many variables into a smaller number of factors to identify the underlying model or factor structure (Burns & Burns, 2008). It helps to ascertain the degree to which the observed variable is explained by corresponding latent factors (Byrne, 2001). For modelling unobserved (latent) constructs, EFA employs a combination of rotation and extraction techniques. According to Osborne (2014), the basic assumption of EFA is that the observed variables are the cumulative outcome of the underlying unobserved constructs. Accordingly, the total variance in the model would be the sum total of the unique variances and common variance across each variable. However, only common variance is examined by it, and unique variance is kept in the model while generating each factor. The current study employs EFA to validate the possibility of structure among the focal variables. Before initiating factor analysis, data adequacy tests are also to be performed to extract relevant factors. This thesis follows the step by step procedure for

conducting EFA as suggested by Osborne (2014) and used SPSS 25.0 to carry out the analysis.

Step 1: The selection of an appropriate extraction method is the first step in conducting EFA. As the word indicates, this method involves the “extraction” of the latent variable from observed variables by analysing the covariation or correlation between the variables. Generally, either Principal Component Analysis (PCA) or Maximum Likelihood Estimation (MLE) is used based on the distribution of variables. MLE is widely considered as the appropriate extraction method if the data is normally distributed. At the same time, PCA is considered suitable if the data is non-normal, especially when the normality assumption is severely compromised (Fabrigar & Wegener, 2011). As the data were moderately skewed and non-normal, the current study selected Principal Component Analysis.

Step 2: Determining the number of factors to be retained is the second step in the process of EFA. This should be done based on the critical assessment of the theories regarding the focal constructs as well as using Kaiser Criterion and scree plot. The Scree plot gives a graphical illustration of the eigenvalues as a curve and the point where slope flattens is marked. The number of factors to be retained is usually taken as equal to the data points count after the abrupt bend of the curve in the scree plot.

After a critical review of the theories regarding the focal constructs, it was decided that the number of factors to be extracted for the current study should be 5. The Kaiser criterion, i.e. an eigenvalue above 1.0, was fixed as the extraction preference. A scree plot illustration was also generated to confirm the extraction decision further. The scree plot for the final data analysis is given in Figure 5.2.

Step 3: The selection of the rotation method for facilitating the simplification of the factor structure is the next step in the EFA process. Methods of factor rotation are categorised based on the angle between the X-axis and Y-axis as orthogonal (90) and oblique (other than 90). Factors are produced by orthogonal rotation on the basis of their non-correlation, while oblique rotation generates factors on the basis of their correlation. Varimax, Equimax and Quartimax are the three types of orthogonal rotations, whereas Direct Oblimin and Promax constitute the types of oblique rotations.

The current study employs Varimax rotation, one of the popular orthogonal rotation techniques which focus on maximising within factor variance, so that lower loadings are minimised, and higher loadings are amplified. This approach is opted, considering its easy interpretability.

Step 4: Run EFA and interpret the results.

The EFA results and their interpretations are discussed in detail in the subsequent section.

5.4.1 Results of the Exploratory Factor Analysis

The results of the EFA are generally reported on the basis of a few key outputs. These outputs include Kaiser Meyer Olkin and Bartlett test criteria, total variance explained, communalities, rotated component matrix and scree plot. In the current study, EFA involved performing a Principal Component Analysis as well as Varimax rotation on 40 items of a questionnaire filled by 496 owners/senior managers of small businesses across footwear clusters in India regarding their firm's industrial cluster involvement, organisational isomorphism, organisational learning and the perceived outcome in terms of incremental innovation. The key EFA outputs are discussed in detail below.

5.4.1.1 Data Adequacy

Table 5.3 presents the results of KMO Barlett's test. The KMO measures sampling adequacy, and it helps to establish whether the data variables are factorised efficiently. The value of KMO Barlett's test should be higher than 0.05 for proceeding for subsequent analysis (Kline, 2014). This criterion is met in the present study as the KMO value of the study sample is 0.956 suggesting significant correlations between underlying constructs. Bartlett's test of sphericity evaluates potential redundancy among the variables to reduce a large number of variables to a limited number of factors by comparing the observed co-relation matrix with the identity matrix. Here, Bartlett's test result is found significant with corresponding probability (p) being less than 0.001 at 780 degrees of freedom.

Table 5.3
Results of Kaiser-Meyer-Olkin and Bartlett's tests

KMO Sampling Adequacy Measure.		.956
Bartlett's Test of Sphericity	Chi-Square (Approx.)	25493.749
	Degrees of freedom	780
	Sig.	.000

5.4.1.2 Communalities

For variables, the degree of variance is explained by factors referred to as 'communalities'. The communality value indicates the degree of variance described by all the extracted factors. A high degree of communality value indicates a higher amount of variance accumulated for some factors, thus reinforcing the reliability of factor analysis (Field, 2000).

The communalities values of all the study variables are given in Table 5.4. All items of '*industrial cluster involvement*' have communalities higher than 0.649, with items ICI1 and ICI8 having the highest value, 0.746. All items of '*normative isomorphism*' have

communalities higher than 0.799, with NI1 having the highest communality value of 0.840. The communalities values of the items in ‘*mimetic isomorphism*’ and ‘*organisational learning*’ fall in the range of 0.706 and 0.815 and 0.784 and 0.831, respectively. All items of the ‘*incremental innovation*’ have communalities value higher than 0.632, with II1 having the highest value of 0.828.

Table 5.4
Communalities

Communalities		
Item	Initial	Extraction
ICI1	1.000	.746
ICI2	1.000	.722
ICI3	1.000	.720
ICI4	1.000	.726
ICI5	1.000	.680
ICI6	1.000	.741
ICI7	1.000	.732
ICI8	1.000	.746
ICI9	1.000	.743
ICI10	1.000	.702
ICI11	1.000	.649
ICI12	1.000	.691
ICI13	1.000	.730
ICI14	1.000	.702
NI1	1.000	.840
NI2	1.000	.799
NI3	1.000	.828
NI4	1.000	.805
NI5	1.000	.823
NI6	1.000	.807
MI1	1.000	.815
MI2	1.000	.752
MI3	1.000	.706
MI4	1.000	.722
OL1	1.000	.795
OL2	1.000	.811
OL3	1.000	.815
OL4	1.000	.825

OL5	1.000	.784
OL6	1.000	.815
OL7	1.000	.802
OL8	1.000	.831
OL9	1.000	.813
OL10	1.000	.815
II1	1.000	.828
II2	1.000	.777
II3	1.000	.757
II4	1.000	.811
II5	1.000	.632
II6	1.000	.688
Method of Extraction : PCA		

5.4.1.3 Total variance explained

Eigenvalue indicates the total amount of variance, which can be elucidated by a particular principal component. From the first component onwards, each of the following components is generated by partialling out its previous component. Thus, the most variance is explained by the first component and the least by the last component. Total variance explained table displays all the factors along with their respective eigenvalues, the per cent of variance ascribed to each factor, and cumulative variance of the factor and the previous factors.

The total variance explained for the current model is shown in Table 5.5. Five factors that jointly explain 76.32 per cent of the total variance are retained as Kaiser's rule suggest the selection of factors with an Eigenvalue higher than 1.

Table 5.5
Total Variance Explained

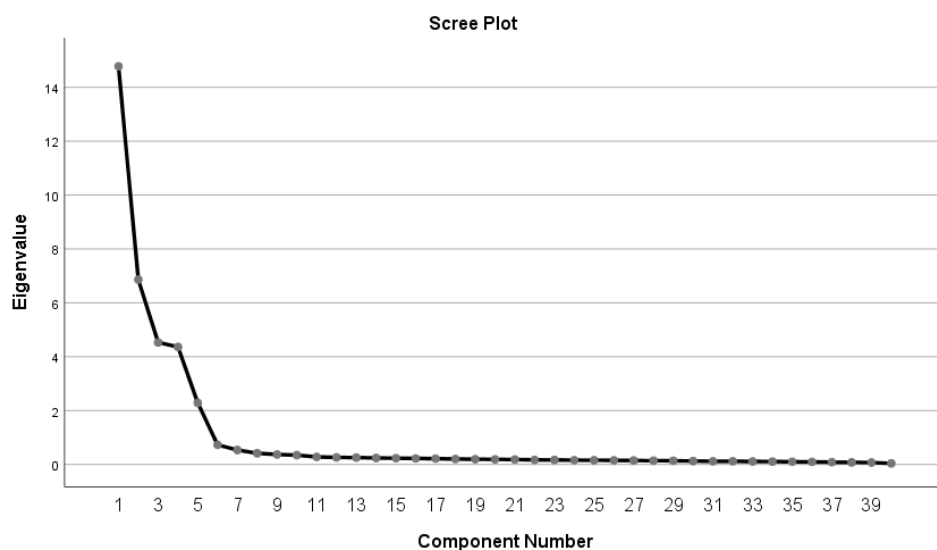
Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	13.356	33.389	33.389	13.356	33.389	33.389	10.036	25.091	25.091
2	6.423	16.057	49.446	6.423	16.057	49.446	8.111	20.276	45.367
3	4.454	11.136	60.582	4.454	11.136	60.582	4.903	12.257	57.624
4	4.030	10.075	70.657	4.030	10.075	70.657	4.336	10.839	68.463
5	2.264	5.661	76.318	2.264	5.661	76.318	3.142	7.855	76.318
6	.733	1.833	78.151						
7	.691	1.726	79.877						
8	.498	1.245	81.122						
9	.446	1.116	82.238						
10	.400	1.001	83.239						
11	.385	.962	84.200						
12	.360	.899	85.099						
13	.341	.853	85.952						
14	.339	.847	86.800						
15	.327	.818	87.618						
16	.291	.727	88.345						
17	.284	.711	89.055						
18	.273	.684	89.739						
19	.266	.665	90.404						
20	.253	.632	91.037						
21	.250	.625	91.662						
22	.242	.604	92.265						
23	.228	.570	92.836						
24	.223	.556	93.392						
25	.219	.548	93.940						
26	.212	.530	94.471						
27	.199	.498	94.969						
28	.191	.478	95.447						
29	.186	.466	95.912						
30	.177	.441	96.354						
31	.172	.431	96.785						
32	.161	.404	97.189						

33	.160	.400	97.588						
34	.156	.390	97.978						
35	.149	.371	98.350						
36	.142	.356	98.706						
37	.142	.354	99.059						
38	.133	.333	99.392						
39	.122	.306	99.698						
40	.121	.302	100.00						
Extraction Method used: PCA									

5.4.1.4 Scree plot

Scree plot is an alternative method for determining the numbers of factors to be retained. It was suggested by Cattell. Here, the successive eigenvalues are plotted on a graph to look for a spot where the plot levels out abruptly. At that point, the additional factors explain less variance than a single variable, i.e. these factors are inconsequential, contributing negligibly to the analysis. Thus only those factors which occur on and above the spot where the plot levels out are accepted. The number of factors to be retained as per the scree plot is five, and this is in line with the decision taken using Kaiser's rule.

Figure 5.2
Screeplot



5.4.1.5 Rotated Component Matrix

The current study uses Varimax rotation for factor rotation, and its result is shown in table 5.6. Rotation improves the interpretability and comprehensibility of the factor solution such that variable with higher and smaller loadings are well-distinguished. It is done by rotating axes on a series of scatter graphs until the most coherent factor structure is realised. Table 5.6 shows the five factors which will be used for subsequent analysis. The results reveal that none of the items in the measurement scale has cross-loadings. Thus it is considered for further analysis.

Table 5.6
Rotated Component Matrix

	Component				
	1	2	3	4	5
ICI1	.847				
ICI2	.839				
ICI3	.827				
ICI4	.841				
ICI5	.818				
ICI6	.835				
ICI7	.834				
ICI8	.843				
ICI9	.844				
ICI10	.816				
ICI11	.795				
ICI12	.817				
ICI13	.839				
ICI14	.820				
NI1			.899		
NI2			.880		
NI3			.884		
NI4			.878		
NI5			.877		
NI6			.876		
MI1					.862
MI2					.824
MI3					.804

MI4					.812
OL1		.870			
OL2		.872			
OL3		.885			
OL4		.884			
OL5		.866			
OL6		.891			
OL7		.882			
OL8		.897			
OL9		.870			
OL10		.882			
II1				.853	
II2				.840	
II3				.844	
II4				.855	
II5				.778	
II6				.812	
Extraction Method used: PCA					
Rotation Method used: Varimax (Kaiser Normalization)					
Rotation converged in 5 iterations.					

The matrix of component coefficient scores is presented in table 5.7, from which the component factor scores are estimated. The rows in the matrix represent observed variables, and the columns of the matrix refer to extracted components. If the observed variables are standardised, the factor values can also be standardised. Using coefficient for a factor 1, the component score for factor is equal to $(0.090) \times z_{ICI1} + (.092) \times z_{eICI2} + \dots + (.089) \times z_{ICI14}$, where the z in the presence of observed variables specifies that it is in a standardised form. With the help coefficient matrix, all the factor scores were estimated.

Table 5.7

Component Score coefficient matrix

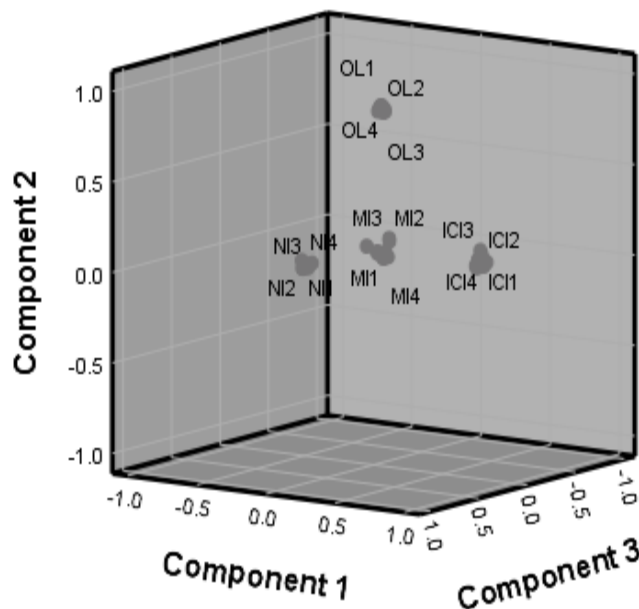
	Component				
	1	2	3	4	5
ICI1	.090	-.011	-.012	-.011	-.001
ICI2	.092	-.012	-.009	-.012	-.014
ICI3	.090	.000	-.010	-.014	-.027
ICI4	.093	-.009	-.013	-.003	-.025
ICI5	.092	-.010	-.020	.003	-.031
ICI6	.088	-.011	-.004	.007	-.013
ICI7	.090	-.017	.003	.014	-.031
ICI8	.090	-.014	.004	-.010	-.011
ICI9	.090	-.016	-.012	.000	.002
ICI10	.086	-.010	-.008	-.008	.001
ICI11	.087	-.013	-.006	-.011	-.011
ICI12	.088	-.011	-.012	-.006	-.010
ICI13	.091	-.012	-.021	-.004	.001
ICI14	.089	-.004	-.015	-.001	-.021
NI1	-.015	-.020	.198	-.010	-.006
NI2	-.015	-.019	.195	-.015	-.010
NI3	-.012	-.021	.193	.008	-.017
NI4	-.017	-.018	.192	-.010	.003
NI5	-.009	-.016	.191	-.016	-.005
NI6	-.018	-.014	.192	.001	-.015
MI1	-.018	-.024	.003	-.048	.310
MI2	-.020	-.009	-.010	-.044	.295
MI3	-.021	-.005	-.015	-.050	.291
MI4	-.023	-.018	-.013	-.024	.289
OL1	-.011	.116	-.013	-.005	-.012
OL2	-.010	.115	-.013	-.003	-.004
OL3	-.012	.119	-.014	-.006	-.015
OL4	-.010	.117	-.014	.000	-.015
OL5	-.017	.116	-.015	.007	-.011
OL6	-.013	.122	-.021	-.003	-.021
OL7	-.013	.120	-.012	-.009	-.025
OL8	-.014	.121	-.016	-.010	-.014
OL9	-.013	.114	-.010	-.030	.022
OL10	-.012	.118	-.016	-.006	-.006
II1	-.007	-.014	-.007	.198	.017
II2	-.008	-.016	-.014	.198	.013
II3	-.013	-.010	-.017	.204	-.004

II4	-.008	-.016	-.011	.200	.015
II5	-.007	.003	.006	.211	-.109
II6	.002	.000	-.002	.224	-.127
Extraction Method: PCA					
Rotation Method: Varimax (Kaiser Normalization)					

Figure 5.3 illustrates the component plot in the rotational space, which is calculated after Varimax rotation. This plot enables the computation of orthogonal rotation and is drawn using factor loadings. Each of the plotted items corresponds to the rotated factor matrix, where factor 1 corresponds to the x-axis, factor 2 corresponds to the y-axis and factor 3 corresponds to the z-axis.

The pattern of all the loadings associated with definite factors falls into a cluster. The component plot describes how closely related items are and also the direction of the components.

Figure 5.3 *The component plot in the rotated space*



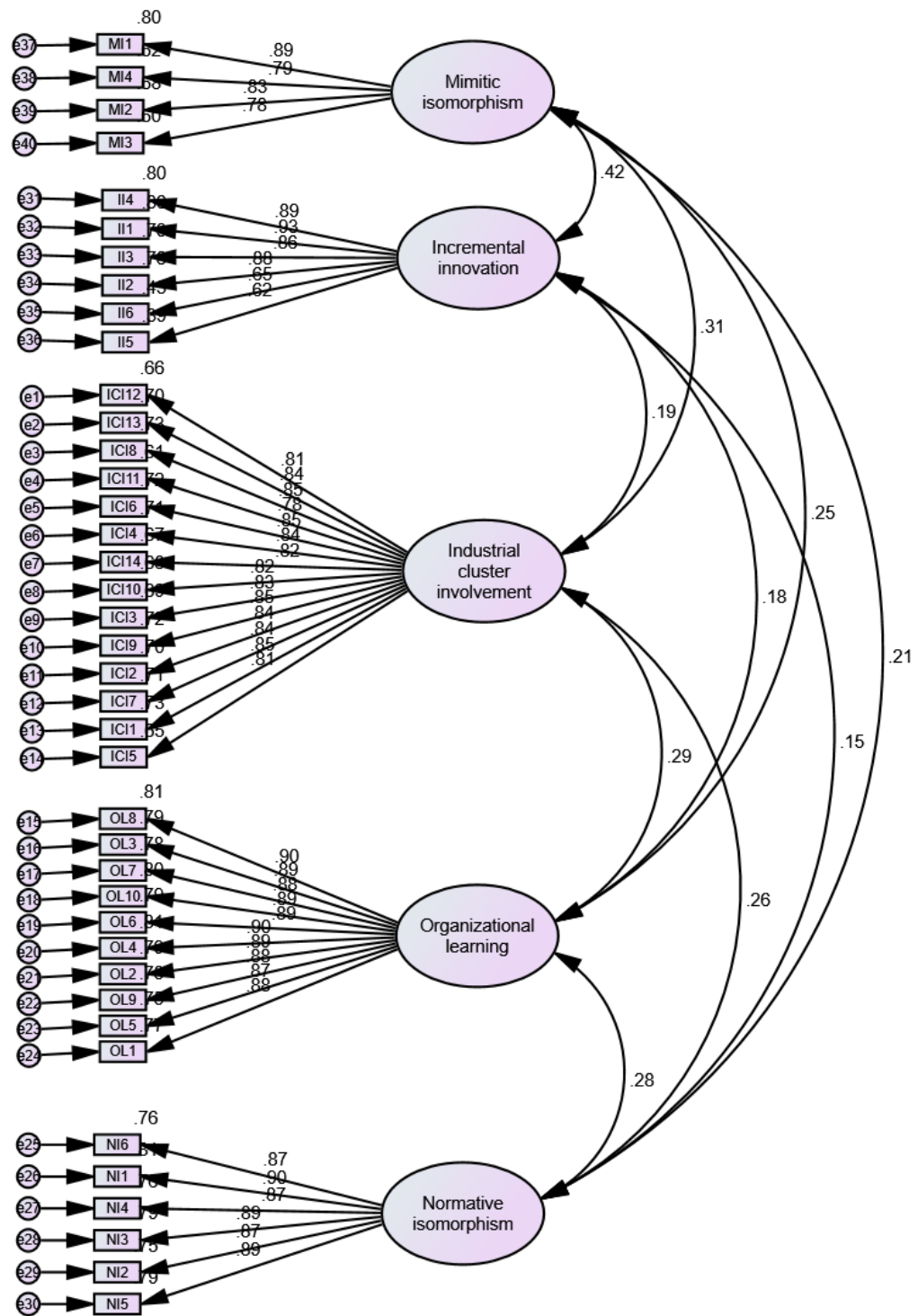
5.5 Confirmatory Factor Analysis (Measurement Model Evaluation)

Confirmatory Factor Analysis, a major part of Structural Equation Modelling, is a statistical method driven by theory, emphasising the assessment of the measurement model by modelling the relationship between observed indicators and unobserved (latent) variables on the basis of covariances and correlations. CFA is generally employed for scale validation, construct validation and evaluating measurement invariance. It basically stipulates the theoretical model using a graphical illustration that indicates observed variables in squares and latent constructs in circles, all of which are linked using covariance and regression paths, respectively. It sets the specifications of various features of the study model proposed, including hypothesised relationship between factors, number and patterns of indicators etc. CFA ascertain the sequence of individual factor loadings and shows how variables or indicators of the measurement model consolidate to explain all the latent constructs. The current study uses AMOS version 24.0 for conducting CFA and SEM. Figure 5.2 shows the measurement model proposed by the study.

There are several criteria for evaluating the measurement model in CFA. Tests of reliability and validity constitute two of such significant criteria. The validity concerns about the relevance of the scale in measuring the construct it claims to measure, whereas reliability looks into the consistency and precision of a measure. In quantitative research, reliability is used to indicate the degree to which the results from the concerned study can be reproduced, and validity stands as the evidence for the integrity of the study findings. Following tests are used to establish the internal reliability and validity.

- Reliability
- Discriminant validity and convergent validity
- Model fit indices

Figure 5.4
Measurement model



5.5.1 Reliability

Reliability values show the extent of consistency and uniformity of the study findings, which allows its replicability. One of the most common methods of determining internal reliability is by employing Cronbach's alpha values that specify if all the items in the scale calculate the same thing. It matches to the mean of all the split-half correlations of the corresponding scale items (Burns & Burns, 2008). The current study uses Reliability analysis tool in SPSS to obtain Cronbach alpha value. For having sufficient reliability, the alpha value should be above 0.70 (Nunnally, 1978). Table 5.8 shows the internal reliabilities of all the constructs in the model.

Table 5.8
Construct Reliabilities

Study Constructs	Cronbach's alpha (α)
ICI	0.969
MI	0.890
NI	0.954
OL	0.974
II	0.922

The measurement model validity depends upon

- Achieving a sufficient level of goodness of fit.
- Providing evidence for construct validity through the determination of convergent validity and discriminant validity.

5.5.2 Convergent validity and discriminant validity

Campbell and Fiske (1959) stress the significance of using both convergent and discriminant validation techniques to validate new test instruments. Convergent validity is a parameter that is used to indicate the extent to which different measures of a construct that should be theoretically related are actually related. In other words, convergent validity shows the extent to which a scale bear upon similar constructs in the model, whereas discriminant validity shows the discrimination among the constructs that are dissimilar to each other.

Convergent validity evaluates the scale items which merge to constitute a construct and share maximum common variance. This is calculated using Average variance extracted (AVE) and Composite Reliability (CR) values that act as determinants for assessing convergent validity for the measurement model (Fornell & Larcker, 1981; Hair, 2007)

Average Variance Extracted (AVE) calculates the amount of variance that is encapsulated by a construct against the degree of variance due to measurement error. To get accepted for establishing validity, AVE values should be equal to or higher than 0.50 (Fornell & Larcker, 1981; Kline, 2014). AVE for each of the study constructs is measured as the sum of squares of standardised factor loadings divided by this sum plus aggregate error variances of scale items.

Composite reliability is a measure of internal consistency in scale items or indicators of a particular construct (McDonald, 1970). In the course of model estimation, CR designate preference to indicators and calculate the reliability scores as a function of item factor loadings. Though in the broader sense, it may resemble Cronbach's alpha (Netemeyer *et al.*, 2003), both are distinct from each other as the latter uses an item covariance matrix (Cronbach, 1951). The values of CR in exploratory research is supposed

to be between 0.60 and 0.70, whereas in empirical studies, it should fall within the range of 0.70 and 0.90 (Nunnally & Bernstein, 1994). Hair *et al.* (2019) is of the opinion that CR values higher than the threshold value of 0.70 can be considered acceptable.

Table 5.9 presents the AVE value and CR values of all the focal constructs for the current study. The AVE values range between 0.669 and 0.859 and are higher than the threshold score of 0.50. Also, the values of CR are found to be between 0.910 and 0.983. The values of CR are also found to be greater than the values of AVE for all the study variables. This shows that the measurement model has adequate convergent validity.

Table 5.9
Results of Convergent Validity Tests

Constructs	CR	MSV	AVE	Convergent Validity
ICI	0.983	0.122	0.805	Yes
OL	0.978	0.085	0.817	Yes
NI	0.973	0.072	0.859	Yes
LL	0.922	0.188	0.669	Yes
MI	0.910	0.188	0.716	Yes

Note: For convergent validity: $AVE \geq 0.5$; $CR > 0.7$; $CR > AVE$

Discriminant validity is “the degree to which two conceptually similar concepts are distinct” (Hair Jr *et al.*, 2019). This measure aims to reaffirm if a reflective construct establishes the most robust relationship with its corresponding items than the other constructs in the path model (Hair *et al.*, 2017). According to Fornell & Larcker (1981), “discriminant validity can be established by comparing the degree of variance explained by a construct (AVE) and its shared variance with other dissimilar constructs (inter-construct correlation)”. According to them, the square root of each of the study constructs should be higher than its maximum correlation with other constructs.

Table 5.10

Results of Discriminant Validity Test

	ICI	OL	NI	II	MI
ICI	0.897				
OL	0.291***	0.904			
NI	0.252***	0.267***	0.927		
II	0.186***	0.178***	0.131**	0.818	
MI	0.349***	0.260***	0.205***	0.434***	0.846

Note: Bold values are the square root of AVE

Discriminant validity: Square root of AVE > Inter construct co-relation.

** “Correlation is significant at the 0.05 level (2-tailed)”.

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

Table 5.10 displays the inter construct correlations of the reflexive constructs under the study and the square root of AVE values along the diagonal. As per Fornell- Larcker (1981) criteria stated earlier, AVE's square root values are greater than the inter construct correlations, thus indicating acceptable discriminant validity for all the constructs in the model.

5.5.3 Model Fit Indices

The goodness of fit of a model tells how well the model fits a set of observations. It describes the extent of similarity of the observed and estimated covariance matrix. It typically summarises how well the specified model reproduces the observed covariance matrix across the indicator items.

The goodness of fit model encapsulates the discrepancy between observed values and the expected values under the specific model. On the estimation of the model in question, model fit measures compare the theory (specified by the estimated covariance matrix) with the reality (specified by the observed covariance matrix), whereby the prevalence of high similarity propose perfect theory development. According to Hair *et al.* (2010), “higher the similarity in values of matrices, better is the model fit”.

Fit indices for both the measurement model and structural model evaluation are reported below:

- *Absolute fit indices:* These indices show how well a specific model fits or replicates the data. It is a direct indicator of how extend the proposed theory fits with the study data. The most popular absolute fit indices include Root Mean Square Error of Approximation (RMSEA), Goodness-of-fit (GFI) and Normed Chi-square (CMIN/df).
- *Incremental fit indices:* These indices assess how well the estimated model fits with some other baseline model. They don't use the chi-square in its raw form but compare the value to a baseline model. The most common baseline model presumes all variables have no correlations and is called a null model. These indices are also called as relative (McDonald & Ho, 2002) or comparative (Miles & Shevlin, 2007) fit indices. Popular incremental fit indices include the Normed Fit Index (NFI), Comparative Fit Index (CFI) and Tucker Lewis Index (TLI).
- *Parsimonious fit indices:* These fit indices assess model fit corresponding to its complexity and show which model is ideal among a specific number of alternative models. The most popular among this category of fit indices is the Adjusted Goodness-of-fit Index (AGFI).

The current study uses the maximum likelihood estimation method to estimate the measurement model fit (Arbuckle, 2007). Table 5.11 shows the model fit indices for the study model along with the values recommended in the literature that deem model fit to be good. Bentler and Bonett (1980) proposed a set of criteria for assessing model fit, i.e., $\chi^2/df < 3$, $RMSEA \leq 0.05$, $TLI \geq 0.95$, $CFI \geq 0.95$, and P Close near to 1. The model fit indices for the measurement model are within the recommended values i.e. $CFI = 0.953$, $\chi^2/df = 2.276$, $GFI = 0.849$, $RMSEA = 0.051$ and $NFI=0.919$ demonstrating adequate fit of the measurement model.

Table 5.11

CFA - Model Fit indices

Structural model	Fit statistics	Recommended cut off value
CFI	0.953	≥ 0.95
CMIN/DF	2.276	< 3
P-VALUE	0.000	≥ 0.05
AGFI	0.830	≥ 0.80
NFI	0.919	> 0.90
GFI	0.849	≥ 0.95
RMSEA	0.051	≤ 0.05
P close		Close to 1
Note: “Reported fit indices indicate adequate model fit”		

5.6 Common Method Bias

The research design adopted in the current study is cross-sectional and thus has collected data at a single time point. The data has been collected from respondents from homogenous social context using questionnaires with common scale format and anchors, making it vulnerable to socially desirable responses. Thus, it is possible that the present data analysis and the following results to be misrepresented due to the effect of common method bias like measurement context effects, item context effects and common rater effects (Podsakoff *et al.*, 2003). This calls for the significance of reporting the extent of the common method bias, for which two popular approaches have been usually used, i.e. Common Latent Factor (CLF) and Herman single factor test.

Herman single factor test involves running unrotated EFA, including all the items to get the single factor majority of variance. It is represented by the Eigenvalue, which serves as a measure for common method bias and manifests the non-occurrence of common method bias if observed to be less than 50% (Harman, 1967). In the current study, the test

results reported the Eigenvalue of single-factor variance to be 35.66 per cent that is within the recommended threshold, affirming the absence of common method bias (Table 5.12).

Table 5.12
Harman Single Factor Test Result

Total Variance Explained						
Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	14.778	36.945	36.945	14.268	35.669	35.669
2	6.861	17.152	54.097			
3	4.528	11.321	65.418			
4	4.364	10.909	76.327			
5	2.285	5.713	82.040			
6	.729	1.823	83.863			
7	.536	1.341	85.204			
8	.415	1.039	86.242			
9	.371	.927	87.169			
10	.347	.868	88.037			
11	.281	.702	88.740			
12	.263	.658	89.397			
13	.258	.644	90.041			
14	.241	.602	90.643			
15	.235	.588	91.231			
16	.224	.559	91.790			
17	.218	.545	92.335			
18	.202	.504	92.839			

19	.195	.488	93.327			
20	.189	.473	93.801			
21	.183	.458	94.259			
22	.170	.426	94.684			
23	.167	.418	95.102			
24	.161	.402	95.504			
25	.157	.392	95.896			
26	.154	.384	96.280			
27	.147	.367	96.646			
28	.142	.354	97.001			
29	.139	.347	97.347			
30	.126	.315	97.663			
31	.119	.297	97.960			
32	.117	.292	98.252			
33	.114	.285	98.537			
34	.109	.272	98.809			
35	.102	.255	99.064			
36	.096	.239	99.303			
37	.086	.215	99.518			
38	.078	.196	99.714			
39	.073	.183	99.897			
40	.041	.103	100.000			
Extraction Method: Principal Axis Factoring.						

5.7 Structural model evaluation

Structural Equation Modelling is a multivariate statistical analysis method used to analyse the structural relationship between various dependent and independent variables, manifested in a sequence of multiple regression equations. It is a mix of factor analysis and multiple regression. It's main objective is to test the theory by analysing the structural relationship among observed variables and latent constructs (Teo *et al.*, 2015). SEM often uses a measurement model which defines latent variables or constructs using one or more observed variables or factors and a structural model that assigns the relationship between variables (Kaplan, 2008).

The use of SEM has become popular in social sciences due to its ability to attribute relationship between unobservable constructs from observable variables. This enables us to measure certain constructs, which otherwise cannot be measured directly.

The three distinguishing features of SEM can be listed as follows,

- Ability to estimate the dependence relationship between multiple variables.
- Potential to characterise latent theory in those associations and rationalize measurement error in the estimation process.
- Ability to outline a structure to depict the whole set of associations.

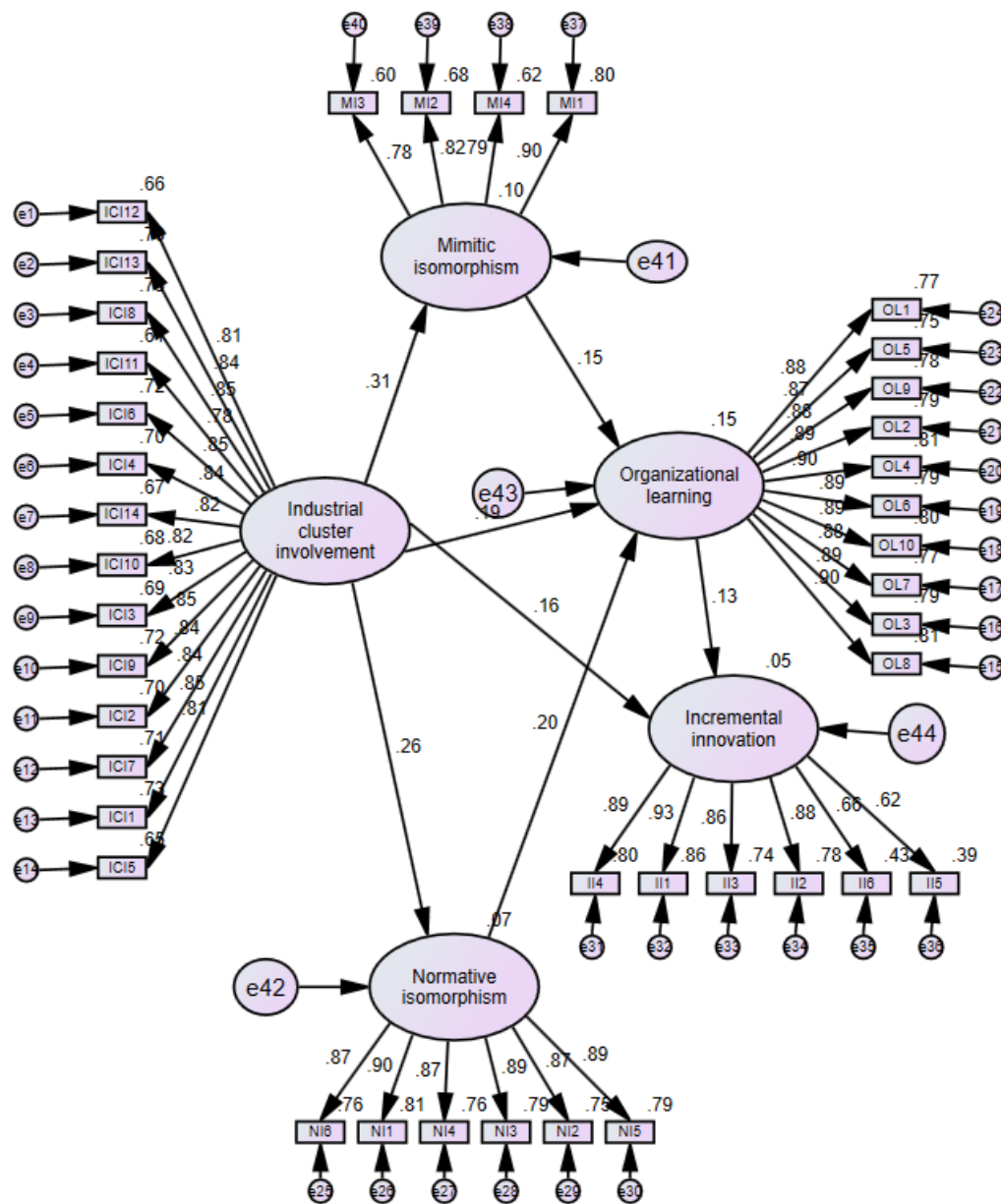
In a nutshell, SEM analyses multiple, distinct, yet interdependent relationships together by hypothesising the structural model, that originates from theory, observations, experiences and research objective of the researcher. In SEM estimation, a dependent variable may serve as an independent variable in subsequent relationships as there is a

series of dependent variables and independent variables. This makes it inevitable to differentiate the latent variables more vividly than the conventional dependent – independent variable dichotomy. In SEM, such latent constructs are denoted as exogenous constructs and endogenous constructs. In the current study, industrial cluster involvement is an exogenous construct, and all other focal constructs are endogenous constructs.

The maximum likelihood estimation method is used in the present study as it is expected to give valid and stable output even if the sample size is as small as 50. It is also preferred as the study involved data collected through Likert scale responses, as opined by Breckler (1990). Here, the parameter measures are estimated by enabling observed data to leverage the parameter likelihood with the given data. MLE is used in the current study to examine whether the theorised model fits into the observed data.

There are a few significant steps in the process of structural model evaluation. It begins with conducting path analysis to analyse the relationships between latent factors in the model. Further statistical significance and path coefficients are reported for testing the proposed hypothesis. Then, the theorised covariance model and the observed covariance matrix are matched to check the model fit (Hair Jr *et al.*, 2019; Shah & Goldstein, 2006). For assessing the model fit, three types of estimates– squared multiple correlations (R^2), path coefficients and fit indices are obtained. The present study used AMOS-24 for performing the SEM, and the structural model obtained for the study is given in Figure 5.5.

Figure 5.5
Structural Equation Model



Further, the model estimation was carried out to analyse the overall model fit of the structural model. The following indices values are revealed in the estimation: $\chi^2/df = 2.383$, GFI= 0.843, CFI = 0.949 and RMSEA = 0.053 (Table 5.13). The results show acceptable goodness-of-fit of the theorised model as values of all the fit indices fall within the suggested acceptable limits.

Table 5.13
SEM-Model fit Indices

Structural model	Fit statistics	Recommended cut off value
CFI	0.949	≥ 0.95
CMIN/DF	2.383	< 3
P-VALUE	0.000	≥ 0.05
AGFI	0.825	≥ 0.80
NFI	0.915	> 0.90
GFI	0.843	≥ 0.95
P close	0.069	Close to 1
RMSEA	0.053	≤ 0.05
Note: Results show that the proposed model is deemed to be fit		

Besides, the model estimation output generated path coefficients (standardised direct effects), R^2 values (variance explained) and path significances for every dependent variable to examine the significance of the hypothesised paths. Table 5.15 presents the path estimates of the structural model, along with their significance values.

Table 5.14 shows the squared multiple correlations (R^2) for each proposed paths using multiple linear regression. It signifies the degree of variance explained by independent variables on their corresponding dependent variables. The R^2 value for the construct *mimetic isomorphism* is 0.099. It means the antecedent *industrial cluster involvement* is explaining 9.9 % of the variance on *mimetic isomorphism*. Similarly, 6.8 % of the variance of *normative isomorphism* is explained by *industrial cluster involvement*, and 14.6 % of the variance on *organisational learning* is explained by *normative isomorphism* and *mimetic isomorphism*. *Incremental innovation*, *mimetic isomorphism*, *normative isomorphism* and *organisational learning* together explain 5.5% of the variance on *incremental innovation*.

Table 5.14

Squared Multiple Correlations

Path	Estimate (R ²)
Mimetic Isomorphism	.099
Normative Isomorphism	.068
Organisational learning	.146
Incremental Innovation	.055

Table 5.15

Results of Hypothesis testing

Exogenous Construct	Endogenous Construct	Hypothesis	Standard estimate (β)	Standard error	t-statistic	p-value	Interpretation
ICI	II	H1	0.196	.060	3.257	.001	significant
ICI	OL	H2	.233	.057	4.061	***	significant
ICI	NI	H3	.267	.048	5.606	***	significant
ICI	MI	H4	.363	.055	6.648	***	significant
NI	OL	H5	.238	.053	4.485	***	significant
MI	OL	H6	.157	.049	3.181	.001	significant
OL	II	H7	.138	.050	2.766	.006	significant

Table 5.15 presents the results of the hypothesis testing. Based on the significance of (β) values (standardised coefficients), it is easy to determine if the hypothesis proposed is supported or rejected. The unstandardised estimates and the item loadings of each construct are analysed for testing their significance. It also assured that each of the focal constructs' item loadings is highly significant at the level of 0.001 (0.1%), and their P values are denoted as “***”.

Results of the analysis reveal that industrial cluster involvement of the firms has a significant effect on their incremental innovation performance ($\beta = 0.196$ $t = 3.257$, $p < .001$), thus supporting the respective hypothesis (H1). It also shows that industrial cluster involvement significantly influences the normative isomorphic behaviour ($\beta = 0.267$, $t =$

5.606, $p < .001$) as well as mimetic isomorphic behaviour of clustered firms ($\beta = 0.363$, $t = 6.648$, $p < .001$), thus supporting both hypothesis 3 and 4. The result also supports hypothesis 2, as it was revealed that industrial cluster involvement significantly influences the clustered firms' organisational learning ($\beta = 0.233^{***}$, $t = 4.061$). Both normative isomorphism ($\beta = 0.238$, $t = 4.485$, $p < .001$) and mimetic isomorphism ($\beta = 0.157$, $t = 3.181$, $p < .001$) is found to have significant effect on organisational learning, thus supporting hypothesis 5 and 6. Finally, the findings also suggest a significant relationship between organisational learning and the firm's incremental innovation performance ($\beta = 0.138$, $t = 2.766$, $p < .001$), thus supporting hypothesis 7.

5.8 Mediation analysis

I. Mediation effect of organisational learning

To establish the presence of a mediation relationship between variables, three basic criteria need to be met. Firstly, there should be a significant relationship between the independent variable and dependent variable. Here, it was found that there is a significant relationship ($\beta = 0.1144$) between *industrial cluster involvement* and *incremental innovation*. Then, the second criterion is that there should be a significant relationship between the independent variable and the mediating variable. It was also found that industrial cluster involvement has a significant influence on *organisational learning* ($\beta = 0.307$). Finally, the relationship between the mediating variable and the dependent variable should also be significant. Here, this criterion was also met as there is a significant link between *organisational learning* and *incremental innovation* ($\beta = 0.131$). As all three paths are significant, the proposed model fulfilled three primary conditions.

Finally, the direct influence of *industrial cluster involvement* on *incremental innovation* in the mediation model is found to be less significant ($\beta = 0.114^{***}$) than the

direct relation in the constrained model ($\beta = 0.196^{***}$) implying that *organisational learning* plays a partial mediating role (Table 5.16). This shows a significant effect of *industrial cluster involvement* on *incremental innovation* through *organisational learning*. The indirect effect here is 0.041 ($\beta * \beta = 0.317*0.131$), which is less than the direct link between *industrial cluster involvement* and *incremental innovation* ($\beta = 0.114$). Hence, the finding reveals that organisational learning partially mediates between *industrial cluster involvement* and *incremental innovation*.

Figure 5.6
Simple mediation

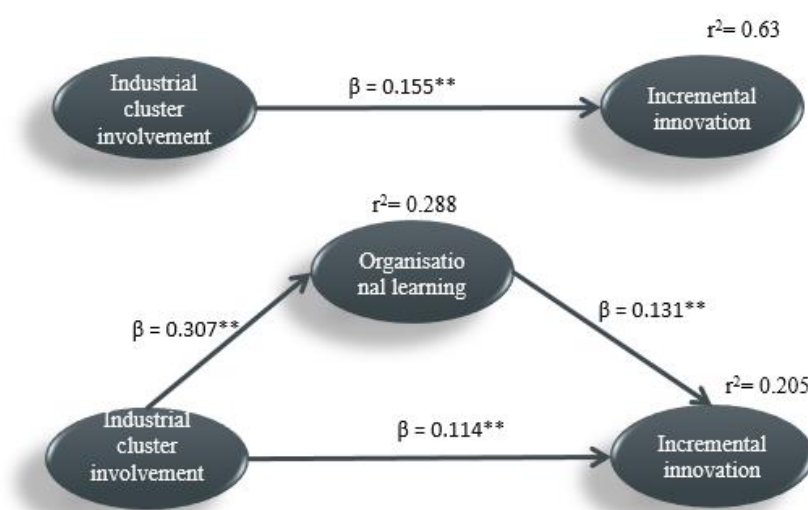


Table 5.16
Path Coefficients for the Structural Model

Direct Effect	Standard Estimate (β)	Standard Error (SE)	t-Statistic	P-Value	Result
ICI -> II	0.114	.0458	2.4997	.0128	Supported
ICI -> OL	0.307	.0460	6.6874	.0000	Supported
OL-> II	0.131	.0429	3.0437	.0025	Supported

Table 5.17

Results of Two Path Mediation Analysis

Hypothesis	Indirect paths	Indirect effect	SE	LLC	ULCI	Decision
H7	ICI -> OL -> II	.0401	.0169	.0096	.0772	Supported

2. *Serial mediation effect of organisational isomorphism and organisational learning in Industrial cluster involvement and incremental innovation*

In the current study, all the path parameters were estimated in the structured path model and serial mediation simultaneously to examine the potential channel through which the relationship between *industrial cluster involvement* and *incremental innovation* is facilitated. The study has examined three path mediation effects (Preacher & Hayes, 2004). This approach helps us to detach both the indirect mediation effects of organisational isomorphism and organisational learning and innovation.

This approach also helps to assess the indirect effect transit through the mediators in a sequence. The conceptual model for the mediation analysis is shown in Fig.5.1. The current study has used SPSS process macro version 25 to test the proposed model. The mediation analysis is conducted using the bootstrapping procedure. The choice of adopting bootstrapping procedures over Sobel's test was due to its efficiency in testing indirect effects than the latter (Preacher & Hayes, 2004).

As predicted in H1, a firm's *industrial cluster involvement* is positively related to its *incremental innovation performance*. Testing hypothesis H2 to H6 reveals significant positive paths between various focal constructs connected in our conceptual framework. H7 also predicts the mediating role of *organisational learning* in the relationship between *industrial cluster involvement* and *incremental innovation*. In the following sections, we further analyse the serial mediating effect of organisational isomorphism and

organisational learning in the relationship between *industrial cluster involvement* and *incremental innovation*. The two path mediation results for the indirect effect of mimetic isomorphism and organisational learning on the relationship between *industrial cluster involvement* and *incremental innovation* are presented in table 5.19. The values are at 95% of the bias-corrected confidence interval for the estimated paths. Table 5.18 also gives estimated path coefficients. Results suggest that *normative isomorphism* and *organisational learning* partially mediate the relationship between the firm's *industrial cluster involvement* and *incremental innovation* performance.

The value of the coefficient of determination is given in Figure 5. The coefficient of determination for *incremental innovation* is 0.214, which means that total serial mediation explains 21% of variance from mediators and antecedents.

Figure 5.7
Serial mediation-1

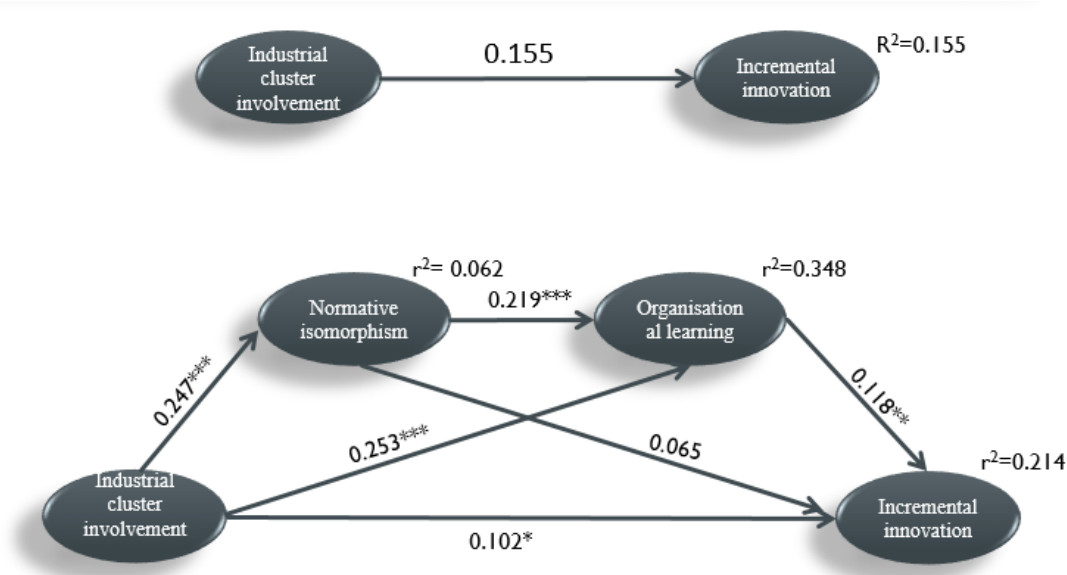


Table 5.18

Path Coefficients for the Structural Model

Direct Effect	Standard Estimate (β)	Standard Error (SE)	t-Statistic	P-Value	Result
ICI -> II	.1022	.0466	2.1939	.0287	Supported
ICI -> NI	.2467	.0431	5.7218	.0000	Supported
ICI -> OL	.2533	.0465	5.4484	.0000	Supported
OL -> II	.1180	.0438	2.6935	.0073	Supported
NI -> OL	.2190	.0471	4.6622	.0000	Supported
NI -> II	.0655	.0467	1.4023	.1615	Not-Supported

Table 5.19

Result of two path mediation analysis

Hypothesis	Indirect paths	Indirect effect	SE	LLC	ULCI	Decision
	ICI-> NI->II	.0162	.0138	- 0.009	.0446	Not Supported
	ICI-> OL-> II	.0299	.0146	.0045	.0612	Supported
H8	ICI-> NI->OL-II	.0064	.0035	.0008	.0145	Supported

Table 5.20 and Table 5.21 and Figure 5.8 show the path coefficients and the analysis results for the two-path mediation effect of *mimetic isomorphism* and *organisational learning* on the relationship between *industrial cluster involvement* and *innovation performance*. The results doesn't support the hypothesis that *mimetic isomorphism* and *organisational learning* mediate the relationship between *industrial cluster involvement* and *incremental innovation* performance of the firm as the range between Lower limit confidence interval (LLCI) and Upper limit confidence interval (ULCI) include 0.

Figure 5.8
Serial mediation-2

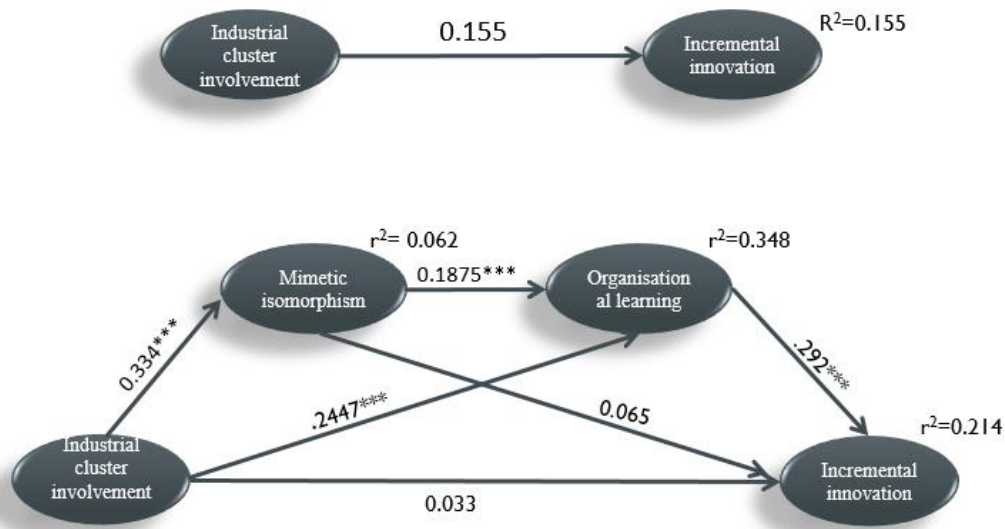


Table 5.20
Path Coefficients for the Structural Model

Direct Effect	Standard Estimate (β)	Standard Error (SE)	t-Statistic	P-Value	Result
ICI -> II	.0329	.0454	.7252	.4687	Not significant
ICI -> MI	.3341	.0448	7.4560	.0000	Significant
ICI -> OL	.2447	.0477	5.1294	.0000	Significant
OI -> II	.0786	.0418	1.8823	.0604	Not significant
MI -> OL	.1875	.0454	4.1278	.0000	Significant
MI -> II	.2918	.0428	6.8107	.0000	Significant

Table 5.21
Results of Two Path Mediation Analysis

Hypothesis	Indirect paths	Indirect effect	SE	LLCI	ULCI	Decision
	ICI-> MI->II	.0975	.0217	.0576	.1441	Not Supported
	ICI-> OL-> II	.0192	.0136	-.0048	.0485	Not Supported
H9	ICI-> MI->OL->II	.0049	.0036	-.0012	.0126	Not Supported

Chapter Summary

In summary, the present chapter presented the results of the various analysis employed in the current study. The chapter began with summarising the demographic profile of respondents (firms) who participated in the study. Further, the chapter presented each item's descriptive statistics in the measurement scales used for the study. Finally, the chapter offered the results of EFA, CFA and SEM and mediation analysis with relevant reporting of every essential statistics.

Chapter 6

DISCUSSION & CONCLUSION

The last chapter of the thesis discusses the study results and presents a summary of this research endeavour. The chapter examines the overall output of the research project to understand if the study's defined objectives are fulfilled as outlined in the initial chapters. Towards the end of this chapter, the significant limitations of this research project are presented while also providing the scope for future research in the area.

6.1 Discussion

This thesis's broad aim was to study how involvement in industrial cluster activities and the subsequent knowledge interactions help small firms achieve innovation performance. The study proposed that industrial cluster involvement would trigger isomorphic tendencies among the participating firms, which may act as a means for organisational learning. To achieve this objective, the study considered two types of organisational isomorphism, mimetic isomorphism and normative isomorphism, as antecedents for organisational learning and further for innovation performance.

6.1.1 Relationship between industrial cluster involvement and incremental innovation performance of firms

The empirical analysis in the current study began with addressing the most debated question in the cluster literature, i.e., if there is any significant relationship between industrial cluster involvement of firms and their innovation performance. This has been

controversial ever since the concept of clusters got introduced in the literature. Even though most of the scholars on industrial clusters believe that clusters significantly impact participating firm's innovation performance, some scholars also argue that it doesn't have any significant impact. Some scholars argue that clusters may negatively impact a firm's innovation performance due to the negative externalities of lock-in effects and congestion. In the backdrop of these contrasting arguments and inconclusive results in the literature, the current study also attempted to address this question. Our results reveal a significant relationship between industrial cluster involvement and incremental innovation performance of the clustered firms ($\beta = 0.196$ $t = 3.257$, $p < .001$). This is in line with the majority of the empirical studies which reported a positive result.

To address this question and operationalise the whole conceptual framework, we used more robust instruments relevant to the current study context. The multi-dimensional '*industrial cluster involvement*' scale helps to capture the details of the characteristics of the cluster in which the focal firm is a part of and the degree to which the firm is involved in various activities happening in the cluster. Such a measure can bring in more subtle details of the effect of clustering than the popular strategy adopted by the scholars where the effect of clustering is identified by mere location status of the firm. Likewise, in most studies on the innovation impact of clusters, innovation performance was measured using proxies such as patent counts, product launches etc. While such an approach has its own merits, it only accounts for the radical innovations achieved by hi-tech firms, which is not the case of firms in most industrial clusters in the developing world. The industrial clusters in countries like India are predominantly traditional manufacturing-oriented and home to thousands of small scale units that have succeeded in achieving a mark for excellence in the global manufacturing value chain in the respective domain. Their innovations are not

radical but incremental in nature. In that way, our empirical estimations are not only robust to the statistical procedures but also to the field realities of study subjects.

6.1.2 Relationship between industrial cluster involvement and organisational learning of firms.

The second hypothesis proposed in the current study is about the relationship between industrial cluster involvement of firms and their organisational learning performance. This also amounts to one of the most discussed aspects of industrial clustering as ‘knowledge spillover’ and ‘knowledge externalities’ are some of the significant reasons firms wish to locate in cluster ecosystems. The analysis results reveal a significant positive relationship between a firm’s involvement in industrial cluster activities and their organisational learning performance ($\beta = 0.233^{***}$, $t = 4.061$). These results are in line with that of Bessant (2004) and Niu *et al.* (2014).

Though the knowledge spillover aspect of industrial clustering has been much discussed, it was not subjected to proper empirical estimations much. In that sense, the findings of the current study reaffirm the knowledge externalities aspect of industrial clustering. This result holds relevance as policymakers are pushing the cluster development agenda, and the world is already evolving into a knowledge economy. In competing with larger companies with deep pockets for investing in knowledge acquisition, being in cluster locality and proactively involving in cluster activities would help smaller firms.

6.1.3 Relationship between industrial cluster involvement and normative isomorphism

The third objective of the current study was to analyse the relationship between industrial cluster involvement of firms and their normative isomorphic behaviour. The study results showed that a firm’s industrial cluster involvement is significantly related to

its normative isomorphic behaviour ($\beta = 0.267$, $t = 5.606$, $p < .001$). Though isomorphism among clustered firms was a matter of scholarly attention in the past, the current study would be among the first to empirically test the direct relationship between the degree of involvement in cluster activities and normative isomorphic behaviour of clustered firms.

Supporting the broader proposition based on population ecology theory and social conformity theory, these findings reinforce the significance of industrial clusters as it provides an avenue for achieving legitimacy for small firms by conforming to best practices and standards. The norms and standards set by leader firms and trade bodies in the clusters force smaller and newer firms who act as feeders or auxiliaries to conform to such standards, thus giving them a chance to improve themselves in the process.

6.1.4 Relationship between industrial cluster involvement and mimetic isomorphism

The propensity of firms that operate under similar environmental conditions to resemble their peers in the environment has attracted significant scholarly attention (DiMaggio & Powell, 1983; Oliver, 1990; Morrill & McKee, 1993; Sheppard, 1994; Scott, 1987; Zucker 1987). Being in the same geographical vicinity and exposed to similar environmental conditions, firms in the industrial clusters have high chances of having such isomorphic tendencies. To empirically test this aspect, the current study proposed a hypothesis to analyse the relationship between industrial cluster involvement and the mimetic isomorphic behaviour of the participating firms.

The study results showed that industrial cluster involvement is significantly related to the mimetic isomorphism of clustered firms ($\beta = 0.363$, $t = 6.648$, $p < .001$). This underscores the famous thesis that active involvement in the industrial cluster activities triggers mimetic isomorphic tendencies among the clustered firms. This is a significant

finding in the cluster literature as it is among the first to empirically test this relationship despite the existence of this argument in the literature for a long time.

Supporting the broader proposition based on population ecology theory and social contagion theory, the findings of this research reinforce the significance of conducive ecosystems for achieving targeted policy outcomes, especially in the areas such as industrial development. This also gives light to the undercurrents in the cluster – innovation phenomenon. Though isomorphic tendencies such as imitation may be detrimental in certain industries as it may dissuade companies from investing in R&D as others can enjoy a free ride of their achievement, it is an essential strategy for smaller firms for seeking legitimacy and performance improvement. Instituting conducive environments such as industrial clusters would trigger entrepreneurial spirits in the region as people would try to emulate the model firms in the region in their products and production processes.

6.1.5 Relationship between normative isomorphism and organisational learning

The fifth objective of the current study was to analyse the relationship between normative isomorphism and organisational learning. Isomorphism is often acknowledged as a learning strategy in human psychology. In the organisational context, scholars had a contrasting opinion about its effectiveness as a sustainable strategy. Some scholars believe that normative pressures help firms adhere to best practices and industry standards, thus prompting them to reinvent themselves with the best version of theirs with better service offerings. However, some scholars raised the concern that although isomorphic actions enable the firms to mobilise support and obtain resources, they may also adopt less constructive practices and forms (DiMaggio & Powell, 1983; Meyer, 1983). It also carries the danger of non-optimal model of operations and institutional models (Srikantia & Bilimoria, 1997).

The current study results show that a firm's normative isomorphic behaviour significantly impacts its organisational learning performance ($\beta = 0.238$, $t = 4.485$, $p < .001$). This is in line with Zhang & Hu (2017) finding that normative isomorphism significantly influences the firm's exploitative and explorative knowledge search process.

6.1.6 Relationship between mimetic isomorphism and organisational learning

As mentioned earlier, mimicking or imitating is a learning strategy as per human cognitive psychology. The theory of institutional isomorphism brought this notion to organisational context to argue that organisations can learn by emulating the best practices and products of those firms which they revere as models. While a significant section of scholars acknowledge that mimetic isomorphism is a good strategy for learning and innovation, the critics argue that isomorphism leads to homogenisation and the notion of homogenisation and innovation never go hand in hand. They point out that innovation is always about finding new ways and doing new things, whereas homogenisation is everyone converging to the same process and practices. According to them, such behaviour would result in a self-perpetuating cycle of mimicking influences, where firms would mutually reinforce and sustain institutional forms compatible with their abilities and limitations without attempting to innovate and learning.

Our finding reaffirms the popular notion that mimetic isomorphism significantly impacts a firm's organisational learning performance ($\beta = 0.157$, $t = 3.181$, $p < .001$). The critics' concerns may not be applicable in the context of the current study as the study is about small firms in industrial clusters that don't have internal institutional mechanisms such as R&D facilities to create and acquire knowledge on their own. For such firms, mimetic isomorphism would serve as a significant channel for organisational learning.

6.1.7 Relationship between organisational learning and incremental innovation.

The knowledge-based view of the firm emphasises the significance of knowledge as the most crucial asset for a firm to achieve a competitive advantage. The current study attempts to analyse the relationship between organisational learning and incremental innovation in the context of industrial clusters. The results reveal a significant relationship between organizational learning and incremental innovation performance of clustered firms ($\beta = 0.138$, $t = 2.766$, $p < .001$). These results are in line with that of Corral de Zubielqui *et al.* (2018). It reinforces the basic principle of knowledge based view of the firm in the context of industrial clusters.

6.1.8 Mediation analysis

Hypothesis 8 to 10 proposes mediation relationships between certain variables that constitute parts of the comprehensive framework of industrial cluster involvement-innovation relationship presented in the current study. Hypothesis 8 proposes that organisational learning mediates the relationship between industrial cluster involvement and incremental innovation. The results reveal that the proposed mediation relationship is partial. This shows that organisational learning acts as a potential channel through which the effect of a firm's industrial cluster involvement on its incremental innovation performance is facilitated. Hypothesis 9 proposes that normative isomorphism and organisational learning mediate the relationship between industrial cluster involvement and incremental innovation. This mediation relationship was also found to be partial. Hypothesis 10 proposes that mimetic isomorphism and organisational learning mediate the relationship between industrial cluster involvement and firms' incremental innovation performance. However, the results reveal that an indirect relationship in this proposition is insignificant.

6.2 Theoretical contributions

The current study makes significant theoretical contributions to the industrial cluster literature in multiple ways. The study has explored various channels through which knowledge interactions are facilitated in an industrial cluster by examining how industrial cluster involvement impacts organisational isomorphism, organisational learning, and innovation performance of firms in the industrial cluster. This implies testing of various distinctive relationships and thus making some concrete contributions to the existing body of knowledge in the domain.

The study's conceptual model was developed on the foundations of theories such as population ecology theory, social conformity theory, social contagion theory, and knowledge-based view of the firm. While population ecology theory can be used as an overarching theory to explain the processes involved in the knowledge interactions among firms in the cluster ecosystem in their pursuit for innovation, the social conformity theory and social contagion theory give a valid case for explaining distinct isomorphic practices involved in such interactions. The knowledge-based view of the firm stresses the strategic significance of organisational learning and acknowledges knowledge resources as an asset to the firm in their pursuit of competitive advantage. This thesis integrates these theories for building a coherent model for logically elucidating the relationship between various constructs. In other words, the explanations for the proposed relationships using these theories are not distinct but are synergistic with evidence and assumptions of one theory giving light to the formulation of a novel perspective ingrained within the premises of another theory. Thus, the current study attempts to demonstrate the plausibility of theoretically integrating the antecedents and outcomes of the clustering phenomenon and to empirically examine a comprehensive model of the cluster-innovation thesis.

Zhang & Hu (2017) are among the first to empirically analyse the organisational isomorphism in industrial clusters. The current study extends the scope of Zhang & Hu (2017) by introducing the construct *industrial cluster involvement* for assessing organisational isomorphic tendencies of clustered firms. They attempted to study isomorphism in the context of clusters by merely taking the sample of clustered firms as a unit of analysis. Such an approach limits the scope of the study as it doesn't look into the degree of the firm's involvement in the cluster activities and its impact on cluster outcomes.

Past studies had highlighted that, though most of the firms in the industrial clusters relay on inter-firm relationships for innovation, they cannot often purposively utilise these relationships as sources for ideas and new knowledge in innovation (Brunswick & Vanhaverbeke, 2015) (Ceci and Iubatti 2012; Edwards, Delbridge, and Munday 2005). Our results underscore this aspect and call for the need for serious attempts from clustered firms for proactively involving in the cluster activities and to make use of the relationships for learning and innovation. In that way, the current study deepens our conceptual understanding of clustered firm's external knowledge sourcing strategies for innovation. The thesis presents an empirical typology of organisational learning strategies of clustered firms in their pursuit of enhancing innovation performance.

The results show that engaging in organisational isomorphic practices is a sensible move for clustered firms as it offers learning opportunities and improves their innovation performance. It is identified that both forms of organisational isomorphism, i.e., normative isomorphism and mimetic isomorphism, aid in the firm's learning process. Further, exploring the cluster- innovation hypothesis in the context of traditional industry such as footwear manufacturing, which is largely dominated by SMEs, is a significant contribution as it addresses the need for studies on local innovation diffusion and its importance in the context of inclusive development agenda.

6.3 Practitioner implications

From a practitioner point of view, this thesis gives light to various aspects of the industrial cluster phenomenon, which would help policymakers devise better cluster development strategies for achieving desired policy outcomes. The main take away from the current study's findings is that organisational isomorphism and its allied aspects, such as imitation tendencies and group obedience, are not always against the notion of innovation. The critiques of induced clustering strategies often raise the concern that such ecosystems will result in 'lock-in effects', which impedes innovation. They also argue that allegiance to group norms is never a route to innovation; instead, walking out of the crowd is what makes innovation possible. The current study doesn't claim to take a conclusive position on this isomorphism- innovation debate, but the findings show a possibility of reconciling the contradiction between isomorphism and innovation. The results show that organisational isomorphism aids organisational learning, which in turn improves the innovation performance of clustered firms. The study results should be read in the context of this particular research and the sampling frame, i.e., small and medium firms in the footwear cluster. The study shows that in the context of SMEs, especially those in traditional industries, such concerns matters least. The thesis doesn't attempt to claim that this holds scope for generalisation irrespective of industry type and size. Lock-in and imitation would be a serious concern in hi-tech industries where cash outlay in research and development activities is enormous. Whereas, in the case of SMEs, where most of them don't even have a functional department for R&D, organisational isomorphism provides an avenue for learning and achieving legitimacy. This gives a serious takeaway for policymakers who are keen to induce industrial clusters as a strategy for regional industrial development. Devising industrial clusters should involve thorough introspection and should be done by considering the industry's nature and firm size.

The current study's fieldwork gave the author many first-hand insights on how such efforts can help small firms pursue (at least) incremental innovation and achieve growth. It is not mere membership in the cluster ecosystem that would help the firms achieve innovation, but their involvement in the cluster activities is what matters. The cluster authorities and the corresponding organisations at the helm of affairs should consider this aspect seriously, and attempts should be taken to bring all the stakeholders on board. Infrastructural facilities in the cluster locality should be improved for facilitating inter-firm interactions and joint actions. Governments can do a lot in this respect as a facilitator. Though governmental interventions are there in the focal clusters, it is found to be minimal. It is at the auspicious of various trade bodies all major activities are being conducted there. The government's proactive approach to setting up training institutes and conducting industrial exhibitions would trigger the entrepreneurial pulse of the locality.

Apart from the quantitative assessments and their results portrayed in the thesis, there are plenty of other insights the author received first hand during the fieldwork for the study. Detailed informal personal interviews conducted as part of data collection revealed that the events such as industrial exhibitions and trade fairs helped the firms get updated with the industry's latest happenings. Such events allow them to meet various machinery and raw materials suppliers and expose them to the latest technological updates in the domain.

The importance of firm's active involvement in the industrial cluster activities should be taken seriously by policymakers and participating firms. If the policy maker's role is to provide conducive infrastructural support for facilitating joint actions, the firm's role is to act proactively to make use of such platforms. This would help them engage in synergistic relationships between other firms in the ecosystem to help themselves overcome the limitations of scale and scope. Fruits of such actions are evident throughout

the clusters considered for the study. For e.g., the brand *Nexo*, a popular footwear brand in south India, especially in Kerala and Tamilnadu, is a product of the synergistic relationship between more than ten small companies which are situated within the geographical limits of Calicut Industrial Cluster. These companies are independent of each other in terms of ownership but came together under the same brand name for marketing purposes. They set up a centralised marketing office and divide the cost between them in the proportion of sales achieved for each firm's products. The visibility and the reach that they achieved would not have been made possible if not for this strategic joint action they all together initiated. Most of these firms are very small and have limited production capacity, and handle a product assortment of very few products. Maintaining a separate marketing channel for each of these firms would have been very difficult and costly. Coming together of these different companies under a single brand also ensures them to have a rich portfolio of products across different market categories. This gives them an edge while taking on their bigger rivals who have presence in all product segments.

This study also shows light on the necessity of having a balanced approach in formulating and enforcing laws concerning intellectual property or copyrights, especially with regards to small businesses. Though such regulations are crucial in ensuring the confidence of the business community who often incur significant cash outlay in research and development activities, it should not also turn as an impediment for smaller firms in their pursuit for learning and incremental innovation by modelling products and practices of their bigger or older counterparts. For smaller firms that don't possess the means for spending heavily on R&D activities, organisational isomorphism is a vital source of learning and development.

Overall the current thesis supports cluster development as an effective strategy for regional industrial development against the mounting arguments in the recent period citing concerns regarding the feasibility of such an approach .

6.4 Limitation and Future Research Directions

While the current study has significant implications in advancing the theoretical and practical understanding of the industrial cluster phenomenon, it also faces certain limitations. Some of these limitations can be addressed in further studies as it serves as a potential avenue for future research. The study uses cross-sectional data, which acts as a limitation in affirming the causal relationship between various focal constructs. The author has to rely on cross-sectional data while understanding the inherent limitations of such an approach owing to practical reasons. The data is collected from major footwear clusters in India, which spread throughout the length and breadth of the country. Collecting data through different waves was not feasible due to financial and logistical concerns. Time constraints for the project also act as an impediment for such an endeavour. Future researchers can take heed of these limitations and use panel data to explore the causal relationship depicted in the current study and verify the results. Introducing moderators in the current model also would yield more vivid explanations for the phenomenon.

To address such limitations, scholars must also utilise advanced methodologies for addressing similar questions. Applications of tools such as social network analysis can yield more nuanced results on how involvement in the industrial cluster activities or the networks of various stakeholders in the cluster helps them pursue learning and innovation. Even though the current study's initial plan included the propositions for using such techniques, it was dropped midway due to logistic concerns in mapping the interconnections between various actors in the cluster milieu. The respondent's

confidentiality concerns and apprehensions were also a reason for not materialising that proposal. The author strongly recommends using such techniques in furthering the scope of the current project.

Another limitation of the current study is that the data used is a self-reported assessment from the firm's owner or a senior manager. Even though such an approach is common within the field, maximum efforts are taken in the designing and analysing stage to limit the usual concerns about the self-reported assessment, especially on firm performance matters. Yet, the concerns such as common method variance cannot be conclusively ruled out. In continuation, the study also possesses the limitations of single informant data, i.e., the study collected data from only one respondent from one organisation. Even though it is a common practice in the domain (Maloni and Benton, 2000, Cheng *et al.*, 2014), the possibility that the person responding on behalf of the firm may not give an exact representation for the entire firm. To eliminate such concerns to the possible extent, serious efforts were taken to ensure that the respondents are either the owner/ proprietor or a top management professional at the helm of the organisation's overall administration.

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Appendix 1: HARP Statements

Please indicate your agreement or disagreement with the statements below. There are no wrong answers.

(Strongly Agree; Agree; Slightly Agree; Slightly Disagree; Disagree; Strongly Disagree)

Your views on the nature of reality (ontology)

1. Organisations are real, just like physical objects.
2. Events in organisations are caused by deeper, underlying mechanisms.
3. The social world we inhabit is a world of multiple meanings, interpretations and realities.
4. 'Organisation' is not a solid and static thing but a flux of collective processes and practices.
5. 'Real' aspects of organisations are those that impact on organisational practices.

Your views on knowledge and what constitutes acceptable knowledge (epistemology)

6. Organisational research should provide scientific, objective, accurate and valid explanations of how the organisational world really works.
7. Theories and concepts never offer completely certain knowledge, but researchers can use rational thought to decide which theories and concepts are better than others.
8. Concepts and theories are too simplistic to capture the full richness of the world.
9. What generally counts as 'real', 'true' and 'valid' is determined by politically dominant points of view.
10. Acceptable knowledge is that which enables things to be done successfully.

Your views on the role of values in research (axiology)

11. Researchers' values and beliefs must be excluded from the research.
12. Researchers must try to be as objective and realistic as they can.
13. Researchers' values and beliefs are key to their interpretations of the social world.
14. Researchers should openly and critically discuss their own values and beliefs.
15. Research shapes and is shaped by what the researcher believes and doubts.

Your views on the purpose of research

16. The purpose of research is to discover facts and regularities, and predict future events.
17. The purpose of organisational research is to offer an explanation of how and why organisations and societies are structured.
18. The purpose of research is to create new understandings that allow people to see the world in new ways.
19. The purpose of research is to examine and question the power relations that sustain conventional thinking and practices.
20. The purpose of research is to solve problems and improve future practice.

Your views on what constitutes meaningful data

21. Things that cannot be measured have no meaning for the purposes of research.
22. Organisational theories and findings should be evaluated in terms of their explanatory power of the causes of organizational behaviour.
23. To be meaningful, research must include participants' own interpretations of their experiences, as well as researchers' interpretations.
24. Absences and silences in the world around us are at least as important as what is prominent and obvious.
25. Meaning emerges out of our practical, experimental and critical engagement with the world.

Your views on the nature of structure and agency

- 26. Human behaviour is determined by natural forces.
- 27. People's choices and actions are always limited by the social norms, rules and traditions in which they are located.
- 28. Individuals' meaning-making is always specific to their experiences, culture and history.
- 29. Structure, order and form are human constructions.
- 30. People can use routines and customs creatively to instigate innovation and change.

Scoring key

Each answer you gave is given a number of points as shown in the table below

Strongly agree	Agree	Slightly agree	Slightly disagree	Disagree Strongly	Disagree Strongly
3	2	1	-1	-2	-3

Appendix 2- English Questionnaire

Dear Sir,

I, Mohemmad Naseef P- am a doctoral research student at School of Management Studies, University of Hyderabad conducting a research on “*Knowledge Interactions, Organisational Isomorphism and Innovation Performance of Firms in Industrial Clusters: A Study of SMEs In Indian Footwears Clusters*”.As a part of the research project I am requesting you to spare few minutes for filling the following questionnaire.

While answering the questionnaire please note that:

- Your answers are STRICTLY CONFIDENTIAL and intended for academic research only– study results will simply be exhibited in aggregate form.
- Your contribution toward the successful outcome of this study is INVALUABLE; please answer all questions as honestly as possible.
- There is no right or wrong answer, please just answer according to your opinion.

Thank you

Section 1

Name of the organisation				
Contact (Mob/ Email)				
Mode of existence	Registered		Non-registered	
Cluster/Locality/City	Chennai	Calicut	Agra	Kolkata
Product/Service category	Finished footwear	Ancillary services/Job works	Raw material suppliers	Machinery Suppliers
Total sales per year (approx.)				
Ownership pattern	Single owner	partnership	company	Cooperative/S HG
Gender of the promoter	Male	Female	other	
Educational background of the promoter (if applicable)	Below 10th	10 th	Degree	PG and above
Total no of employees/workers in the organisation				
Years of operation				
Scale of operation	Micro	Small	Medium	Large

Section 2- ICI

To what extent do you agree or disagree with each of the following statements? (Please put tick mark in the circle)

Note: Industrial cluster is nothing but a locality where large number of similar industrial units are co-existed. Here in this study industrial cluster refer to those places (namely Ambur/Kanpur/Calicut/Agra etc.) where large number of footwear manufacturing /related firms are co-located. Please fill the questionnaire keeping this in mind.

ICI-1. Firms within this industrial cluster often engage in subcontracting with other buyers and suppliers

Strongly Disagree ☐ *Disagree* ☐ *Neutral* ☐ *Agree* ☐ *Strongly Agree* ☐

ICI-2. Firms within this industrial cluster often engage in collaboration with other companies in a similar position on the supply chain

Strongly Disagree ☐ *Disagree* ☐ *Neutral* ☐ *Agree* ☐ *Strongly Agree* ☐

ICI-3. Firms within this industrial cluster can often focus more on developing their core value and activities

Strongly Disagree ☐ *Disagree* ☐ *Neutral* ☐ *Agree* ☐ *Strongly Agree* ☐

ICI-4. This industrial cluster encourages and stimulates more economic activities inside and outside the cluster

Strongly Disagree ☐ *Disagree* ☐ *Neutral* ☐ *Agree* ☐ *Strongly Agree* ☐

ICI-5. This industrial cluster allows the participating companies to establish a multiple interlinked relationship with their partners

Strongly Disagree ☐ *Disagree* ☐ *Neutral* ☐ *Agree* ☐ *Strongly Agree* ☐

ICI-6. Widespread local product imitation can be observed in this industrial cluster

Strongly Disagree ☐ *Disagree* ☐ *Neutral* ☐ *Agree* ☐ *Strongly Agree* ☐

ICI-7. This industrial cluster represents a particular technical competence as a whole (e.g., leather shoes, leather products [. . .] etc.)

Strongly Disagree ☐ *Disagree* ☐ *Neutral* ☐ *Agree* ☐ *Strongly Agree* ☐

ICI-8. Many companies that reside in this cluster share a joint social history.

Strongly Disagree ☐ *Disagree* ☐ *Neutral* ☐ *Agree* ☐ *Strongly Agree* ☐

ICI-9. Companies in this cluster are located in close geographic proximity to each other

Strongly Disagree ☐ *Disagree* ☐ *Neutral* ☐ *Agree* ☐ *Strongly Agree* ☐

ICI-10. The social network relationship among the companies and labors in this cluster are not based on purely economic or transactional relationships

Strongly Disagree ☐ *Disagree* ☐ *Neutral* ☐ *Agree* ☐ *Strongly Agree* ☐

ICI-11. There are some or many supportive institutions (e.g., research labs and universities [...] etc.) around the cluster

Strongly Disagree ○ *Disagree* ○ *Neutral* ○ *Agree* ○ *Strongly Agree* ○

ICI-12. National and/or local governments support the development of this cluster

Strongly Disagree ○ *Disagree* ○ *Neutral* ○ *Agree* ○ *Strongly Agree* ○

ICI-13. Many companies and labors have a shared cultural background

Strongly Disagree ○ *Disagree* ○ *Neutral* ○ *Agree* ○ *Strongly Agree* ○

ICI-14. The infrastructure (e.g., transportation and logistics) are favorable and supportive of participating companies in this cluster

Strongly Disagree ○ *Disagree* ○ *Neutral* ○ *Agree* ○ *Strongly Agree* ○

Section 3 -(OI)

NI-1. The operation of our firm is influenced by the relevant policies and regulations of the government

Strongly Disagree ○ *Disagree* ○ *Neutral* ○ *Agree* ○ *Strongly Agree* ○

NI-2. The restriction strength among peers makes the operation mode of our firm abide by industry regulations

Strongly Disagree ○ *Disagree* ○ *Neutral* ○ *Agree* ○ *Strongly Agree* ○

NI-3. The development process of our firm would be affected by the requirements of important customers or suppliers

Strongly Disagree ○ *Disagree* ○ *Neutral* ○ *Agree* ○ *Strongly Agree* ○

NI-4. The practitioners in the industry have similar education background and working experience

Strongly Disagree ○ *Disagree* ○ *Neutral* ○ *Agree* ○ *Strongly Agree* ○

NI-5. Our firm is willing to participate in technical cooperation to obtain new business knowledge and technology;

Strongly Disagree ○ *Disagree* ○ *Neutral* ○ *Agree* ○ *Strongly Agree* ○

NI-6. Our firm is willing to obtain new business knowledge and technology through the cooperation with university, research institute and government.

Strongly Disagree ○ *Disagree* ○ *Neutral* ○ *Agree* ○ *Strongly Agree* ○

MI-1. The practitioners of the industry often mimic each other.

Strongly Disagree ○ *Disagree* ○ *Neutral* ○ *Agree* ○ *Strongly Agree* ○

MI-2. Our firm often mimics the benchmarking enterprises in the industry

Strongly Disagree ○ *Disagree* ○ *Neutral* ○ *Agree* ○ *Strongly Agree* ○

MI-3. Our firm often mimics the innovative behaviour of other enterprises in the industry.

Strongly Disagree ○ *Disagree* ○ *Neutral* ○ *Agree* ○ *Strongly Agree* ○

MI-4. Our firm and other members of the industry often have more consistent market reaction behaviours.

Strongly Disagree ○ *Disagree* ○ *Neutral* ○ *Agree* ○ *Strongly Agree* ○

Section 4-(OL)

OL-1. Our company frequently acquires information or knowledge from outside the company.

Strongly Disagree ○ *Disagree* ○ *Neutral* ○ *Agree* ○ *Strongly Agree* ○

OL-2. Our company receives valuable information or knowledge by benchmarking.

Strongly Disagree ○ *Disagree* ○ *Neutral* ○ *Agree* ○ *Strongly Agree* ○

OL-3. Our company frequently communicates with partners/alliances .

Strongly Disagree ○ *Disagree* ○ *Neutral* ○ *Agree* ○ *Strongly Agree* ○

OL-4. Our company is able to get needed knowledge from contractual relationships from strategic partners.

Strongly Disagree ○ *Disagree* ○ *Neutral* ○ *Agree* ○ *Strongly Agree* ○

OL-5. Our company frequently receives feedback from customers.

Strongly Disagree ○ *Disagree* ○ *Neutral* ○ *Agree* ○ *Strongly Agree* ○

OL-6. Our company is capable of analysing, categorizing or systematizing general knowledge and transforming it into specific knowledge.

Strongly Disagree ○ *Disagree* ○ *Neutral* ○ *Agree* ○ *Strongly Agree* ○

OL-7. Our company is able to initiate various experimentations to explore new knowledge.

Strongly Disagree ○ *Disagree* ○ *Neutral* ○ *Agree* ○ *Strongly Agree* ○

OL-8. Our company is able to generate needed knowledge internally.

Strongly Disagree ○ *Disagree* ○ *Neutral* ○ *Agree* ○ *Strongly Agree* ○

OL-9. Our company has formal procedures or departments to develop valuable and useful knowledge.

Strongly Disagree ○ *Disagree* ○ *Neutral* ○ *Agree* ○ *Strongly Agree* ○

OL-10. Our company has informal procedures to develop knowledge.

Strongly Disagree ○ *Disagree* ○ *Neutral* ○ *Agree* ○ *Strongly Agree* ○

Section 5-(II)

II-1. Our company frequently improves the existing range of products and services.

Strongly Disagree ○ *Disagree* ○ *Neutral* ○ *Agree* ○ *Strongly Agree* ○

II-2. Our firm regularly applies small adaptations to the existing products and services.

Strongly Disagree ○ *Disagree* ○ *Neutral* ○ *Agree* ○ *Strongly Agree* ○

II-3. Improvements in existing products and services are introduced in the local market by our company

Strongly Disagree ○ *Disagree* ○ *Neutral* ○ *Agree* ○ *Strongly Agree* ○

II-4. Our firm improves the efficiency of our supplies of products and services.

Strongly Disagree ○ *Disagree* ○ *Neutral* ○ *Agree* ○ *Strongly Agree* ○

II-5. Our company increases economies of scale in existing markets.

Strongly Disagree ○ *Disagree* ○ *Neutral* ○ *Agree* ○ *Strongly Agree* ○

II-6. Reducing the costs of internal business processes is a major goal in your company

Strongly Disagree ○ *Disagree* ○ *Neutral* ○ *Agree* ○ *Strongly Agree* ○

Any other comments

.....
.....
.....
.....
.....

Appendix 3- Malayalam Questionnaire

Dear Sir,

I, Mohemmad Naseef P- am a doctoral research student at School of Management Studies, University of Hyderabad conducting a research on “*Knowledge Interactions, Organisational Isomorphism and Innovation Performance of Firms in Industrial Clusters: A Study of SMEs In Indian Footwears Clusters*”.As a part of the research project I am requesting you to spare few minutes for filling the following questionnaire.

While answering the questionnaire please note that:

- Your answers are STRICTLY CONFIDENTIAL and intended for academic research only– study results will simply be exhibited in aggregate form.
- Your contribution toward the successful outcome of this study is INVALUABLE; please answer all questions as honestly as possible.
- There is no right or wrong answer, please just answer according to your opinion.

Thank you

Section 1

Name of the organisation				
Contact (Mob/ Email)				
Mode of existence	Registered		Non-registered	
Cluster/Locality/City	Chennai	Calicut	Agra	Kolkata
Product/Service category	Finished footwear	Ancillary services/Job works	Raw material suppliers	Machinery Suppliers
Total sales per year (approx.)				
Ownership pattern	Single owner	partnership	company	Cooperative/S HG
Gender of the promoter	Male	Female	other	
Educational background of the promoter (if applicable)	Below 10th	10 th	Degree	PG and above
Total no of employees/workers in the organisation				
Years of operation				
Scale of operation	Micro	Small	Medium	Large

Section 2- ICI

To what extent do you agree or disagree with each of the following statements? (*Please put tick mark in the circle*)

താഴെ കൊടുത്തിരിക്കുന്ന പ്രസ്താവനകൾ എത്രത്തോളം നിങ്ങൾ അംഗീകരിക്കുന്നു ? (ദയവായി ബന്ധപ്പെട്ട വൃത്തങ്ങളിൽ ടിക്ക് മാർക്ക് രേഖപ്പെടുത്തുക)

Note: Industrial cluster എന്ന പദം ഒരു ഭൂപ്രദേശത്ത് ചില പ്രത്യേക വ്യവസായവുമായി ബന്ധപ്പെട്ട സ്ഥാപനങ്ങൾ വളരെ ധാരാളമായ അളവിൽ ഒരുമിച്ച് കാണപ്പെടുന്ന

പ്രവണതയെ സൃഷ്ടിക്കുന്നു. ഇവിടെ ഈ പഠനത്തിൽ ഈ പദം സൃഷ്ടിക്കുന്നത് പാദരക്ഷാ നിർമ്മാണവുമായി ബന്ധപ്പെട്ട വ്യവസായ സ്ഥാപനങ്ങൾ ധാരാളമായി കാണപ്പെടുന്ന ഇന്ത്യയിലെ പ്രദേശങ്ങളെ ആണ്. ഉദാഹരണത്തിന് ആമ്പൂർ / /കോഴിക്കോട് / ആഗ്ര etc. തങ്ങളുടെ പോലുള്ള മറ്റനേകം സ്ഥാപനങ്ങളുമായി ഒരു ഭൂപ്രദേശത്ത് തൊട്ടടുത്തുള്ള സഹവാസം എങ്ങനെയാണ് സ്ഥാപനങ്ങളെ പുതിയ അറിവുകൾ നേടാനും വളരാനും സഹായിക്കുന്നത് എന്നതിലേക്കുള്ള അന്വേഷണമാണ് ഈ പഠനം. ഈ കാര്യം മനസ്സിൽ വെച്ചുകൊണ്ട് ഈ ചോദ്യാവലി പൂരിപ്പിക്കുക.

Note: Industrial cluster is nothing but a locality where large number of similar industrial units are co-existed. Here in this study industrial cluster refer to those places (namely Ambur/Kanpur/Calicut/Agra etc.) where large number of footwear manufacturing /related firms are co-located. Please fill the questionnaire keeping this in mind.

ICI-1. Firms within this industrial cluster often engage in subcontracting with other buyers and suppliers

ഈ പ്രദേശത്തെ (industrial cluster) സ്ഥാപനങ്ങൾ പൊതുവേ മറ്റു സ്ഥാപനങ്ങളുമായി (buyers and supplier) സബ് കോണ്ട്രാക്ടിംഗിൽ ഏർപ്പെടാറുണ്ട്.

Strongly Disagree ☐ Disagree ☐ Neutral ☐ Agree ☐ Strongly Agree ☐

ICI-2. Firms within this industrial cluster often engage in collaboration with other companies in a similar position on the supply chain.

ഈ പ്രദേശത്തെ സ്ഥാപനങ്ങൾ പലപ്പോഴും തങ്ങളെ പോലുള്ള മറ്റു സ്ഥാപനങ്ങളുമായി സഹകരിച്ചു പ്രവർത്തിക്കാറുണ്ട്.

Strongly Disagree ☐ Disagree ☐ Neutral ☐ Agree ☐ Strongly Agree ☐

ICI-3. Firms within this industrial cluster can often focus more on developing their core value and activities

ഈ പ്രദേശത്തെ (industrial cluster) സ്ഥാപനങ്ങൾ തങ്ങളുടെ കാതലായ മൂല്യങ്ങളും (core value) പ്രവർത്തികളും വികസിപ്പിക്കുന്നതിൽ ശ്രദ്ധയുന്നു.

Strongly Disagree ☐ Disagree ☐ Neutral ☐ Agree ☐ Strongly Agree ☐

ICI-4. This industrial cluster encourages and stimulates more economic activities inside and outside the cluster

ഈ industrial cluster പ്രദേശത്തിലും ചുറ്റുവട്ടത്തും കൂടുതൽ സാമ്പത്തിക പ്രവർത്തനങ്ങൾക്ക് ഉത്തേജനവും പ്രോത്സാഹനവും നൽകുന്നു .

Strongly Disagree ☐ Disagree ☐ Neutral ☐ Agree ☐ Strongly Agree ☐

ICI-5. This industrial cluster allows the participating companies to establish a multiple interlinked relationship with their partners

ഈ industrial cluster അതിലെ സ്ഥാപനങ്ങളെ അവരുടെ പാർട്ട്നർ സ്ഥാപനങ്ങളുമായി വിവിധ തരത്തിലുള്ള പരസ്പര ബന്ധങ്ങൾക്ക് പ്രോത്സാഹിപ്പിക്കുന്നു.

Strongly Disagree ☐ Disagree ☐ Neutral ☐ Agree ☐ Strongly Agree ☐

ICI-6. Widespread local product imitation can be observed in this industrial cluster

വളരെ വ്യാപകമായി ഉത്പന്നങ്ങളുടെ അനുകരണം ഇവിടെ കാണാൻ കഴിയും.

Strongly Disagree ○ *Disagree* ○ *Neutral* ○ *Agree* ○ *Strongly Agree* ○

ICI-7. This industrial cluster represents a particular technical competence as a whole (eg. footwear)

ഈ industrial cluster ഒരു പ്രത്യേക സാങ്കേതിക നൈപുണ്യത്തെ കേന്ദ്രീകരിച്ചാണ് നിലനില്ക്കുന്നത്. ഉദാ. പാദരക്ഷകൾ

Strongly Disagree ○ *Disagree* ○ *Neutral* ○ *Agree* ○ *Strongly Agree* ○

ICI-8. Many companies that reside in this cluster share a joint social history.

ഇവിടെ സ്ഥിതി ചെയ്യുന്ന ധാരാളം കമ്പനികൾ ഒരേ സാമൂഹിക ചരിത്ര പശ്ചാത്തലത്തിൽനിന്നുള്ളവയാണ്.

Strongly Disagree ○ *Disagree* ○ *Neutral* ○ *Agree* ○ *Strongly Agree* ○

ICI-9. Companies in this cluster are located in close geographic proximity to each other

ഈ industrial cluster ലെ കമ്പനികൾ ഒരേ ഭൂപ്രദേശത്ത് വളരെ അടുത്തടുത്ത് നിലകൊള്ളുന്നു.

Strongly Disagree ○ *Disagree* ○ *Neutral* ○ *Agree* ○ *Strongly Agree* ○

ICI-10. The social network relationship among the companies and labors in this cluster are not based on purely economic or transactional relationships

ഈ ക്ലസ്റ്ററിലെ സ്ഥാപനങ്ങളും വിവിധ തൊഴിലാളികളും പരസ്പരം സാമൂഹിക ബന്ധങ്ങളിൽ എർപ്പെടുന്നത് വെറും സാമ്പത്തിക ഉദ്ദേശത്തോടെ മാത്രമല്ല.

Strongly Disagree ○ *Disagree* ○ *Neutral* ○ *Agree* ○ *Strongly Agree* ○

ICI-11. There are some or many supportive institutions (e.g., research labs and universities [...] etc.) around the cluster

ഈ ക്ലസ്റ്ററിനു ചുറ്റും ഈ വ്യവസായത്തെ സപ്പോർട്ട് ചെയ്യാനായി സ്ഥാപിതമായ കറച്ച/ ധാരാളം സ്ഥാപനങ്ങൾ ഉണ്ട് .

Strongly Disagree ○ *Disagree* ○ *Neutral* ○ *Agree* ○ *Strongly Agree* ○

ICI-12. National and/or local governments support the development of this cluster

ഈ ക്ലസ്റ്ററിന്റെ വളർച്ചയ്ക്കും വികാസത്തിനും പ്രാദേശിക/ ദേശീയ സർക്കാരുകളുടെ പിന്തുണ ലഭിക്കുന്നുണ്ട് .

Strongly Disagree ○ *Disagree* ○ *Neutral* ○ *Agree* ○ *Strongly Agree* ○

ICI-13. Many companies and labors have a shared cultural background

ഇവിടെ ഉള്ള ധാരാളം കമ്പനികളും തൊഴിലാളികളും ഒരേ സാംസ്കാരിക പശ്ചാത്തലത്തിൽ നിന്ന് ഉള്ളവരാകുന്നു.

Strongly Disagree ☐ Disagree ☐ Neutral ☐ Agree ☐ Strongly Agree ☐

ICI-14. The infrastructure (e.g., transportation and logistics) are favorable and supportive of participating companies in this cluster

ഈ പ്രദേശത്തെ അടിസ്ഥാന സൗകര്യങ്ങൾ ഇവിടുത്തെ കമ്പനികളുടെ വളർച്ചയ്ക്കും വികാസത്തിനും ഉതകുന്ന തരത്തിൽ ആണ്.

Strongly Disagree ☐ Disagree ☐ Neutral ☐ Agree ☐ Strongly Agree ☐

Section 3 -(OI)

NI-1. The operation of our firm is influenced by the relevant policies and regulations of the government.

സർക്കാരിന്റെ നയ-നിലപാടുകളും അതത് കാലത്തെ നിയമങ്ങളും ഞങ്ങളുടെ സ്ഥാപനത്തിന്റെ പ്രവർത്തനത്തെ സ്വാധീനിക്കാറുണ്ട് .

Strongly Disagree ☐ Disagree ☐ Neutral ☐ Agree ☐ Strongly Agree ☐

NI-2. The restriction strength among peers makes the operation mode of our firm abide by industry regulations.

ചുറ്റുമുള്ള മറ്റു കമ്പനികൾ ഉയർത്തുന്ന നിയന്ത്രണ സ്വാധീനം ഞങ്ങളുടെ കമ്പനിയെ ഇന്ധന നിയമങ്ങൾ പാലിച്ചു പ്രവർത്തിക്കാൻ പ്രേരിപ്പിക്കുന്നു.

Strongly Disagree ☐ Disagree ☐ Neutral ☐ Agree ☐ Strongly Agree ☐

NI-3. The development process of our firm would be affected by the requirements of important customers or suppliers

ഞങ്ങളുടെ സ്ഥാപനത്തിന്റെ വളർച്ച പ്രക്രിയ തങ്ങളുടെ പ്രധാന ഉപഭോക്താക്കളുടെയും വിതരണക്കാരുടെയും ആവശ്യങ്ങളുമായി വളരെയധികം ബന്ധപ്പെട്ടായിരിക്കും.

Strongly Disagree ☐ Disagree ☐ Neutral ☐ Agree ☐ Strongly Agree ☐

NI-4. The practitioners in the industry have similar education background and working experience

ഈ വ്യവസായ മേഖലയിലെ പ്രാക്ടീഷ്ണെർസിന് സമാനമായ വിദ്യാഭ്യാസ പശ്ചാത്തലവും ജോലി പരിചയവും കാണപ്പെടുന്നു.

Strongly Disagree ☐ Disagree ☐ Neutral ☐ Agree ☐ Strongly Agree ☐

NI-5. Our firm is willing to participate in technical cooperation to obtain new business knowledge and technology.

ഞങ്ങളുടെ സ്ഥാപനം വിവിധ സാങ്കേതിക സഹകരണങ്ങളിൽ പങ്കുകൊള്ളുന്നതിലും അതുവഴി പുതിയ ബിസിനസ് അറിവുകളും സാങ്കേതിക വിദ്യകളും ആർജ്ജിക്കുന്നതിലും ബദ്ധശ്രദ്ധരാണ്.

Strongly Disagree ☐ Disagree ☐ Neutral ☐ Agree ☐ Strongly Agree ☐

NI-6. Our firm is willing to obtain new business knowledge and technology through the cooperation with university, research institute and government.

ഞങ്ങളുടെ സ്ഥാപനം യൂനിവേർസിറ്റി, ഗവേഷണ സ്ഥാപനങ്ങൾ , ഗവർണ്മെന്റ് തുടങ്ങിയവരുമായി സഹകരിച്ചു പുതിയ അറിവുകളും സാങ്കേതിക വിദ്യകളും നേടിയെടുക്കുന്നതിൽ ബദ്ധശ്രദ്ധരാണ്.

Strongly Disagree ○ *Disagree* ○ *Neutral* ○ *Agree* ○ *Strongly Agree* ○

MI-1. The practitioners of the industry often mimic each other.

ഈ വ്യവസായ മേഖലയിലെ പ്രാക്ടീഷ്യൻസ് പലപ്പോഴും പരസ്പരം അനുകരിക്കാറുണ്ട്.

Strongly Disagree ○ *Disagree* ○ *Neutral* ○ *Agree* ○ *Strongly Agree* ○

MI-2. Our firm often mimics the benchmarking enterprises in the industry

ഞങ്ങളുടെ സ്ഥാപനം ഇൻഡസ്ട്രി യിലെ മികച്ച സ്ഥാപനങ്ങളെ പലപ്പോഴും അനുകരിക്കാറുണ്ട്.

Strongly Disagree ○ *Disagree* ○ *Neutral* ○ *Agree* ○ *Strongly Agree* ○

MI-3. Our firm often mimics the innovative behaviour of other enterprises in the industry.

ഞങ്ങളുടെ സ്ഥാപനം ഇൻഡസ്ട്രിയിലെ മറ്റു സ്ഥാപനങ്ങളുടെ നവീനമായ പ്രവർത്തികളെ അനുകരിക്കാറുണ്ട്.

Strongly Disagree ○ *Disagree* ○ *Neutral* ○ *Agree* ○ *Strongly Agree* ○

MI-4. Our firm and other members of the industry often have more consistent market reaction behaviours.

ഞങ്ങളും ഞങ്ങളെ പോലെ ഈ ഇൻഡസ്ട്രിയിലെ മറ്റുള്ളവരും വിപണിയിലെ ചലനങ്ങളോട് സ്ഥിരതയാർന്ന പെരുമാറ്റമാണ് കാണിക്കാറു.

Strongly Disagree ○ *Disagree* ○ *Neutral* ○ *Agree* ○ *Strongly Agree* ○

Section 4-(OL)

OL-1. Our company frequently acquires information or knowledge from outside the company.

ഞങ്ങളുടെ കമ്പനി കമ്പനിക്ക് പുറമെയുള്ള സ്രോതസ്സുകളിൽ നിന്നും നിരന്തരം അറിവും വിവരങ്ങളും ശേഖരിക്കാറുണ്ട്.

Strongly Disagree ○ *Disagree* ○ *Neutral* ○ *Agree* ○ *Strongly Agree* ○

OL-2. Our company receives valuable information or knowledge by benchmarking.

വിപണിയിൽ മികച്ച പ്രവർത്തനം കാഴ്ച വെക്കുന്ന സ്ഥാപനങ്ങളെ മാതൃക ആക്കി വഴി (benchmarking) ഞങ്ങളുടെ കമ്പനിക്ക് ധാരാളം വിലപ്പെട്ട അറിവും വിവരങ്ങളും ആർജ്ജിക്കാൻ കഴിയുന്നു.

Strongly Disagree ○ *Disagree* ○ *Neutral* ○ *Agree* ○ *Strongly Agree* ○

OL-3. Our company frequently communicates with partners/alliances .

ഞങ്ങളുടെ കമ്പനി തങ്ങളുടെ വ്യാപാര പങ്കാളികളുമായി നിരന്തരം സമ്പർക്കത്തിൽ ഏർപ്പെടാറുണ്ട്.

Strongly Disagree ○ *Disagree* ○ *Neutral* ○ *Agree* ○ *Strongly Agree* ○

OL-4. Our company is able to get needed knowledge from contractual relationships from strategic partners.

തങ്ങളുടെ തന്ത്ര പ്രധാന പങ്കാളികളുമായുള്ള കരാർ ബന്ധങ്ങളിലൂടെ തങ്ങളുടെ കമ്പനിക്ക് ധാരാളം ആവശ്യ അറിവുകൾ ആർജ്ജിക്കാൻ സാധിക്കുന്നു.

Strongly Disagree ○ *Disagree* ○ *Neutral* ○ *Agree* ○ *Strongly Agree* ○

OL-5. Our company frequently receives feedback from customers.

തങ്ങളുടെ കമ്പനിക്ക് തങ്ങളുടെ ഉപഭോക്താക്കളിൽ നിന്നും നിരന്തരം അഭിപ്രായങ്ങൾ (feedback) ലഭിക്കാറുണ്ട്.

Strongly Disagree ○ *Disagree* ○ *Neutral* ○ *Agree* ○ *Strongly Agree* ○

OL-6. Our company is capable of analysing, categorizing or systematizing general knowledge and transforming it into specific knowledge.

തങ്ങളുടെ കമ്പനിക്ക് സാധാരണ അറിവുകളെ അപഗ്രഥിക്കാനും അവ ചിട്ടപ്പെടുത്തി വ്യവസ്ഥാപിതമാക്കി തങ്ങളുടെ പ്രത്യേക ആവശ്യങ്ങൾക്ക് ഉപയോഗപ്പെടുത്താനുമുള്ള കഴിവുണ്ട്.

Strongly Disagree ○ *Disagree* ○ *Neutral* ○ *Agree* ○ *Strongly Agree* ○

OL-7. Our company is able to initiate various experimentations to explore new knowledge.

തങ്ങളുടെ കമ്പനി പുതിയ അറിവുകൾ തേടാൻ വിവിധ പരീക്ഷണ നിരീക്ഷണങ്ങളിൽ ഏർപ്പെടാൻ പ്രാപ്തമാണ്.

Strongly Disagree ○ *Disagree* ○ *Neutral* ○ *Agree* ○ *Strongly Agree* ○

OL-8. Our company is able to generate needed knowledge internally.

തങ്ങളുടെ കമ്പനിക്ക് തങ്ങൾക്കാവശ്യമുള്ള അറിവുകൾ സ്ഥാപനത്തിന്റെ ഉള്ളിൽ നിന്ന് തന്നെ ഉല്പാദിപ്പിക്കാൻ സാധിക്കാറുണ്ട്.

Strongly Disagree ○ *Disagree* ○ *Neutral* ○ *Agree* ○ *Strongly Agree* ○

OL-9. Our company has formal procedures or departments to develop valuable and useful knowledge.

തങ്ങളുടെ കമ്പനിക്ക് മൂല്യവത്തും ഉപകാരപ്രദവുമായ അറിവുകൾ വികസപ്പിക്കാൻ ഔദ്യോഗികമായ (formal) സംവിധാനങ്ങൾ ഉണ്ട്.

Strongly Disagree ○ *Disagree* ○ *Neutral* ○ *Agree* ○ *Strongly Agree* ○

OL-10. Our company has informal procedures to develop knowledge.

തങ്ങളുടെ കമ്പനിയിൽ അറിവുൽപാദിപ്പിക്കാൻ അനൗദ്യോഗികമായ സാഹചര്യങ്ങൾ ഉണ്ട്.

Strongly Disagree ○ *Disagree* ○ *Neutral* ○ *Agree* ○ *Strongly Agree* ○

Section 5-(II)

II-1. Our company frequently improves the existing range of products and services.

തങ്ങളുടെ കമ്പനി തങ്ങളുടെ ഉത്പന്ന ശ്രേണി നിരന്തരം മെച്ചപ്പെടുത്താറുണ്ട്.

Strongly Disagree ☐ Disagree ☐ Neutral ☐ Agree ☐ Strongly Agree ☐

II-2. our firm regularly applies small adaptations to the existing products and services.

ഞങ്ങളുടെ കമ്പനി തങ്ങളുടെ നിലവിലുള്ള ഉത്പന്നങ്ങളിൽ സ്ഥിരമായി കൊച്ചുകൊച്ചു മാറ്റങ്ങൾ (adaptations) വരുത്താറുണ്ട്.

Strongly Disagree ☐ Disagree ☐ Neutral ☐ Agree ☐ Strongly Agree ☐

II-3. Improvements in existing products and services are introduced in the local market by our company.

നിലവിലുള്ള ഉത്പന്നങ്ങളിൽ ഇടക്കിടെ മെച്ചപ്പെടുത്തലുകൾ കൊണ്ടുവന്ന് പ്രാദേശിക വിപണിയിൽ അവതരിപ്പിക്കാറുള്ളത് ഞങ്ങളുടെ കമ്പനി ആണ് .

Strongly Disagree ☐ Disagree ☐ Neutral ☐ Agree ☐ Strongly Agree ☐

II-4. Our firm improves the efficiency of our supplies of products and services.

ഞങ്ങളുടെ സ്ഥാപനം തങ്ങളുടെ ഉത്പന്ന വിതരണ സംവിധാനങ്ങളുടെ കാര്യക്ഷമത വർദ്ധിപ്പിക്കാറുണ്ട്.

Strongly Disagree ☐ Disagree ☐ Neutral ☐ Agree ☐ Strongly Agree ☐

II-5. Our company increases economies of scale in existing markets.

ഞങ്ങളുടെ കമ്പനി തങ്ങളുടെ നിലവിലുള്ള വിപണികളിൽ പ്രവർത്തനങ്ങളുടെ തോത് കൂട്ടി വരുമാന വർദ്ധനവ് സാധ്യമാക്കാറുണ്ട്.

Strongly Disagree ☐ Disagree ☐ Neutral ☐ Agree ☐ Strongly Agree ☐

II-6. Reducing the costs of internal business processes is a major goal in our company

കമ്പനിയുടെ ഉള്ളിലെ വിവധ പ്രവർത്തനങ്ങൾ നിയന്ത്രിച്ചു ചെലവ് ചുരുക്കുക എന്നത് ഞങ്ങളുടെ കമ്പനിയുടെ ഒരു പ്രധാന ലക്ഷ്യം ആണ്.

Strongly Disagree ☐ Disagree ☐ Neutral ☐ Agree ☐ Strongly Agree ☐

Any other comments

.....

Appendix- 4

Hindi Questionnaire

Questionnaire(प्रश्नावली)

Dear Sir,

I, Mohemmad Naseef P- am a doctoral research student at School of Management Studies, University of Hyderabad conducting a research on “*Knowledge Interactions, Organisational Isomorphism and Innovation Performance of Firms in Industrial Clusters: A Study of SMEs In Indian Footwears Clusters*”.As a part of the research project I am requesting you to spare few minutes for filling the following questionnaire.

While answering the questionnaire please note that:

- Your answers are STRICTLY CONFIDENTIAL and intended for academic research only– study results will simply be exhibited in aggregate form.
- Your contribution toward the successful outcome of this study is INVALUABLE; please answer all questions as honestly as possible.
- There is no right or wrong answer, please just answer according to your opinion.

Thank you

प्रश्नावली का उत्तर देते समय कृपया ध्यान दें कि :

- आपका उत्तर अत्यंत गोपनीय एवं केवल अकादमिक शोध के लिए उद्दिष्ट(intented) है- अध्ययन के परिणामों को सामूहिक रूप में प्रदर्शित किया जाएगा
- इस अध्ययन के सफलतापूर्वक परिणाम के ओर आपका योगदान बहुमूल्य है ; कृपया सभी प्रश्नों का निष्ठापूर्वक उत्तर दें
- यहाँ कोई भी गलत या सही उत्तर नहीं है, कृपया अपने मतानुसार उत्तर दें

धन्यवाद

Section 1

Name of the organisation					
Contact (Mob/ Email)					
Mode of existence	Registered		Non-registered		
Cluster/Locality/City	Chennai	Calicut	Agra	Kolkata	Kanpur
Product/Service category	Finished footwear	Ancillary services/Job works	Raw material suppliers	Machinery Suppliers	
Total sales per year (approx.)					
Production Capacity (Approx.; no of pairs per day if applicable)					
Ownership pattern	Single owner	partnership	company	Cooperative/S HG	
Gender of the promoter	Male	Female	Other		

Educational background of the promoter (if applicable)	Below 10th	10 th	Degree	PG and above
Previous entrepreneurial experience of the promoter/s	Yes		No	
Total no of employees/workers in the organisation				
Years of operation				
Scale of operation	Micro	Small	Medium	Large

Section 2- ICI

To what extent do you agree or disagree with each of the following statements? *(Please put tick mark in the circle)*

निम्नलिखित कथनों से आप किस सीमा तक सहमत या असहमत हैं? (कृपया गोले के भीतर सही का निशान लगाएं)

Note: Industrial cluster is nothing but a locality where large number of similar industrial units are co-existed. Here in this study industrial cluster refer to those places (namely Ambur/Kanpur/Calicut/Agra etc.) where large number of footwear manufacturing /related firms are co-located. Please fill the questionnaire keeping this in mind.

नोट: व्यवसायिक समूह (Industrial cluster) एक स्थान है जहाँ समरूप व्यवसायिक इकाइयाँ एक बड़ी संख्या में एक साथ पाए जाते हैं। इस अध्ययन में व्यवसायिक समूह का संबंध उन स्थानों से है (नामत: Ambur/Kolkata/Calicut/Agra इत्यादि) जहाँ एक बड़ी संख्या में फुटवियर (footwear) विनिर्माण (manufacturing)/सम्बंधित व्यवसायिक संघ (firms) या कंपनियाँ एक साथ स्थापित हैं। कृपया इन बातों का ध्यान रखते हुए प्रश्नावली का उत्तर दें।

ICI-1. Firms within this industrial cluster often engage in subcontracting with other buyers and suppliers

इस व्यवसायिक समूह के अंतर्गत व्यवसायिक संघें अक्सर दूसरे खरीदारों एवं आपूर्तिकर्ताओं (suppliers) के साथ उप-ठेकेदारी (subcontracting) में संलग्न (engage) रहते हैं

Strongly Disagree ☒ Disagree ☒ Neutral ☒ Agree ☒ Strongly Agree ☒

दृढ़तापूर्वक असहमत ☐ असहमत ☐ निष्पक्ष ☐ सहमत ☐ दृढ़तापूर्वक सहमत ☐

ICI-2. Firms within this industrial cluster often engage in collaboration with other companies in a similar position on the supply chain

इस व्यवसायिक समूह के अंतर्गत व्यवसायिक संघें अक्सर दूसरे कंपनियों के साथ आपूर्ति श्रृंखला पर एक समान स्थिति में सहभागिता में संलग्न रहते हैं।

Strongly Disagree ☒ Disagree ☒ Neutral ☒ Agree ☒ Strongly Agree ☒

ICI-3. Firms within this industrial cluster can often focus more on developing their core value and activities

इस व्यवसायिक समूह के अंतर्गत व्यवसायिक संघों अक्सर उनके बुनयादी मूल्य एवं गतिविधियों को विकसित करने में अधिक ध्यान केन्द्रित कर सकते हैं।

Strongly Disagree *Disagree* *Neutral* *Agree* *Strongly Agree*

ICI-4. This industrial cluster encourages and stimulates more economic activities inside and outside the cluster

यह व्यवसायिक समूह, समूह के भीतर एवं बाहर अधिक मात्र में आर्थिक गतिविधियों को प्रोत्साहित एवं प्रेरित करता है।

Strongly Disagree *Disagree* *Neutral* *Agree* *Strongly Agree*

ICI-5. This industrial cluster allows the participating companies to establish a multiple interlinked relationship with their partners

यह व्यवसायिक समूह भाग लेने वाले कम्पनियों को उनके सहभागियों के साथ एक बहु अंतर्संबंधित/आंतरिक रूप से जुड़ा (interlinked) सम्बन्ध स्थापित करने की अनुमति देता है।

Strongly Disagree *Disagree* *Neutral* *Agree* *Strongly Agree*

ICI-6. Widespread local product imitation can be observed in this industrial cluster

इस व्यवसायिक समूह में स्थानीय उत्पाद प्रतिरूप/ नकली(imitation) एक बड़े पैमाने पर देखा जा सकता है।

Strongly Disagree *Disagree* *Neutral* *Agree* *Strongly Agree*

ICI-7. This industrial cluster represents a particular technical competence as a whole (e.g., leather shoes, leather products [. . .] etc.)

यह व्यवसायिक समूह सम्पूर्ण रूप में एक विशेष तकनीकी योग्यता को प्रस्तुत करती है।

Strongly Disagree *Disagree* *Neutral* *Agree* *Strongly Agree*

ICI-8. Many companies that reside in this cluster share a joint social history.

इस समूह में रहने वाली बहुत सारे कम्पनियाँ एक संयुक्त सामाजिक इतिहास साझा करते हैं।

Strongly Disagree *Disagree* *Neutral* *Agree* *Strongly Agree*

ICI-9. Companies in this cluster are located in close geographic proximity to each other

इस समूह में कम्पनियाँ एक दूसरे के निकट स्थित होती हैं।

Strongly Disagree *Disagree* *Neutral* *Agree* *Strongly Agree*

ICI-10. The social network relationship among the companies and labors in this cluster are not based on purely economic or transactional relationships

इस समूह में, कम्पनियों एवं मजदूरों का सोशल नेटवर्क के साथ संबंध केवल आर्थिक या लेन-देन संबंध पर आधारित नहीं हैं।

Strongly Disagree *Disagree* *Neutral* *Agree* *Strongly Agree*

ICI-11. There are some or many supportive institutions (e.g., research labs and universities [...] etc.) around the cluster

समूह के आस-पास कुछ या बहुत सारे सहयोगी संस्थाएं हैं। (उदाहरणतः शोध प्रयोगशालायें एवं विश्वविद्यालय आदि)

Strongly Disagree *Disagree* *Neutral* *Agree* *Strongly Agree*

ICI-12. National and/or local governments support the development of this cluster

इस समूह के विकास में राष्ट्रीय और/या स्थानीय सरकारें सहयोग प्रदान करती हैं।

Strongly Disagree *Disagree* *Neutral* *Agree* *Strongly Agree*

ICI-13. Many companies and labors have a shared cultural background

बहुत सारे कम्पनियों एवं मजदूरों ने सांस्कृतिक पृष्ठभूमि को साझा किया है।

Strongly Disagree *Disagree* *Neutral* *Agree* *Strongly Agree*

ICI-14. The infrastructure (e.g., transportation and logistics) are favourable and supportive of participating companies in this cluster

इस समूह में भाग लेने वाले कम्पनियों के लिए आधारभूत संरचना (जैसे- परिवहन एवं सैन्य -तंत्र) अनुकूल एवं सहयोगी हैं।

Strongly Disagree *Disagree* *Neutral* *Agree* *Strongly Agree*

Section 3 -(OI)

NI-1. The operation of our firm is influenced by the relevant policies and regulations of the government

हमारे व्यवसायिक संघ(firm) की कार्य- विधि सरकार के उपयुक्त नीतियों एवं नियमन(regulations) द्वारा प्रभावित है।

Strongly Disagree *Disagree* *Neutral* *Agree* *Strongly Agree*

NI-2. The restriction strength among peers makes the operation mode of our firm abide by industry regulations

सहकर्मियों के बीच प्रतिबन्ध क्षमता हमारे व्यवसायिक संघ(firm) के कार्य-विधि प्रणाली, व्यवसाय (industry) विनियमन का पालन कराता है।

Strongly Disagree *Disagree* *Neutral* *Agree* *Strongly Agree*

NI-3. The development process of our firm would be affected by the requirements of important customers or suppliers

हमारे व्यवसायिक संघ(firm) की विकास प्रक्रिया महत्वपूर्ण ग्राहकों एवं आपूर्तिकर्ताओं के द्वारा प्रभावित किया जाएगा।

Strongly Disagree *Disagree* *Neutral* *Agree* *Strongly Agree*

NI-4. The practitioners in the industry have similar education background and working experience

व्यवसाय (industry) में व्यवसायी(practitioners) के पास समान शिक्षण पृष्ठभूमि एवं कार्य अनुभव होता है।

Strongly Disagree *Disagree* *Neutral* *Agree* *Strongly Agree*

NI-5. Our firm is willing to participate in technical cooperation to obtain new business knowledge and technology;

नए व्यवसायिक जानकारी एवं प्रौद्योगिकी प्राप्त करने के लिए हमारा व्यवसायिक संघ(firm) तकनीकी सहयोग में भाग लेने की लिए इच्छुक है।

Strongly Disagree *Disagree* *Neutral* *Agree* *Strongly Agree*

NI-6. Our firm is willing to obtain new business knowledge and technology through the cooperation with university, research institute and government.

हमारा व्यवसायिक संघ(firm) विश्वविद्यालयों, शोध संस्था एवं सरकार के सहयोग के माध्यम से नए व्यवसायिक जानकारी एवं प्रौद्योगिकी प्राप्त करने के लिए इच्छुक है।

Strongly Disagree *Disagree* *Neutral* *Agree* *Strongly Agree*

MI-1. The practitioners of the industry often mimic each other.

व्यवसाय में व्यवसायी(practitioners) अक्सर एक दुसरे के नकल करते हैं।

Strongly Disagree *Disagree* *Neutral* *Agree* *Strongly Agree*

MI-2. Our firm often mimics the benchmarking enterprises in the industry

हमारा व्यवसायिक संघ(firm) व्यवसाय में मानदण्डनीय प्रतिष्ठान का अक्सर नकल करते हैं।

Strongly Disagree *Disagree* *Neutral* *Agree* *Strongly Agree*

MI-3. Our firm often mimics the innovative behaviour of other enterprises in the industry.

हमारा व्यवसायिक संघ(firm) व्यवसाय में अक्सर दूसरे प्रतिष्ठानों के नवीन व्यवहार की नकल करते हैं।

Strongly Disagree *Disagree* *Neutral* *Agree* *Strongly Agree*

MI-4. Our firm and other members of the industry often have more consistent market reaction behaviours.

हमारा व्यवसायिक संघ(firm) एवं व्यवसाय के दूसरे सदस्यों के पास अक्सर अधिक अटल(consistent) बाजार प्रतिक्रिया व्यवहार होता है।

Strongly Disagree *Disagree* *Neutral* *Agree* *Strongly Agree*

Section 4-(OL)

OL-1. Our company frequently acquires information or knowledge from outside the company.

हमारी कम्पनी प्रायः बाहरी कम्पनी से सूचना एवं जानकारी प्राप्त करती है।

Strongly Disagree *Disagree* *Neutral* *Agree* *Strongly Agree*

OL-2. Our company receives valuable information or knowledge by benchmarking.

हमारी कम्पनी मानदण्ड के द्वारा बहुमूल्य सूचना एवं जानकारी प्राप्त करती है।

Strongly Disagree *Disagree* *Neutral* *Agree* *Strongly Agree*

OL-3. Our company frequently communicates with partners/alliances .

हमारी कम्पनी प्रायः अपने साथियों के साथ बात-चीत करते हैं।

Strongly Disagree *Disagree* *Neutral* *Agree* *Strongly Agree*

OL-4. Our company is able to get needed knowledge from contractual relationships from strategic partners.

हमारी कम्पनी कूटनीतिक साथियों से ठेकेदारी सम्बन्धों के माध्यम से आवश्यक जानकारी प्राप्त करने में योग्य है।

Strongly Disagree *Disagree* *Neutral* *Agree* *Strongly Agree*

OL-5. Our company frequently receives feedback from customers.

हमारी कम्पनी प्रायः अपने ग्राहकों से प्रतिपुष्टि(feedback) प्राप्त करती है।

Strongly Disagree *Disagree* *Neutral* *Agree* *Strongly Agree*

OL-6. Our company is capable of analysing, categorizing or systematizing general knowledge and transforming it into specific knowledge.

हमारी कम्पनी सामान्य जानकारी को विश्लेषण, वर्गीकरण या सुव्यवस्थित करने में एवं इसे विशिष्ट जानकारी में रूपांतरित करने में सक्षम है।

Strongly Disagree *Disagree* *Neutral* *Agree* *Strongly Agree*

OL-7. Our company is able to initiate various experimentations to explore new knowledge.

हमारी कम्पनी नई जानकारी खोजने के लिए विभिन्न प्रयोग को शुरू करने में सक्षम है।

Strongly Disagree *Disagree* *Neutral* *Agree* *Strongly Agree*

OL-8. Our company is able to generate needed knowledge internally.

हमारी कम्पनी आंतरिक रूप से आवश्यक जानकारी उत्पन्न करने में सक्षम है।

Strongly Disagree *Disagree* *Neutral* *Agree* *Strongly Agree*

OL-9. Our company has formal procedures or departments to develop valuable and useful knowledge.

हमारी कम्पनी के पास बहुमूल्य एवं उपयोगी जानकारी विकसित करने के लिए औपचारिक पद्धतियां एवं विभाग हैं।

Strongly Disagree *Disagree* *Neutral* *Agree* *Strongly Agree*

OL-10. Our company has informal procedures to develop knowledge.

हमारी कम्पनी के पास जानकारी विकसित करने के लिए अनौपचारिक पद्धतियां हैं।

Strongly Disagree *Disagree* *Neutral* *Agree* *Strongly Agree*

Section 5-(II)

II-1. Our company frequently improves the existing range of products and services.

हमारी कम्पनी प्रायः उत्पादों एवं सेवाओं के वर्तमान श्रृंखला में सुधार करती है।

Strongly Disagree *Disagree* *Neutral* *Agree* *Strongly Agree*

II-2.Your firm regularly applies small adaptations to the existing products and services.

हमारी व्यवसायिक संघ(firm) उत्पादों एवं सेवाओं के वर्तमान श्रृंखला में निरंतर छोटे रूपांतरण लागू करता है।

Strongly Disagree *Disagree* *Neutral* *Agree* *Strongly Agree*

II-3.Improvements in existing products and services are introduced in the local market by our company

स्थानीय बाजार में उत्पादों एवं सेवाओं के वर्तमान श्रृंखला में सुधार आपके कम्पनी के द्वारा प्रस्तुत किया जाता है।

Strongly Disagree *Disagree* *Neutral* *Agree* *Strongly Agree*

II-4.Our firm improves the efficiency of your supplies of products and services.

हमारी व्यवसायिक संघ(firm) आपके उत्पादों एवं सेवाओं के आपूर्ति के कार्यक्षमता को सुधारता है।

Strongly Disagree *Disagree* *Neutral* *Agree* *Strongly Agree*

II-5.Our company increases economies of scale in existing markets.

हमारी कम्पनी वर्तमान बाजारों में अर्थव्यवस्था के स्तर को बढ़ता है।

Strongly Disagree *Disagree* *Neutral* *Agree* *Strongly Agree*

II-6.Reducing the costs of internal business processes is a major goal in our company

आंतरिक व्यवसाय प्रक्रिया के खर्च को कम करना आपके कम्पनी का प्रमुख लक्ष्य है।

Strongly Disagree *Disagree* *Neutral* *Agree* *Strongly Agree*

Any other comments (कोई अन्य टिप्पणियां)

.....
.....
.....
.....

Thank you(धन्यवाद)

Policy for Performance: Towards Integrating Entrepreneurial Ecosystem Approach on Co-operative Framework—The Case of Coir Co-operatives in Alappay

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Mohemmad Naseef¹
P. Jyothi¹

Abstract

Industrial clustering and co-operativization are two globally acknowledged policy mechanisms for regional industrial development. Alappay district of Kerala is one of the major hubs of coir industry in India and it occupies a substantial place in the coir map of the world. Alappay possesses almost all the physical attributes of a typical industrial cluster with a critical mass of related units and ancillaries enjoying spatial agglomeration and sharing common facilities. The coir industry of Alappay is largely organized on 'workers' co-operative' basis. Despite the incidence of these supportive policy measures and favourable environmental conditions, the industry is on the verge of decline. The findings of the current study show that though Alappay possesses a fare score in the assessment of its cluster attributes, most of the firms are consistently reporting losses and their number is increasing year by year. A similar trend is seen in the case of firm survival and new firm creation. Among the output indicators, employment generation is the only aspect which is consistently showing positive results. Drawing on personal interviews with relevant stakeholders such as managers/secretaries of co-operative societies and government officials and a critical analysis of various policy documents, this article attempts to explore why the globally acclaimed policy

¹ School of Management Studies, University of Hyderabad, Hyderabad, Telangana, India.

Corresponding author:

Mohemmad Naseef, School of Management Studies, University of Hyderabad, Prof. C.R. Rao Road,
PO Central University, Hyderabad, Telangana 500046, India.
E-mail: naseefp@uohyd.ac.in

mechanisms such as industrial clustering and co-operativization fail to bring the fruits of competitiveness and innovation to the coir industry in Alappay. The study also proposes an entrepreneurial ecosystem approach as a mechanism to revive this floundering industry and discusses its adaptability and complementarity with the co-operative framework prevailing in the industry.

Keywords

Regional development, industrial clusters, economic policy, entrepreneurial ecosystem, workers' co-operatives, sick industry, coir industry, competitiveness

Introduction

The significance of small firms in the economic development of a region is uncontested. Governments across the globe are focusing on formulating policies for the development of this sector assuming its potential in employment generation and inclusive development (Birch 1979, 1987). Now, the power of small firms in economic development is well acknowledged, unlike the latter part of the 20th century in which narratives of 'trickledown effect' dominated policy debates. Earlier, policy intervention in terms of special legislation, protective regulation and tax incentives were made to reduce cost or competition in favour of those big 'national firm champions' (Reynolds, Hay and Camp 1999; Stevenson and Lundström 2007).

The catalytic role of policy intervention on regional industrial or entrepreneurship development is well accepted. But what should be the ultimate objective of a regional entrepreneurship policy? Should the policymakers prefer increasing the quantity or the quality of entrepreneurship? The inability to address this fundamental question is one of the vital reasons behind the policy paralysis regarding regional industrial development in many developing countries. The situation is much worse when analysing the impact of policy interventions pertaining to the so-called 'sick industries'. The recent debates show that regional entrepreneurship policies are now shifting from enhancing the quantity of entrepreneurship to enhancing the quality of entrepreneurship (Stam 2015).

Policy interventions on 'sick industries' are often a double-edged sword especially when they bear a history of centuries and cater to the livelihood of thousands of families in a region. Any intervention which may disrupt the industry equilibrium is viewed with scepticism. The fear of potential job loss and the tendency to resist change hinder stakeholders from embracing the reforms despite the hues and cries for proactive actions from various corners. This situation can be well identified with the coir industry of India especially in coastal areas of Alappay district of Kerala.

Alappay has an important place in the coir map of the world whose history dates back to the 18th century when India was under colonial rule. Alappay possesses roughly all major attributes of a typical industrial cluster with enormous related industrial units functioning in a constrained geographical proximity. The government had initiated various policy and regulatory measures to improve the productivity of this industry. Coir research institutes and common facilities were established



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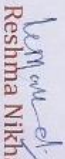
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Knowledge Interactions, Organisational Isomorphism and Innovation Performance of Firms in Industrial Clusters: A Study of SMEs in Indian Footwear Clusters

by Mohemmad Naseef P

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