NOBEL INTERNATIONAL BUSINESS SCHOOL

DOCTOR OF PHILOSOPHY IN BUSINESS ADMINISTRATION

Examining the relationship between Intrapreneurship, Institutions, and Perceived Sectoral Growth: A Meso-Level Empirical Study in the Manufacturing Sector

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Declaration

I, Sule **Ishola Omotosho,** hereby declare that this dissertation is the product of original research conducted by me under the supervision of Dr. Hod Anyigba. I also declare that this dissertation has not been submitted to any other institution for assessment, publication, or for any other purpose. Where the works of other people have been used, references have been duly cited. It is in this regard that I declare this work as originally mine. It is hereby presented in partial fulfilment of the requirements for the award of the Doctor of Philosophy Degree in Business Administration at the Nobel International Business School.

…… Date: ……

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Dr. Hod Anyigba (Supervisor)

Abstract

Intrapreneurship study is not a new concept to scholars in the field of strategic management and economics just to mention few. However, what is consistent with the intrapreneurship literature is the ambiguities in its context, antecedents, moderation or mediation, consequences and its synonymity with the concept of corporate entrepreneurship.

As wide as the phenomenon of intrapreneurship is, it takes different form of dimensions and contexts to achieve desired performance outcomes. For instance, innovation, corporate venturing, strategic renewal, institutions are widely acceptable dimensions while firm, industry, region and country are well known contexts of intrapreneurship. However, effects of these dimensions and contexts can easily be interchanged.

Of particular interests are; (i) intrapreneurship influence in the context of sectoral economy, (ii) what factors drive and moderate intrapreneurship to grow industries, particularly in the manufacturing sector (iii) the dichotomy of industry and sectoral concepts of entrepreneurship and (iv) sectoral growth as a perceived performance outcome of intrapreneurship. Thus, the domains of entrepreneurship, institutions, industry agglomeration, and sectoral economic performance are synthesised and critiqued with the objectives of investigating the relationships among these variables and in particular, if both formal and formal institutions moderate the effects of innovation, corporate venturing and strategic renewal on the growth of the Ghanaian manufacturing sector.

The main focus is to integrate the associated theories of new institutions, new (endogenous) growth, and externality theory in a unique scholastic platform that is complemented with the concept of indigenous study which debunks that the ontology and epistemology of the western nations' philosophy as entrenched in most of the entrepreneurship literature fit all issues and gaps of the phenomenon globally. Hence, the peculiarity of culture, traditions, regulatory environment in different countries, differentiate performance outcomes among the different economies.

Framework of sectoral economy and perceived sectoral growth was conceptualised, while the dependent and independent variables were operationalised in the context of sector as a unit of analysis which is distinct from industry view of entrepreneurship. To buttress this conceptual framework, contingent focus was put on the nexus of industry agglomeration externalities and intrapreneurship dimensions on one hand, and on sectoral growth on the

other hand. The choice of quantitative analysis methodology design was adopted. In this methodology, stratified sampling was followed by the use of structured questionnaire on a 7-point Likert scale items for all the measurement variables and responses collected from the sampled instrument were analysed using basic statistics and structural equation modelling (SEM) as a comprehensive regression analysis.

The main findings from the study include; (i) industry agglomeration externalities of specialisation, diversity, competition and technology spillovers have positive and significant relationships with innovation, new business start-up, industry transformation and the growth of the manufacturing sector of Ghana. (ii) innovation dimension and formal institutional role of regulation are positively and significantly related to the Ghanaian manufacturing sector. These findings answered some of our research questions that point to the effects of industry agglomeration externality, regulation and innovation on the growth of Ghana manufacturing sector. Therefore, validating the concept of sectoral entrepreneurship.

Finally, this study has two implications; its contributions to theories bridging and policy implications for the current industrial policy in Ghana. With some limitations such as the ambiguity of the concept of sectoral entrepreneurship, dichotomy between the concepts of industry and sectoral entrepreneurship, and focusing on a single sector analysis instead of multi-sector analysis of the Ghanaian economy, we suggest some appropriate theoretical and policy recommendations to expand the frontiers of entrepreneurship literature, empirical investigation and future research.

Keywords: *entrepreneurship, intrapreneurship, industry agglomeration externality, formal institutional role, informal institutional role, perceived sectoral growth, intrapreneurship dimensions.*

Dedication

This dissertation is dedicated to God Almighty ALLAH and to my immediate family; my wife (Sherifat Olanike Omotosho), and my children (Barakat Ayomide, Faruq Olanrewaju and Abdul-Muiz Ayodamola).

When the going was tough and my hopes were dangling, I hold faith in God and took solace in my family.

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The journey to achieving Ph.D. has not been fairly smooth, but eventually I was able to arrive at the destination. Completing this doctoral programme would not have been possible without the able supports and encouragement from my indefatigable supervisor and my academic advisor, Dr. Hod Anyigba (Ph.D. Entrepreneurship and Economics).

His genuine critique, analysis and use of comparative research literature and evidences to assess my capability from time to time, have helped me to improve the contents, reasoning and validity that were put behind the study. Although, he is always there for me, it is not as easy as i earlier thought.

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Chapter 1: Introduction

1.1 Background of the study

Entrepreneurship studies at the micro-economic level has always emphasized the How's and Why's of entrepreneurial activities and processes of individual entrepreneurs and established firms, with the consequence of performance in terms of profitability and growth (McKelvie & Wiklund, 2010). At the macro-economic level, entrepreneurship research has broadened its influence on economic activities of entrepreneurs in the productive sectors of the economy with the consequence of sectoral, regional, and national growth and development. (Naudé, 2013; Aparicio, Urbano & Audretsch, 2015; Carlsson, Braurerhjelm, McKelvey, Olofsson, Pearson & Ylinenpaa, 2013).

Therefore, today's globalized and industrialized world, projects entrepreneurship as a *'sine qua non'* engine of economic growth (Bradley & Klein, 2016; Chowdhury, Terjesen & Audretsch, 2014; Galindo & Méndez, 2014; Bjørnskov and Foss, 2016). This growth tendency focuses entrepreneurial impacts on business mindset, agility, and orientation of business leaders toward risks and rewards, market opportunities and challenges in a disruptive and competitive marketplace. It follows that the perception of entrepreneurship as a *"dominant logic"* which influences behaviours, structures, systems, culture, resource allocation, and strategic decision-making process of entrepreneurial firms (Bettis & Prahalad, 1995), can no longer be over-emphasised.

Similarly, the departure from traditional economy of production factors (land, capital and labour) to the dictates of knowledge-based economy and innovative entrepreneurship has also helped define the importance of a long-run economic progress that is anchored on creation of wealth, enhancement of productivity, full employment and technological advancement (Bruton, Ahlstrom & Si, 2015; Zahra, 2015, 1991; Simsek & Heavey, 2011). Entrepreneurship has equally been posited as the barometer for a country's economic growth as it represents the vehicle for global shifts in investment, human capital, market information, and for strengthening strategic decision-making process of corporate firms in their pursuits of competitive advantages (Thurik, 2009).

Not surprising that intrapreneurship in particular, has been postulated as one of the pathways to a sustainable economic growth (Holmes, Zahra, Hoskinson, DeGhetto & Sutton, 2016), it suffices to state that if entrepreneurship culture is well enshrined in an established and organised industrial sector that has strategic focus and directions, aggregate firms in that sector

would always seek for opportunities, evolve novelty in product and process, exploit and explore resources and capabilities to seek advantages and create value (De Massis, Kotler, Wright & Kellermans, 2018; Kuratko, Morris & Schindehutte, 2015).

However, there have been different scholastic views on what factors influence intrapreneurship in its contributions to economic growth. The emphasis of boundary conditions in this study, is that formal and informal institutions moderate intrapreneurship in the quest for economic growth at the sectoral level of economy (Auto & Fu, 2015; Álvarez, Amorós, & Urbano, 2014; Aparicio, Urbano & Audretsch, 2015; Acs, Audretsch, Braunerhjelm & Carsson, 2012; Braunerhjelm, Desai & Eklund, 2015).

This argument therefore corroborates that the domains of industry agglomeration, intrapreneurship, institutions, sectoral economic performance, and indigenous research are bounded together to give a unified and unique platform for understanding entrepreneurship set-up in a sectoral economy of a country.

In the extant literature, the definition, concept, and model of entrepreneurship are elusive, ambiguous and heterogenous. The phenomenon of entrepreneurship still lacks rigours, its existing theoretical frameworks and contextualisation need to be deepened, while its diversity that cut across different disciplines need to be integrated to provide a unified platform for enhanced the understanding of entrepreneurship domain (Sharma & Chrisman, 1999; Audretsch, Kuratko & Link, 2015; Kuratko, Hornsby & Hayton, 2015; Kuratko, Morris & Schindehutte, 2015; Kuratko & Audretsch, 2013).

Notwithstanding this complexity, the dimensions of intrapreneurship phenomenon is unambiguously conceptualised in terms of innovation, corporate venturing, and strategic renewal (Kuratko & Audretsch, 2013; Corbett, Covin, O'Connor & Tucci, 2013; Guth & Ginsberg, 1990; Zahra, 1996). These variables suggest that there are precursors of intrapreneurship which enable the understanding of why corporate firms pursue entrepreneurial efforts and compete to be the market leader in their industries.

Foremost, innovation is a means of exploring new products, process or markets to create a competitive edge. Whereas corporate venturing refers to the creation of new business organization within or outside the existing corporate organization, while strategic renewal is the effort of entrepreneurial firms in bringing substantial changes or renewal to their current strategy or structural foundations.

These entrepreneurial activities take place in an economic environment that are significantly influenced by hostility, munificence, disruption, competition, and other global shifts (Zahra, 1993; Hitt, Ireland, Sirmon & Thrams (2011). The activities are also driven by

institutions across sectoral economy, especially when it is linked to economic growth (Krasniqi & Desai, 2016). This is because institutions dictate the level-playing rule of the games in the environment (North, 2016) and contains factors that are capable of moulding entrepreneurial actions and behaviours. Institutions also make the entrepreneurs behave differently than they would have ordinarily behaved (Voigt, 2013), since naturally some situations could influence people and organisations not conforming to the rules and regulations. To illustrate, Bjørnskov and Foss (2016, 2013) argue that institutions and economic growth allow for economic freedom and moderate the relationship between entrepreneurship and total factor productivity.

The interplay of industry agglomeration externalities, intrapreneurship and institutions have consequences of firm-level and sectoral economic performances. However, theoretical framework of firm performance in relation to corporate entrepreneurial activities has been of diverse applicability and subjectivity among scholars of different disciplines (i.e., economics, finance, management). It follows that the definition and measurement of entrepreneurial outcomes are not universally adopted in the literature of organizational performance. However, Miller, Washburn, and Glick (2013) in their work titled "Myth of Performance", emphasise that the determinants of firm performance are composed of its dimensionality, expectations from the theory, empirical work, and performance as aggregate construct. Thus, performance of organisations could be seen from the lenses of either theoretical or methodological approach or from both areas.

It also follows that the definition and conceptualisation of entrepreneurial outcome variables are very important. The outcome variables to measure should be defined and the performance measurement to use should reflect "*valid sample*" of the measurement items that are contained in the domain of those outcome variables (Katsikeas, Morgan, Leonidou & Hult, 2016). In the perspective of sectoral performance measurement, aggregate growth of corporate firms in an industry is usually expressed in terms of conventional economic growth, although performance measurement of an economic sector is not be limited to growth phenomena.

Thus, the sectoral growth that incorporate the context of institutions and industry performance effects are considered appropriate measures for entrepreneurship research at the macro-economic level (Erken, Donselaar & Thurik, 2016; Aparicio, Urbano & Audretsch, 2015; Acemoglu, Gallego & Robinson, 2014; Galindo & Méndez, 2013; Bjørnskov & Foss, 2013). Normally, such economic growth is expected to emerge from the internal and external environment in which the industries operate, and they vary across sectors, regions, and countries.

Unarguably, this notion of environmentality has brought in some debates on indigeneity perspective of theory which has exposed gaps in the extant theories of entrepreneurship and institutions. To buttress this argument, the literature, and empirical evidences from which most of the extant entrepreneurship studies have cited, are predominantly focused on the theories and models of the western nations. Notwithstanding, few studies have explored plausibility of entrepreneurship and institutions theories in the context of emerging and developing economies (Edoho, 2015; Salimath & Cullen, 2010; Bruton, Ahlstrom & Li, 2010; Acs, Desai & Hessel, 2008).

In attempt to bridge the indigeneity gap and factor specificity of institutional and entrepreneurial environment in the study of entrepreneurship, the philosophy of indigeneity was advanced to limit the over-reliance on the theory and epistemology of western nations as *'one-fits-all'* propositions, values and assumptions for global research environment (Bruton, Zahra & Cai, 2018). This attempt showcases that indigenous research underpins the local domain of study that augment leading home-grown theories, concepts, and empirical investigation rather than subjugate them to those of the western nations as either confounding variables or moderators.

The underlying rationale in this instance is to develop local context of theories and epistemological frontiers that are comparable to global advanced knowledge. Redding, and Witt (2015) argue that indigenous research entrenches *"meaning systems" in a "societal context"*. This context significantly influences both the actions and strategic relationships of agents in an organization and by extension, the surrounding of the organization.

1.2 Problem Statement

In recent times, entrepreneurship literature has expanded the linkage among intrapreneurship, institutions, and their influences on the economy (Bjørnskov & Foss, 2016, 2013; Bradley & Klein, 2016; Castaño, Méndez & Galindo, 2016; Aparicio, Urbano & Audretsch, 2015).The frontier of intrapreneurship has also strengthened theoretical and empirical focus and interest on institutionalism as it impacts entrepreneurship domain and economic growth (Stuetzer, Audretsch, Obschonka, Gosling, Rentfrow & Potter, 2017; Lubishtani, 2017; Prieger, Bampoky, Blanco & Liu, 2016; Krasniqi & Desai, 2016, Eesley, 2016; Acs, Astebro, Audrestch & Robinson, 2016).

This trend of entrepreneurial curiosity has also expanded the context of relationship between entrepreneurship and institutions (Eijdenberg, Thompson, Verduijon & Essers, 2018; Angulo-Guerrero, Perez-Moreno & Abad-Guerrero, 2017; Armanios, Eesley, Li & Eisenhardt,

2017; Edoho, 2015; Chowdury, Terjesen & Audretsch, 2014), while the nexus of industry collocation and growth of sectoral economy was exploited with the view of establishing how industry clusterisation enhances growth and other growth in a geographical context (Elison, Glaesar & Kerr, 2010).

However, the domain of entrepreneurship is laden with several ambiguities and sparseness of modern issues in the area of intrapreneurship. This demands problematization and deeper understanding. To illustrate, the issue as to what extent does an intrapreneurship impacts growth in the sectoral economy is still an unresolved debate (Stuezer, Audretsch, Obschonka, Gosling, Rentfrow & Potter, 2017; Lee, 2016; Naudé, 2013, 2011; McKleve & Wiklund, 2010).

Lack of unified theories of diverse disciplines, complexity of data sources and measurement related issues are significant factors that contribute to the constraints in establishing valid connections of intrapreneurial activities to the aggregate economic growth of firms (Erken, Donselaar and Thurik, 2016; Bjørnskov and Foss, 2013; Aparicio et al., 2015; Thornton, Riberio-Soriano and Urbano, 2011).These three constraints noted above can be categorised into theoretical, empirical and methodological gaps.

First, the phenomenon of intrapreneurship is often subjected to diverse theories, In the literature, intrapreneurship is commonly accepted as a conceptual domain rather than a theory. However, the underlying theory is not universal and the domain is often explained using different theories, depending on the theoretical framework emanating from the discipline of scholars (i.e., economics, law, sociology, etc.,) which consequently exposes the ambiguity in the understanding of the intrapreneurship and its relationship with the sectoral growth.

For instance, most of the scholars in the field of economics and legal studies apply theory of institutions to explain intrapreneurship (Bjørnskov & Foss, 2016, 2013; Aparicio, Urbano & Audretsch, 2015). The term institutional intrapreneurship is common, while the proponent scholars tend to focus primarily on the institutional implications of entrepreneurship, such as regulations, policies, traditions, culture to positioning intrapreneurship phenomenon as a criterion rather than explanatory variable.

Similarly, the scholars of sociology or psychology disciplines tend to use behavioural theories that emphasise cognition, social skills, affects, leadership, motivation and networks to personify the characteristics of intrapreneurship (Baron, 2007; Rowe, 2001; Baum & Locke, 2004). In this instance, intrapreneurship is seen as consequence of good leadership, effective motivational forces or environmental contingency that drives necessity or opportunity entrepreneurship.

On the contrary, the proponents of new growth theory contend that endogeneity of entrepreneurship in form of innovation and technological disruption can enhance economic growth (Erken, Donselaar & Thurik, 2016; Feki & Mnif, 2016). Hence, intrapreneurship is posited as an explanatory variable to the growth of economy. With these inherent ambiguities in the diversity of the underlying theories, the necessity of investigating a unified theory that encompass these differences and give a single identity to the phenomenon of intrapreneurship with the consequence of sectoral growth should dominate the next frontier of intrapreneurship domain.

Second, there is a gap in the theory of institutions in the emphasis of *'rule of the game'* and *'endogeneity'* of institutionalism, when relating institutions to the phenomenon of 'growth', as a consequence of intrapreneurship, particularly at the sectoral level. The rule of game determines how the intrapreneurial firms or industry conform with the determinants of the institutional forces such as customs, traditions, laws, regulations to be economically productive to their sectors and can serve as either incentives or disincentives (Acemoglu & Johnson, 2005; Voigt, 2013). At the same time, these institutional forces and its changes are endogenous to the industry (North, 2016), meaning that it can also be influenced by the behaviours of the intrapreneurial industry.

Therefore, the instance of sectoral growth being perceived as the consequence of intrapreneurship, might result in a likelihood of bias that could lead to bidirectional relationship or simultaneous causality, where intrapreneurship is also conceived as a driver for growth (Zaefarian, Kadile, Henneberg and Leischnig, 2017; Hartog, Parker, Stel & Thurik, 2010; Davidsson, Demar & Wiklund, 2008). Similarly, institutions may influence sectoral growth and sectoral growth may also influence institutions (Elert & Henrekson, 2017).

Taking cue on this dilemma, it is argued that on one hand, intrapreneurship within the manufacturing sector of an economy can emerge from performance growth of established and new cluster of industries through agglomeration externalities of diversity and competitiveness and through the informal channels of shared culture, rules and convention. On the other hand, sectoral growth as a perspective of aggregate performance of clustered industries could also emanate from the continuous emergence of intrapreneurial activities of innovation, corporate venturing and strategic renewal which is largely driven by diversity, knowledge spillover, competition, shared rules and conventions within the cluster of industries.

Third, the dimensions of 'cognitive', 'normative' and 'regulative' rules of game as espoused by Scott (2005) do influence the relationship that institutions have on entrepreneurship (Bradley & Klein 2016). However, the nexus of these institutional dimensions

with the growth consequence of intrapreneurial industry is virtually missing in the extant literature. Cognitive rule of game dictates the entrepreneurial know-how and use of judgement in discovering entrepreneurial opportunities and resources. On the other hand, normative rules are ethical and moral behaviours of intrapreneurs that are appropriate to justify entrepreneurial actions, while regulative rules show the legality of entrepreneurial actions.

Notwithstanding, the effects of these institutional forces and their changes on sectoral growth differ across countries, and also across sectors of the economy simply because the characteristics of sectoral economy often become stable over time, while the socio-political, economic environment and enabling culture are dynamic, thus witnessing continuous changes. The fact that the cognitive, normative and regulative institutional forces are driven by increasing dynamism in the socio-economic environment, make them to be important determinants of industry growth which could promote or constrain sectoral intrapreneurship and the growth of the sector.

The above connotation suggests that the informal institutional roles of shared values information symmetry, social network and industry-wide cultural affiliations within the manufacturing sector carry the implications of the cognitive, normative and regulative dimensions. First, industries within the manufacturing sector share the norms, conventions among themselves to give meanings to agglomeration benefits and the consequence of growth of the sector. Second, the influence of knowledge spillovers and affiliations among the clustered industries through informal associations and enhancement of sector-based knowledge are evolved through the normativeness of the informal institutional roles which are considered obligatory and evaluative. Lastly, the setting of rules and standards, as well as the sanctioning and enforcement of those rules are embedded in the regulatory framework that are collectively understood among the sectoral intrapreneurs regardless of the fact that the rules do not need to be formalised but rather taken as norms and conventions prevailing in the socio-political environment of the industries.

Therefore, it is pertinent for scholars to address the observed gap by expanding the understanding of how the institutional forces of cognitive, normative and regulative dimensions change the entrepreneurial intents, motives, processes and growth consequences for industrial sector of the economy.

Fourth, the focus of entrepreneurship research in most of the extant literature was concentrated on the micro (i.e., firm-level) and macro (i.e., national or regional level) entrepreneurship with very little efforts on meso-level (i.e., industry sectoral level) entrepreneurship that interacts between the micro and macro levels which is important to

establish the relationship that exists among intrapreneurship, institutions and sectoral growth of the economy (Massis, Kotlar, Wright and Kellermanns, 2018).

The over-reliance on micro and macro-economic tendency of intrapreneurship to the detriment of a meso-level analysis is an open gap waiting to be addressed by entrepreneurship scholars. There is apparent gap in theorising meso-level entrepreneurship in the extant literature and this has led to the failure of scholars to understand and appreciate how industrial sector shapes intrapreneurial activities of the economy regardless of the fact that industry variables have long been studied in entrepreneurship.

It follows that prior research tends to treat industrialism in the model of intrapreneurship as a cofounding or instrumental variable rather than a criterion or explanatory construct to fully explore the linkages and effects of industry agglomeration externalities on the macroeconomics of intrapreneurship and sectoral growth (De Massis et al., 2018; Gorgievski & Stephan, 2016; Navis & Ozbek, 2016; Zahra & Wright, 2011; Welter, 2011). The failure to bridge this gap in the literature has resulted in overbearing of studies on macro-level institutions which has consequently belittle the understanding and complementarity of the roles that institutions play in an entrepreneurial economy, particularly at the industrial sectoral level.

Finally, the fallout from the lack of unique theoretical platform for explaining relationship of intrapreneurship and sectoral growth has opened a gap of theory integration. In order to provide a solid base for entrepreneurship domain and particularly the concept of intrapreneurship, the theories of institutions, growth and agglomeration externalities should be bridged together and integrated as one single theory that will expose further the relationship among intrapreneurship, institutions and growth in a sectoral economy.

Following some of the research studies that adopt theory integration (Sherer & Lee, 2002), the frontier of entrepreneurship theory could expand, if the influences among the variables of intrapreneurship, agglomeration, institutions and sectoral growth are investigated based on an integrated theory that unifies these sets of variables. In this instance, a theoretical development of sectoral intrapreneurship is necessary to provide stronger scholastic supports for the frontier of entrepreneurship research.

Following the theoretical issues problematised above, it appears that adequate empirical justifications for the heterogeneity of the intrapreneurial dimensions across varying institutional roles are lacking in the extant literature. No gainsaying that intrapreneurial dimensions of innovation, corporate venturing and strategic renewal are heterogenous across different roles of formal and informal institutions. However, the empirical gap does not allow the evolution of institutionalism and institutional linkage to industry characteristics to measure

full impacts of the institutional roles and growth of sectoral economy within the framework of entrepreneurship (Bradely and Klein, 2016). This argument further insinuates an endogeneity of intrapreneurship in the sense that it could be the cause and also the consequence of economic growth (Bjorskov & Foss, 2012).

As a consequence, scholars are confronted with some of the issues that accompany rigorous research in the empirical investigation of what institutional factors drive the endogeneity of intrapreneurship in the quest for growth in the industrial sector of the economy and whether intrapreneurship has a bi-directional relationship with institutions (Pacheco, York, Dean and Sarasvathy, 2010). This gap also translates to the fact that the effects of entrepreneurial activity across diverse roles of formal and informal institutions are yet to be fully explored and investigated (Bjørnskov & Foss, 2016).

Aside the empirical gaps, it appears that there is a methodological gap when it comes to sourcing, measuring and analysing data that are used in the study of intrapreneurship-sectoral growth relationship. The choice of sourcing and using primary data is rare in the study of macro-entrepreneurship, particularly the ones that focus on the nexus of institutions, intrapreneurship, and sectoral growth. What is prevalent in this area of study is the sourcing and using of secondary data that are collected and analysed mostly using the ordinary least square regression methodology. The main issue with this methodology is the risk of collecting and analysing data that may be weak, doubtful or inaccurate.

This issue often places higher limitations on the reliability and validity of data methodology than those data sourced primarily using structured questionnaires or interviews (Eijdenberg, Thompson, Verduijn & Essers, 2018). Therefore, finding appropriateness of data collection methodology that allows for the evaluation of relationships among the constructs and establish their importance, has become critical for the enhancement of entrepreneurship literature (Aparicio et al., 2015).

In the extant literature of economic geography and entrepreneurship, there is also a methodology gap identified in establishing psychometric properties that measure industry agglomeration externality. What exists in the literature are mostly not relevant or not compatible with the empirical investigation of the relationships among agglomeration forces of competition, diversity, and the intrapreneurial activities of innovation, corporate venturing, strategic renewal in the context of sectoral growth.

Although, scholars in the field of economic geography have done tremendous work in exploiting and exploring the relevance of industry agglomeration to the domains of intrapreneurship and sectoral growth (Fujita & Thisse, 1996; Glaeser, Kallal, Scheinkman &

Shleifer, 1992), however these efforts do not match the constantly evolved industry agglomeration externality concept which has become a valid construct in the research studies of entrepreneurship, urbanisation development and sectoral growth.

Unfortunately, there is a lack of measurement scales and standardised questionnaires for the construct of industry agglomeration externality in the context of intrapreneurship and sectoral growth relationship. There is a need for scholars to address this gap by developing a comprehensive set of measurement scales and standardised, open, and industry relevant question items that suit the setting of sectoral growth, intrapreneurial activities of innovation, corporate venturing, strategic renewal and the industry agglomeration externalities of knowledge and technological spillovers, diversity, competition, localisation benefits of material and labour pooling, social and spatial interactions.

In the same way, we identified that the existing question items and measurement scales for informal and formal roles of institutions are grossly inadequate for the research study of intrapreneurship and sectoral growth nexus. In this instance, the need to adjust the existing ones or to create new psychometric properties of measuring policies, regulations and other governance variables of formal institutions, and those of rules, networks, shared values and other informal social relationships, should be a major step in addressing the methodology gaps.

Resolving such gaps will reinforce the knowledge of the dynamics of institutional environment in the context of industry agglomeration influences, help better to understand growth in the industrial sector, and establish reliable and valid instruments of eliciting data and relevant information on a standard measuring scales which foster new enquiries on research designs and methodology for entrepreneurship and sectoral growth studies.

There are also concerns on the definition and measurement of growth in the context of industrial sector. As most nations are fast becoming entrepreneurial and leaning towards globalization and industrialization, the macroeconomic definition of growth is shifting from ‘short-term’ and ‘aggregate-demand’ focus to the ‘long-term’ and ‘supply-side’ focus. This paradigm shift has exposed the slackness of harmonized performance outcome indicators that are influenced by the nexus of intrapreneurial activities, industry concentration and enabling institutions (Acemoglu, Gallego & Robinson, 2014; Zahra & Wright, 2011).

Finding consensual measures that harmonize and operationalise economic growth in the context of intrapreneurial activities of innovation, corporate venturing and strategic renewal as well as the formal and informal roles of institutions are fast becoming conceptually complex (Decker, Haltiwanger, Jarmin & Miranda, 2014). Taking these issues further, shows that many questions regarding appropriate measures of sectoral growth are still remain unanswered,

despite that macroeconomic growth such as gross domestic product, total factor productivity, labour productivity and the use of Global Entrepreneurship Monitor (GEM) data, have been widely used as performance dimensions of entrepreneurship in the context of industrial sector.

However, the delineation of what constitutes sectoral output in terms of growth and non-growth outcomes in an industry is a very complex one that requires further theoretical and empirical study. In this respect, researchers' focus should be extended to what constitutes perceived growth as a dimension of performance outcomes of the sectoral economy. Finding an appropriate growth perception that reflects some of the properties of the conventional economic growth is still a missing link in the measurement of outputs of the manufacturing sector, particularly when the instruments of eliciting data is geared towards primary sources.

However, inclusivity of endogenous growth theory into the domain of entrepreneurship can go a long way to establish theory of sectoral growth in the directions of institutional and agglomeration forces that drive or moderate such growth in the industry.

1.3 Objectives of the Study

The main objective of the study is to empirically assess the effects of the linkages existing among industry agglomeration externality, intrapreneurship dimensions of innovation, corporate venturing strategic renewal, the moderating roles of formal and informal institutions, and the sectoral economic growth in a manufacturing industry setting of the republic of Ghana.

Therefore, the focus of the objective will be on the critique and synthesis of new institutional theory, new growth theory, externality theory, and development of conceptual models that integrate the theories in the context of industry agglomeration externalities, intrapreneurship, and growth of the Ghanaian manufacturing sector.

1.4 Research Questions

The following research questions are necessary for fulfilling the objectives of this study:

- What is the effect of intrapreneurship on sectoral growth?
- What is the effect of institutional roles on sectoral growth?
- What is the role of institutions in the relationship between intrapreneurship and sectoral growth?
- What is the effect of industry agglomeration externalities on intrapreneurship?
- What is the effect of industry agglomeration externalities on sectoral growth?

1.5 Contributions of the Study

First, this study contributes to the extant theoretical implications for entrepreneurship study by adopting the theory of new institutionalism as a base theory that encompasses most of the issues problematised across the domains of the study. The reflection of the formal and informal institutional roles in the industry agglomeration, intrapreneurship and sectoral economic growth as espoused in the literature cannot be over-emphasised.

Second, the binding or integration of the domains of industry agglomeration, institutions, entrepreneurship and indigenous research to suggest one scholastic platform that synthesise and conceptualise 'all inclusive' model of economic performance at the sectoral level of economy. Although, these domains have been substantially explored in different disciplines, they are isolated and pose ambiguity in one field as opposed to the others. For instance, the meaning assigned to the operationalisation of performance for the sectoral entrepreneurial activities differ across literature irrespective of common antecedents alluded to intrapreneurship.

Therefore, the theory integration endeavour in this research will undoubtedly give a new understanding and meaning to the phenomenon of intrapreneurship with the undertones of industry agglomeration externalities and the roles that institutions play at the meso-level of the sectoral economy, most importantly with the focus on the theories of new institutionalism and new growth. Not only the integration that matters, but also the systemic reviews of those theories and relevant models are complemented with the use of bibliometric indicators of the literature coupled with the empirical evidence of related research. These further steps taken, afford the study with the complementarity of benefits of theory-binding that offers new knowledge frontier in the field of sector-based entrepreneurship and meso-level institutions with the significant contributions to the sectoral economic growth.

Third, the study also contributes to the improvement in the methodology designs where standardised questionnaire based on new measurement scales and items were developed for the constructs of industry agglomeration externality, formal and informal institutional roles. In the extant literature, there are no psychometric instruments available to measure these constructs, and the similar instruments that exist are not compatible with the constructs in question.

Fourth, appropriate and informed recommendations for policy implications were suggested. These recommendations as informed by findings of the study are viewed from two perspectives. First, from the perspective of government authorities to help augment existing entrepreneurial and institutional reforms that have the capabilities of improving economic performance of manufacturing sector. These recommendations are made to serve as reference

points for public policies of most developing countries that strive to establish or improvise their economic blueprints and policy reform strategies. Following this, are the suggestions and recommendations for the industry managers who are seen as intrapreneurs and other related stakeholders that are exposed to the sector. Suggestions and recommendations in this respect are to help the intrapreneurs and relevant stakeholders transform strategies, renew industrial foundations and enhance competitiveness and growth of the sector.

Fifth, this research allows for meaningful discussions and debates for future research agenda on what type of institutions influence sector-based entrepreneurship most, and to what extent does a sector-focused intrapreneurship contributes to the development of the sector. Likewise, the significance and insights that indigeneity of African entrepreneurship model offers its continent and the world at large, regarding localised practices, peculiar institutional environment, culturally-based actions and rationale thinking are well espoused.

Consequently, meso-level institutions that connotes ambidexterity within an organised industry and its community do influence entrepreneurial intentions, actions and growth of the sector. This means that the contributions of this study, based on the context of meso-level institutions are significant to the awareness of the indigenous philosophy which is still unpopular across the management literature. Developing countries in Africa could therefore, tap relevant knowledge base that currently exists in the emerging countries of Asia, such as China.

Finally, the complexity of conceptualising, operationalising, and measuring economic growth of industrial sector is demystified. In most of the macroeconomic studies of entrepreneurship, endogenous variables are predominantly defined and measured as gross domestic product, full employment, labour productivity, etc., from data collected at various secondary sources. The focus on the methodology of this study by leaning on new growth theory and using growth-specific indicators of sectoral economic performance that are defined in terms of latent constructs and proxied aggregate industry's economic growth, is a very good improvement to the extant literature and theory of organisational performance.

In this regard, replacing the conventional statistics of secondary measures of economic growth with the perceived growth measurement indicators as proxies, undoubtedly lend credence to the empirical implications of this study and show the way for future similar research methodology design.

1.6 Delimitation of the study

The findings of this study are restricted to a single sector rather than multiple sectors of the economy. Thus, delimiting the possibility of extending the conclusions reached in the study to other sectors of the same economy and not allowing cross sectoral comparison. This delimitation is also contingent on the existence of industry peculiarities such as nature of business, government policy impacts, innovation challenges, diversity in opportunities and competition which differentiate one sector from the other.

Second, the willingness of the respondents to disclose sensitive information that could compromise competitive and leading hedge is another delimitation. Possible confidentiality clauses or level of confidence from respondents towards designed research questionnaires and interviews may not allow relevant information like financial outcomes, market share, level of technology or intellectual assets to be divulged.

Finally, the use of own-defined proxies for the conventional macroeconomic growth of the sector and the development of own measurement scales and items to support established constructs of formal and informal institutional roles, and agglomeration externalities, are likely to generate debates among scholars because of their specificity. Although, no standardised measurement scales and question items applicable to the constructs in question exist in the extant literature.

1.7 Definition of key terms

This research study employs some key definitions such as *industry agglomeration*, *industry agglomeration externalities, intrapreneurship, intrapreneurship dimensions, entrepreneurial orientation, growth, entrepreneurial economy, institutional roles, sectoral growth, and moderating variables.*

Industry agglomeration is a clusterisation or concentration of industrial activities of firms in a relatively small area with the view of exploiting both the internal and external economies of the industry.

Industry agglomeration externalities are the economies or benefits arising from the concentration of firms in an industry which facilitate industry growth. These include diversity, local competition, variety, and specialisation (de Groot, Poot & Smit, 2015).

Intrapreneurship is synonymous with corporate entrepreneurship. In the context of sectoral economy, intrapreneurship exploits entrepreneurial opportunity within the industry and creates wealth (Parker, 2011). Entrepreneurship that co-exists within industrial cluster of homogenous firms involves creation of new industrial venture and innovation within the sector.

Intrapreneurship dimensions are precursors or antecedents that either formatively or reflectively relate to intrapreneurship. The most widely accepted dimensions are innovation, corporate venturing and strategic renewal, risk-taking, proactiveness and competitive aggressiveness (Antoncic & Hisrich, 2003. 2001).

Entrepreneurial orientations signify the dimensions of entrepreneurship that are propounded by Miller (1983); proactiveness, innovativeness, risk-taking and augmented by Lumpkin and Dess (1996); competitive aggressiveness and autonomy. These are the processes for which entrepreneurial opportunities and activities are enabled and walked through firms' performance outcomes.

Growth is a performance indicator of an economic system. Economic output is usually indicated as economic growth which measures increase or decrease in a country's Gross Domestic Growth (GDP) between one year and another. It shows how a country efficiently utilises its available resources of natural, human capital & technology to optimally produce goods and services for the economy (Pietak, 2014). Growth also means an economic output for individual firms' use of resources, entrepreneurial strategy and technological process (Mcklevie & Wiklund 2010).

Entrepreneurial economy as popularised by Audretsch and Thurik (2004) is a model of a country's economic structure that is largely influenced by entrepreneurial capital to generate entrepreneurial activities which in turns complement the traditional economy of large-scale production factors. Corporate firms that aim at strategic renewal, break-through innovation, technology, and process disruptions are labelled as entrepreneurial firms

Institutional roles are referred to as the structures, processes and impacts of constituted authorities within a given economic and political regime that aims at incentivising businesses and society (North, 1991). They make and enforce rules and norms to impact allocation of resources within the economy. The paths and policies deployed to ensure the formulation and enforcements of the rules and norms are referred to as *institutional reforms*.

Sectoral growth is industry aggregate productive growth resulting from the use of resources, processes, technology and strategy of agglomerated industries within a particular economic sector. The growth is conventionally defined in terms of gross domestic product of the sector, but could also be measured using proxies or alternatives such as industrial productivity, gross capital formation, full employment, capacity utilization, total factor productivity, etc., of the sector (Gore, 2007; Peneder, 2002).

Perceived Sectoral growth is defined as the proxy of conventional economic growth for a sector in form of industrial productivity growth, sales growth, industry employment growth,

etc. Thus, resulting from the efficiency in the utilisation of its resources of human capital, and technology to produce goods and services.

Moderating variables are the factors that control or enable the predictive (or independent) variables to achieve the criterion (or dependent) variables. Moderators can change the nature or degree of relationship of the variables which may either strengthen or weaken how the variables relate.

1.8 Overview of the Dissertation

Traditional thesis approach was adopted and it comprises of five chapters. The first chapter emphasizes the introduction, objectives, research questions, gaps identified in the extant studies, and contributions of the study. Delimitations of the study are also highlighted in this chapter.

The second chapter focused on the review, synthesis and critique of extant literature, and empirical findings of related research. The review is broken down into theoretical background on one hand and empirical findings with comparative analysis on the other hand. Prominent reviews are dedicated to different scholastic positions on antecedents, dimensionality, conceptualization and measurement of industry agglomeration externalities, intrapreneurship and its dimensions, economic performance specifically focused on sectoral growth, theory of new institutions, and indigenous research that emphasizes local contexts of theory and epistemology in developing economies. Hypotheses that determine the relationships among all the variables were also developed.

The third chapter was dedicated to the methodology and research designs employed in the study, and was premised on the quantitative research approach and shows how population data and sampling are organised, how primary data are sourced from targeted respondents using standardized pen & paper-based questionnaire considering the details of itemized constructs and their measurement scales.

Chapter four comprised of the methods adopted for analysing, presenting, and reporting data and the findings of the study, based on the statistical approach of choice that considers the use of descriptive statistics, correlational analysis, confirmatory factor analysis, and structural equation modelling (SEM).

Chapter five addresses the conclusion of the study and relevant discussions on its findings, evaluation, and comparison with related conceptual and empirical studies. Major contributions to theory-building and theory integration are enumerated, while appropriate suggestions and recommendations on theoretical and policy implications were also made.

Quest for further study to expand the concept of sectoral entrepreneurship and insights into the dichotomy of industry and sector views of entrepreneurship to expand the frontier of the field are encouraged.

Chapter 2: Literature review

2.1 Introduction

Aside the microeconomic effects of individual and firm level entrepreneurship which have been entrenched in the literature (Bierweth, Schwens, Isidor & Kabst, 2018; Lechner & Gudmundsson, 2014; Rutherford & Holt, 2007; Zahra, 1993), the relevance of macroeconomic consequence of intrapreneurship has also been given scholastic attention. Studies on the linkage between new firm start-ups and economic growth are explored by Lee (2016), Glaeser, Kerr and Kerr (2013), Audretsch, Belitski and Desai (2015), while Stuetzer, Audretsch, Obschonka, Gosling, Rentfrow & Potter (2017) and Acs, Braunerhjelm, Audretsch & Carlsson (2012) have also investigated the relationship that exists among entrepreneurial acts, culture and economic growth.

Some of the key findings of these notable studies suggest that economic growth, wage growth and growth in urban employment are significantly influenced by new business creation, entrepreneurial culture, and entrepreneurial knowledge spillover. For instance, Acs et al. (2012) argue that the regions with a high degree of entrepreneurial activity and culture tend to produce higher growth and enjoy better economic growth.

However, there are still limited understanding of how the nexus of entrepreneurship-economic growth plays a vital role in the development of economies of nations (Naudé, 2013). This then bring to the fore, several debates as to why the impacts of intrapreneurship differ across various economies and institutional environment (Bradley et al., 2016; Bjørnskov & Foss, 2016; Thornton et al., 2011; Bruton et al., 2010). It is this controversy that generates some questions for further insights: how do institutions formally and informally influence intrapreneurship to enhance economic growth at the sectoral level of the economy? Does intrapreneurship really improve industry growth and induce sectoral innovation, since it is being considered as a conduit for new ideas and creativity (Rosenbusch, Brinckmann & Bausch, 2011; Rutherford & Holt, 2007)?

These questions should direct researchers' attention to gain an in-depth understanding of two important notions. First, the industry agglomeration as a phenomenon that has relevance to the sectoral economic performance, and second, the intrapreneurship as a socio-economic phenomenon that is influenced by regulations, culture, governance and sectoral affiliations with the objective of enhancing sectoral economic growth. These notions indicate that firms operate at different levels of environment and institutional contexts within an economy or across economies (Bjørnskov & Foss, 2013). This extension of knowledge could also bolster the

dynamics of entrepreneurship study and encourage integration of multidisciplinary approach to the entrepreneurial phenomenon.

To start with the concept of industry agglomeration, entrepreneurial researchers should explore and acquaint themselves with the reasons why firms collocate or cluster in a given industry. The fact that industries spatially concentrate to enjoy some collective benefits in form of reduction in transport costs, accessibility to labour market pool, knowledge and technology spillover that enhance learning and innovation adoption, explain why firms may choose to agglomerate (Hanlon & Miscio, 2017; Ellinson, Glaeser and Kerr, 2010).

The focus on agglomeration-intrapreneurship relationship is hinged on the externalities that are brought by the agglomeration which contribute to the innovation, corporate venturing, strategic renewal and sectoral growth, such as employment and urban growth (de Groot, Poot & Smit, 2015). These externalities are commonly defined in the literature as diversity, variety, specialisation and local competition (Glaeser, Kallal, Scheinkman & Shleifer, 1992).

On the other hand, the phenomenon of intrapreneurship has different consequences for economic growth, partially because of the heterogeneity in the entrepreneurial antecedents and outcomes which cut across firms, sectors, and countries (Terjesen, Hessels and Li, 2016). Consequently, entrepreneurship researchers have begun to realise the cogent needs to bridge gaps in the contents, theories and methodologies of entrepreneurship study by explaining in explicit terms, the consequences of the sector-specific, country-specific and cross-country variations in intrapreneurship on economic growth.

For instance, Audretsch, Belitski and Desai (2015) examine the linkage between entrepreneurial activity and economic development in selected European cities and found positive relationship between new firm start-ups and economic growth in both large and small cities. Likewise, Acs, Estrin, Mickiewicz and Szerb (2018) conceptualised intrapreneurship as a *"missing link"* in the analysis of the aggregate production function and factor inputs for explaining variations in the economic growth across country.

On the same front, Prieger, Bampoky, Blanco and Liu (2016) argue that a country could suffer from economic growth in a situation where its entrepreneurial activity falls below optimal levels, and conclude that the optimal rate of entrepreneurship is generally higher in developing economies than in developed economies. Although, the nexus of entrepreneurship and economic performance varies across regions and/or cities, there are still unanswered questions as to why productive entrepreneurship in most of the low-income economies could not transform or grow such economies.

The argument that intrapreneurship generates a positive pulse for regional and cluster agglomeration that nurture economic growth and development should further be explored for developing nations. It therefore follows that the conceptual and empirical imperatives of intrapreneurship phenomenon have become a mainstream focus for scholars to show that intrapreneurship, together with the diversity of its nature, level and timing are linked to industrial evolution which subsequently influences the stages at which a nation grows its economy (Acs, Desai & Hessels, 2008; Audretsch & Thurik, 2003).

In fact, intrapreneurship has virtually become an economic model that addresses *"industrial depression and rise of supply side economics"* and it is aimed at improving macroeconomic performance (Casson & Wadeson, 2007). This suggests that the concept of 'entrepreneurial *economy'* (Thurik, 2009; Audretsch & Thurik, 2004; Carree & Thurik, 2010) is fasting becoming a departure from traditional or *'managed economy'* in a bid to rekindle knowledge of the antecedents and consequences of intrapreneurship in relation to economic performance.

At the core of debates and arguments that surround phenomenon of entrepreneurship is the connotation and roles of institutional environment that plays out in the relationship between intrapreneurship and economic growth. Although, institutions are considered an influential determinant of intrapreneurship (Dilli, Ellert & Herman, 2018; North, 2016; Autio & Fu, 2015), it is nonetheless a subject of diversity among scholars. While institutional policies have been found to have significant impacts on economic growth such as *"aggregate elasticity of substitution"* at the regional and national economy (Bjørnskov & Foss, 2016, 2013), It has also been established that variations in the income per capita of different economies are as a result of their differing economic institutions, changes in political institutions and the extent to which their political powers are exercised (Acemoglu & Robinson, 2010).

The above notions, briefly highlights the necessity for current and further debates on the relationships among intrapreneurship, moderating institutional roles and their effects on sectoral economic growth, and the significance of industry agglomeration externality on the intrapreneurship equation.

The subsequent sections of this literature review focus on six other sections. Section 2.2 shows the systematic analysis of the literature and the data obtained from reviewed articles and journals as well as the analysis of the theoretical framework and methodology techniques that are used in those papers. In section 2.3, five research domains are identified together with associated theories and theoretical frameworks. These domains are fully reviewed. Section 2.4 focuses on the conceptual model adopted in this research. In this section, the conceptualisation

and operationalisation of all the constructs are clarified. The next section 2.5 presents various hypothesised relationships of the research study variables, while section 2.6 touches on the propositions made regarding simultaneity of some variables, albeit not tested. The last section summarises and concludes the overall contents that are reviewed in this chapter.

2.2 Systematic literature analysis

Adopting a systematic review process and citation analysis is crucial to the literature synthesis of the five research domains identified in this study (industry agglomeration, entrepreneurship, institutions, economic performance, and indigenous research). The review mainly focuses on the relationships among the domain variables and how institutions moderate the effects of intrapreneurship on economic growth at the sectoral level of economy.

The methodology adopted to synthesise and review literature for this dissertation follows the systematic process used by Schmitt, Raisch and Volberda (2018), and van Pragg and Versloot (2007). In these instances, all-inclusive database of journal articles was built to make literature review and critique plausible, while categorisation and thematic coding of sampled articles are emphasised. Similar steps are taken in this research study.

First, top-ranking journals are searched in the Scimago Journal and Country Ranking (SJR) database. Journals with a three-year citable documents and impact indicator of 0.1 and above, based on 2017 SJR citation year are considered. The use of SJR is informed by the fact that it is a publicly available journal and country ranking of top-notch articles of various academic disciplines contained in SCOPUS database, which has a wider coverage of published articles with high level of precision in terms of quality of information. SJR also have the options of open access, SciELO and Web of Science (WoS) journals.

The SJR journal search was based on the following criteria: (a) subject areas (b) subject category (c) geographical scope (d) Web of Science (WoS) option, and (e) 2017 citation year. Journals of business, management and economics that give emphasis to entrepreneurship, institutions, industry agglomeration and economic performance are subjected to the rigours of the SJR search. All regions/countries are considered.

Second, the search for articles that focus on entrepreneurship, institutions and entrepreneurial performance at industry & economic levels are identified. The articles are primarily searched from SCOPUS and JSTOR databases using three different approaches in sequence. The use of keywords-based search to identify all articles that link institutions with the entrepreneurship, the one that link intrapreneurship with economic performance and finally,

the keywords that link institutions, industry agglomeration, entrepreneurship and economic performance as the overall sequence.

The search keywords used are mainly the articles that include “entrepreneurship” AND institutions, “entrepreneurship” AND sectoral economic performance, “entrepreneurship” AND agglomeration, “corporate entrepreneurship”, and “intrapreneurship”. Since this study is a combination of different variables of institutional entrepreneurship with emphasis on sectoral economic performance, the keyword search was expanded to include string of word search in form of, “institutional entrepreneurship”, “firm performance”, “industry performance” “industry agglomeration”, “externality”, “formal institutions”, “informal institutions”, “innovation”, “strategic renewal”, “corporate venturing”, “meso-level entrepreneurship”, “meso-level institutions”.

The articles search is focused on the ones published in English language and the search was concentrated on titles, topic-fields, and abstracts. The period of publication for the articles searches ranges from 1999 to 2019, thus covering 20 years of quality and seminal journals on the five distinct domains of this study (industry agglomeration, entrepreneurship, institutions, economic performance, and indigenous research). In order to mitigate against possible risk of excluding some relevant articles, the search was further extended to journal article search engines and databases such as Google Scholar, Social Science Research Network (SSRN) and EconPapers. References cited in the selected research articles from the above-mentioned sources that are relevant to the study are also searched.

The third and final step taken in the systematic review of the literature is the thematic coding of predetermined themes of the selected articles which are classified according to the study domains and then manually coded using the themes: (i) journal, (ii) author, (iii) year of publication, (iv) focus of study, (v) type of study, (vi) theory, (vii) methodology, and (viii) key findings.

2.2.1 **Results of the systematic literature analysis**

The results of the journal search in Scimago (SJR) database using the criteria identified above, and in particular with the 2017 SJR indicators between 0.1 and 11.2 ranking shows that three hundred and sixty (360) journals covering business, management and economics categories were extracted. In selecting the sample for the systematic review and considering the focal points of this research study being entrepreneurship, industry agglomeration, institutions and sectoral economic performance, the extracted journals database was first filtered for the following; (i) journals written in English language, (ii) journals that exclude core economics,

finance, marketing, accounting, and social management and, (iii) top-ranked academic publisher.

The journals that meet the filtration criteria are ranked by their 2017 SJR indicators in ascending order. Finally, the ranked journals are further selected based on; (i), the total documents published in the past three years, (ii), total cites in the past three years and (iii), citable documents in the past three years. The total cites over total documents (on the average of three years) is computed as a further ranking parameter to enhance the journal sample selection. With these processes and parameters, the journals selected as a sample for systematic review was pruned to forty (40). Details shown in table1 below.

Table 1: Scimago journal and country ranking (SJR): Selected journals – 2017SJR Indicator

S/N	Title	SJR Index	Total Docs. (3years)	Total Cites (3years)	Citable Docs. (3years)	Cites / Doc. (3years)
1	Academy of Management Annals	11.2	46	569	44	12.9
2	Academy of Management Journal	8.5	252	1813	248	7.3
3	Strategic Management Journal	8.0	408	2539	396	6.4
4	Journal of Business Venturing	5.2	133	1153	129	8.9
5	Entrepreneurship: Theory and Practice	3.6	187	1054	171	6.2
6	Academy of Management Perspectives	2.9	107	443	103	4.3
7	Strategic Entrepreneurship Journal	2.7	65	246	64	3.8
8	International Small Business Journal	2.0	147	653	146	4.5
9	Entrepreneurship and Regional Development	1.5	98	332	92	3.6
10	Technological Forecasting and Social Change	1.4	889	2940	774	3.8
11	Journal of Business Ethics	1.3	1253	2990	937	3.2
12	Asia Pacific Journal of Management	1.2	135	317	125	2.5
13	Business Ethics	0.9	97	282	96	2.9
14	International Journal of Entrepreneurship and Innovation	0.4	82	81	76	1.1
15	Entrepreneurship Research Journal	0.4	31	38	30	1.3
16	Critical Perspectives on International Business	0.4	58	68	58	1.2
17	International Journal of Entrepreneurial Venturing	0.3	61	32	60	0.5
18	Harvard Business Review	0.3	507	767	107	7.2
19	Journal of Entrepreneurship	0.3	33	37	33	1.1
20	Journal of Entrepreneurship in Emerging Economies	0.3	49	51	48	1.1
21	Journal of Entrepreneurship and Public Policy	0.3	60	39	60	0.7
22	Journal of Marketing	8.6	127	1054	125	8.4
23	Strategic Organization	2.3	66	134	62	2.2
24	MIT Sloan Management Review	1.8	178	320	144	2.2

S/N	Title	SJR Index	Total Docs. (3years)	Total Cites (3years)	Citable Docs. (3years)	Cites / Doc. (3years)
25	Management and Organization Review	0.8	109	162	84	1.9
26	European Management Review	0.6	57	86	52	1.7
27	Journal of Social Entrepreneurship	0.6	49	80	46	1.7
28	European Business Review	0.6	100	246	100	2.5
29	Economics of Governance	0.4	50	42	48	0.9
30	International Journal of Innovation Management	0.3	234	226	225	1.0
31	Journal of Entrepreneurship in Emerging Economies	0.3	49	51	48	1.1
32	Journal of Economic Policy Reform	0.3	64	61	59	1.0
33	Asia Pacific Management Review	0.2	89	59	81	0.7
34	International Journal of Business and Society	0.2	93	48	93	0.5
35	Journal of Developmental Entrepreneurship	0.2	93	47	80	0.6
36	Economics of Innovation and New Technology	0.6	117	127	112	1.1
37	African Journal of Economic and Management Studies	0.2	75	50	73	0.7
38	American Economic Journal: Economic Policy	9.1	130	606	129	4.7
39	Journal of Institutional Economics	1.0	131	208	129	1.6
40	Journal of Entrepreneurship in Emerging Economies	0.3	49	51	48	1.1
	Total		**6,558**	**20,102**	**5,535**	**3.6**

Source: Author's adaptation

Concerning the results of the search for articles from the sampled journals, the criteria enumerated in the third paragraph of the systematic literature analysis section was followed. Search keywords that include "entrepreneurship" AND institutions, "entrepreneurship" AND firm performance, "economic performance", "corporate entrepreneurship", "intrapreneurship", "externality", "industry agglomeration" and "industry study" are used to search for relevant articles from SCOPUS and JSTOR databases within the research periods of 1999 and 2019.
The number of articles that are populated from the searched journals databases are over 5,000 articles. These articles are filtered in the following manner; (i), articles topics of the articles (ii), period of research selected between 1999 and 2019 with few exceptions (iii), elimination of duplicate articles (iv), categorisation of articles into the four research domains (v), identification of articles into conceptual, theoretical and empirical.

With the above filtration process, hundred and eighty (180) articles are sampled for systematic literature analysis. They compose of 71 conceptual (*39.4%*), 20 review and discussions (*11.1%*), 8 qualitative (*4.4%*) and 81 quantitative (*45.0%*). These articles explicitly

explain the relationships among entrepreneurship, institutions, and firm performance. They also show propositions and hypotheses about how institutions affect intrapreneurship and firm performance and how intrapreneurship in turn impacts sectoral economic growth. Likewise, overwhelming empirical evidences supporting some of the hypotheses and propositions are also presented.

Three main theories; new institutional theory, new growth theory, and theory of externality as well as three theoretical frameworks; firm performance, industry agglomeration and indigenous research were adopted in this study. These theories and framework have evolved over decades of entrepreneurship, strategic management, and economic geography research studies.

The main results found in our analysis show that entrepreneurship theoretical framework was adopted in 71 articles (*39.4%*), the theory of institutions was adopted in 46 articles (*25.6%*), performance theoretical framework was adopted in 29 articles (*16.1%*), indigenous research framework was adopted in 9 articles (*5.0%*) and externality theory /agglomeration framework was manifested in 25 articles (*13.9%*). The theoretical foundations of entrepreneurship and institutions cut across other domains and more pronounced between themselves while only indigenous theoretical framework stays sticky to the indigenous research domain.

The literature methodology review also shows the use of various techniques and statistical analysis in empirical articles through quantitative and qualitative methods as well as stylised facts entrenched in the conceptual/theoretical articles. This suggests that intrapreneurship research designs have come of age. Relevant data variables are analysed for quantitative studies using descriptive statistics, correlation analysis, and regression models, multivariate estimation models, cross-sectional designs, component factor analysis and structural equation models, among others. On the other hand, case study, group focus, interviews, questionnaire administration and ground theory are employed for qualitative studies, while review of literature, discussions and special issue review are adopted for theoretical and conceptual articles.

The details of the systematic literature synthesis are shown in the tables 2 to 4 below

Table 2: Selected Articles per domain of study for Systematic Literature Review

Study Domain	**Pre 1999**	**1999-2003**	**2004-2008**	**2009-2013**	**2014-2019**	**Total**
Entrepreneurship	13	8	8	21	34	**84**
Institutions	2	2	3	12	28	**47**
Firm Performance	2	0	1	5	6	**14**
Indigenous Research	0	0	1	3	5	**9**
Industry Agglomeration	4	3	3	8	8	**26**

Source: Author's adaptation

Table 3: Selected Articles categorised into Conceptual/Theoretical and Empirical

	Conceptual/Theoretical		**Empirical**		
Study Domain	Conceptual	Review and discussions	Qualitative	Quantitative	**Total**
Entrepreneurship	47	3	3	31	**84**
Institutions	11	9	4	23	**47**
Firm Performance	7	0	0	7	**14**
Indigenous Research	1	7	1	0	**9**
Industry agglomeration	5	1	0	20	**26**

Source: Author's adaptation

Table 4: Articles categorised into theories and theoretical framework

Study Domain	Entrepreneurship	Agglomeration Externality	Institutions	Firm Performance	Indigenous Research	**Total**
Entrepreneurship	61	0	6	14	0	**81**
Institutions	10	0	39	1	0	**50**
Firm Performance	0	0	0	14	0	**14**
Indigenous Research	0	0	0	0	9	**9**
Industry agglomeration	0	25	1	0	0	**26**

Source: Author's adaptation

2.3 Research Domains, Theories and Theoretical Framework Adopted

2.3.1 Research Domain of Industry Agglomeration

The phenomenon of industry agglomeration is as old as the concept of industry itself. However, scholars in entrepreneurship research have not fully exploited the linkages and significance of industry agglomeration to macroeconomics of intrapreneurship and sectoral economic performance. This knowledge areas are rather left to the economists, particularly in the area of new economic geography (NEG) where lots of work has been done to directly link the phenomenon of industry agglomeration externalities to industry growth (deGroot, Poot & Smit, 2015; Gustavsson, 2003; Glaeser, Kallal, Scheinkman & Shleifer, 1992; Ellinson, Glaeser & Kerr (2010).

Industry agglomeration emerges through the presence of economic activities in areas or locations endowed with the advantages of natural resources, landscape features and developed trade routes, all of which give firms' settlement strategic and efficient advantages (DeGroot, Poot & Smit, 2008). This follows that agglomeration externalities drive economic growth in a dynamic and competitive industry where clustered firms engage in production and consumption activities. Consequently, there is an empirical evidence that different agglomeration externalities have impacted industry growth differently. For instance, there are positive effects of diversity and competition on the growth of industries, while variety of industry activities has also encouraged employment growth in the industries (DeGroot, Poot & Smit, 2015).

Unfortunately, industry agglomeration phenomenon is also perceived ambiguous and has been debated in the economic geography literature as to whether it is an outcome or a determinant of an outcome. Some of the advocates of 'outcome-phenomenon' (Dumais, Elliot, & Glaeser, 2002; Glaeser, 1999), view industry agglomeration as a locational concentration of firms that aims at minimising transportation costs, reducing transaction costs, enabling easy proximity and access to raw materials and intermediate products, and facilitating the exchange and sharing of knowledge.

The protagonists for the 'determinant phenomenon' (Krugman,1991; Frenken, Van Oort & Verburg, 2007), suggests that agglomeration is a process that emanates from the demands of individual firms or industries to engender spatial economies or externalities that grow the industry through the benefits of localization, urbanization, diversity, learning, competition and related variety among others (Caragliu et al., 2016). It is a means to an end but not the end itself. With these two perspectives of industry agglomeration, clustered firms are enabled to benefit from common inputs and knowledge sharing and the externalities of

industry agglomeration are more visible when firms are able to share production factors, access skilled and diversified labour pool and explore the variety and diversity in a diffused atmosphere of the industries.

In the new economic geography literature, the concept of industry agglomeration encompasses three different theories of industry concentration. First, the Marshallian agglomeration theory that suggests knowledge spillover among firms in the same industry. Next, the Porter's theory of competition that argues that locally based competition as against local monopoly stimulates acquisition and adoption of innovation. Lastly, Jacobian theory of agglomeration which argues that variety and diversity as opposed to industry specialisation, enhances innovation, and promote economic growth.

To further illustrate, Gustavsson (2003), stresses that spatial concentration of firms, together with its externalities of competition and diversity have relevance to knowledge spillover and growth of industries, although such effects differ across industries, region, and country. Similarly, Fujita and Thisse (2003) argue that industry agglomeration has positive impacts on innovation, particularly when there is a trade-off between industry growth and spatial equity. This suggests that industry agglomeration would be beneficial, when its impacts on innovation outweigh and compensate for the loss of industry that accompanied the innovation.

The seminal work of Glaeser, Kallal, Scheinkman & Shleifer (1992), complemented with that of Ellison, Glaeser & Kerr (2010) further elaborate the significance and impacts of industry agglomeration on industry growth and economic performance of cities and regions where clusterisation of firms take place. Glaeser et al. (1992) found that industries grow faster in cities with less specialisation and in the cities with the size of industry concentration smaller than the average size of all the firms in that industries. However, growth of industry is slower in cities that have over-representation of industries.

Similarly, Ellison, Glaeser & Kerr (2010) shows supports for the Marshallian, Porter's and Jacobian theories of agglomeration and argue that co-agglomeration of firms has stronger effects on industry growth than the effects of exogenous and shared natural endowments have on the industry.

*2.3.2 **Research Domain of Intrapreneurship***

Intrapreneurship consists of innovative search for ideas on new products, process, markets, improved organizational efficiency and serves as a conduit for firms to speed up their change intensity in the global marketplace through corporate venturing and strategic renewal. Thus, the entrepreneurial activities and behaviours of key players in established and complex

organizations require a deeper understanding of intrapreneurship domain. This quest for knowledge is a prerequisite for increased theory development and testing of conceptual model.

Although, intrapreneurship is considered within the larger domain of entrepreneurship, its connotations are different among scholars. However, the common antecedents of intrapreneurship are largely premised on seeking opportunity, taking risk, and evolving innovation (Welter, Baker, Audretsch & Gartner, 2016; Sharma & Chrisman, 1999; Stevenson & Jarillo, 1990).

Intrapreneurship also focuses on the behavioural and orientation perspectives of an entrepreneur within an established company. These perspectives come into play when an a firm or individual(s) within a firm directs orientation and behaviours towards a pursuit of opportunities in a new product, process, market as well as rejuvenating current business operations and exploiting the capabilities and decision-making processes that provide foundation for entrepreneurial actions to take place (De la Vega, 2015; Rauch et al., 2009; Barringer and Bluedorn, 1999).

The complexity of intrapreneurship as a strategic phenomenon is critical to the understanding of researchers and entrepreneurship educators on how internal and external environmental variables and roles of managers create an atmosphere of competitive advantages and enable fertile ground for innovation and entrepreneurial environment (Antoncic & Hisrich, 2003). This argument validates the quest for support of top management, adequate managers' autonomy, good reward system and creation of organisational boundaries as major determinants of entrepreneurial environment (Kuratko, Hornsby and Covin, 2014; Kuratko and Morris, 2018).

We contend that managerial roles at all levels in the pursuit of entrepreneurship and innovative ideas could give birth to firm's strategic renewal or rejuvenation, and this could be a barometer for arousing innovative ideas to activate entrepreneurial mind-sets of people within established organisations.

However, intrapreneurs are also seen as change agents and decision makers in their organizations. These positions influence their "mental models" (i.e., *subjective perception*) and determines entrepreneurial choices they make (North, 2016). Thus, the entrepreneurial perceptions are informed by the changes in the institutional environment or by acquisition of skills and learnings incorporated in such perceptions.

Contextualisation of intrapreneurship

Intrapreneurship domain has also been viewed theoretically and empirically at a multi-level dimension where emphasis placed on entrepreneurial outcomes have gone beyond

individual and firm-level performance outcomes (Davidsson, 2016). Extant research study has also focused significantly on the contextualisation of entrepreneurship, particularly at the geographical proximity or sectoral agglomeration of industry. In fact, the sectoral context at which aggregate firms play dominant roles in enhancing economic growth through corporate entrepreneurial activities has become a research concern. Thus, the economic consequence of intrapreneurship could be attributed to growth and creation of wealth and jobs.

However, the heterogeneous nature of intrapreneurship in terms of sectoral and institutional contexts has largely been taken for granted and the antecedents for corporate entrepreneurial actions, intent, aims and values have also been ignored (Welter, Baker, Audretsch & Gartner, 2016; Phan, Wright, Ucbasaran & Tan, 2009). These arguments have renewed the calls for entrepreneurship research to *'embrace entrepreneurial diversity'* rather than focusing on the singularity of entrepreneurship meaning and value make senses in developing the entrepreneurship literature further. In the same vein, the quest for contextualization of intrapreneurship will foster the understanding of intrapreneurship phenomenon, particularly in the context of industrial sector.

In this regard, the meso-level institutions which intermediates between micro and macro-economic environment will allow entrepreneurial actors in an organisation to shape the context in which they seek opportunities and widen the pace at which they make strategic decisions. Consequently, entrepreneurial firms within a community of industrial sector also benefit from cognitive and culturally motivated rules, sectoral obligations and shared values that exist within the sector (Zahra & Wright, 2011; Welter, 2011).

Intrapreneurship dimension

Innovation, corporate venturing, and strategic renewal are widely acceptable dimensions of intrapreneurship (Morris et al., 2011; Phan et al., 2009; Antoncic & Hisrich, 2003; Guth & Ginsberg, 1990; Zahra, 1993; Sharma & Chrisman, 1999). Premised on Guth and Ginsberg (1990), the phenomenon of intrapreneurship is portrayed in terms of corporate venturing (i.e., formation of new business from within an existing firm) and strategic renewal (i.e., organizational transformation of firm's key ideas and foundation).

This combination reflects corporate entrepreneurial behaviours that drive necessary changes in the deployment of organisational resources and fit intrapreneurship into strategic management through five pillars of influence: *environmental influence, strategic leadership influence, organization conduct influence, organizational performance influence and performance consequence*. Intrapreneurship also makes firms to cope effectively with the

competitive realities within and outside of their economic domains (Kuratko, Hornsby & Covin, 2014).

As one of the widely acknowledged dimensions of intrapreneurship, innovation is integrated into the entrepreneurial environment together with corporate venturing and strategic renewal which vary in relationship with firm's growth and performance (Zahra, 1993). When a firm becomes more innovative, it shows the symptoms of being entrepreneurial, for the reason that intrapreneurship seeks to enable or renew firms' competitiveness through series of innovative activities that make them respond to entrepreneurial obligations and opportunities as they manifest (Corbett, Covin, O'Connor and Tucci, 2013).

Innovation dimension of intrapreneurship also show how entrepreneurship encourages firms to innovative new ideas, new products, new markets and rejuvenate or renovate to stay competitive (Galindo & Méndez-Picazo, 2013; Covin & Miles, 1999; Zahra, 1996, 1993; Hitt, Ireland, Camp & Sexton, 2001). Thus, innovation could be said to positively correlate with entrepreneurship and create a knowledge-based innovation hub that supports new knowledge acquisition for introducing new products or processes and enable firms' entry into new markets. While agreeing that innovation domain of intrapreneurship is helpful in explaining the perception and measures of market competitiveness, it also reflects corporate innovative strategies which are intended to facilitate entrepreneurial intents and efforts of firms.

It is therefore no gainsaying the fact that the emerging role of intrapreneurship is fast extending to accumulation of knowledge and integrating such into industry environment where new wealth and economic value are created. Innovation has also become a vital source of knowledge that amplifies the creation of new ventures, and the enhancement of organisational strategy renewal (Block, Fish, and van Praag, 2016). This situation reiterates *'Schumpeterian entrepreneurship'*, where knowledge about innovation is crucial to intrapreneurship phenomenon and consequently endear established corporate organisations to increase their exploration and nurturing of new talents to effect changes in the cognition, culture, behaviours and structures of their organizations cannot be overemphasised.

Although, earlier acclamation of innovative entrepreneurship could be traced to Miller's (1983) "*first to come up with proactive innovations that beat competitors to punch"* and that of Schumpeter's (1934) "*creative destruction"*, where new products, processes and inventions render the current ones obsolete, innovative entrepreneurship manifests more in a situation where strong knowledge-based and technology-driven innovation exist and where industrial cluster that facilitate spillover of entrepreneurial knowledge is prevalent (Block, et al., 2016; Zahra, 2015).

Corporate venturing as the second domain of intrapreneurship has also been well elaborated in extant literature. It is synonymous with the meaning of *"birth of new businesses within the current organisation"* (Zahra, 2000; Miles & Covin, 2002; Guth & Ginsberg, 1990; Sharma & Chrisman, 1999; Morris et al., 2011; Lin & Lee, 2011). Relatedly, Kuratko et al. (2014) explain corporate venturing in the context of internal and external venturing while Guth & Ginsberg (1990) describe entrepreneurial activities that result in the creation of other business entity within and an existing organization as internal corporate venture. Whereas the external corporate venture is born out of the entrepreneurial activities that result from the acquisition of new business entity created outside the existing organisation (Covin & Miles, 2007).

Although, the corporate venturing dimension of intrapreneurship (Guth & Ginsberg, 1990) as a precursor to intrapreneurship is essential but it is not sufficient to tag an organisation as entrepreneurial. It should rather be seen as an impetus for corporate firm to "rejuvenate" or "redefine" itself (Covin & Miles, 1999). We support this argument of rejuvenation and redefinition because it differentiates a firm as a corporate entrepreneur depending on (i), when an *'established organization enters a new business'*, (ii), when '*an individual or individuals champion new product ideas within a corporate context'*, and (iii), when *'an entrepreneurial philosophy permeates an entire organization's outlook and operations'* (Covin & Miles, 1999, P.48).

These differentiators posit intrapreneurship as innovative strategies for firms to create or enhance competitive advantages through sustained regeneration, organizational rejuvenation, strategic renewal, and domain redefinition. The entrepreneurial dimension also goes beyond local entrepreneurship context. In this respect, some scholars have enunciated the contributions of international entrepreneurship to the theory of intrapreneurship. For instance, Zahra, Ireland and Hitt (2000) highlight the expansion of corporate venturing beyond domestic domain and argue that the operations of new ventures need be internationalised to take advantage of technology, learning capabilities and international diversity.

This argument gives rise to the curiosity concerning the perception of multinational or transnational firms in the context of sector-based entrepreneurship and how their internalisation efforts are influenced by their institutional environment to drive innovation, productivity and growth in their sectoral domain of the economy.

Strategic renewal as the third dimension of intrapreneurship refers to the renewal of entrepreneurial processes of corporate firms in an attempt to transform and renew the foundations on which their visions are built, their strategic directions and organisational

structure (Zahra, 1996; Sharma & Chrisma, 1999, Covin & Miles, 1999; Guth & Ginsberg, 1990). A firm exhibits strategic renewal when it demonstrates the how's and the extents to which it transforms itself in relation to its pasts and to its industry in terms of product offerings, internal process, market adaptation and organisational changes (Kuratko et al.2014; Kuratko and Audretsch, 2013). This argument is supported by the fact that the extent to which entrepreneurial firms do compete and win in the marketplace and redefine themselves by adopting new and innovative strategies are enabled by the intensity of their strategic renewal.

Agarwal and Helfat (2009) further highlight that strategic renewal implies a '*momentum*' at which a firm '*refreshes or replaces*' its strategic attributes such as long-term goals, product or service offerings, competences, and other resources. Such renewal goes through the process of increasing or decreasing the firms' current strategic attributes or take form of discontinuous strategic transformations, where the impact of major changes may cause a substantial change in the firm's strategy and organization.

Correspondingly, Schmitt, Raisch and Volberda (2016) suggest that strategic renewal permeates alteration of firm's '*path dependence'* through transformation of their strategic visions, resources, and capabilities. This argument synthesises prior research studies on strategic renewal to better understand various challenges of diversity in the theoretical and empirical context of strategic renewal of entrepreneurial firms, as most firms that find themselves in the need of transformation at one time or the other make strategic renewal a key factor in the intrapreneurship.

Fundamental in this course, is the influences and impacts that intrapreneurs within the firm make in the transformation processes and directions of the organizational strategy (Glaser, Fourné & Elfring, 2015). This becomes a dilemma and poses a reflection for the understanding of long-term sustainability, growth, and survival of the firm.

Relatively, Basu and Wadhwa (2013) argue that the extant literature ignores the dimensional view of firm's renewal activities and fails to examine situations that drive firms to undertake strategic renewal. Their study on the relationship between firm's renewal activities and its strategic renewal using longitudinal dataset, suggests that a firm's corporate venture capital (CVC) activities is negatively related to the likelihood that the firm will go through a discontinuous renewal.

Industry sector context of intrapreneurship

Emerging trend in the intrapreneurship literature has lent credence to the context of sectoral entrepreneurship that focuses on the industry (i.e., aggregate firm-level), which was hitherto integrated into the study of entrepreneurship as cofounding constraints. The

interactions among 'like-industries' within a given economic sector influence sectoral growth in a diverse way as a result of different socio-political, economic, institutional environment, and technology disruptions (Welter, 2011; Zahra and Wright, 2011). Consequently, the contextual differences at the level of sectoral economy have the tendency to shape the antecedents, processes and consequences of intrapreneurship.

In the event that firms become more entrepreneurial and successful, there is a tendency that they adapt to some countervailing constraints of both the macro and meso institutional environments (De Castro, Khavul & Bruton, 2014). As a consequence, industry cluster would actively influence the innovation of a start-up firms and the presence of a strong meso-level interaction among industry will have a positive impact on firm innovativeness in that industry (Block et al., 2016). Zahra, Wright and Abdelgawad (2014) view industry context of entrepreneurship in terms of the available and potential opportunities, competitive intensity, market entry and exit strategies. These contextual influences of the industrial sector have helped shape intrapreneurship towards fostering communications, alliances, and knowledge sharing, all of which culminates in sectoral economic development.

Therefore, industry sector that is conceived as a unit of analysis would tend to bridge the dichotomy of macroeconomics and microeconomics entrepreneurial activities. This is because the influence of industry variables as meso-level contexts of intrapreneurship have long been recognised within the extant studies, but are usually not integrated as the intermediate level constructs that could further enhance the robustness of entrepreneurship studies (Kim, Wennberg, & Croidieu, 2016). This means that Industry sector has long been an influential dimension in entrepreneurial research, but the extent to which it is theorised or conceptualised on the meso-level of the economy has been very insignificant.

Further, the shifts in industry's landscape are usually driven by changes in institutions, environment, and technology (Zahra et al., 2014). We argue that these drivers in turn, stimulate progression of innovation, corporate venturing and firms' strategic renewal processes, and that the clustered entrepreneurial firms have the benefits of geographical proximity and inter-sectoral linkages which are envisioned to enhance spillover effects of technology and increase firm's competitiveness using the economies of scale and scope within the sector (Delgado, Porter & Stern, 2015).

Further implications for industry-specific entrepreneurship are the evolution of industry and its impact on intrapreneurship. The evolution of *"markets in motion"* has exposed the volatility of the entry and exit of firms in a market (Audretsch and Thurik, 2003). Market in motion can be horizontal whereby exiting firms are those ones that entered the market lately.

The motion can also be vertical whereby incumbent firms are chased out of the markets by the younger ones. This suggests that implications for studying entrepreneurship at the industry level could help understand better, the entrepreneurial strategies involving innovation, new venture creation and strategic renewal as they carry the implications of entry-exit strategy which in turn could shape the performance or growth of the sectoral economy positively or negatively.

Studies on sectoral entrepreneurship have also lent credence to the industrial and sectoral context of entrepreneurship and its consequences of sectoral performance (Audretsch, Lehmann, Menter & Seitz, 2019; Omri, 2017; Duschl, Scholl, Brenner, Luxen & Raschke, 2014). Arguments from these studies have begun to reinvigorate some provoking questions on how influential are the sector-based entrepreneurial capabilities in driving industrial growth and performance, and to what extent is the sectoral growth influenced by presence or lack of entrepreneurial renewal, disruption and spillovers (De Masis et al., 2018).

Relatedly, De Massis, Kotlar, Wright and Kellermanns (2018) suggest the concept of *"sector fluidity"* and define it as "*the extent to which information, knowledge and resources can flow freely across industry boundaries" (*P.7*).* This concept suggests a thoroughfare in which industrial sector shapes the phenomenon of intrapreneurship and provides the means through which intrapreneurs interact with industrial sectors to *"prospect, develop and exploit"* opportunities within the environment.

Premising this concept largely on the industry sector as one of the key environmental variables of entrepreneurship, coupled with the fact that intrapreneurs and organisation interact with peers, competitors, regulators and other stakeholders in the industry, could help scholars to further integrate industry context beyond the current level of entrepreneurship literature. However, industrial sectors differ from one another in terms of cultural, economic and technological context, and those contextual differences do significantly influence the antecedents, process and consequences of corporate entrepreneurial firms (Zahra & Wright, 2011).

Scholars of different disciplines continue to expand the frontier of industrial contextualisation of intrapreneurship research. Zahra (1996), on industry and technology. Zahra and Covin (1995), and Covin and Slevin (1989) on industry and environment, while Covin and Slevin (1991) stresses the significance of industry life cycle of entrepreneurship. However, most of these studies do not present industry as a meso-level construct that either mediates or moderates intrapreneurship dimensions of innovation, corporate venturing and strategic renewal. Hence, they lack the distinct meso level analysis of intrapreneurship.

Notwithstanding the dimensionality and contextualisation of intrapreneurship as enunciated above, the bedrock of the entrepreneurial phenomenon is largely hinged on opportunity-seeking and risk-taking. Short et al. (2010) argue that there won't be entrepreneurship if opportunity does not exist. Venkataram et al. (2012) complemented this argument by recognising opportunity as a *'dominant thread'* of entrepreneurship. These suggest that intrapreneurship is all about seeking opportunities and taking calculated risks regardless of the debates among scholars that entrepreneurial opportunity can either be created or discovered (Ramoglou & Tsang, 2016; Davidsson, 2015; Sarasvathy & Venkataram 2011; Álvarez & Barney, 2007; Hitt et al., 2001; Shane & Venkataram, 2000).

On the other hand, the challenges of risk-taking in the turbulent business environment (Bettis & Hitt, 1995; McGrath & MacMillan, 2000) and the willingness of firms to commit resources for low or uncertain rewards in such a volatile environment (Van Ness & Seifert, 2016; Morris, Kuratko and Covin, 2008; Lumpkin and Dess, 1996; Covin and Slevin, 1989), are emphasis of the domain of intrapreneurship.

2.3.3 **Research Domain of Institutions**

The linkage and effects of institutions on entrepreneurial activities are mostly explained in the strategic management literature in terms of changes in institutional environment and forces within an organisational environment. This unarguably posits institutions to be one of the major determinants of economic progress resulting from the consequences of intrapreneurship (Eesley, 2016; Krasniqi & Desai (2016); Autio & Fu, 2015).

Institutions is key to entrepreneurship development, hence the need for the consideration of the complexity of institutional roles, entrepreneurship, and their relationship in the application of institutional theory to entrepreneurship study (Welter & Smallbone, 2012). Scholars should be able to prove that the interactions among institutions, entrepreneurs and organisations do shape the evolution of economies in the context of institutions.

Thus, the need for enhanced comprehension of how successful is institutions-driven intrapreneurship to deliver or improve economic growth (Stough, 2016) and the quest for deeper understanding of how multi-level entrepreneurial activities are aggregated to produce national economic growth (Shepherd, 2011) can no longer be evasive in the current discussions and debates of institutionalised entrepreneurship, particularly at the sectoral or meso-level of economy. The focal and predominant theory adopted in this research study is the new institutional theory.

2.3.4 New Institutional Theory

The theory of institutions is crucial to the deepening of knowledge on how the environment of formal and informal institutional variables impact entrepreneurial behaviours and decision making in the perspectives of regulation, policies, ethics, customs, and norms. The emergence of new institutionalism in the twentieth century has further helped throw more light on the fact that institutions not only matter, but should be more explicit on theory building and exploration of realism beyond the description and normative evaluation views of the old institutionalism.

Proponents of new institutionalism suggest that socio-economic processes and issues of an organisation should be subjected to facts and realities through empirical orientations rather than the assumptions that are guided by inductive observation or reasonings which ends in predictive and explanatory consequences (Filho, 2020; Lowndes, 1996; Jacoby, 1990). New institutionalists do not find the atomistic and behaviouralist approach of neoclassicist to institutional environment helpful in formulation of policies because they are driven mainly by introspection and assumptions, and by consequence, 'laws', 'ceteris paribus', etc, which are regarded as deduced probabilistic statements rather than psychological facts (Immergut, 1998; Jacoby, 1990; Bell, 2001).

This paradigm shift in institutionalism has been that of holistic approach to the theory of institutions that integrates economic theory, political theory and social theory to amplify the understanding of institutional environment in a fractioned and uncertain world that we live (North. 2003, 1986). Thus, enabling the theory of institutions to facilitate the understanding of institutional framework, market efficiency and organisational environment that enhances entrepreneurial decision making and shaping the behaviours of individual actors with the view of mitigating the impacts of uncertainties in human interactions.

This inspired shift of attention of an organisational unit towards a societal focus of relationship and embeddedness (Powell, 2007; Selznick. 1996) where individual behaviours, pressure group power, informality and institutional changes have become the order of institutions (March & Olsen, 2008). For instance, efficiency, growth, competition and relations with peer industries, community and governance in the landscape of industry, cannot be devoid of the institutional framework of the industrial sector. Consequently, the political behaviours and the sources of political power of organisations within its domain could be seen as transcending beyond formality and regulation of the organisational environment.

In an extensive theory of new institutions that embodies '*organisational institutionalism*', Berthod (2016) argues that increase in the arguments for institutional

entrepreneurship reflects the discontentment with the theories that propound efficiency as the dominant outcomes of an organisation without considering the influences emanating from the differences in culture, conventions, social norms, legal requirements and the demands of "diversity actors" such as trade unions, NGOs, regulatory agencies among others.

This research study therefore augments the argument that the structure of formal institutional forces which are driven by rational mythologies, laws, regulations, public policies, could be more efficient if the informality of institutional environment that connotes the responses of rules, beliefs, conventions, norms are solidly entrenched in organisations because these institutional roles extend beyond the technical and resource dependencies of firms (Powell, 2007).

The theory of New institutions is heterogenous in the sense that various disciplines such as strategic management, economics, political science, history and sociology embody the concept of institutionalism in their theories and this carries different nomenclature, albeit with commonality in terms of the oppositions to the behaviouralist simplicity and atomism of individual economic preferences as enunciated by the old institutionalists. This follows that the diversity of institutional forces in terms of rules, normativeness, and setting of standards are not mutually inclusive, they can be applied differently within an organisational environment and they can be at odds with each other, or be nested with one another (Powell, 2007).

First, the new institutional orientation of organisation theory buttressed the interactions of firms within a given organisational field, with the idea of institutional isomorphism (Di Maggio & Powell, 1983). It is argued that, as different organisations in the same line of business structured themselves in a common field, there is a tendency for them to be bound as similar firms in the long run, with the emergence of powerful forces which will constrain and enable their actions to become homogenous irrespective of exit and entry into the organisational field. DiMaggio and Powell (1983) explain three mechanisms that embody institutional isomorphism in an organisational setting; *'coercive', 'normative' and 'mimetic'*. Coercive isomorphism is about the state regulations through political pressures and forces and the problems of legitimacy. Normative isomorphism pinpoints to the influence of education and professionalisation while the mimetic isomorphism relates to 'habitual' and 'taken for granted' responses to uncertain environment.

Scott (2005) complements the isomorphic institutionalism by developing three pillars of institutional forces namely, *regulative, normative and cultural/cognitive* which emphasise legal sanctions/obligations, moral suasion or authority and cultural supports, respectively.

The new institutions theory also drives the economic models of rational choice and aggregate individual preferences alongside empirical observation and theory building rather than abstracted assumptions. In this instance, new institutionalists dispute old institutionalist's model of preferences aggregation as atomistic and argued that summation of individual preferences cannot fully explain collective decisions. It was further argued that the economic behaviours of individual actors exist in the context of institutions.

The advent of the new institutional economics gives prominence to issues relating to cognitive limits, transaction costs, information costs, contracts agreement enforcement and other market uncertainties in the theory of new institutions (Menard, 2018; Williams, 2000). For instance, Williams (2000) identifies institutional environment of property rights, limited (bounded) rationality, judiciary, bureaucracy on one hand, and governance which aligns governance structure with the transaction costs, on the other hand as formal rules of the game. These two are complemented with the model of resource allocation and employment which describes incentive alignment.

Menard (2018) refers to the combined concepts of property rights, transaction costs and contracts agreement as the 'golden triangle' of the new institutionalism. Therefore, no gainsaying that new institutionalism in economic theory evidently portrays that the existence of institutions in any economic entity is dependent on the benefits exceeding the costs of creating and maintaining such institutional roles (Lowndes, 1996).

Aside, economic institutional environment, political institutionalism has also been highly exploited in the theory of new institutions. The fact that institutions shape the behaviours of individual actors in the political arena in terms of their power, preferences and influence, is enough to constrain or enable organisational environment in which organisations reside and operate (Lowndes, 1996; Bell, 2001). The new institutionalists reinforce the enforcement of the rules of the game and sanctions of non-compliance to the rules through political institutional forces. North (1986) stresses that institutions *"are not persons, rather they are customs and rules that provide a set of incentives and disincentives for individuals and entail enforcement either of self-enforcing variety through code of behaviour or by third party policing and monitoring"* (p.231).

The frontier of new institutional theory also includes sociological or historical institutionalism (Filho, 2020; Bell, 2002; Immergut, 1998; Lowndes, 1996; March & Olsen, 1989). Individual actors stress their appropriate responses to uncertainties in the environment considering their positions and responsibilities. This undoubtedly infers logic and openness to the appropriateness of the individual actors (March & Olsen, 1989), where individual actors

are enabled to interpret and make choices in a constrained social and political environment. Similarly, Williams (2000) also identifies embeddedness which defines informal institutions, customs, traditions, norms and religion.

In this perspective of historical or sociological institutionalism, the uncovering of cognitive structures of institutions which are 'taken for granted' clearly resonates with the construct of postmodernism (Palmer, Bigart and Dick, 2007). It also suffices to note that new institutionalists depict methodology as inductive which informs exploration of empirical consistencies for inquiries through repeated observations (Bell. 2002).

The diverse institutional forces as articulated by the new institution theory shows that institutions matter and that the structures of institutions do constrain and enable individual actors in their environment. In fact, institutions and institutional changes are considered as endogenous to an organisation and institutions are *"the rules of the game of a society or more formally are the humanly devised constraints that structure human interaction" (*North, *2016,* p.*76)*. As the systems of incentives and disincentives that structure behaviours of people in certain ways, institutions provide socio-political environment that determines the outcomes of human interactions and behaviours.

Extending the notion of rules of the game, Bradley and Klein (2016) contend that the rules of the game can either be *normative* (moral or ethical behaviour of entrepreneur), or *cognitive* (knowledge and judgement on opportunities, environment and resources) or *regulative* (legality of entrepreneurial actions). In the same way, Urban (2013) finds that the normative, regulatory and cognitive dimensions of institutions have positive but less significant relationship with entrepreneurial intentions in the context of emerging economies.

Urbano and Álvarez (2014) enhanced those institutional dimensions espoused by Urban (2013) and Brand and Klein (2016) by examining how they influence the start-up of an entrepreneurial firm. They argue that favourable institutional factors encourage entrepreneurial intentions substantially

However, in the extant literature, few or no arguments exist against the notions of the 'rule of game' and endogeneity of institutions, particularly when it is related to intrapreneurship and its environment. Moreso, the understanding of what institutions is complementary to economic growth is still basic in the entrepreneurial knowledge cycle. Further, the questions as to whether the consequences of corporate entrepreneurial activities are heterogeneous across different institutions (Bjørnskov & Foss, 2016) and whether economic growth that is impacted by intrapreneurship is simultaneously shaped by institutional variables (Carlsson et al., 2013) are yet to be answered and aligned across entrepreneurship scholars.

Nevertheless, most scholars are explicit in emphasising that institutions are not just the rules of the game, they also unbundle the way individual actor behaves, acquires and utilises knowledge in consonance with legality, ethicality and regulation within the encompassing environment. This emphasis supports the argument that entrepreneurial characteristics such as risk tolerance, experience, educational status and alertness do influence intrapreneurship via institutions (Fuentelsas, Maicas & Montero, 2018). Thus, helping scholars to explain the correlation that may exist among individual characteristics of entrepreneurial managers, influencing dimensions of institutions, and how each complements the other.

Some scholars have unarguably argued that the regulative, cognitive, or normative environment of institutions tend to foster progress of intrapreneurship, however there are not definitive institutional roles that consistently explain the forms of institutions that are best suited or most influential to the concept of intrapreneurship and how these institutional roles complement each other to sustain varieties of entrepreneurship (Dilli, Ellert & Herman, 2018).

The understanding of the above suggests that there are no impeccable institutional dimensions that can facilitate different forms of entrepreneurship through institutional reforms or changes, hence the need for policy trade-off regarding the entrepreneurship type to be promoted. Equally, it is very complex to establish which institutions mostly encourage or inspire growing entrepreneurial firms.

Estrin, Korosteleva and Mickiewicz (2013) contend that growing entrepreneurial firms benefit from the policies of smaller and bigger government but also suffer from the consequences of corruption and suggest that the corporate network ties could mitigate the adverse consequences of the institutions. However, Baumol (1990) in his seminal research on entrepreneurship argues that the actions of an entrepreneur depend substantially on the rules of the game which he denotes as the *"reward structure"* in the economy. The suggestion that entrepreneurial actions can result in either unproductive or destructive tendencies is indicative of the diverse impacts of entrepreneurship on the economy and society.

Measuring institutions has also not been well profound in extant literature of entrepreneurship. Nonetheless, some scholars have identified that formal institutions could be measured in terms of policies, regulations, other government related sanctions and formality variables such has contracts, procedures, property rights and transactional costs (Chowdhury et al. 2014; Chowdury, Audretsch & Belitski, 2019; Álvarez, Amorós, & Urbano, 2014; Estrin et al. 2013; Acemoglu, 2005; Méndez -Picazo, Galindo-Martin & Ribeiro-Soriano, 2012). On the same note, economic and political institutions tend to influence the entry of entrepreneurial

firms directly and indirectly. There is a finding that the impacts of formal and informal institutions on entrepreneurship is symmetric when the effects are direct (Autio and Fu, 2015).

Informal institutions, on the other side could be measured in terms of attitudes, values, social norms and religion, community affiliation and socio-economic cognition (Urbano & Aparicio, 2016; van Hemen et al. 2015; Urbano & Álvarez, 2014; Estrin, Korosteleva & Mickiewicz, 2013; Sobel, 2008; Aparicio et al. 2015; Thornton et al. 2011; Levie, Autio, Acs & Hart, 2014). The belief systems, culture, social norms and cognitive dimensions have helped mitigate uncertainties arising from entrepreneurial decision-making (North, 2003).

However, Voigt (2013) differentiates institutions into *"de jure"* (i.e., the formality and informality of the institutions) and *"de facto"* (i.e., the factual enforcement of the institutions) to emphasize the strengths of the institutions and to emphasise the extent to which rules, norms etc. are being enforced.

The dichotomy of formal and informal institutions as synthesised above has also been criticised (Stephan, Uhlaer and Stride, 2015). Suggestions from the authors that if formal and informal institutions are configured, it could reduce the intensity of arguments on the dichotomy is plausible. Institutional roles are significant to the entrepreneurial outcomes, and the configuration of the formal and informal institutions can offer better enabling or constraining effects on intrapreneurship than when the two institutional forms are separately assessed.

However, Cardinale (2017) argues that institutions go beyond constraining or enabling the actions of individual actors in an uncertain environment. Thus, identifying some gaps in the literature which needs to be bridged in the context of new institutionalism. Alternative micro foundations of institutions in form of '*dual embeddedness view of actions*' and '*pre-reflective agency view*' was suggested to bridge the divides within the institutional theory. These suggestions advocate for two premises. First, institutions do not only constrain and enable actions but also actively '*orienting'* such actions through the current and historical positioning of the individual actors and second, the agency view of institutions should also be pre-reflective and its interplay with the agency reflective position should be continuous and concurrent.

Many other scholars have also debated on which type of the institutions affects intrapreneurship most or least. Aparicio, Urbano and Audretsch (2015) explore institutional factors that drive entrepreneurship to achieve economic development and argue that both formal and informal institutions affect opportunity entrepreneurship, but the effects are stronger for the informal institutions. They find that the informal institutions of corruption

control, confidence in skills and coverage to obtain credits, drive the positive effects that opportunity entrepreneurship has on the economic growth.

Similarly, Dau and Cuervo-Cazurra (2014) examine what impacts does the "pro-market" institutions (i.e., economic liberalization and governance) have on formal and informal entrepreneurship. Their findings suggest that economic liberalization positively affects both form of entrepreneurship while only formal entrepreneurship is positively impacted by governance and negatively affect informal entrepreneurship. However, taking the lenses of institutions in the context of developing economies, formal institutional structures such as economic, political, and socio-cultural are influential forces in the modern economies of most African nations and tend to dominate and influence entrepreneurial activities in the modern sector through regulation. On the contrary, these regulations are weak when compared with the same set of institutions in the developed nations (Zoogah, Peng & Woldu, 2015).

Other studies have shown that institutions of economic, politics and culture foster or hinder entrepreneurship. For instance, Eijdenberg, Thompson, Verduijn and Essers (2018) found that entrepreneurship in Tanzania is negatively impacted by some peculiar environmental constraints such as language barrier, gender inequality and negative media coverage which are seen as further impediments to the well-known institutional barriers of illogical enforcement, unnecessary bureaucracy and lack of access to entrepreneurial capital.

Extant literature on institutional entrepreneurship has also provided insights into the understanding of multi-level institutions and how these multiple layers of institutions affect intrapreneurship at different levels (i.e., macro, meso and micro). For instance, some organisations are typically inclined to adapt informal rules despite the existence of formal rules due to ambiguity (Uzo and Mair, 2014). The authors called this, an organizational defiance and argue that embeddedness could mediate the relationship between the defiance and institutional ambiguity.

Further, Stenholm, Acs and Wuebker (2013) explores how the different institutions affect the type and rate of entrepreneurship at the country level. The authors argue that regulative environment of institutions matter less for new start-up entrepreneurial firms while it matters most for the "high-impact" entrepreneurial firms that are created by knowledge spillover.

When it comes to the conceptualisation of institutions at the meso-level, extant studies in entrepreneurship research has a very little patronage for theoretical and empirical literature, as most of the studies focusing on institutional impacts are largely tailored towards macro-level, where policies, regulations and other formality are given regional or country prominence (Castro, Khavul & Bruton, 2014; Elsner, 2010), irrespective of the fact that institutional

environment and roles go beyond macro-level perspective of governance. Thus, having meso-levels of entrepreneurship and institutions less underscored in entrepreneurship literature.

For instance, research focus on economic progress of sectoral innovation and technological disruptions that contribute largely to sectoral employment growth, labour and industrial productivity (Kannebley, Sekkel & Araujo, 2008; Stam &Wennberg, 2009) are inadequate at both the theoretical and empirical studies of entrepreneurship, despite notable efficacy of innovative entrepreneurs at the meso-level of economy and their distinctive contributions to the economic development (Naudé, 2013).

Nonetheless, Institutions as a key determinant of entrepreneurial growth in terms of micro and macro-economic performance can no longer be over emphasised. For instance, the rate at which formal and informal institutional environment and the roles they play, influence innovation and entrepreneurship in the context of sectoral or industry setting and continues to trigger scholastic quest for deeper insights into how institutional forces could change the antecedents, processes and consequences for opportunity entrepreneurship, business formation and economic growth (Brandley & Klein, 2016). Therefore, formal, and informal institutions affect entrepreneurship at a multiple level of analysis and carry some consequences for policy implications and entrepreneurship practitioners.

In a recent study, there are arguments that organised clusters of industries do act as institutions and create innovations in their constituent domains. As a result, organised clusters are perceived to be '*context-embedded meta organisations*' that engaged in deliberate strategy deployment and decision making (Lupova-Henry, Blili & Zotto, 2021). The scholars found that organised clusters in Russia can put up collective actions that can shape their environment as a result of the magnitude of power they can exert. The clusters can also become avenues of empowerment for their individual industries so as to help them foster their creativity which may allow them engage in institutional entrepreneurship.

Institutional framework of sectoral affiliation has also been proved to be the bridge between intrapreneurship and its community of stakeholders regarding the delivery of sectoral growth and improvement of the national economy. De Castro, Khavul and Bruton (2014) and Greenwood and Hinings (1996) stress the importance of value accretion, coherence and predictability of set of rules and 'taken-for-granted norms' that are provided to community or group through a meso-level institutional environment.

De Castro et al., (2014) emphasise how the meso-level institutional environment is significant to entrepreneurial decision making and strategies. In this regard, meso-level institutions are entangled between formality and informality of the economy where meso norms

are made legitimate, with the tendency of meso institutional norms weakening micro and macro level institutions and provide an avenue for trade-off between macro and meso levels as entrepreneurial firms become more successful.

Equally, Menard (2018) argue that meso institutions are missing link in the levels of institutions. The author contends that meso institutions are mechanisms through which specific rules and norms together with the enforcement modalities are possible and allowed within the meso environment. Meso institutions are posited to bridge gaps between general rules and the individual actors within the meso level by translating, adapting and allocating such rules and the applicable rights.

*2.3.5 **Research Domain of Firm (Organisational) Performance***

Firm performance as a consequence of intrapreneurship has thoroughly been analysed in the strategic management literature. Kuratko, Hornsby and Hayton (2014) argue that intrapreneurship is central to the strategic focus of established firms with the view of improving growth, profitability and international success, expanding knowledge for future gains, effectively configure resources and capabilities and developing or sustaining competitive advantages.

In strategic management literature, the domain of organisational performance is closely linked to the corporate objectives and strategic goals and are largely microeconomic. However, organisational goals are complex, multi-dimensional and are perceived to be one of the main antecedents to firm performance, primarily because it is usually defined in terms of goals or target achievement over a period of time. Dobbs and Hamilton (2007) argue that firm performance is of continuous phenomenon, it has antecedents and consequences, and it varies between periods of boom and busts, where fluctuations and stagnation are manifested.

*2.3.6 **New Growth Theory***

New growth theory is the second focal theory adopted in this research study, and has been expressed as one of the dimensions of macroeconomic performance. However, in a microeconomic setting of an organisation, growth is commonly construed as the main criterion. In economics and strategic management literature, growth perception of a firm's performance has also been intensified. For instance, McKelvie and Wiklund (2010) suggest new directions for researchers to move away from the conventional notion of *"how much firms grow*" to the new way of thinking, *how firms grow*"?

The core of the argument is that the definition of growth should include factors that mediate or moderate growth and not just the quantity perception of growth which is traditionally considered as a measure in the literature. Thus, positing the frontier of growth

towards the concept mode which denotes “organic”, “acquisition” or “hybrid” types of mode of growing, as well as the cogent factors that drive this mode.

In this study, focus is mainly on the theory of endogenous growth, commonly referred to as new growth theory. The new growth theory is a response to the criticism of neoclassical exogenous growth model that attaches much importance to the external factors of technological changes when explaining long run economic growth of a country. Solow (1956) explains that in the absence of external shocks relating to technology changes, and where the increases observed in the growth of an economy could not be traced to short term adjustments in labour and physical capital, then the economy will strive for zero growth. This suggests that the only source of long run growth per capita is the technical change which is also outside of government policy intervention (Chirwa & Odhiambo, 2018; Tavani & Zamparelli, 2017).

In entrepreneurship research, where the criterion variable is economic performance, the review of literature would not be sufficient without inclusion of new growth theory which encompasses innovation, new technology, human capital and institutional factors. New growth theory assumes that factors which determine the growth lies within the growth model itself. This means that there are feedbacks from growth variables that make the model an endogenous one (Kibritcioglu & Dibooglu, 2001; Chirma & Odihambo, 2018).

The advent of new growth theory stems from Schumpeter growth model which postulates that the innovation and creativity of entrepreneurs are critical determinants of economic growth and are premised on assumptions of research & development spends, property rights, efficient financial market, and competition (Pietak, 2014). It further stresses that ‘creative disruption’ tendencies of entrepreneurship will help replace old organisational processes and procedures with new ones that will enhance productivity and growth.

Romer (1986) and Lucas (1988) expatiated the frontiers of new growth theory further, and laid its solid foundation. Growth is driven by technological development and knowledge, therefore, sharing of entrepreneurial ideas and making inventions in new technologies and products, characterise what economists call ‘increasing returns’ and consequently propel an economic growth (Romer, 1994). Knowledge therefore, breeds innovation and as a consequence, spillover effects as a multiplier of innovation across sectors of economy.

Therefore, the path to endogenous growth of an economy is opened by the accumulation of intangible assets of knowledge that induces innovative ideas and technical progress. When inventions are taken boldly by entrepreneurs, it is sometimes resulting in monopoly which carries reward through patents to indemnify the costs of novel investment in products and technology (Cortright, 2001). However, Lucas (1998) argues that development of human

capital through building and enhancement of workers' skills is also a determinant for new growth theory. The core of this growth assumptions lies in the accumulation of human capital that is linked to the rate at which the human capital changes (Chirma & Odihambo, 2018). Lucas' endogenous growth model has implications for increasing labour productivity and the maximisation of human capital accumulation to enhance economic growth.

New growth theory has also been explained in terms of economic policies and institutions. Acemoglu et al., (2005) emphasises the long-term effects that institutions and public policies have on the long run equilibrium growth of an economy. For instance, economic policies and institutional forces that minimise distortions in resource allocation and contribute to financial markets development will generally increase growth of the economy (Cvetanovic, Mitrovic & Jurakic, 2019; Easterly & Wetzel, 1989).

North (1990) suggests '*adaptive efficiency*' of institutions and economies as impetus to endogenous growth model. The ability of institutional and economic forces to rapidly adapt to prevailing environmental situations and avoid being static, will contribute immensely to the long run growth of the economy. In this context of adaptive efficiency, individual actors within the entrepreneurial environment should have considerable tolerance for novel ideas, challenge the status quo and be opened to intensity of disruptions, so as to infuse growth to the economy (Cortright, 2001).

2.3.7 ***Theoretical Framework of Industry Economic Performance***

The context of economic performance in terms of growth will undoubtedly illuminate knowledge of scholars more, on the collective economic performance of industries, notwithstanding that the phenomenon of economic performance in the context of entrepreneurship has been widely espoused by many scholars (Urbano & Aparicio, 2016; Lee, 2016; Naudé, 2013; Bjørnskov & Foss, 2013; Acs et al., 2012; Hessels & van Stel, 2011).

It all comes down to the fact that industry structure of an economy is a major driver for collective firms' performances. The challenge is that structural manifestation of growth has more impacts on entrepreneurial performance in industry and what distinguishes a successful sector from the other is its economic structure which is also pivotal to economic growth.

The growth of industry is also conditional to agglomeration effects and economic structure. These conditions also differentiate successful economies from unsuccessful ones. Sectoral performance is also largely driven by macroeconomic conditions, demand side factors, production inputs, innovation in research and development, market structure, trade openness and barriers to trade (Lankauskienė & Tvaronaviciene 2013). Thus, the sectoral economic growth has become a major determinant of the structural changes and transformation in the

prosperity of a country and could be measured in terms of growth, value added, employment, labour productivity, international trade and foreign direct investment (Peneder, 2009).

However, these economic performance measures are multidimensional, and the extent to which they are operational within clusters of industry are dearth of academic research. Moreso, the understanding of the relationship among these performance dimensions are theoretically undernourished in extant entrepreneurial literature. Nevertheless, the concept of economic performance in the context of sectoral growth of clustered firms asserts that firm clusterisation and related institutional policies are intended to evolve innovative growth, exploit benefits of their industry cluster, leverage on the advantages of knowledge spillover within the cluster and maximise spatial proximity to ensure sectoral economic growth are fully optimised (Audretsch, Lehmann, Menter & Seitz, 2019).

Industry-specific firm growth and agglomeration also suggest that the growth prospects of entrepreneurial firms are generally constrained by the effects of industrial clusterisation and the knowledge spillover mechanism within the cluster, which tend to positively correlate with the growth of firms that rely on knowledge-intensive industries outside their cluster during their early life cycle (Duschl, Scholl, Brenner, Luxen and Raschke, 2014).

In examining relative effects of industry on the economic growth and the variations in firm performance, McGahan & Porter (1997) found that industry has significant direct and indirect influence on firm's profitability. However, earlier similar study by Rumelt (1991) posits that the heterogeneity of industry does not support the widely acclaimed classical focus on industry performance analysis as the central determinant of firm performance. Rather, the most barriers to the long run *"rate of return*" are not connected to industry structure, but to the *"unique endowments, positions and the strategies"* of individual firms.

In a similar manner, Delgado, Porter and Stern (2012) evaluate the roles of regional cluster of industry on the economic performance of selected industries, clusters and regions within the United States and found 'convergence and agglomeration' effects of industry composition on economic performance. Convergence effects shows that an industry growth rate within a region is declining at the level of the industry activity while agglomeration effects signify that an industry growth rate within a region increases in *'sizes and strengths'* relatively to the sectors of the economy. The authors' findings further suggest a significant evidence of agglomeration effects that is driven by regional cluster and the presence of strong clusters in a region enhances growth opportunities.

In some other empirical studies, there are findings that strategic renewal, corporate venturing and innovation influence firm's performance across continents (Bierweth, Schwens,

Isidor and Kabst, 2014). The scholars argue that innovation and corporate venturing have stronger effects on intrapreneurship than strategic renewal, while also suggesting that innovation strongly impacts the performance of high-tech industries than low-tech industry.

The moderating effects of firm size, industry type and country origin also determine the relationship between intrapreneurship and performance. Nevertheless, the constructs of entrepreneurial performance remain multidimensional, meaning that the entrepreneurial efforts and activities that yield positive outcomes based on one dimension could turn negative on a different performance dimension (Lumpkin & Dess, 1996).

Correspondingly, the impacts of agglomeration on industry growth and sectoral economic performance can no longer be over-emphasised. Question as to whether economy could grow faster with the clusterisation of industry also demand scholastic attention. It is therefore no gainsaying that the models and theories of growth as articulated in the literature of new economic geography support that spatial agglomeration is important to sectoral economic growth. For instance, Fujita and Thisse (2003),

Baldwin and Martin (2003) agree that agglomeration is not only conducive for sectoral growth but both agglomeration externality and growth are mutually inclusive and self-reinforcing (Martin & Ottaviano,1999). However, Brülhart and Sbergami (2009) argues that the relationship between industry agglomeration and growth might likely be non-linear and the effects of agglomeration on growth may be conditional on some other externalities. The authors proposed a mediation of openness to international trade and stages of development for the agglomeration-growth nexus. This line of argument makes good sense, however in this study such nexus could also be moderated by institutional variables prevalent in the industry.

Nevertheless, of much importance is the question of how aggregate firms in a cluster of industry perform at the meso-level of economy? How is such a performance conceptualised and measured? This question is still lacking answers in the domain of theoretical and conceptual literature of entrepreneurship performance.

According to Churchill (1979), the gap in measuring a phenomenon is largely seen as lack of know-how. Researcher has no sure knowledge of exact measurement for their fundamental objective, they rather have inferences which are largely dependent on procedures and evidences that support their" goodness". In this context, it means that the heterogeneity of intrapreneurship domain coupled with the variability in the conceptualisation and measurement of sectoral economic growth give rooms for ambiguity and fragmentation of industry economic performance, therefore may lead to barriers in internal and external validity of the performance concept (Katsikeas, Morgan, Leonidou and Hult, 2016; Miller, Washburn & Glick, 2013).

*2.3.8 **Domain of Indigenous Research***

In recent times, academic research efforts are increasingly focusing on how indigenously developed phenomenon could be intensified to reflect the reality and diversity of entrepreneurship models, values, and concepts across the globe instead of the overbearing theoretical foundations of the western countries. Some scholars have argued that much reliance is placed on entrepreneurship theory propounded on the premise of traditions, epistemology and philosophy of western countries (Bruton, Zahra & Cai, 2018; Li, Chung, Chen & Luo, 2012).

We corroborate that such theoretical and conceptual overbearing can only strengthen the entrepreneurial activities in the direction of western countries rather than bringing out the diversity of entrepreneurship as it happens globally. Hence, the need for strong notion of indigeneity in the study of entrepreneurship that focuses on such diversity rather than imposition of the western theoretical foundations on other locations. This necessity in the extant entrepreneurship literature is borne out of the fact that there is a dearth of deeper understanding of the uniqueness of a local phenomenon which the theories or constructs from western nations cannot effectively account for (Li, et al., 2012)

Although, indigenous concept is construed to be in its infancy (Bruton et al, 2018) and it is yet to gather scholastic momentum in the field of entrepreneurship research, most extant management and entrepreneurship theories based on the values and philosophies of western nations do not kill the values in indigenous research. For instance, Boyacigiller and Adler (1991) earlier posited that indigenous research has potentials in contributing to the western theories either by modifying or enriching them. Similarly, Bruton et al. (2018) in comparing Chinese entrepreneurship setting and cultural environment to that of western nations setting, suggest that the notion of indigenous research is becoming *'fast exposing'* in China management and literature.

Indigenous study according to Li (2011), means the *"study of a unique local phenomenon or a unique element of any local phenomenon from a local perspective to explore its local relevance and if possible, its global relevance as well*" (P.3). To further this line of definition, Leung (2009) advocates that, for the perspective of a phenomenon to be construed as an essential indigenization component, full understanding of such a local phenomenon and its resulting effects are mandatory, so as to provide locally suitable solutions that evidence compatibility between theory and the phenomenon.

The debate as to what the motives of indigenous research are, and whether such a line of theoretical perspective is maturing or is in infancy cannot be overemphasized. While some

authors are of opinion that indigenous research should cover only local theoretical perspectives where new theories are developed entirely to explain uniqueness of a local phenomenon (Leung, 2009; Li, 2011; Li, Leung, Chen, Luo & Der, 2012), Others argue that research that covers local phenomenon could be referred to as indigenous even if it adopts the theories and concepts of the west (Whetten, 2009; Tsai, 2006; Tsui, 2004; Boyacigiller & Adler, 1991).

Unarguably, a unique local phenomenon based purely on local perspective and with the aim of exploring both local and global relevance defines indigenization theory and concepts of that phenomenon. Nonetheless, whatever local phenomenon that adopts or modifies theories emanating from the perspectives and epistemology of western nations also qualify as indigenous (Whetten, 2009; Tsui, 2004).

According to Jair, Nair and Ahlstrom (2015), indigenous studies on entrepreneurship and innovation suggests that there are need for more of theories that are non-western, laden with unique approaches and concepts to help deepen scholastic understanding of local phenomena and allow for meaningful complementarity of the existing theories in the domain of western culture and values.

Likewise, Li, Sekiguchi & Zhou (2016) argue that the need for indigenous theoretical perspectives to modify, enrich or revise western nations-based theories and concepts are very paramount in today's research of entrepreneurship. Therefore, with the globalization on the rise, coupled with its attendant effects on intrapreneurship, it has become very important to analyse the uniqueness of the environment, structure, resources and knowledge in which intrapreneurship operate, particularly in the spatial context of economy.

There is a compelling question for entrepreneurship researcher to address; are there gaps in existing western theories and concepts of intrapreneurship and its institutional environment (Redding & Witt, 2015)? Globalization of theories in diversity, creativity, understanding of the 'meaning systems' in the context of societal values, the influence of proximate institutional context and strategic relationship of intrapreneurship with such institutional environment to deliver entrepreneurial growth are more than cogent in the advancement of entrepreneurial research.

In the context of developing or emerging economies, entrepreneurship literature should further contextualise the localisation of sectoral or meso-levels of intrapreneurship and institutions that will benefit theoretical and conceptual understanding of corporate entrepreneurial activity and small medium scale firms that contribute to the national economy through their proximate industries or sectors. Chinese context of indigenous entrepreneurship settings and institutional arrangement (Ahlstrom & Ding, 2014; Leung, 2009) and the focal

indigenous setting of Indian entrepreneurship and innovation settings are revelation of the needs for enhanced approach to indigenous theory of entrepreneurship, particularly in the African economic and institutional setting.

*2.3.9 **Theory of Externality***

Externality theory is the third focal theory in this research study. Although, externality is more pronounced in economics literature, it is basically an economic event that flows from one economic agent with the consequences of either conferring benefits or causing damage to other agents without their consent. This suggests that external economies (benefits) or diseconomies (damages) would arise in a situation where production or consumption of some goods or services give benefits or impose costs on others (i.e., third parties) which are outside the ambit of the producer-consumer relationship and these benefits or costs are not accounted for in the market price of the goods or services.

Claassen (2016) classify externality theory as a part of larger theory of market failure and argue that externality poses a situation opposed to 'pareto-efficiency', which means that there are possibilities of allocating economic resources inefficiently where economic changes can make one individual better-off and at the same time make another worse-off. Therefore, externality is posited as an interaction effects from a non-market relationship situation which either positively or negatively impact third party.

Externality theory focuses on effects that are beyond the control of the third parties not involving in the market forces of production and consumption, hence it is called external effects of the actions of the production or consumption agents and carries no benefits or costs to them. Such external effects, according to Pigouvian view, embodies a divergence between the marginal private costs (or savings) and marginal social costs (or savings). There is a negative externality where the marginal social costs are higher than marginal private costs. On the contrary, where the marginal private gains are less than the marginal social gains, there exist, positive externalities (Helbing, 2010).

Krupp (1963) explain externality in terms of an extension of composition laws which governs relationship among individual relationships. Where there is a violation of such a law, there is an emergence of externality. Therefore, the external effects are explained on the basis of the new relationship that was created by the new factors coming from the outside of the initial relationship. It therefore follows, that externality theory postulates the emergence of interdependence from the agglomeration of individual firms with attendant consequences that are not expected under the theories derived from the individual firms.

The logical reason behind this postulation is that the decision on the scale of growth for industry is an externality to an individual firm. Hence, the industry supply curve can be deduced only when the externalities are added to the aggregate cost curves of the individual firms (Parr, 2002). Moreover, externality in the industry can act as a bridge between firms and industry, also between industries and the society. This is because of the conditions external to firms are internal to industry and those external to industry are internal to the society at large. Thus, the actions and processes in the industry are seen as the 'interrelated whole' which enables development in the areas of new products, new technology and new industries.

The relevance of externality theory to this research study lies on the external effects from industry agglomeration and its significance to the entrepreneurial outcomes of the industry. According to Parr (2002), industry agglomeration externalities are cost savings flowing to firms from the clusterisation of firms in a given location. Such externalities are of significance in manufacturing sector of economy. These externalities also referred to as economies and are classified into the category of large-scale economies, localization economies and urbanization economies.

Parr (2002) also classified the agglomeration economies as either internal or external and further group each economy under the perspectives of scale, scope, and complexity. Since our focused agglomeration economies are external, the externalities based on scope, scale, and complexity matter most. External effects of scale signify cost saving associated with the scale of industry to which a firm belongs. This scale allows firms of same industry to collocate while permitting effects of specialisation, access to specialist markets and knowledge spillovers to take place. These align with the Marshal-Arrow- Romer (MAR) view of agglomeration economies (Glaeser et al. 1992).

On external economies of scope, cost savings flow from the presence of firms in other industries. The fact that firms could share same or similar inputs with other firms in a different industrial set-up based on either bilateral or multi-lateral agreement is of immense benefits to the industry agglomeration concept. This type of externality involves urbanization economies which shows that firms which are unrelated in production and consumption activities can co-agglomerate within same region to share inputs that are specific to them and also to enable the sharing of public utilities and common infrastructure.

The external effects of complexity bring the benefits of transport cost savings, access to inputs availability to different firms in the complex structure of industry, and easy and available flows of information (information symmetry). These economies are provided to firms of different activities but are related to one another through vertical linkages of agglomeration.

The theory of externality in economics and particularly that of agglomeration externality, suggests interdependence in the production and consumption functions of different agent of economy. In this context, the different individual firms as aggregated into industry and having consequences of conferring benefits or causing damages which are beyond the controls of the producer-consumption relationships and those costs and/or benefits are excluded from the prices of the goods or services traded or exchanged inter or intra industry.

2.4 Conceptual Model

This section presents the model conceptualised and later operationalised in this study. We discuss the interrelationship and measurement of industry agglomeration externality, intrapreneurship dimensions, institutional roles, and sectoral growth as latent variables and review the relevant contexts in which these variables are conceptualised and measured. Our model follows four direct relationships and one moderating effect. First, industry agglomeration externality directly relates to sectoral performance. Second, intrapreneurship dimensions of innovation, corporate venturing and strategic renewal are functions of industry agglomeration externality. Third, sectoral growth is a function of both intrapreneurship dimensions and institutional roles. Finally, the institutional roles moderate the effects of the relationships between intrapreneurship dimensions and the sectoral growth.

The dimension of industry agglomeration as to vertical and horizontal was followed (Baldwin & Martin, 2003; Head & Ries, 1995; Du, Lu and Tao 2008; Krugman and Venables,1996). These two dimensions embody industry agglomeration as a latent construct, with those dimensions being reflective of the agglomeration phenomenon. However, the concept of industry agglomeration is measured by its externalities of diversity, variety, specialisation, local competition, and knowledge spillover which are the main focus of the agglomeration construct.

Manufacturing sector is a considered ideal context from where those externalities evolve. We take cue from Dumais, Ellison and Glaeser (2002), and Krugman (1991) in which agglomeration externality is focused on the specific manufacturing industry with the aim of understanding why some cities concentrate manufacturing industries than the others.

For the dimensions of intrapreneurship, we follow precursors espoused by Guth and Ginsberg's (1990), Zahra (1996) and Sharma and Chrisman (1999). These are innovation, corporate venturing, and strategic renewal. We subsequently measure each of these dimensions separately, in order to operationalise intrapreneurship for empirical analysis. The concept of institutions is operationalised by following North (1991) and Voigt (2013) regarding the

formality and informality of institutional environment. These two dimensions to the institutions are measured and analysed in the context of intrapreneurship. For instance, government policies and regulations are considered formal institutions, while culture, governance and sectoral affiliation are viewed as informal institutions.

As for the unit of analysis, we adopt spatial context of analysis, where manufacturing sector of the economy is considered as the level of observation and unit of analysis. Since sectoral level of economy aggregate similar industry into a specific unit of economy within the larger macro-economy, focusing on such analytical unit for measuring entrepreneurial progress in an economy shows an important dimension along which intrapreneurship, institutions and sectoral growth can be reliably measured (Audretsch, Lehmann, Menter & Seitz, 2019; Delgado, Porter & Stern, 2015). Thus, the sectoral growth is measured by sectoral growth.

In addition, some confounding variables that are considered necessary to impact the relationships among industry agglomeration externality, intrapreneurship, institutional roles, and sectoral growth are controlled for. These cofounding variables are industry type, average industry firm age, average industry size, and level of technology.

The conceptual model developed for the relationships among the three variables is shown in figure 1 below.

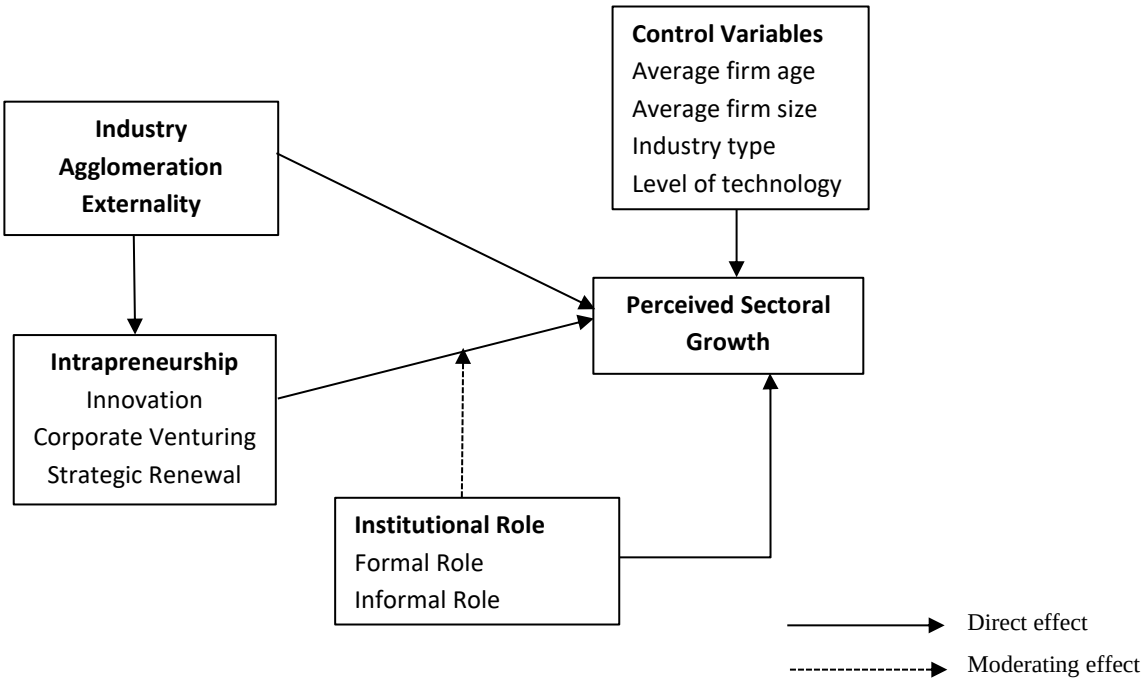


Figure 1: Conceptual Model of Industry Agglomeration, Intrapreneurship, Institutions and Sectoral Growth Relationship.

Source: Author's concept.

*2.4.1 **Conceptualising and operationalising Industry Agglomeration***

In this research study, industry agglomeration is conceptualised in the contexts of vertical and horizontal agglomeration. However, it is measured in terms of the externalities of the phenomenon irrespective of whether the industries are vertically or horizontally agglomerated. Nonetheless, industrial agglomeration is viewed as a reflective latent construct that is better explained on the ground that clusterisation of industries is either vertical or horizontal.

Agglomeration externalities are the external economies of industry concentration that provides collective benefits to firms that locate together. First, specialisation creates space for supplier and customer base, labour market pool and knowledge accumulation and spillover. Diversity on the other hand means diverse mix of firms within the industry or diverse mix of industries with a given location. This stimulates pollination of ideas, knowledge, and technology transfers. Variety externality is considered a strategy to protect industries from asymmetric shocks. Local competition encourages innovation and stimulate knowledge spillovers.

Vertical Agglomeration

Industry is said to vertically agglomerate when clustered firms in a given industry have the benefits of backward and forward linkages among themselves. In a vertical agglomeration, both the upstream and downstream industries are so much integrated that the upstream industry supplies differentiated raw materials and intermediate inputs to the downstream industry which eventually produces differentiated final goods to the consumers (Krugman & Venables, 1996; Baldwin & Martin, 2003; Head & Ries, 1995). In augmenting the vertical agglomeration, various dimensions are enunciated in new economic geography literature. These dimensions reflect trade costs, local production costs, size of the local market and the strength of the vertical linkage.

Du, Lu and Tao (2008), and Krugman and Venables (1996) argue that vertical agglomeration generates positive externality in the sense that: (i) varieties of intermediate inputs and final goods are made available for choice, (ii) local production costs reduce on average, (iii) ample opportunities are afforded to the upstream and downstream industries to mitigate or resolve inherent contract issues and finally, it creates knowledge spillovers through learning.

Horizontal Agglomeration

Horizontal perspective of agglomeration indicates the linkage of many industries to one industry within a given a location (e.g., region). For instance, a car manufacturing industry

sourcing differentiated components from other industries such as tyre manufacturing, glass manufacturing, iron, and steel, etc. This perspective of agglomeration is also tagged as "own-industry".

Du et al. (2008) further differentiate horizontal agglomeration into two. First, the clustering of source industries that operate in the same industry and same region. Second, concentration of domestic firms of the same industry and same region. These two dimensions of horizontal agglomeration provide industries with some positive externalities such as knowledge spillover across industries, improved access to market and technology trends, better economies of scale resulting from improved demands from similar industries and finally, improved access to public goods and infrastructure. However, horizontal agglomeration also poses negative externalities such as loss of firm's own technology arising from spillover and increased competitive intensity and rivalry among similar firms in the product and factor markets (Du et al., 2008).

*2.4.2 **Conceptualising and operationalising intrapreneurship***

Intrapreneurship is largely defined as an entrepreneurial process whereby internal innovation and strategic renewal are instigated and a new organisation is created within an existing organisation (Sakhdari, 2016; Zahra, 1996, 1993). The phenomenon of intrapreneurship is also defined in the context of entrepreneurial behaviours. Kuratko and Morris (2018) defines it as entrepreneurial behaviours within large and middle-sized organisations, while Kuratko and Audretsch (2013) emphasise the criticality of intrapreneurship and corporate entrepreneur's behaviours in the process of seeking 'newness' of products, process, organisation and technology.

In this conceptual model, intrapreneurship is viewed as a super-ordinate independent construct and a cornerstone of the study. It is also a multidimensional construct that encompasses innovation, corporate venturing and strategic renewal as its dimensions or measures (Guth & Ginsberg, 1990; Zahra, 1996; Sharma & Chrisman, 1999). Intrapreneurship is also defined as a context-dependent construct, meaning that the intrapreneurship is given a prominence at the sectoral level of economy where similar firms are aggregated into industry.

The first step taken to conceptualise intrapreneurship was the adoption of composite conceptualisation where measurable variables of intrapreneuship antecedents were identified and aggregated as formative items of the phenomenon of intrapreneuship. The illustration of the composite conceptualisation was presented in the appendices A and B respectively.

The second step is to conceptualise the phenomenon of intrapreneuship based on the dimensionality of precursors which are identified as innovation, corporate venturing and strategic renewal.

Innovation is defined as as one of the dimensions of intrapreneurship gives an impetus to the conceptualisation of the phenomenon of intrapreneurship. Innovation according to Dess and Lumpkin (2005) is a willingness by a firm to *"introduce newness and novelty through experimentation and creative processes aimed at developing new products, services as well as new processes"* (P.148). In the same vein of dimensionality, corporate venturing is when a firm invests in a new firm or create such a new firm from within an existing organisation (Sharma & Chrisman, 1999). Strategic renewal, another dimension of intrapreneurship is defined as the "*process, content and outcome of refreshment or replacement of attributes of an organisation that have the potential to substantially affect its long-term prospects"* (P.282).

The relationship among the three dimensions of intrapreneurship is better conceptualised in the context of an industrial sector. This is because context is seen as either circumstance or environment which lies outside a phenomenon (Welter, 2011; Zahra, Wright and Abdelgawad, 2014) and such a phenomenon is both constrained and enabled by context (Bierwerth, Schwens, Isidor and Kabst, 2015). Thus, context plays a prominent role in assessing the relationship between intrapreneurship and sectoral economic performance. Therefore, industry structure as a context of intrapreneurship cannot be over-emphasised.

Bierwerth et al., (2015) argue that context is key in determining the nexus of intrapreneurship and economic performance. Hence, intrapreneurship carries strong performance implications at different levels of economy (micro, meso or macro). Similarly, Zahra, Wright and Abdelgawad (2014) contend that the variability in the entrepreneurial opportunities and intensity of cluster competition coupled with shifts in industrial landscape and influence of regulation, shape the entrepreneurial strategies deployed for exit and entry in the market environment.

The major learnings in those studies are that sector-based entrepreneurship can be perceived as the exploitation of entrepreneurial opportunities of cluster agglomeration and geographical proximity which can foster knowledge spillover that spur technological development. However, the contemporary perception of sector-based entrepreneurship in the context of economic performance is still debatable. The argument that the structure of a country's economy is pivotal to the success of such a country can no longer be over stressed (Lankauskienė & Tvaronauviciene, 2013; Peneder, 2009).

The relationship between the construct of intrapreneurship and its dimensions or measures is positioned as "reflective" (MacKenzie, Podaskoff & Jarvis, 2005). This means that intrapreneurship construct gives meaning to its dimensions and the direction of causality emanates from the intrapreneurship construct and flows to its dimensions of innovation, corporate venturing, and strategic renewal. George and Marino (2011) emphasise reflexive construct as more consistent with the theoretical and conceptual framework of a phenomenon. Therefore, it is assumed that the three dimensions of the intrapreneurship are interrelated and interchangeable, having common or shared variance which cut across the dimensions and can be operationalised using thematic measurement (MacKenzie et al., 2005).

2.4.3 ***Conceptualising and operationalising Institutions***

Institutions is viewed in this model as the second independent latent construct and a moderator of the relationship between intrapreneurship and sectoral economic growth. Similar to the definition of intrapreneurship conceptualisation, institution was also defined in terms of the aggregate variables that depict the composite and formative items that identify the institutions as a single latent construct.

Following the composite conceptualisation is the dimensionality of institutions into formal and informal institutional roles which serve as the other side of the conceptualisation. The illustration of the composite conceptualisation of institutions was presented in the appendices A and B respectively.

We follow the definitions of North (1991) and Voigt (2013) to classify the domain of institutions into formal and informal. These two domains are further classified into six institutional environments in order to analyse their influences on intrapreneurship as well as their moderating roles on sectoral growth. These institutional environments are regarded as the dimensions or measures of institutions, and they are: regulation, fiscal policy, monetary policy, culture, governance, affiliation. This institutions conceptualisation is premised on Gnyawali and Fogel (1994) who earlier proposed five institutional environment that enable or constrain entrepreneurship (i.e., *government policies and procedures, social and economic factors, entrepreneurial and business skills, financial assistance, and non-financial assistance*).

Institutions is defined as the rules of the game of the society, which are have become "humanly devised constraints" that structure and regulate the interactions of human beings (North, 2016, P.74). Formal Institutions as a dimension of institutions is regarded as formal or regulative rules such as constitutions, laws, court decisions and other regulations. Informal Institutions on the other hand signifies norms, customs, and social conventions. (North, 2003,

2016). In fact, institutions are primarily evolving as a result of human interactions and aimed at providing incentives and disincentives to ensure people behave as they should.

Our focus on formal institutions centers on regulations and government policies as they affect entrepreneurship-growth relationship and allows for better appreciation of the influence that exists in the nexus of formal institutional environment and intrapreneurship in the context of sectoral economy. North (1991) suggests that through regulations, formal institutions are aimed at mitigating the effects of risks and costs associated with contractual transactions. Similarly, Álvarez, Amorós, and Urbano (2014) recognises regulations as a rule of the game that cover "*government spending, investment freedom, financial freedom, entrepreneurship legislation, labour regulations and unemployment legislation*" (pg.82), while Holmes, Zahra, Hoskisson, De Ghetto and Sutton (2016) suggest how the use of economic freedom and intellectual property protection as a form of regulation significantly impact firms' entrepreneurial capabilities. In the same context, Chowdury, Terjesen and Audretsch (2014), contend that formal institutions are an embodiment of property rights, business start-up procedures, and inflows of foreign direct investment.

Informal institutions as the second domain of institutions in our model, covers basically the institutional environment that influence entrepreneurial behaviours at the firm and sectoral level. North (1991) stresses that informal institutions are intended to reduce the uncertainty that surround decision making process of entrepreneurship. Other related studies have also shown that informal institutional environment have strong relationship with entrepreneurial activities and behaviours at different levels and context (Urbano & Álvarez, 2014; Stenholm et al., 2013; Thornton et al., 2011).

In a case of affiliation as a measure of informal institutions, we follow Kim, Wennberg and Croidieu (2016) by paying attention to the ambidextrous relationship among similar firms within an industry as a social group at the meso-level of the economy. This allows for the enhanced understanding of the roles that strong informal social network and alliance within a given industrial sector, play in the event of intrapreneurs dealing with weak formal institutions (Brandley & Klein, 2016).

The construct of Institutions is also considered a reflexive variable in the same way intrapreneurship construct is perceived on the conceptualisation and operationalisation. The construct has its causality flows to its six dimensions or measures.

*2.4.4 **Conceptualising and operationalising Sectoral Growth***

The centrality of growth as the macroeconomic performance of intrapreneurship has revealed some empirical evidences on the linkage among entrepreneurial activity, industry evolution

and economic growth that intrapreneurship stimulates positive pulse in the sectoral economic development (Audretsch & Thurik, 2003). However, there is a dichotomy of what growth are ideal between firm-level and macro-level entrepreneurship.

Entrepreneurial growth at the firm level is usually focused on firm's profitability and growth (Zahra, 1996), while in conventional macroeconomics, entrepreneurial growth is conceptualised as economic growth and usually expressed in terms of Gross Domestic Product (GDP) or its proxies such as Total Factor Productivity (Bjørnskov & Foss, 2013; Erken, Donselaar & Thurik, 2016) or Labour Productivity (Aparicio et al., 2015) or Employment Growth (Lee, 2016; Glaeser, Kerr & Kerr, 2013).

The sectoral growth conceived in the conceptual model of this study is the 'growth' of the aggregated industries in the manufacturing sector of the economy which determines structural changes and transformation of the sector. Thus, positioning the construct of entrepreneurial growth as a context dependent variable.

Evolution of economic growth has always been tied to growth theory and measuring growth as economic growth of entrepreneurial activity has always been diverse and debatable, despite that endogeneity and institutional context have been encapsulated in the growth theory (Acemoglu, Gallego & Robinson, 2014; Galindo & Méndez, 2013; Erken, Donselaar & Thurik, 2016). However, the need for continuous focus on sectoral economic growth of entrepreneurial activity is very important because its impacts on the economy is substantial while the dynamics of industry influence profitability of firms within the industry (McGahan & Porter, 1997).

We follow De Masis, Kotlar, Wright and Kellermans (2018) to focus on the pertinent questions raised in the quest for operationalising sectoral growth; *(i) "how do sector-based entrepreneurial capabilities influence related industries? (ii) to what extent are there industry-level outcomes of sector-based entrepreneurial capabilities in terms of (lack of) renewal and disruption, cross-fertilisation and spillovers"?* and ponder on how sectoral growth based on the dimensions of innovation, strategic renewal and corporate venturing would be unfolded as a construct that measures structural changes and transformation, rather than the traditional macroeconomic growth such as gross domestic product, labour productivity, industrial production, etc., at the sectoral level of the economy.

Premised on the sectoral proximity of firms, McGahan and Porter (1997) argue that industry structure is a significant determinant of firm performance while performance variations of firms are measured against their industry. This argument posits that industrial sectors have some influences on intrapreneurship and its aggregate sectoral performance. Further, firms differ, when it comes to data interpretation as a result of access asymmetry of

environmental data, distinctive qualities of organizations, differences in firm's market position and the disparity in the cognitive and styles of firms' managers (Zahra, 1993).

We also complement the concept of growth 'Mode and Reasons' (McKlevie & Wiklund, 2010) with that of DeMassis et al., 2018) to emphasise the need for conceptualising the how's and why's of sectoral growth using the perspective of meso-level entrepreneurial model. This explains how the dynamics of sectoral economy shapes and influence entrepreneurial activities and processes (Fitz-kotch, Nordqvist, Carter & Hunter, 2018), and in relation to the growth of start-ups, product differentiation and entrepreneurial capital (Braunerhjelm, 2010).

Growth concept of the sectoral growth is therefore perceived in this study as alternative measure of economic performance rather than the conventional economic performance indicators, and defined in attempt to de-emphasize ambiguity in the operationalisation of sectoral growth. The basic difference between the conventional and perceived measures is that perceived growth is not necessarily what the conventional statistics may dictate, and the growth might also be potentially subjective. Moreover, operationalisation of perceived economic performance data requires the use of survey with a large sample size which is essential to collect precise data.

The perceived sectoral growth data indicates the growth in the size of the sector arising from the growth in aggregated industry within the sector. The determinants of this perceived growth are (i) organic growth in the turnover of the sampled sector and (ii) incremental growth arising from the entrepreneurial efforts of innovation, corporate venturing and strategic renewal within the sectoral economy. No doubt that agglomeration or proximity of similar firms within a given geography has tendency to influence how firms grow (Duschl, Scholl, Brenner, Luxen & Raschke, 2014). Although, the term proximity has different implications to different industries, nonetheless similar firms located within the spatial context of their industry benefit together and have tendency to achieve higher growth. (Delgado et al., 2012). Nevertheless, the focus of sectoral growth as a unit of analysis is premised on Syverson (2011) and Zahra (1993) where data of aggregated firm over years are sourced.

The choice of perceived sectoral growth as the outcome variables over the conventional macroeconomic growth measures such as gross domestic product, total factor productivity, labour productivity, etc., was made for three reasons.

First, the traditional economic growth measures of gross domestic product (GDP) or total factor productivity (TFP) are of different assumptions and often-adjusted econometric model. For instance, different measures such as gross domestic product (GDP) or gross national

product (GNP) usually measured with varying models to produce similar results in different ways depending on the context, constraints and data availability (Pietak, 2014; Cross, 2016 and Bleaney & Nishyama, 2000). On the other hand, our conceptual model aims at focusing on sectoral growth because of incremental economic activities generated by entrepreneurial efforts and opportunity-seeking which underpin this kind of entrepreneurial growth as *"organic growth* (Davidsson, Delmar and Wiklund, 2007).

Second, the source data for the growth measures of GDP or TFP are virtually obtained from secondary sources (e.g., World Bank, United Nations, Countries' central banks and other financial institutions). Most of these data are based on macro statistics that show how economy grows or shrinks. Such data are usually predefined and collected periodically (i.e., yearly or quarterly, etc.) and are not regularly updated or reviewed. In order to avoid data collection lapses, we consider obtaining relevant alternative data from the primary sources such as entrepreneurial firms within a defined industrial sector, related meso institutions such as industry association and from relevant government partners.

Finally, sourcing primary data from the key players in the industry (firms, industry association and government partner) affords the opportunity of "dual" data collection and analysis in terms of questionnaire administration and supporting interviews.

Sectoral growth as a latent criterion construct in the model is also conceptualised in terms of formativeness or reflexiveness. The performance growth is positioned as a formative construct unlike intrapreneurship and institutions which are described as reflexive constructs. This portrays the measures of perceived sectoral growth as outcome variables that give meaning to the sectoral growth rather than these dimensions becoming the construct's manifestations. Thus, the measures of the sectoral growth are deemed dependent and cannot be interchanged as they are integral parts of the sectoral growth. As a result, the measures bind together to form the sectoral growth and the direction of the causality or correlation emanates from those measures to the latent construct of sectoral growth (George & Marino, 2011).

Table 5 below shows the key measures of conventional economic growth adopted in the extant literature of some selected studies, compared with perceived alternatives.

Table 5 Key measures of conventional and perceived economic growth

Author	Economic Growth	Traditional Measure	Perceived Economic Growth	Perceived Measure
Aparicio et al., (2015)	Economic Growth	Labour Productivity	Employment Growth	Growth in labour force size over years
Bjørnskov and Foss (2016,2013) Erken, Donselaar and Thurik (2016) Lee (2016) Glaeser, Kerr and Kerr (2013)	Economic Growth	Total Factor Productivity	Industrial Productivity	Capacity utilisation and growth in industrial production
Audretsch and Thurik (2003) Stuetzer, Audretsch, Obschonka, Gosling, Rentfrow and Potter (2017)	Economic Growth	Employment Growth	Employment Growth	Growth in labour force size over years

Author	Economic Growth	Traditional Measure	Perceived Economic Growth	Perceived Measure
Van Stel, Carree and Thurik (2005)	Economic Growth	GDP Per Capita	Sectoral Growth	Organic and Incremental Growth in Revenues
Stam and Van Stel (2011)	Economic Growth	GDP Growth	Sectoral Growth	Organic and Incremental Growth in Revenues
Acs, Audretsch, Braunerhjelm and Carlsson (2012)	Economic Growth	GDP Growth	Sectoral Growth	Organic and Incremental Growth in Revenues

Source: Author's summary

2.5 Hypotheses Development

2.5.1 ***Hypothesis on the influence of industry agglomeration externality on intrapreneurship dimensions***

The phenomena of intrapreneurship and institutions has a bearing on industry agglomeration for the fact that the clustering of industries either spatial or as firms-related, tends to facilitate benefits accruing from locational proximity in terms of customers and labour pool, access to natural endowment of inputs, spillover of intellectual assets and technology, diversity, competition, among others (Elison, Glaeser & Kerr, 2010). This suggests that positive and strong relationship between industry clusters and entrepreneurial activities cannot be ruled out.

Thus, in the context of sector-based entrepreneurship, industry agglomeration serves as a vehicle whereby the collective entrepreneurial efforts of clustered firms in terms of innovation, technology spillovers, creation of new firms, strategic renewal and knowledge spillover lead to positive effects on sectoral productivity, albeit within some confines and influence of institutional environment (Acs & Varga, 2005; Malmberg, 1996).

Relatedly, the evolving agglomeration of firms tends to have societal influences on the cluster's environment and the industry through the prevailing culture and other institutional factors. This stresses the importance that institutions play in the cluster where firms agglomeration is strong. This situation also has the consequences of spillover effects of industry agglomeration where growth of one industry within an established industrial cluster has the effects of attracting other industries into that cluster through resources like entrepreneurial capital, labour pool and availability of intermediate inputs (Malmberg, 1996).

The fact that when firms cluster together, they benefit better from the internal and external economies and the dynamics of innovation and knowledge spillovers are enhanced. However, the extent to which industry agglomeration matters and at what level of agglomeration do cluster firms exert influences and add value to the economy are critical for further studies in entrepreneurship. Considering all these, we develop hypotheses that industry agglomeration externality has relationship with the three dimensions of the construct of intrapreneurship

Hypothesis 1: Industry agglomeration externality has positive relationship with the innovation dimension of intrapreneurship

Hypothesis 2: Industry agglomeration externality has positive relationship with the corporate venturing dimension of intrapreneurship

Hypothesis 3: Industry agglomeration externality has positive relationship with the strategic renewal dimension of intrapreneurship

2.5.2 ***Hypothesis on the influence of industry agglomeration externality on perceived sectoral growth***

Since the notion of industry agglomeration has long been seen as influential in the literature of entrepreneurship but rarely given an in-depth focus on the sector-based intrapreneurship study (De Massis et al., 2018; Zahra, 1993), scholars need to address such questions as to whether sectoral economy grow faster with having firms clustered, and if yes, why and how do the entrepreneurial firms choose to cluster spatially. Brülhart and Sbergami (2008) support that industry agglomeration grow economies faster and the spatial proximity of well-linked firms is conducive for economic growth. The authors further argued that economic growth and industry agglomeration do have significant policy implications for choosing either to support lagging regional sectoral economy or to promote national economic growth (*"efficiency-equity trade-off"*). In this vein, we develop hypothesis that the construct of industry agglomeration externality has positive relationship with the perceived growth in manufacturing sector of Ghanaian economy.

Hypothesis 4: Industry agglomeration externality has positive relationship with the perceived sectoral growth

2.5.3 ***Hypothesis on the influence of intrapreneurship dimensions on perceived sectoral growth***

Although, the linkage between economic development and corporate entrepreneurial activities have been theoretically and empirically examined in the extant literature, entrepreneurship study on the nexus of sectoral economic performance and intrapreneurship has relatively been found inadequate, irrespective of the fact that the economy which focuses on innovative development of its sectors makes a difference (Naudé, 2013).

Essentially, the normative theory of intrapreneurship and performance measurement theory posit that the two phenomena are mutually inclusive (Dess, Ireland, Zahra, Floyd, Janney & Lane, 2003), and the outcomes and measurement constructs of intrapreneurship are deemed to be valid and reliable. It is therefore important that the methodological approach to measure and report economic performance of intrapreneurship take the heterogeneity of

reported effects of entrepreneurship-performance nexus into consideration (Lubistani, Dimos, Hashi & Jackson, 2017).

In critically examining this notion, hypotheses are developed in line with the conceptual model and key research questions that focused on: (i) perception and measurement of sector-based entrepreneurship; (ii) influences of the intrapreneurship constructs of innovation, corporate venturing and strategic renewal; and (iii) the perceived economic growth in the context of sectoral entrepreneurship and as a proxy for the traditional economic growth. In this regard, innovation, corporate venturing, and strategic renewal are focused antecedents for hypotheses development to explore how the diverse constructs of intrapreneurship have influenced entrepreneurial outcomes at the sectoral level of the economy.

Innovation as one of the measures of intrapreneurship, has extensively been enunciated in the literature. Following Schumpeterian entrepreneurship in 1934, various scholars such as Miller (1983), Zahra (1996), Sharma and Chrisman, (1999) among others, have emphasised creative disruption in product, process and technology as innovative entrepreneurship. Innovative entrepreneurship distinguishes firms whose products, processes and technology differ significantly from others in their competitive environment. In fact, innovation is not synonymous with imitation or replica of existing ventures, technology in one market but adopted as innovative attempt in another market (Fuentelsaz, Maicas & Montero, 2018).

The potentials of innovation on entrepreneurial firms can also be of immense impact on their growth. Simply because, innovative activities could either sustain the competitive positions of incumbent firms or potentially disrupt the market environment by creating new market, product and technology while displacing existing or earlier market or technology (Hechavarria & welter, 2015).

While the findings of some of the entrepreneurship studies have proved that sectoral innovation contributes positively to the overall economic growth by inducing higher productivity, employment growth, improved market share and create multiple spillover effects on other industry (Holmes, Zahra, Hoskinson, De Ghetto & Sutton, 2016; Stam & Wennerberg, 2009; Kannebley, Sekkel & Araujo, 2008), the required in-depth theoretical and empirical inferences on how sectoral economic growth are influenced by innovative entrepreneurship are still inadequate (Bradely & Klein, 2016; Zahra, Wright & Abdelgawad, 2014). For some of these reasons, we hypothesise that innovation as a dimension of intrapreneurship has relevance and correlation with the perceived sectoral growth

Hypothesis 5: Innovation dimension of intrapreneurship has positive relationship with the perceived sectoral growth

Corporate venturing as another dimension or measure of intrapreneurship has also been given prominence in the literature (Guth & Ginsberg, 1990; Zahra et al., 2000). The significance of corporate venturing is that new businesses are created from within and outside the existing business venture. Although, creation of new business ventures through corporate venturing is heterogeneous in terms of market or product innovation, the requisites for survival and competitive advantages should come from structural differentiation and effective integration as well as giving necessary autonomy to the new venture without jeopardising the benefits that may accrue to the parent company (Phan et al., 2009).

The dimension of corporate venturing extends beyond internal innovation and the birth of new business within an existing organisation. The internationalisation process of creating new businesses offshore the local boundary in form of spin-offs, joint ventures or through corporate venture capital adds value to the overall business portfolio of the parent company (Zahra et al., 2000; Yiu & Lau, 2008).

However, scholastic questions yet to be answered are whether internal corporate venturing is more efficient than the external corporate venturing, and to what extent and conditions does one differ from another in generating intrapreneurship? (Phan et al., 2000; Zahra, Ireland & Hitt, 2000). The fact that little empirical work is done on the diversity of external corporate venturing and its relatedness with internal corporate venturing to assess their combined synergy on intrapreneurship continue to bring debates among scholars. Nonetheless. corporate venturing facilitates organisational learnings through exploitation of entrepreneurial knowledge but, how and to what extent is the external creation of new firms are influenced by regulatory environment, sectoral or industrial economic factors and competition to enable parent company maximises the knowledge acquisition, integration and internalisation remains underexplored.

Another focus on corporate venturing is the issue of ambiguity in the context of strategic leverage and organisational practice. Although some common practices of corporate venturing activities are intended to consolidate corporate entrepreneurial strategies and actions for sustainable competitive advantages, many firms still fall short of harnessing such benefits because of their inability to effectively leverage on such corporate venture to enhance their corporate entrepreneurial strategies (Covin & Miles, 2007).

However, one of the most critical organisational practices for creating corporate venturing is investment intermediation. Miles and Covin (2002) explain investment intermediation as one of the corporate venturing dimensions that takes the form of direct or indirect investment of capital in smaller firms by bigger firms. The bigger firms usually invest in a venture capital fund for the purpose of having a financial intermediary between themselves and the newly formed or acquired business through an instrument of independent financial investment outside the domain of the parent company.

As mentioned above, corporate venturing as a dimension of intrapreneurship carries implication of organisational expansion both locally and internationally to enhance competitive advantages of entrepreneurial firms. Nonetheless, the required insinuations into how entrepreneurial firms effectively leverage on this dimension still need more of conceptual and empirical insights. Accordingly, some authors have asked pertinent research questions that require further scholastic attention: "what accounts for performance difference between entry into new markets through internal venturing versus acquisition? And how does increasing global market opportunity and competition affect new venture strategies within existing firms"? (Guth and Ginsberg, 1990 pg. 14). "How should company sequence their venturing efforts? What and under what conditions can organizations learn from their corporate venturing"? (Zahra, Randerson & Fayolle, 2013 pg.371)

The gaps enumerated above coupled with such debatable questions have led to the third hypothesis that both internal and external corporate venturing activities of intrapreneurship are strongly related to and influence the perceived sectoral growth.

Hypothesis 6: Corporate venturing dimension of intrapreneurship has positive relationship with the perceived sectoral growth

Organizational transformation through renewal of business foundations and strategies, reconstruction of business models and reconfiguration of corporate attributes and capabilities have also been posited in the literature as strategic renewal antecedent of intrapreneurship (Schmitt, Raisch & Volberda, 2016; Agarwal & Helfat, 2009; Kuratko & Audretsch, 2013; Covin & Miles, 1999). Notwithstanding, the momentum at which firms reinvigorate their capabilities and competences amidst volatile and competitive environment still need further academic inquisitions.

Increasing disruption in the market and technology coupled with the proactivity of organisations to swiftly react to such volatility are instances of externality that shape the path

dependency of intrapreneurship to improve sectoral growth. For example, Basu and Wadhwa (2013) argue that shortcomings exist in the extant literature and studies, where variety in forms and dimensions of organizational renewal activities are not focused, externality causing shifts in core fundamentals of firms are less understood and the conditions that necessitate reconfiguration of organizational strategy are not substantially examined.

Further, the need to fully understand how strategic renewal could change the pattern of business activity to enhance economic performance (Guth & Ginsberg, 1990) and how an organisational mission or vision is redefined in anticipation of future changes, through redeployment of firm resources and new combination of product and technology (Zahra, 1996, 1993) cannot be overstretched both in the conceptual and empirical literature.

Nonetheless, there are two major classification of strategic renewal that plays vital role in corporate entrepreneurial activity: discontinuous strategic transformations and incremental strategic renewal (Agarwal & Helfat, 2009). When a firm goes through a major change that causes significant shifts in its strategy and organisation which make it seek for new source of growth and survival, such firm has undergone discontinuous strategy transformation. On the other hand, when a firm proactively seek to cope with volatility of its external environment as they are evolving, such a firm is going through incremental strategic renewal. This situation affords entrepreneurial firms to reduce their dependency for a future difficult and big transformation.

In vein of the above synthesis and arguments, we hypothesise that strategic renewal as a dimension of intrapreneurship has significant relationship with the perceived sectoral growth.

Hypothesis 7: Strategic renewal dimension of intrapreneurship has positive relationship with the perceived sectoral growth

*2.5.4 **Hypothesis on the influence of institutional roles on perceived sectoral growth***

The issue of sectoral economic performance calls for attention when examining the influence of institutions on intrapreneurship. Thus, the need for imperative of reliability and validity in the measurement of sectoral economic growth (Dess et al., 2003). Other scholars have also investigated the relationship of sectoral performance and industry spillover effects of intrapreneurship in the context of public cluster and other institutional policy (Duschl, Scholl, Brenner, Luxen & Raschke, 2014; Delgado, Porter & Stern, 2015; Audretsch, Lehmann, Menter & Seitz, 2019).

The centrality of the institutions-economic growth nexus is that the dynamics of economic environment and its development is characterised by the interdependence of institutional environment. This is because institutions are critical in the determination of economic progress of a country. Bjørnskov and Foss (2016, 2013) support this notion by arguing that aggregate elasticity of substitution as an important measure of economic growth is significantly influenced by institutional environment both at the regional and national economy.

According to Bradley and Klein (2016), economic growth at the country or sectoral level are constantly impacted by the volatility in political and legal environment (formal institutions) and socio-cultural environment (informal institutions) which consequently influence corporate entrepreneurial activities, even when the economic environment appears stable over time. In this regard, it is incumbent on entrepreneurship scholars to exploit better understanding of how institutional environment alter entrepreneurial outcomes particularly at the sectoral economic level.

Similarly, the major factors that determine cross-section or cross-country differences on the impacts of institutions on economic growth are worthy of empirical newness. As Acemoglu and Robinson (2008) rightly stressed that what differentiate economic growth, such as income per capital across country, are the differences in economic institutions and changes in the "*political equilibrium*" of the countries. Therefore, to move economy ahead positively, the notion of institutions must thoroughly be understood, conceptualized, and tested.

There is no doubt that institutions, whether it is formal or informal, influences the choices and decisions of a corporate entrepreneur. Consequently, those choices generate the linkage between the entrepreneurship and economic sectors development, which in turns imply that productive entrepreneurship are impacted by institutional environment (Acs, Audretsch, Braunerhjelm & Carlsson, 2012; Acs, Desai & Hessels, 2008)

In the context of sectoral economy, the institutional influence in terms of changes in political, economic, and cultural, has the tendency of shaping the process and consequence of intrapreneurship (Zahra & Wright, 2011). Nonetheless, the dynamics of institutions also involve the interactions among organisational, industry and national factors which help scholars to understand the industrial growth better, particularly in the context of African countries (Zoogah et al., 2015).

The relationship between the formal and informal institutions and that of sectoral growth has shown to be strong. Hence, the following hypothesis:

Hypothesis 8: Formal institutions has positive relationship with perceived sectoral growth

Hypothesis 9: Informal institutions has negative relationship with perceived sectoral growth

2.5.5 ***Hypothesis on the formal institutional roles as moderators to the intrapreneurship dimensions***

Emphasis on formal institutional environment is laid on regulations, government policies, rules and laws as dimensions or measures of the construct of institutions. According to Autio and Fu (2015) and Castaño, Méndez and Galindo (2016), formal institutions play significant roles in economic stimulation of intrapreneurship, enable policies and environment for entrepreneurial opportunity creation and impact economic growth through consequences of entrepreneurship.

No gainsaying the fact that prior research studies on the imperatives of formal institutions-entrepreneurship nexus have well been entrenched in the literature. Formal institutions in form of regulations and policies have proved to be one of the phenomena that shapes and influences intrapreneurship and equally conceived as an impetus to economic growth in the short and long run (Bjørnskov & Foss, 2016, 2013; Aparicio, Urbano & Audretsch, 2015 Braunerhjelm & Herenkson, 2013; Hausmann & Rodrik, 2003).

Heterogeneity of formal institutions as a construct of intrapreneurship has also been stressed. However, most of these studies fail to build up the lucidity and fluidity that the institutional entrepreneurship deserves, particularly at the sectoral level of economy (De Masis et, al. 2018). There is also a gap in the knowledge of consequence of this influence in extant conceptual models and empirical insights of institutions. The reasons why formal institutional environment has differing impacts across sectors or countries and in what ways such institutional roles have evolved as a rule of the game for entrepreneurial activity is still largely incongruent among scholars.

Notwithstanding, formal institutional roles are conceptually posited as a conduit for growing intrapreneurship and sectoral economy and its influence dictates how an economy grows faster or slower across sectors or countries (Acemoglu, Gallego & Robinson, 2008, 2014). Contextually, the understanding of sector-based intrapreneurship as one of the sources of changes in industrial economies cannot be divorced from understanding the significance of formal (Salimath & Cullen, 2010) as they have policy implications for government and intrapreneurs. Hence, the consensual knowledge of institutions among scholars, as a rule of game have undoubtedly aligned debates on property rights, transaction costs, and governance

structures (Chowdury, Terjesen & Audretsch, 2015; Stephan, Uhlaner & Stride, 2015; Stenholm, Acs & Wuebker, 2013).

Considering the significance of the moderating roles that formal institutions play on the entrepreneurship-outcome relationship, we hypothesise that the effects of intrapreneurship on sectoral growth are moderated by formal institutional roles of regulations, policies, laws and formal rules.

Hypothesis 10: Formal institutions moderates the positive effects of innovation construct of intrapreneurship on the perceived sectoral growth.

Hypothesis 11: Formal institutions moderates the positive effects of corporate venturing construct of intrapreneurship on the perceived sectoral growth.

Hypothesis 12: Formal institutions moderates the positive effects of strategic renewal construct of intrapreneurship on the perceived sectoral growth.

2.5.6 ***Hypothesis on the informal institutional roles as moderators to the intrapreneurship dimensions***

Informal institutional environment that embodies culture, norms, traditions, and cluster affiliation are also regarded as dimensions of institutions that impact the growth of an economic sector (Autio & Fu, 2015; Castaño, Méndez & Galindo, 2016).

The informalisation of entrepreneurial economy is a focus of new institutionalism as complementarity to formal institutions, hence the collaboration among industries within the manufacturing sector plays a prominent role in shared values, informal rules and its enforcement, resources pooling, knowledge spillovers and social interactions (Zoogah, Peng & Woldu, 2015; Estrin, Konsteleva & Mickiewicz, 2013). While entrepreneurship benefits from regulations of formal institutions, it also suffers from corruption emanating from informal institutions.

Informal institutions are also argued to be an "*underlying cause*" of changes in the relationship between entrepreneurship and economic growth. For instance, such variations, although may be beneficial to the activities of intrapreneurs in the relationship, but often explained through the institutional framework of informality, particularly in the area of social interactions (Diaz-Casero, Gonzalez, Escobedo, Martinez & Mogollon, 2013). This posits that

informal institutions fundamentally impact on the aggregate economic growth. However, the debate as to how and to what extent does the informal institutions drive productive entrepreneurship which in turns promote economic growth still generate ambiguity in the literature. In this vein, we hypothesise that the effects of intrapreneurship on sectoral growth are moderated by informal institutional roles of shared culture and tradition, social interactions and enforcement of informally aligned rules of the game.

Hypothesis 13: Informal institutions moderates the positive effects of innovation construct of intrapreneurship on the perceived sectoral growth.

Hypothesis 14: Informal institutions moderates the positive effects of corporate venturing construct of intrapreneurship on the perceived sectoral growth.

Hypothesis 15: Informal institutions negatively moderates the effects of strategic renewal construct of intrapreneurship on the perceived sectoral growth.

The dichotomy of impacts of the formal and informal institutions on entrepreneurship continue to generate scholastic arguments among scholars. Thornton et al., (2011) and Bjørnskov and Foss (2016) contend that informal institutional environment positively impact entrepreneurship more than formal institutions, while variables such as belief systems, social norms and culture tend to influence informal institutions to a greater extent. The question as to whether the interactions between formal and informal institutions matter for productive entrepreneurship also persist. Godlewska (2019) suggests that the institutions itself and the interactions between its constituents in terms of formal and informal institutions coupled with the 'institutional asymmetry' and the 'invisible hand of the state' (i.e., where the government act within the law) are necessary for productive entrepreneurship.

However, on the other front, Baumol (1990) stresses that it is not whether formal or informal institutions that really matter in the context of intrapreneurship but the incentives that are endogenous within the institutional environment. This incentive is critical as to whether entrepreneurial activities are productive or are rent seeking. The consensus among scholars is that whatever the institutional environment is (i.e., formal or informal), the nature of entrepreneurship within economic sectors or country is significantly influenced.

With respect to the variables that moderate or mediate the effects of intrapreneurship on economic performance, many authors have provided insights that institutional theory is an

essential framework for understanding the linkage between intrapreneurship and economic growth (Liñán & Fernandez-Serranoi, 2014; Naudé, 2010) and that institutions and policies moderate or mediate the effects of entrepreneurship on economic performance (Bjørnskov & Foss, 2013; Aparicio, Urbano & Audretsch, 2015).

2.6 Summary and Conclusions

The study of intrapreneurship and its consequences for sectoral economic performance which is moderated by institutional environment continues to evolve in the management research domain. Scholars of management and economic disciplines have argued, debated, and stressed the importance of the relationships that exist among intrapreneurship, institutions, and entrepreneurial performance outcomes at micro, macro and meso economic levels.

The synthesis and analysis of literature adopted in this study shows that scholars of entrepreneurship study have of recent, reinvigorated the linkage and relevance of intrapreneurship to economic growth and development (Lubishtani, Dimos, Hashi & Jackson, 2017; Erken, Donselaar & Thurik, 2016; Urbano & Aparicio, 2016; Prieger et al., 2016; Audretsch, Belitski & Desai, 2015) while on the other hand, some scholars have also renewed institutional context of intrapreneurship (Eijdenberg, Thompson, Verduijin & Essers, 2018; Stuetzer et al., 2017; Alvi & Mendoza, 2017; North, 2016; Aparicio, Urbano & Audretsch, 2015; Zoogah, Peng & Woldu, 2015).

As a focus of this thesis, intrapreneurship at the sectoral economy level is extensively explored in the literature both at the spatial context of industry agglomeration and the proximity of economic sector (De Massis et al., 2018; Delgado, Porter & Stern, 2012; Audretsch & Thurik, 2003; McGahan & Porter, 1997; Zahra, 1996). With respect to meso-level perspective of the study, emphasis was laid on two connotations. First, the contextual relevance of the sector-based entrepreneurship that is hinged on industry agglomeration. Second, the meso-level institutions where the linkage of intrapreneurship to the industry community and relevant stakeholders within the institutional environment are emphasised. These two connotations of meso-level are aimed at building bridges between microeconomic and macroeconomic importance of intrapreneurship and to differentiate entrepreneurial performance outcomes at the meso-level of economic growth.

Relatedly, De Castro, Khavul and Bruton (2014) argue that informality of institutions is best examined at the meso-level of institutions confronting entrepreneurship. Similarly, Tracey, Philips and Jarvin (2011) argue that bridging institutional entrepreneurship in order to

create a new organisation or venture will necessitate entrepreneurial efforts at multilevel economy, i.e., micro, meso and macro levels.

In the same vein, Stenholm, Acs and Wuebker (2013) explore the implications of institutional arrangement on the type of entrepreneurial activities, while Valdez and Richardson (2013) investigate how the determinants of formal and informal institutions influence macro level entrepreneurship.

To further our review, a systematic analysis of literature was conducted and focused on the five domains of the study. The synthesis which includes citation analysis shows how the effects of intrapreneurship on economic growth are moderated by institutional environment at the sectoral level of economy. We adopt the systematic review process followed by van Pragg and Versloot (2007) which was reverberated by Raisch and Volberda (2018). The aim is to make the review plausible and to permit thematic coding of the sampled articles. Search for top-ranked journals is made using Scimago Journal and Country Ranking (SJR) database. Same search made for sampling of relevant articles, using predefined search criteria in SCOPUS and JSTOR databases. Period of publication within 1999 to 2019 was defined for the articles search.

Results of the literature methodology reveals that entrepreneurship research has evolved over the years with increasing scholastic contributions on the linkages among intrapreneurship, institutions, and sectoral economic growth. Most of the theories and theoretical framework that are focused on the study of entrepreneurship, industry agglomeration, institutions, and firm performance have also evolved over the decades of entrepreneurship, economics, and strategic management research. Likewise, the methodology designs used in the sampled literature shows that the use of qualitative and quantitative techniques have been of immense significance in data collection, analysis, interpretation, and presentation. In fact, most of the findings in the sampled research studies through qualitative and quantitative methods suggest that intrapreneurship influences sectoral economic growth, industry agglomeration externalities are related to industry growth and sectoral performance while formal and informal institutional variables also impact intrapreneurship in the quest for better economic performance.

With regard to corporate entrepreneurial performance outcomes, most of the articles analysed use theory of neo-classical economic growth, with majority of the findings suggest direct or indirect positive effects of intrapreneurship, agglomeration externality and institutions on economic growth (Bjørnskov and Foss, 2013, 2016; Aparicio et al.,2016; Glaeser et al. 1992). For instance, entrepreneurship is posited as endogenous factor which is moderated by institutions to impact economic growth positively (Acemoglu et al., 2014).

Peculiar focus of this thesis is to establish what measures of growth at the sectoral level of economy could improve the understanding of entrepreneurial growth from the perspective of industry agglomeration and institutional roles. In this direction, inquisitiveness about the interactions between intrapreneurship and sectoral economic growth in the context of varying institutional environment are intensified and the knowledge of how intrapreneurship is shaped by the agglomeration externality of industry are further deepened.

Suggestions by some authors that intrapreneurship outcomes at the macro-economic level should be measured beyond the neo-classical measures of GDP so as to factor inclusive growth in the entrepreneurial performance model (Van Vuuren & Alemayehu, 2018; Naudé, 2013; Bruton, Filatotchev, Si & Wright, 2013; Peneder, 2009) supports one of the research questions asked in this thesis; what aggregate firm level growth could be proxied for the conventional economic growth in the context of entrepreneurial economy. Thus, the antecedents and consequences of entrepreneurial activities and behaviours of intrapreneurs in the context of industrial sector and institutions matter for the study of entrepreneurship performance at the multi-level analysis (Kotlar, DeMasis, Wright & Frattini, 2018; Kim, Wennberg & Croidieu, 2016).

In this chapter, research domains of entrepreneurship, industry agglomeration, institutions, firm performance, and indigenous research are critiqued to reawaken the need for enhanced literature and knowledge on the nexus of intrapreneurship, agglomeration, institutions, and economic performance. Albeit, at sectoral economy level. The critiqued domains are also augmented with established theories of intrapreneurship, institutions, economic performance, and indigenous research.

The constructs of intrapreneurship, industry agglomeration, institutions and economic growth are conceptualised and operationalised in this chapter. Our conceptual model follows four distinct analysis. First, industry agglomeration affects intrapreneurship through its externalities of specialisation, variety, diversity, and competition. Next, intrapreneurship as a construct, has a relationship with industry agglomeration setting. Third, intrapreneurship influences sectoral economic growth. This bivariate relationship denotes that sectoral growth is a dependent variable of intrapreneurship. Our focal argument lies in the understanding of the varied effects of intrapreneurship variables on the economic growth within the manufacturing sector and these are more explicit in the context of moderated institutional environment (Bjørnskov & Foss, 2016; Naudé, 2011; Pragg & Versloot, 2007).

Fourth, the construct of institutions moderates intrapreneurship in achieving or enhancing sectoral economic growth. This means that there is indirect relationship effect of

institutions on sectoral growth through institutions. Our model therefore positions four direct relationships and one moderating effect of the four constructs. The constructs of intrapreneurship and institutions are multidimensional while those of agglomeration and sectoral growth are unidimensional. There are reflexive and formative relationships between the measurement items within each construct and the constructs (Jarvis, MacKenzie &, Podaskoff (2003); MacKenzie, Podaskoff & Jarvis, 2005; George & Marino, 2011). For instance, the relationships between the constructs of intrapreneurship, institutions and their dimensions are positioned as formative. However, the relationships between the items for agglomeration and that of sectoral growth are reflective.

Hypotheses are developed based on the research questions and the conceptual model constructed. The first set of hypotheses developed is the influence of industry agglomeration on intrapreneurship and sectoral growth. In this instance, the premise of sector-based entrepreneurship through the phenomenon of industry agglomeration externalities are offered. Following this hypothesis is the focus on the influence of the intrapreneurship constructs of innovation, corporate venturing, and strategic renewal on the sectoral economic growth. The third set of hypotheses developed suggest that formal and informal institutional roles moderate the consequence of intrapreneurship on sectoral growth. The final hypothesis emphasises that sectoral economic growth is a consequence of institutional roles, industry agglomeration externalities and intrapreneurship.

This chapter also suggests some encompassing theoretical framework and policy implications, considering research gaps that are identified in this review. On the theoretical implications, the first note is the wide heterogeneity of intrapreneurship and institutions study that has become a difficult issue in the validity and coherence of the two phenomenal constructs. Hence, there is a need for further theoretical understanding and framework that could constructively and strategically deal with this complexity. This argument is credible for the fact that intrapreneurship research is fast reaching maturity, and whatever heterogeneity and differences associated with such a research study should be fully embraced beyond the academia.

Second, research contents that could lead to a broader context of intrapreneurship and its linkage to the moderators influencing sectoral economic performance should also be investigated. For instance, the constructs of innovation, corporate venturing and strategic renewal are considered to be very strong antecedents of intrapreneurship (Guth & Ginsberg, 1990; Sharma & Chrisman, 1999; Rutherford & Holt, 2007; Zhara, 1993). However, no consensus among entrepreneurship and strategic management scholars as to what extent do

those antecedents influence the latent variables of economic growth and what best boundary conditions do moderate or influence the relationship between the sectoral based entrepreneurship and economic performance, particularly at the sectoral level of economy.

In order to deal with this sort of ambiguity in literature, the efficacy of intrapreneurship study should be enhanced to provide further insights especially on a contextual basis. For instance, Sakhdari (2016) suggests that entrepreneurial scholars must expand their focus towards newness of models in entrepreneurial capabilities and process and enhance higher level of contextualization of entrepreneurship. This will unarguably present a platform for new thinking in entrepreneurship literature that brings new knowledge, new concepts, and new models that would expand extant literature.

Third, premised on the notion that *'one fit all'* entrepreneurship ideas do not exist (Welter et al. 2016), and the argument that dichotomy of emerging new and existing firms has overshadowed the heterogeneity concept of entrepreneurship firms (Phan et al.2009), it is very apparent among scholars that differences in the form, space, and timing of entrepreneurship study matter most than before. Hence, the need to factor the dimension of life cycle of theories, concepts, and models for intrapreneurship study to enable knowledge accumulation.

Fourth, the current multilevel analysis of the interplay of industry agglomeration, intrapreneurship, institutions, and sectoral economic performance in the extant literature is very insignificant. It therefore follows that the theoretical and conceptual understanding of intrapreneurship from the lenses of meso-levels of industry and institutions need enhanced literature review, particularly at the cluster diversity and ambidextrous relationship within the industry and firms' community environment.

To be specific, the significance of the influence that industry agglomeration has on intrapreneurship and sectoral economic growth needs nomological network. Quantitative and qualitative entrepreneurship studies on agglomeration-entrepreneurship nexus is sparse. There is also the possibility that institutions have effects on industry agglomeration which in turn might influence both the intrapreneurship and its consequences (Du, Lu &Tao, 2008)

Fifth, integrated or encompassing conceptual model that deals with the simultaneity of intrapreneurship, institutions and sectoral growth needs further contributions to the entrepreneurship study in the fields of strategic management and economics. The fact that simultaneity shows the relationship between more than one variable that are assumed to occur at the same time under a given circumstance, should prompt researchers for an integrated model that incorporates complexity of the nexus of the four constructs of industry agglomeration, intrapreneurship, institutions and sectoral growth. Such an integrated conceptual model should

be able to create a distinguishing framework that consolidates the domains of agglomeration, entrepreneurship, institutions, sectoral economic performance, and indigenous research. The quest for a unified model that unambiguously identify the antecedents, relationships, complexity, and consequences of intrapreneurship in the context of sectoral economy at the meso-level of industrial environment has become future research areas for scholars.

Further to the theoretical implications as stated above, some policy implications are also worthy of note. The need for appropriate government agencies and authorities to focus their attention on key entrepreneurial strategy recommendations and deploy beneficial fiscal and monetary policies to support such strategies and advance progress and sustainability of the growth of small and medium scale businesses and creation of new business ventures are paramount in policy formulation and implementation. The policy strategy that could develop industrial clusters or districts and harness entrepreneurial activities to improve growth of industry and economic growth at large should be one of the focal priorities of appropriate government agencies and authorities in the development of entrepreneurial economy.

Although, there are limitations identified in the usefulness and implementation intrapreneurship concept (Corbett, Covin, O'Connor and Tucci, 2013), management and intrapreneurs should be mindful of cogency of intrapreneurship which is rooted on how their firms are positioned entrepreneurially and what strategies are adopted to make entrepreneurship successful and differentiated from others. Consequently, the efficacy of intrapreneurship literature in the areas of successful adoption and emergence of entrepreneurial concepts and models that integrate industry policy and institutional policy would go a long way to support choice of governance.

Chapter 3 Methodology

3.1 Introduction

Quantitative methodology is adopted for this research. The main reason being that the methodology supports confirmatory study more than exploratory one and it encompasses objectivity, generalisability, deductive reasoning, numbers, and breadth. Quantitative study is therefore characterised by factors that include explanatory prediction, cause-effects examination, large sample size, numerical significance, and hypothesis testing among others (Creswell, 2009).

Further, the choice of research methodology is critical to ensure that there is a logical fit between theory, or the conceptual model developed for a study and the chosen research method (Edmondson & McManus, 2007), and the fact that research study is always conceived as a continuum suggests that the 'prior state' of research theory can be classified as either nascent, intermediate, or mature. These respective states of research and theory do determine the development of models and instruments that are deployed to operationalise constructs, test theoretical models, and develop new hypotheses.

Thus, the quantitative research method is more suitable for a theory that has highly been developed while for a less developed theory, qualitative research method is more conducive. However, when theory development is at the intermediate stage, combining both the qualitative and quantitative methods is desirable.

In our own view, we consider the prior state of theory for entrepreneurial research study with the connotations of industry agglomeration and sectoral performance growth as intermediate, and justify the adoption of quantitative methodology to investigate constructs relationship based on the fact that intrapreneurship theory and research have undoubtedly evolved with several models and empirics over time. However, the field is still saddled with the limitation as to the evolvement of sectoral entrepreneurship and related macroeconomic growth, which are largely missing in the modern entrepreneurship literature and knowledge building.

3.1.1 Research Paradigm and Philosophy

Paradigm is simply defined as the combination of important concepts, variables and problems that are matched with appropriate and corresponding methodology and tools (Kuhn, 1977). Therefore, paradigm can be conceived as a model that examines research problems and find appropriate solutions. According to Scotland (2012), paradigm is best explained in terms of its

components (ontology, epistemology, and methodology) and its underlying philosophies (scientific, interpretive, and critical).

Ontology refers to the study of 'being'. It carries the assumptions of what comprises the reality and the perception of how things come into being and how things work. On the other hand, epistemology emphasises the nature and forms of knowledge and carries the assumptions of knowledge is created, acquired, and disseminated. The methodological component of a paradigm focuses on the strategy and actions that are deployed into the choice and use of a particular research method and technique of collecting and analysing data. The essence is that paradigm is explained by its ontology, epistemology and methodology combined together and this gives meaning and importance to the manner research constructs are conceptualised, operationalised and measured.

The paradigm philosophy follow in this study is scientific paradigm. This connotes that the study of natural and social world is best understood when observation and experimentation are applied. Scientific paradigm underpins the philosophy of 'positivism' which assumes that reality could be offered and measured objectively using instruments that are outside the control of the researcher and his instruments. Therefore, knowledge could be said to be objective and quantifiable.

We adopt 'realism' view of the ontological position of positivism, meaning that the object of research exists independent of the researcher and whatever knowledge discovered or acquired consists of facts, objectivity and realism, which also suggest that methodology is dependent on control and manipulation of the reality. In the same fashion, the epistemology of positivism we adopt is 'objectivity'. In this sense, the researcher proceeds into the natural or social world without prejudice to discover or acquire absolute knowledge whose meaning resides exclusively in the research object and not in the conscience of the researcher (Scotland, 2012).

To summarise, our adoption of positivist approach to research methodology is informed of the facts that (i) scientific propositions are based on facts and figures, (ii) positivism offers verifiable evidences through observations, experimentations empirical testing, etc, (iii) positivist methodology explains relationships among variables and identify cause-effects nexus, (iv) Positivism paradigm permits deductive reasoning and approach, (v) the positivist approach to study encourages predictive methods and generalisations (Creswell, 2009)

The conceptual model of this study comprises of seven (7) latent variables, six (6) of which are independent, two (2) of these independent variables are also moderators. One (1) variable is dependent. Each of the six independent variables is measured with multiple items

on appropriate Likert scale. All the measurement items are adapted from literature to ensure validity of their contents (Straub, Boudreau & Gefen., 2004; Rubio, Berg-Weger, Tebb, Lee & Rauch, 2003). Data are collected through structured survey questionnaire administered on sampled firms within the manufacturing sector of the economy.

The questionnaire aims at eliciting first-hand data, based on the questions construed from the measurement items in each of the constructs hypothesised in the conceptual framework. The survey was carried out on a sample of study that was randomly selected within the entire manufacturing sector of Ghanaian economy based on clustering and stratification of industries that are populated within the sector. Ghana is considered an ideal geographical context of this study because of the entrepreneurial and indigenous innovation activities that are emerging from both the corporate and individual business organisations operating in the volatile and highly competitive developing economy.

The data gathered through the survey questionnaire were initially analysed and presented in the form of descriptive statistics and correlation analysis to assess the relationships among all variables and to investigate the effects of interaction among the variables. In addition, normality test was run to ensure that heterogeneity of the variables and outliers are controlled for, while maintaining normal distribution using the value of skewness and kurtosis. Subsequently, multivariate analysis was performed in two stages. First, the use of factor analytic method to explore interactions among the constructs and its measurement items, explores internal consistency reliability and the validity of the contents and constructs of the model.

Second, the structural model that tested the hypothesised relationships among the dependent and independent variables. This analysis of relationship among the variables is done through structural equation model (SEM) to predict endogenous constructs using path coefficients. The aim of using SEM is to establish correlation among multiple dependent and independent variables as an alternative to the use of regression analysis.

3.2 Research Site

3.2.1 ***Context of the study***

Entrepreneurship study has long gained attention in Ghanaian socio-economic environment in an effort to explore the significance of entrepreneurial economy in a developing country and to investigate how institutions and government policies impact the growth of small and medium scale enterprises (Barr, 2000; Quaye & Acheampong, 2013; Obeng, Robson & Haugh, 2014).

However, considering the recent pace of emerging innovative and technological transformations of some indigenous entrepreneurial activities, coupled with the increasing presence of multinationals and other foreign investment, Ghana has become a frontrunner in the comity of fast-developing nations, and this make the country an ideal geographical context for this research study. In fact, some scholars suggest that the peculiarity of institutional environment and the underlying growth in entrepreneurial activities prevailing in developing economies need an intensified empirical study (Zoogah, Peng & Woldu, 2015; Sautet, 2013).

In the same way as the increasing entrepreneurial activities transform Ghanaian economy, the business philosophy and local phenomenon of intrapreneurship behind such transformation is also key. Therefore, the exploration of Ghanaian entrepreneurship setting, cultural factors and institutional environment are also sources of motivation in the consideration of Ghana as an ideal context.

*3.2.2 **Ghana Manufacturing sector***

Ghana is a democratic country in West Africa, practising presidential republic system of government. It is a developing/emerging country with the population of twenty-nine million (29.7mio), GDP per capital of US$6,956 (PPP 2019 estimate) and GDP growth trends of 7% in 2019 est., 6.3% in 2018 and 17: 8.1% in 2017. Ghanaian economy is market-based and mainly composed of three (3) sectors; Agriculture (18.3%), Industry (24.5%) and Services (57.2%)[1]. In Ghana, manufacturing sector is a sub-division of industry sector and follows international standard classification of industries code (ISIC). The sector comprises of heavy and light manufacturing industries. 2018.

Heavy manufacturing sector includes capital-intensive industries that are prevalent in business-to-business activities rather than selling to end users and consumers. Such industries contribute substantially to the sectoral economic growth of Ghana. Industries in this category include mining, metal production, construction, chemicals (including petrochemicals), quarrying and cement production. On the other side, light manufacturing sectors such as textiles, pharmaceuticals, wood processing, brewery, and food processing industries among others, are characterised by low capital intensive, business to consumer activities, small-scale dominance, and substantial local consumption.

Manufacturing sector in Ghana has undergone series of transformations and industrialisation initiatives by successive government regimes with the objectives of expanding productive base and improve local capacity, encourage exports, promote small scale

[1] CIA Factbook Ghana 2019

entrepreneurship and improve the country's gross domestic product (i.e., economic growth). For instance, the initiative of *'One District One factory'* under the current regime of President Akuffo-Ado is a prospect of economic development in the manufacturing sector.

3.3 Data Collection

3.3.1 Instrument

The conceptual model developed in this study was tested using primary data collected from various firms that are selected from the manufacturing sector of Ghanaian economy. According to some scholars, the choice of survey method has an impact on the measurement invariance of the questionnaire items. Hence, different survey method could lead to different responses even if same questions were administered (Zhang, Kuchinke, Wood, Velten & Margrat, 2017; Sproull & Kiesler, 1986).

In view of this thought and the study focus on manufacturing sector in a developing economy, traditional paper-based questionnaire survey was designed as an instrument for data collection. The choice of paper-based approach compared to other sources such as emerging internet or web-based questionnaire, was premised on the fact that (i) familiarity with the participants and the survey method is ensured, (ii) technological complexity surrounding internet responses by the participants is avoided, and (iii) validity and reliability of scales using paper-based self-administered questionnaire are much more enhanced to reduce item non-response.

Scholars of various disciplines (Zhang, et al., 2017; Ward, Clark, Zabriski & Morris, 2014; Hohwü, Lyshot, Gissler, Jonsson, Petzold & Obel, 2013; Kongsved, Basnov, Holm-Christensen & Hjollund, 2007) have shown in their respective studies that paper-based self-administered questionnaires compared to web-based questionnaires are devoid of complexity resulting from internet technology, not difficult in sample selection, efficiently mitigates the ethical issues relating to participants' information and offer data completeness that ensures validity and reliability in terms of minimising item non-response.

Although, there have been some arguments that on-line or web-based administered questionnaire provides simple logistics, gives access or coverage to large population, processes data faster and has cost efficiency, nonetheless, web-based administered questionnaire suffers from coverage bias and non-response bias (Morgado, Meireles, Neves, Amaral & Ferreira, 2017).

In the former, selected participants may decline use of internet and in the latter, sampled participant may decline response to demographic and attitudinal questions. It is therefore

justified that in African country like Ghana where access to internet and other on-line technology is not advanced, coupled with knowledge gaps, dearth of enabling infrastructure and cyber-mindsets, the administration of paper-based self-administered questionnaire to informed participants in the manufacturing sector will be as productive as web-based questionnaire and the associated cost difference might not be significant.

The development of questionnaire measurement in this study was premised on the constructs defined and the research questions, so as to fulfil the hypotheses and proposition that underlie the quantitative techniques adopted. The questionnaire survey was divided into three sections. The first section of the questionnaire was designed to show the questions that reflect the following.

First, the industry agglomeration that depicts the sectoral environment in which the selected entrepreneurial firms operate. Second, the three (3) independent variables of the intrapreneurship construct which are innovation, corporate venturing, and strategic renewal. Third, the two (2) moderation variables of formal and informal institutional roles. And lastly, the dependent variable of the sectoral growth.

The next section of the questionnaire survey focused on the control variables associated with the study. Questions ranging from the nature of business, age of the sampled firms, the level of technology within the industry and the annual turnover of the sampled firms for the past three years were asked. The last section of the questionnaire was designed to gather respondents' personal information. Respondents were asked to provide their age, level of education, working and industry experience and their current job position.

Although, in most literature, use of existing, well-defined, and tested measurement items and scales are preferred than developing new item measures. This is to ensure compatibility with the existing similar studies and to minimise or avoid investing resources and time on developing new measurement items that may be analogous to the existing ones (Flatten Engelen, Zahra & Brettel, 2011 Churchill, 1979). However, in some cases, the use of tested measurement scales may not totally fit the setting of a research focus, especially if the theory underlying such research study is nascent or intermediate. As a result, existing scales well defined and tested may be adjusted, or new ones may be developed (Carpenter, 2018; Edmondson et al 2007).

Considering the above circumstance, the recommended steps for developing and reporting measurement items and scales by Carpenter (2018) were followed in developing the new items for the industry agglomeration, formal and informal institutions. First to follow is the clear definition, meaning and breadth of the above constructs which are premised on the

established references in the literature and taking cognisance of the fact that the construct is either unidimensional or multidimensional and whether the construct measure is formative or reflective.

The next step taken was the selection of key conceptual labels or codes from the established meaning and definition of each of the constructs. Selecting ideal labels depends on the quality of measurement items that are generated from a well-defined theoretical domain of a construct (Morgado, et al. 2017). In this study, codes like spatial proximity, industry association, knowledge sharing and spillovers and cluster policy are selected for industry agglomeration. While relevant codes identified for the formal institutions measurement items are regulation, policy, laws, governance and for informal institutions, codes like practices, association, collaboration, relationship, sharing among others were selected.

Finally, relevant questions for the selected measurement item were defined. The body of questions was carefully worded to align with the established research questions conceptualised by original authors and at the same time achieve the representation of the construct as intended. In order to avoid mismatch between construct definition and questionnaire survey items which could lead to invalid conclusions on relationship among constructs, feedback was sought for the developed questions from experienced academic and professionals through pilot test which led to refining, rewording, and validating the questions.

Measurement scale for industry agglomeration externality

The measurement items and scale for the industry agglomeration externality was developed anew based on the defined conceptual dimensions of industry agglomeration by Delgrado, Porter and Stern (2015), Audretsch and Thurik (2003), and Chatterji, Glaeser and Kerr (2014). As previously emphasised, industry agglomeration is a clustering of industries within a spatial context and serves as a vehicle whereby the collective entrepreneurial activities of the clustered firms in terms of innovation, corporate venturing, strategic renewal, and knowledge spillovers have produced positive effects on sectoral productivity.

The Construct of industry agglomeration externality was measured with 10 items 5-point Likert scale (1- strongly disagree; 5- strongly agree). Intervals between the two extremes were also defined for the measurement items. See table 6 below:

Table 6: Measurement items for Industry Agglomeration Externality

Construct	10-Item (Indicators) *(5- Point Likert (1/ "strongly disagree";5 / "strongly agree")*	Item Label	Source *(Adapted/Developed)*
Industry Agglomeration	Firms of similar industrial activities are concentrated in my industry to exploit the benefits of location and nearness	AGL01	Developed questions and scales based on the defined conceptual dimensions of industry agglomeration by Delgrado, Porter & Stern (2015); Audretsch and Thurik (2003) and Chartterji, Glaeser & Kerr (2014)
	My industry stimulates the collective efforts of its firms to innovate	AGL02	
	My industry stimulates the collective efforts of its firms to renew strategies	AGL03	
	My industry stimulates the collective efforts of its firms to create new firms	AGL04	
	There are flows of technology and knowledge from the collective entrepreneurial activities of firms in the industry	AGL05	
	My industry enables social and spatial interactions among its firms to foster communication	AGL06	
	My industry enables social and spatial interactions among its firms to foster networking	AGL07	
	My industry enables social and spatial interactions among its firms to foster knowledge sharing	AGL08	
	My industry enables social and spatial interactions among its firms to foster social collaboration	AGL09	
	In my industry, cluster-based policies and obligations are present	AGL10	

Source: Author's concept

Measurement scale for entrepreneurship dimensions

The measurement items and scales for the construct of intrapreneurship dimensions were adapted from Zahra (1993) and its variables; Innovation, corporate venturing, and strategic renewal variables were each measured on 7 items and 5-point Likert scale (1- strongly disagree; 5- strongly agree).

On innovation, the Likert scale lies between scale 1, being significant decrease in emphasis placed on innovation and scale 5, being significant increase on the innovative emphasis. For corporate venturing and strategic renewal variables, the two extreme scales of 1 to 5 lie between minor emphasis placed on the variables scale 1 and major emphasis placed on scale 5. There also interval scales between the two extremes of the measurement items for the three variables of intrapreneurship. See the tables 7- 9 below:

Table 7: Measurement items for Innovation variable of Intrapreneurship

Construct	7-Item (Indicators) *(5- Point Likert (1/ "decreased significantly"; 5 / "increased significantly")*	Item Label	Source *(Adapted/Developed)*
Innovation	**Over the past three years, the industry has witnessed changes on:**		Adapted from Zahra (1993)
	Emphasis on developing new products	INV01	
	Rate of introducing new product into the market	INV02	
	Spending on new product development activities	INV03	
	The number of new products added across firms	INV04	
	The number of new products introduced across firms	INV05	
	Emphasis on technological innovation in the industry	INV06	
	Emphasis on pioneering technological development across firms	INV07	

Source: Author's concept

Table 8: Measurement items for Corporate Venturing variable of Intrapreneurship

Construct	7-Item (Indicators) *(5- Point Likert (1/ "minor emphasis"; 5 / "major emphasis")*	Item Label	Source *(Adapted/Developed)*
Corporate Venturing	**My industry lays emphasis on the following:**		Adapted from Zahra (1993)
	Entering new businesses by offering new lines and products	CRV01	
	Finding new niches for our products in our industry	CRV02	
	Pursuing new businesses in new industries that are related to our current business	CRV03	
	Broadening our business lines in our current industry	CRV04	
	Stimulating new demand on our existing products in our industry through aggressive advertising and marketing	CRV05	
	Establishing and sponsoring several new ventures within the industry	CRV06	
	Expanding its international operations significantly	CRV07	

Source: Author's concept

Table 9: Measurement items for Strategic Renewal variable of Intrapreneurship

Construct	7-Item (Indicators) *(5- Point Likert (1/ "minor emphasis"; 5 / "major emphasis")*	Item Label	Source *(Adapted/Developed)*
Strategic Renewal	**My industry lays emphasis on the following:**		Adapted from Zahra (1993)
	Defining our company's mission relative to changes in the industry	STR01	
	Revising our business concept amidst disruptions in the industry	STR02	
	Redefining the industries in which our company will compete	STR03	
	Reorganising units and divisions to increase innovation	STR04	
	Adopting flexible organizational structures to increase innovation	STR05	
	Establishing procedures to examine new innovation ideas	STR06	
	Making resources available for experimental projects	STR07	

Source: Author's concept

Measurement scale for formal and informal institutional roles

New measurement item and Likert scales were developed for both formal and informal institutional variables that were focused on this study. These scales development is based on a well-defined conceptual dimension of formal institutions by Krasniqi and Desai (2016), Álvarez, Amorós, and Urbano (2014), and Simón-Moya, Revuelto-Taboada, and Guerrero (2014). Seven (7) measurement items on a 5-point Likert scale were defined for formal institutional role, bearing in mind the dimensions of constitutions, laws, tax and trade policies, business start-ups, business financing and other regulations that make market economy functions effectively and contribute to sectoral productivity (Krasniqi & Desai, 2016). The 5-point Likert scale rating is between 1, (strongly disagree) and 5, (strongly agree). Intervals were also defined between the two extremes for the formal institutional roles. See table 10 below:

Table 10: Measurement items for Formal Institutional Role

Construct	7-Item (Indicators) *(5- Point Likert (1/ "strongly disagree";5 / "strongly agree")*	Item Label	Source *(Adapted/Developed)*
Formal Institutions	There are multiple government agencies that moderate business development in my industry	FIN01	developed questions and scales based on the defined conceptual dimensions of formal institutions by Krasniqi & Desai (2016); Álvarez, Amorós, & Urbano (2014) and Simon-Moya, Revuello-Taboada & Guerrero (2014)
	There are laws that regulate taxation in my industry	FIN02	
	In my industry, employment, redundancy, and minimum wages are regulated	FIN03	
	There are regulations for business start-ups relating to my industry	FIN04	
	In my industry, movement of investment capital and other financial resources are regulated	FIN05	
	In my industry, import and export of goods and services are regulated	FIN06	
	There are laws that regulate finance credits availability to my industry	FIN07	

Source: Author's concept

Informal institutional role as a latent construct which is defined as shared meanings and collective understanding that form cohesion and coordination among members of the society (Holmes, Miller, Hitt and Samador, 2013) was measured with seven 7 items on a 5-point Likert scale (1- strongly disagree; 5- strongly agree).

Intervals were also defined between the two extremes for the informal institutional roles. See table 11 below:

Table 11: Measurement items for Informal Institutions

Construct	7-Item (Indicators) *(5- Point Likert (1/ "strongly disagree";5 / "strongly agree")*	Item Label	Source *(Adapted/Developed)*
Informal Institutions	Within the industry, firms share similar business and operational practices through informal channels	IFN01	developed questions and scales based on the defined conceptual dimensions of informal institutions by Krasniqi & Desai (2016); Simon-Moya, Revuello-Taboada & Guerrero (2014); Rodrigo-Alarcon et al., (2017).
	Social rules are mutually shared and enforced informally in the industry	IFN02	
	Firms in my industry belong to trade associations to share information informally	IFN03	
	Within the industry, some business activities are done informally	IFN04	
	Firms conduct collaborative market trade-fairs to enhance business	IFN05	
	Networks and social relationship are used to for routine business activities and contacts	IFN06	
	Conduct of informal business activities in the industry are not predictable	IFN07	

Source: Author's concept

Measurement scale for sectoral growth

The dependent variable of sectoral growth has its measurement items adapted from Zahra (1993), with seven 7 items on a 7-point Likert scale ranges between 1 (very untrue) and 7 (very true). According to Peneder (2009), sectoral growth determines a country's structural changes and growth transformation through its economic sectors. Growth is the main measure of focus for sectoral growth in this study. See the table 12 below:

Table 12: Measurement items for Sectoral Growth

Construct	7-Item (Indicators) *(7- Point Likert (1/ "very untrue";5 / "very true")*	Item Label	Source *(Adapted/Developed)*
Sectoral Growth	Growth opportunities in this industry are abundant	PSG01	Adapted from Zahra (1993)
	This industry offers many attractive opportunities for future growth	PSG02	
	In this industry there are many opportunities for new product introduction	PSG03	
	There are few opportunities for growth in this industry	PSG04	
	In this industry consumer demand for new products is growing	PSG05	
	In this industry market demand for new products is growing	PSG06	
	Over past three years, revenues generated from new business in this industry is growing	PSG07	

Source: Author's concept

3.3.2 Pilot Test

The next step considered was the pilot test of the entire questionnaire survey which embodies both the well-defined and tested variables of intrapreneurship and sectoral growth as well as the newly developed measures for industry agglomeration, formal and informal institutions variables. Initial to this stage is that relevant respondents that are knowledgeable in the manufacturing industry and intrapreneurship were selected within the defined sample size of the firms (Huber & Power, 1985). It is critical to identify persons who have in-depth knowledge about the constructs of industry agglomeration and its connectedness with sectoral entrepreneurship so as to avoid bias and gain meaningful perspectives of the research topic.

In this instance, a random sample of fifty (50) respondents who were either the business owners, directors of operations or business managers across Ghanaian manufacturing firms selected from Accra city were asked to respond to the questionnaire survey that was self-administered. In order to make a meaningful inference, the results of the pilot test were analysed for construct reliability using Cronbach alpha. Based on the results of the test, some items of the questionnaires particularly those of intrapreneurship and informal institutions variables were adjusted and some new measurement items were added.

3.3.3 Sampling Technique

It is not part of the objectives of this study to observe sequences of a particular event in the manufacturing sector of Ghana over a multiple period of time, hence we adopt to source and use cross-sectional data. Our choice of cross-sectional data is justified by the fact that research data such as product and technology innovation, regulation, public policies and growth that are being collected from the manufacturing industries could vary from time to time due to dynamic nature of the economy and this variation could impact performance of the sector differently at different times.

Cross-sectional data can also be an appropriate and less costly option of data collection that can easily mitigate against common method variance bias (Rindfleisch, Malter, Ganesa & Moorman, 2008). Therefore, measuring the focused research data variables at multiple periods of time by using longitudinal data approach will not reveal the real situation of this sector.

The field survey was conducted with full-time and trained field research assistants in Ghana for three weeks in the month of May 2020. This was preceded by pilot-test of 50 respondents that were surveyed in February 2020. Sample frame of 400 respondents across clusters of industries within the manufacturing sector of Ghana were administered the traditional pen/paper questionnaire. Key respondents that have good knowledge and considerable length of experiences in various firms within the manufacturing industry and also

in corporate entrepreneurial activities such as directors, senior managers, business development managers, business owners were identified and were given the paper questionnaires to complete. Appointments for collection of the completed questionnaires were scheduled with these key respondents and complemented with cover letter introducing the researcher.

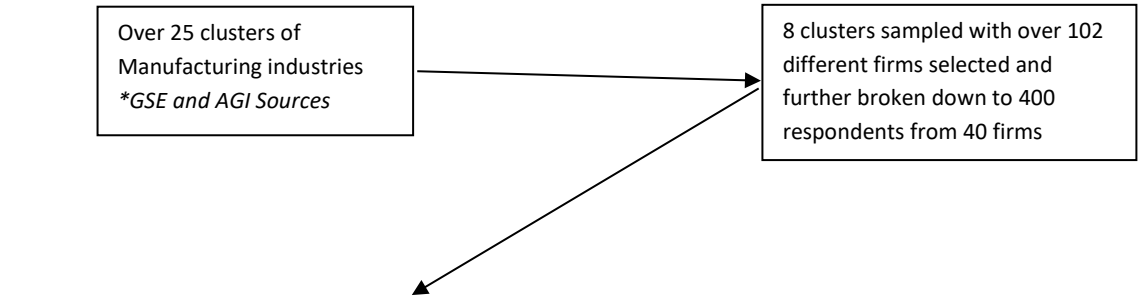
The sample frame of 400 respondents was selected using a multi-level cluster sampling method. Multi-level cluster sampling means the breaking down of population data into smaller but homogenous discrete groups or clusters for collecting primary data. It has advantages of cost and time efficiency and also useful in overcoming heterogeneity issues relating to single-level cluster sampling (Alvi, 2016; Whittemore, 1997).

In Ghana, manufacturing sector follows the International Standard Industrial Classification of All Economic Activities (ISIC) Codes[2], which is the global reference for all productive activities. The sectoral data classification based on the ISIC codes are obtained through primary sources of: (i), Ghana Stock Exchange (GSE) for listed manufacturing industries and (ii), from the directory of the Association of Ghana Industries (AGI) which is the most accredited and leading body of manufacturers in Ghana, with over 1,200 members across large, medium, small and micro manufacturing enterprises.

Eight different clusters of manufacturing industries were selected randomly from the combined data sources of GSE and AGI which have over twenty-five (25) groups of manufacturing industries. These eight clustered industries are: Textiles and Fabrics, Food and Beverages, Pharmaceuticals and Care Products, Paper and Pulp, Plastic and Rubber, Steel and Iron, Wood Products, and other manufacturing. Over One hundred and two firms were randomly selected from these industries.

Further selection of firms within the eight clusters were narrowed down to five firms from each of the clusters, thus making the sampled cluster of manufacturing firms for this survey as forty companies. Consequent to this, is the selection of ten respondents from each of the forty firms to make the sampled respondents needed for data collection to be four hundred (400) respondents. See figure 2 below:

[2] Ghana Statistical Service, 2010



Textiles & Apparels Cluster (5firms/50 respondents)	**Food & Beverages Cluster** (5firms/50 respondents)	**Pharmacy & Chemical Products Cluster** (5firms/50 respondents)	**Pulp & Paper Cluster** (5firms/50 respondents)	**Plastic & Rubber Cluster** (5firms/50 respondents)	**Metals Iron & Steel Cluster** (5firms/50 respondents)	**Electrical & Electronics Cluster** (5firms/50 respondents)	**Other Manufacturing** (5firms/50 respondents

Figure 2: Multi-level Sampling of the survey data collection.

Source: Author's concept.

3.4 Research Methods

3.4.1 Statistics

Descriptive statistics of the respondents' profile, industry profile, response rate, control variables and measures of the constructs are analysed and presented in this study. This is aimed at describing how the data variables behave and to have a fair knowledge of the implications on the relationship among the constructs. Descriptive statistics in the domain of central tendency (i.e., mean, median and mode), in the domain of dispersion (i.e., standard deviation, variance, coefficient of variation, range) and in the domain of position (i.e., frequency, percentiles, quartiles, etc.) are analysed for each measurement items of the research constructs.

Correlation matrix is also presented to examine the relationships that exist among the constructs and to assess the interaction effects among those constructs, measurement items on one hand and between constructs and their measurement items on the other hand. With the correlational analysis, the strengths, and directions of the relationship among the constructs and their measured items are well appreciated.

To further the analysis and presentation of descriptive statistics, there is a crucial need for testing normality of the data variables. In this instance, the normality test for controlling outlier data, maintaining normal distribution of the data and controlling the heterogeneity of the data variables are performed. The Initial two measures of normality testing that are adopted are skewness and kurtosis (Bai & Ng, 2005). Test for skewness is to measure the symmetric distribution of the research data variables and ensure that there is no significant deviation from

normal distribution. The absolute values of skewed distribution of data lie between -2.0 and +2 and by rule of thumb, the values of the skewness should not be more than 2.0, if it is, then the skewness distribution is asymmetry.

Similarly, the test for kurtosis is to measure the peakedness of a normally distributed data, with its normality lies below the absolute values of 7.0. By rule of thumb, there is a substantial deviation from the normality if the value of kurtosis is above 7.0. The combined tests of skewness and kurtosis help to establish whether the normality assumptions of our data variables and relationships among the data are acceptable or not. The two normality tests above are complemented with another two tests to affirm complete normality. In this case, Kolmogorov-Smirnov test and Shapiro-Wilk tests were conducted.

Factor Analysis was also performed as part of the statistics showing whether there is a reasonable and acceptable correlation and relationship among the data variables measurement for the research constructs. Factor analysis is regarded as a statistical method of data reduction, whereby the unobservable (latent) variables that are reflected in the observed variables are searched for. In this study, confirmatory factor analysis (CFA) was run to test for the assumptions made regarding the correlation and relationships among the research data variables and to ensure their reliability.

Two tests of CFA namely KMO (Kaiser-Meyer-Olkin) and Bartlett's tests were carried out. While KMO test measures the adequacy of sampling technique and determines the pattern of correlation among the variables, Bartlett's test of sphericity measures the assumptions of the variables' relationships. KMO values range between 0 and 1, hence its measures indicate reliable pattern of correlation if its value is more than 0.5. KMO value in the range of 0.7 and above shows that relationship among the variables is so high and the factor analysis would yield reliable result.

On the other side, Bartlett's test value is based on p-value and it is compared to the default level of significance (i.e., default p-value) to establish its reliability. This test shows reliable relationship among variables when its p-value is less than the default p-value at a determined significance level. Meaning that there is relationship among the variables and the factor analysis would yield good results.

In addition to the KMO and Bartlett's tests, Eigenvalues, factor matrix and rotated factor matrix were also run for the construct's measurement items. These items are referred to as factors. Eigenvalues represent variances that are explained by each of the factors so as to show their variabilities. On the other hand, factor matrix contains correlation coefficients that exist between the factors (i.e., the measurement items) and their constructs. These correlation

coefficients are called loadings. Rotated factor matrix shows correlation coefficients for the research conceptual model by grouping related factors that measure same objectives into clusters.

3.4.2 Common Method Bias

The issue of common method variance that could lead to bias is given prominence in the methodology review of this research. Common method variance (CMV) is the measurement error relative to the method employed in measuring constructs and not the constructs themselves. This error can either be random or systematic and can result in a bias of validity. In fact, systematic error could lead to some negative influences on the results of empirical study by giving some conclusions that are potentially misleading (Bagozzi & Yi, 2012).

Common method bias (CMB) is the resultant effects of the common error variance and denotes the likelihood of 'threat' to the validity of conclusions that are drawn from the hypothesised relationships among constructs as a result of responses on dependent and independent variables coming from same informant (Podsakoff. Mackenzie, Lee & Podsakoff, 2003). Some of the sources of the common method bias which are notable in this research study include common rater, consistency motif, social desirability, leniency biases and acquiescence biases among others (Podsakoff et al, 2003).

Common rater refers to informant who provides responses to both the independent and dependent variables in the questionnaire administered by researcher. Consistency motif is when respondent maintains levels of consistency in his responses to questions in the questionnaire. When informant gives prominence to questionnaire items based on the social acceptability of the items than the true feelings of the item, then the bias of social desirability is said to occur. Leniency bias exists when respondent gives social traits, behaviours, and attitudes to known and liked researchers but not provide same traits to unknown or disliked researcher. In the case of acquiescence bias, respondents agree or disagree to questionnaire items without giving attention to their contexts, it is merely a '*yea*' or '*nay*' response to the questions.

We follow suggestions by Mackenzie and Podsakoff (2012) to address those issues of common method bias enumerated as above. First, some of the questions we provide in the questionnaire were reversed so as to ensure that all the responses do not correspond to a larger effect. Second, to prevent the thoughts of some informants that some items are redundant, we spread some of the measures relating to one construct throughout the questionnaire. Third, we tested for the common method bias statistically by using Harman's one-factor test, and finally, the test for multicollinearity using variance inflation factor (VIF) was done (Kock, 2015)

3.4.3 Research Model

Structural Equation Model (SEM) of data analysis was adopted in this study. Although majority of data analysis for entrepreneurship research are observed to be prevalent in the use of regression models (e.g. ordinary least square regression) and other multivariate analysis, the emergence of SEM in analysing entrepreneurship concepts, models and data has become imperative in the literature and has attracted many scholars to this statistical domain (Yu & Lau, 2008; Edelman & Yi-Renko, 2010; Stenholm, Acs & Wuebker, 2013; Gupta, Guo, Canever, Yim, Sraw & Liu, 2012) among others.

Davcik (2014) specifically defines SEM as "*a statistical methodology that undertakes a multivariate analysis of multi-causal relationships among different independent phenomena grouped in reality"*, P.49). This definition indeed posits SEM as an analytical methodology that helps a researcher to establish linkages among the unobservable (or latent) variables of a theoretical concept with the measurement items that report those variables as well as examining the relationships among those latent variables as espoused by the theory (Astrachan, Patel & Wanzenried, 2014).

However, structural equation model itself is twofold. The Covariance based SEM (CBSEM) and the Partial Least Square based SEM (PLS SEM). The CBSEM is strictly driven by research theory and involves full requirements of conceptual or theoretical model preceding data analysis. It uses covariance or correlation matrix for input data and also imposes large sample size. On the other hand, the PLS SEM is a component and variance based using partial least square regression algorithm. It is based on theory, but largely driven by data. PLS SEM is also efficient with smaller sample sizes and complex models and more suitable for early stage (exploratory) theory development and testing,

In this study, we adopt the PLS SEM for data analysis. This adoption is inspired from the work of many scholars in the domain of statistical and quantitative analysis which have demonstrated the emergence and significance of PLS SEM in the field of management research (Hair, Sarstedt, Hopkins & Kuppelwieser, 2014; Richter, Sinkovics, Ringle & Schlagel, 2016; Davcik, 2014; Richter, Cepeda, Roldan & Ringle, 2016).

The benefits that PLS SEM offers the analytics of the theoretical model and hypotheses of this study are numerous. First, it affords the improvement of the nomological network of this research study. As highlighted earlier, the theory of sectoral entrepreneurship and its relationship with sectoral economic performance as moderated by the theory of institutions are not yet at a matured stage. Positing SEM as a tool that is effective for studies under the philosophy of discovery, the domains of intrapreneurship, industry agglomeration, institutions,

performance, and indigenous can be bound together to further explore the relationships and constructs associated with the theories and also assessing the predictive validity of those constructs (Mackenzie, Podsakoff & Podsakoff, 2011, P.321).

Second, the methodology of PLS SEM affords the moderation effects of institutional variables hypothesised in this study to be tested as appropriate. In this sense, inter-items comparison can be performed with ease and without recourse to the model complexity that could lead to estimation issues (Hair, Sarstedt, Hopkins & Kupplewieser, 2014).

Third, the issue of non-normal data does not pose a problem. Hence, the sample data sourced for this study which are only perceptive in scale measurement are not necessarily to have a normal distribution pattern. With this non-normality condition, PLS SEM still avoids the issues of under-estimation of standard errors and inflation of goodness of fit statistics that are associated with non-normal data distribution.

The next benefit accruing from PLS SEM is that the formative measurement items for the independent and moderation variables adopted in the research instrument (the questionnaire) are entirely supported by the methodology since it has the origin of ordinary least square regression. As a result, measurement items can be performed better with the methodology without increasing the complexity of the conceptual model of this study.

PLS SEM has the advantages of harnessing the use of confirmatory and exploratory factor analysis in testing variables so as to reduce measurement error. Since we are using factor analysis of relationship (KMO testing) and Bartlett's correlation assumption testing as prior statistical testing of reliability, the methodology of PLS SEM will therefore boost the reliability testing of this study's conceptual model, using its parameters of goodness of fit indices and construct validity.

Lastly, PLS SEM is very ideal to use in survey research and cross-sectional data. It is no gainsaying that this research study employs the use of survey questionnaire and cross-sectional data. However, the use of primary data is a departure from the norm in the analysis of macro-economic performance of intrapreneurship. According to Bagozzi and Yi 2012), PLS SEM is a good measurement tool for testing constructs across group of items and it is also very useful for the testing of constructs in the likes of institutional and cultural contexts.

In order to better utilise the benefits of the SEM methodology as enumerated above, the approach to the PLS SEM in this research focuses on five specifics which are dimensionality, goodness of fit index, measurement model, structural model, and moderation effects testing.

3.4.4 Dimensionality

Statistically, dimensions are the characteristics that a latent construct contains as its indicators. Such variable characteristics have different directions and vary between one another, but they mutually impact each other. As a prelude to assess constructs' reliability and validity, the dimensions of such constructs need be identified and well defined (Anderson & Gerber, 1992, 1988).

George and Marino (2011) advocate a consensus on how entrepreneurship constructs should be well-defined, and their dimensions articulately identified so as to mitigate the prevalent problems of theory definition and construct validity in the field of entrepreneurship. Similarly, Lumpkin and Dess (1996) collaborates the views of earlier scholars on the various dimensions that characterise the concept of intrapreneurship, while Zahra and Wright (2011) equally appreciate the opportunity that the well-defined antecedents, contents, and consequences of entrepreneurial dimensions have brought to the dynamism of entrepreneurship literature.

In this study, the constructs of intrapreneurship and institutions on the first order could be said to be multi-dimensional whereby the dimensions of innovation, corporate venturing and strategic renewal are variables defined for intrapreneurship and formal and informal institutional roles are defined variables for the construct of institutions. The construct of industry agglomeration externality and that of sectoral growth has a unidimensional attribute. There are measurement items for each of the construct variables which are all reflective in nature and serve as indicators for their latent constructs. With these dimensions well defined, the PLS SEM methodology is compatible with the assessment of their relationship and correlation using factor analysis to determine their reliability and validity.

3.4.5 Goodness of fit index

The conceptual model of this study is also tested with various forms of goodness of fit indices to check whether the model reasonably fits the research data collected. Hair, Black, Babin, and Anderson (2010) defines goodness of fit as a statistical means of showing how well a conceptual or theoretical model of a research study replicates observed 'covariance matrix' among the measurement items defined for the construct variables. Thus, presenting statistical indices that show similarities between the observed and predicted covariance matrices.

To test or evaluate overall fit of a model and across models, it is crucial when using SEM measurement model to inquire if the relationship among the hypothesised individual variables is significant, if the relationships among group of variables are consistent with the sample data sourced and whether the statistical solutions reached on the relationships are

appropriate (Mackenzie, Podsakoff & Podsakoff, 2011). In consistent with these criteria of evaluating goodness of fit for this research model, we follow some of the fit measures adopted by Hair, Black, Babin, and Anderson (2010), and Mackenzie et al., (2011) to have some plausible answers to those questions above.

Hair et al., (2010) categorised goodness of fit measures into four (4) categories; basic fit indices, absolute fit indices, incremental fit indices, and parsimony fit indices.

3.4.6 Basic Fit Indices

This goodness of fit indices measures the difference in covariance matrix between the observed and predicted sample sizes. Model is said to be perfectly fit the data, if the covariance matrices for observed sample and estimated sample in SEM are in parity. Indices of Chi-Square (X^2), Degree of Freedom (d.f.) and Normed Chi-Square (X^2/d.f.) are measures of basic goodness of fit. Chi-Square actually tests the adequacy of sample data in a model, and basically relates to the complexity, sample size and non-normality of a model, thus offering good inferential test of overall fit for a model. It is also very useful in testing for statistical significance across models. On the other hand, the degree of freedom shows the quantity of mathematical information that are deployed to estimate model parameters, while the normed chi-square indicates the ratio of chi-square to the degree of freedom.

3.4.7 Absolute Fit Indices

These are other fit measures that complement the basic fit indices to establish adequate overall fit of a model, since relying only on chi-square will be inadequate. Absolute fit indices also show the extent to which the relationships among the hypothesised variables in the SEM measurement model are consistent with the survey sample data. The indices selected for statistical analysis in this category are Goodness of Fit Index (GFI), Root Mean Square Error of Approximation (RMSEA) and Standardised Root Mean Residual (SRMR).

Goodness of Fit Index (GFI) is an index of fit designed to reduce sensitivity of a model to its sample size. This is in attempt to mitigate the issue of X^2 statistic which is highly sensitive to large sample data or data becoming increasing large for the chi-square to handle.

Root Mean Square Error of Approximation (RMSEA) is a widely used fit statistics designed to correct the rejection of large sample size by X^2 statistic. RMSEA includes model complexity and sample size in its computation to estimate model fit that takes account of population data and not just sample data. The lower the value of RMSEA, the better the model fit.

The Standardised Root Mean Residual (SRMR) measures the overall residual values of a model and also useful for comparing fits across models. These indices are important in the

context of research objectives and show the differences between observed sample and predicted covariance matrices or correlations. The lower the value of SRMR, the better the model is fit.

3.4.8 Incremental Fit Indices

Normed Fit Index (NFI) and Comparative Fit index (CFI) are indices selected for analysis under the incremental goodness of fit category. Normed Fit Index (NFI) shows the ratio of the difference in Chi-Square (X^2) between the fitted and null models. This difference is divided by the X^2 value of the null model. Although NFI perfectly fit a model if its ratio is between the values of 0 and 1, it is however not suitable for a complex model because of their higher index value which tends to bloat the estimate of the model fit.

Alternatively, the index of CFI is developed to fix the complexity issue of the NFI. The comparative fit index has been normed to be relatively insensitive to model complexity, hence models with higher index but having CFI value between 0 and 1 will indicate better fit.

3.4.9 Parsimony Fit Indices

These indices afford competing models to be compared as to which is the best considering their relative fits and complexity. Parsimony indices improves model either by refining their fit or by simplifying them through less estimate parameters. Adjusted Goodness of Fit Index (AGFI) is a common measure of parsimony indices. It is defined as the ratio of the degree of freedom (d.f) of a particular model to the totality of d.f. that are available.

Having discussed the goodness of fit measures that are considered for analysis in this research study, it is imperative to emphasise that there are no single best indices that can objectively measure the overall fit of a model. The best approach is to combine fit indices from different families of the goodness of fit indices (i.e., basic, absolute, incremental and parsimony). Given this context, the issue of establishing objective cut-off values associated with the choice of goodness of fit measures for a model testing can be resolved.

Table 13 below shows the summary of the selected goodness of fit measure indices and cut-off values that demonstrate appropriateness across different models as suggested by Hair, Ringle and Sarstedt (2011) for a given sample size and number of observed variables. Relatedly, our model reflects the sample size of 250 and above, with the number of observed variables less than 12.

Table 13: Goodness of Fit Indices across different model **Sample (N): N > 250; No of Observed variables (M): M<12**

Good of Fitness Category	Fit Indices	Measures	Measures Definition	Rule of Thumb Cut-off level of acceptance
Basic Fit Indices	Chi-Square	X^2 =(N-1) (S-∑k)	N=Sample size, k = number of estimated parameters	Relatively small value for X^2 with corresponding large p-value
	Degree of Freedom	d.f. = 1/2*[(p)(p+1)]-k	p=total number of observed variables, k=number of estimated parameters	
	Normed Chi-Square	X^2/d.f.	ratio of chi-square over degree of freedom	ratio 3:1 or less
Absolute Fit Indices	Goodness of Fit Index (GFI)	$\mathbf{GFI} = 1 - \frac{F_k}{F_0}$	F_k = minimum fit function, k is degree of freedom and F_0= fit function when all parameters are zero	GFI ≥ 0.90
	Root Mean Square Error Approximation (RMSEA)	$\mathbf{RMSEA} = \sqrt{\frac{(\chi^2 - df_k)}{(N-1)}}$	X^2 = chi-square, df = degree of freedom, k = value specified for a model N= Number of observations	RMSEA ≤ 0.80
	Standardised Root Mean Residual (SRMR)			SRMR ≤ 0.80
Incremental Fit Indices	Normed Fit Index (NFI)			NFI = 1
	Comparative Fit Index (CFI)	$\mathbf{CFI} = 1 - \frac{(\chi_k^2 - df_k)}{(\chi_0^2 - df_0)}$	X^2 = chi-square, df = degree of freedom, k = value specified for a model N= Number of observations	CFI ≥ 0.95
Parsimony Fit Index	Adjusted Goodness of Fit Index (AGFI)	$\mathbf{PR} = \frac{df_k}{df_t}$	df = degree of freedom, k = value specified for a model t= total value of all df	PR ≥ 0.90

Source: Adapted from Hair et al. (2010).

3.4.10 Measurement Model of SEM

The first stage of performing PLS SEM Algorithm starts with measurement modelling that is also called the 'outer model', where exogenous variables (i.e., independent and moderation variables) are specified and estimated for reliability and validity. In the outer model, the relationship between the constructs and their measuring items are evaluated to ensure adequacy of the model.

In our conceptual model, exogenous variables considered are the constructs of industry agglomeration externality, innovation, corporate venture, and strategic renewal on one side, and the constructs of formal and informal institutions on the other side as the moderation variables. Under PLS SEM measurement model, the indicator items must be specified as either single or multi-items, formative or reflective and the paths that connect both the measurement items and their corresponding constructs should be created in consonance with the established theory (Hair et al., (2014).

Following this order, each of the exogenous constructs in our measurement model were measured by seven (7) items (i.e., indicators) which are reflective in nature. Multi-items in that magnitude were adopted for the constructs in order to ensure that the domain of the constructs is fully captured (Diamantopoulos et al., 2008). Paths showing various connections among each of the items and their variables are chatted as below. These paths are also ensured that circular relationships among the variables are avoided.

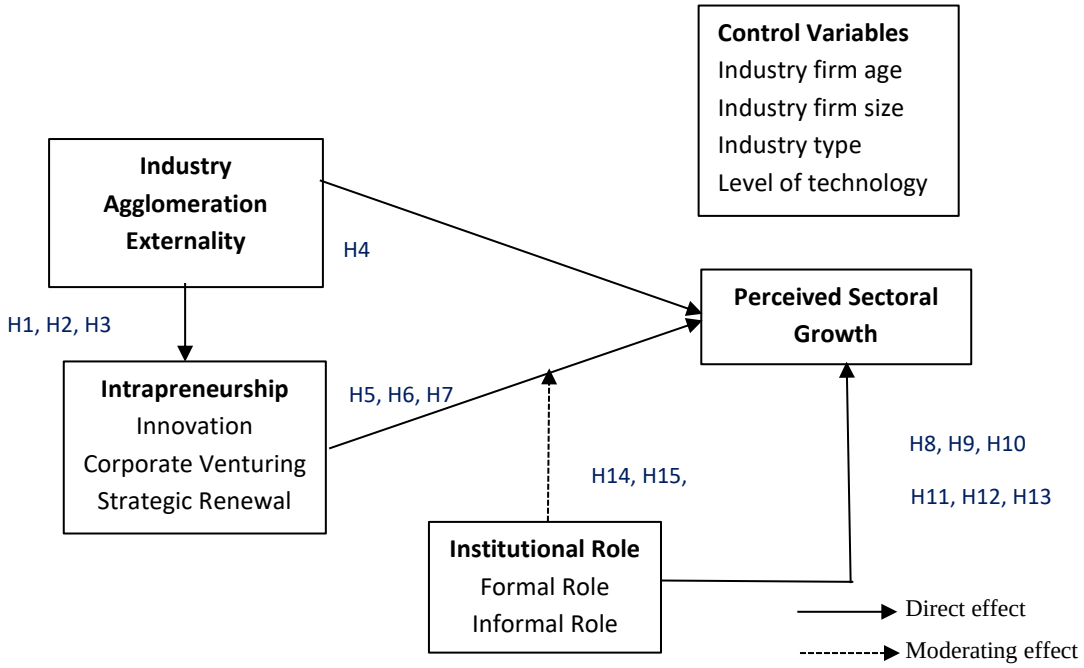


Figure 3: Conceptual Model with paths. Source: Author's concept.

Source: Author's adaptation

The next step considered in this phase of measurement model is the evaluation of reliability and validity depending on the relativeness of the measurement items with their constructs in terms of reflective or formative nature (Mackenzie, Podsakoff & Podsakoff, 2011; Ringle, Sarstedt & Straub, 2012).

3.4.11 Reliability

Reliability of the measurement model depicts consistency and precision of the measurement procedures that are followed in the model. The extent to which the measurement of the latent constructs through the indicators, reflects the true scores of those constructs relative to measurement error is referred to as reliability. In this sense, reliability should ensure that the model actually measure what it is intended to measure, thus eliminating, or reducing to the barest minimum, *'error-variance'* in measurement modelling (Hair et al., 2010). In evaluating reliability test and measure for our study, we considered both reflective and formative measures because our constructs contain measurement items in both directions.

Reliability measurement for reflective measurement model consists of standardised individual-item (or indicator) loading, composite reliability, and Cronbach's alpha (α). The standardised indicator loading measures the amount of indicators variance that are explained by their corresponding constructs. Loadings are correlation coefficient that show that the variances observed in the measurement items are due to their latent constructs. Coefficient value should be from 0.5 and above for the reliability to be significant (Chin, 1998).

Composite reliability assesses the internal reliability of the model and disallows equal weightings of the indicator loadings. It measures the total sum of the loadings of latent constructs relative to the total sum of the loadings of measurement items plus the associated error variance. The values of this measures lie between 0 and 1, and for reliability, the values must tend towards 1.

Cronbach's alpha (α) as a measure of internal consistency is a reliability coefficient that measures the consistency of all the measurement scales and widely use in SEM model. It measures to what extent and how well does a single latent variable are measured by its various sets of measurement items. The value of Cronbach's alpha (α) lies between 0 and 1, and model will be significantly reliable with the value ranges from 0.8 and above (Hair et al., 2014)

The reliability measurement for formative measurement model is assessed on a different set of measures because of its inherent limits of indicators use to measure a construct and the notion that the formative indicators need to fully capture the domain of its construct (Sarstedst et al., 2014). Formative measurement model is assessed using collinearity and the significance and relevance of weights of the measurement items.

Collinearity implies that the variance inflation factor (VIF) is computed for each of the measurement items to ensure that there is no high level of collinearity which could bias the results of the model. Similarly, it shows the level of redundancy in the information about a measurement item. A high value of VIF (above 5.0) is an indication of high collinearity among the measurement items (Hair, et al., 2014).

The next step for establishing reliability for the formative measurement model is to measure the significance and relevance of the measurement items. In doing this, *'bootstrapping'* resampling approach is taken to create a subsample from original sample data with the view of calculating standard error estimates that allows for the computation of t- and p-values for the weight of each items. The values (high or low) established for the loadings of the weight will determine the significance and relevance of the indicator items.

3.4.12 Validity

Testing for reliability of measurement model is necessary, but not sufficient. Hence the need to test for validity of the model too. The term validity in research model signifies accuracy and quality of the measurement items. How well the constructs are measured by the measurement items is a complement to the consistency of the model. Thus, the validity of the model shows how well the measures correspond to research theories and to the measures of similar constructs and that the items really measure what they should and not what they are not intended for. In evaluating validity tests for our constructs and measurement items, we consider both reflective and formative measures because our variables have measures in both directions.

In the reflective measurement model, validity measures are assessed using convergent and discriminant validity. Convergent validity *"measures the extent to which a construct converges in its indicators by explaining the items' variance"* (Sarstedt, Ringle & Henseler, 2014, P.108).

Convergent validity is assessed through average variance extracted (AVE) for all the measurement items related to a given construct. AVE is a calculated mean of the squared loadings (correlation coefficients) of the items. The value of AVE must be from 0.5 and above to make a model valid. With the value of 0.5, it is evident that the construct explains 50% of the variances coming from its items.

Discriminant validity on the other hand, shows the extent to which one latent construct is different from another and to what extent does such a construct correlates with another.

The validity of a model is ensured when there is a discrimination between the constructs in the path model by indicating how much the measurement items distinctly represent only its construct. Discriminant validity is assessed using loading and cross loading analysis, Fornell-

Lacker Criterion and Hetero-trait Mono-trait (HTMT) ratio. The assessment of the loading and cross loading analysis is that the loading (i.e., Correlation coefficients) of each measurement item should be greater than all its cross-loadings. This means that the items loaded on the latent constructs they should theoretically measure should be higher than any other latent structure in the path model.

Fornell-Lacker criterion of validity specifies that the average of each latent construct should be greater than the highest squared correlations between any other constructs. This means that no latent construct should exhibit shared variance (i.e., inter-construct correlation) that is above the construct's average value (AVE) with any other construct. The focus is that the square root of the AVE must be higher than the inter-construct correlation.

In the case of HTMT criterion, Henseler, Ringle and Sarstedt, (2015) emphasise that for a latent variable to show discriminant validity, the loading for each measurement item should be higher on their respective constructs than the loadings on other constructs.

In the formative measurement model, the validity assessment rests with the convergent validity of formatively measured constructs. In this instance, the extent to which the latent constructs that are measured with formative items correlate with another formative construct or with reflective construct that has same meanings as the formative construct (Hair et al., 2014). It is suggested that formative construct should explain at least 65% of the variance of the reflective construct for a convergent validity to hold.

The reliability and validity measures for both the reflective and formative constructs are meant to provide robustness to the test of relationship among the exogenous and endogenous variables in the path model. The PLS SEM statistical tools that are used in this research study to demonstrate the measurement model analysis are SmartPLS version 3.2.7 and IBM SPSS statistic version 24.0.

3.4.13 Structural Model of SEM

Once the assessment of reliability and validity of the measurement model is ensured and the measurement errors of the latent constructs are within acceptable limits, it means that the robustness of the measurement model is established. The next move in the statistical analysis of the relationships among the variables is to determine the structural model.

Structural model of SEM determines both the explanatory and predictive robustness of the model and the path coefficients. The tests of research hypotheses using path coefficient and squared multiple of correlations (i.e., R^2) for the endogenous variables in the model is one of the critical criteria of structural model. It explains the amount of variance in the dependent or endogenous variables and determine if the explanatory power of the model is statistically

substantial and its predictive power is appropriate. In evaluating the hypothesised relationships of the constructs using structural model, PLS SEM makes use of its sample data to obtain parameters that are relevant to predict the dependent variables. This approach differs with the estimation of parameters used in minimising variations between observed and predicted covariance matrix in the model. However, the structural model replicates some of the parameters of the OLS regression analysis.

The criteria adopted in this research study for assessing structural model are *coefficient of determination (R^2), cross-validated redundancy (Q^2), path coefficients and the effect of sizes (F^2).* Coefficient of determination is also called squared multiple of correlations. It measures the variances that are explained in each of the dependent variables to show the predictive accuracy of a model. It also evaluates the collective effects of independent or moderation variables on the dependent variables. The values of R^2 lie between 0 and 1, and the value tending towards 1 strongly indicate good predictive accuracy. However, the rule of thumb for acceptable accuracy is the value from 0.75 and above, while the coefficients values of 0.5 and 0.25 are considered moderate and weak respectively (Hair et al., 2014; Henseler, Ringle & Sinkovics, 2009).

Cross-validated redundancy criterion *(Q^2)* is a means to evaluate the relevance of the predictive accuracy. It is built on the foundation of '*blindfolding*' which is a technique of sample-reuse whereby some data matrix is omitted, model parameters are estimated and enables prediction of the omitted data is made using estimates that are initially computed. When the differences between the original and predicted values are smaller, the higher the value of the cross-validated redundancy criterion to indicate predictive accuracy. The rule of thumb for acceptable predictive accuracy using Q^2 is that its value must be higher than 0 (Sarstedt et al, 2014; Hair et al., 2014).

The next criterion under the structural model is the path coefficient criterion. Path coefficients linking the constructs are tested for relevance and significance while the relationships among the hypothesised constructs are also evaluated in the inner model of SEM. The evaluation of the significance of path coefficient is similar to the assessment of the weights of formative indicator items whereby bootstrapping of standard errors are made to compute t-values for the path coefficients (Helm et al., 2009). For the relevance, the values of the coefficients are standardised in the range of -1 to +1. The values tending towards +1 indicate positive relationships while the ones that tends towards -1 shows negative relationships. However, to determine the meaningful size of the path coefficient will depend on the framework of research study in focus (Sarstedt et al., 2014; Hair et al., 2014).

The final criterion of structural model considered is the effects size (Cohen's F^2) for each of the path model. Effect size denotes the difference of the direct effects and total effects between the independent and dependent variables. This difference allows the influence of exogenous construct on another construct to be felt through the interaction effects via moderation or mediation. As a result, there is awareness of the change in coefficient of determination when a certain construct is removed from the model. For the computation of effect size, at least two path models would have to be estimated, showing a full path model as specified by the hypothesis (called R^2 included) and another path model that excludes some selected exogenous constructs (called R^2 excluded). The difference in both path models gives the value of effect size. The R^2 values of 0.02, 0.15 and 0.35 are considered as small, medium, and large values respectively as a rule of thumb for acceptable effect size (Henseler et al., 2009; Hair et al., 2014).

3.4.14 Moderation Effects Testing in SEM Model

"Moderation effects are evoked by variables whose variation influences the strength or the direction of a relationship between an exogenous and an endogenous variable" (Henseler and Fassott, 2010, P.713). This suggests that moderation occurs when the effects that exogenous constructs have on endogenous constructs are based on the extent of influence from another exogenous constructs.

Considering this interaction effect, further statistical test was done to establish the extent (i.e., the strength) to which the constructs of institutions influence the constructs of intrapreneurship to improve sectoral growth. Accordingly, the structural model evaluation is extended to perform estimation of path coefficients and establish significance of the moderation effects in alignment with the theory and hypotheses developed.

In the structural model evaluation of moderation variables, it is imperative to explain the presence of moderation effects on the sample data by specifying that its path coefficient values should be significantly differ from its mean value (0). This is because the predicted path coefficient of the moderation variable describes the impact it has on the endogenous variable when the moderator variable itself is zero (Henseler & Fassott, 2010).

Consequently, establishing the significance of the moderation variable is crucial to the understanding that the moderation effects support both the hypotheses developed and the corresponding theoretical logic. In this instance, the direct relationship between the independent and moderation variables is established, followed by the interaction effects of the moderation variable on the dependent variable. If the path coefficient of the interaction effects is significant, the hypothesis of the moderation variable is supported regardless of the

relationship effects of the independent variable on the moderation variable. This is probably explained by the fact that path coefficients of the interaction or moderation effects dictate the variations of influence on the dependent or endogenous variable (Chin, Marcolin & Newsted, 1996).

The next step in consideration after evaluating path coefficient and determining the strengths and significance of moderation variables, is the measurement. Effect size (F^2) statistic is common in measuring moderation effects. A number of scholars (Ambrose & Schmike, 2003) have adapted the statistics of effect size to assess significance of moderation effects. F2 statistics estimate the variance explained (i.e., correlation coefficient R^2) of the full model that includes the effect of moderator and compare the result with the R^2 of the model without moderation effect (i.e., effect model) and establish the difference which is known as the effects of moderation. It is suggested that moderation effect size of 0.2 indicates weak effect, while the value of 0.15 is moderate effect while the value of 0.35 shows that the effect is strong.
The tables shown below summarises different SEM measures as adopted in this study.

Table 14: Summary of SEM Measurement Model

Model Category	Measures	Measure Indices	Explanation	Rule of Thumb Cut-off level of acceptance	Recommendation
Measurement (Outer) Model	Reliability	Cronbach Alpha (α)	Coefficient of internal consistency that shows how well indicators measure their latent constructs	Alpha (α) values from 0.6 shows a significant reliability	Nunnally & Bernstein (1994)
		Composite Reliability	Assesses construct's reliability by using items loading that are obtained from the model	between 0.7 and 0.95 are satisfactory	Joreskog (1978, 1982)
		Standardised Factor (Indicator) Loading	Loadings explaining constructs' variances	Loading > 0.7	Sarstedt et al. (2014)
		Collinearity	Computes item's variance inflation (VIF) that shows how variances of one item is explained by another item.	Variance Inflation Factor (VIF) = $1/(1-R^2)$. VIF > 5.0 indicates collinearity issue	Sarstedt et al. (2014), Hair et al. (2014)
	Convergent Validity	Average Variance Extracted (AVE)	The mean of squared loading for all indicators for a given latent construct	AVE for each construct > 0.5	Henseler et al. (2009)
	Discriminant Validity	Loading and Cross-Loading Analysis	ensures items have higher correlations with their constructs they meant to measure than with any other constructs outside their measurement.	Pearson correlation coefficient of items against the constructs	Sarstedt et al. (2014)
		Fornell-Lacker Criterion	AVE: Indicates shared variances between indicators and their constructs as compared to the relationship of same indicators with other constructs.	AVE of each latent construct should be greater than the highest squared correlation with other constructs	Fornell-Lacker (1981)
		Hetero-Trait Mono-Trait (HTMT Criterion	The ratio of correlated indicators across constructs that measure different phenomena, relative to the correlations of indicators that measure same construct.	HTMT ratio should be less than 1. the lower the ratio, the higher the discriminant validity	Henseler, Ringle and Sarstedt (2015)

Source: Author's adaptation of various rules of thumb

Table 15: Summary of SEM Structural Model

Model Category	Measures	Measure Indices	Explanation	Rule of Thumb Cut-off level of acceptance	Recommendation
Structural (Inner) Model	Coefficient of Determination	R^2	Measures variances that are explained in each of the endogenous construct (predictive accuracy)	R^2 > 0.75 is substantial accuracy	Henseler et al. (2009), Hair et al. (2014)
	Cross Validated Redundancy	Q^2	procedures of blindfolding to assess predictive accuracy of endogenous construct (measure of out- of- sample prediction)	Q^2 values > 0	Sarstedt et al. (2014), Hair et al. (2014)
	Path (β) Coefficient	t-test	Evaluates the structural path coefficients for hypothesised relationships between constructs in a structural model	t- value (coefficient) closer to +1 indicate strong positive relationship	Sarstedt et al. (2014), Hair et al. (2014)
	Effects Size	F^2	Interaction effects measured by full model's effect size less model adjusted for moderator (direct effect). Also called variance accounted for (VAF), showing indirect effects divided by total effects.	VAF > 0.7 shows strong interaction effects	Hair et al. (2014)
	Relevance & Significance	p-test/t-test	Running bootstrapping (resampling) procedure to estimate structural relationships between constructs	predicted p or t- test less than level of significance (e.g., $p < 0.05$)	Hair et al. (2014)

Source: Author's adaptation of various rules of thumb

Table 16: Summary of Moderation Effect in Structural Model

Model Category	Measures	Measure Indices	Explanation	Rule of Thumb Cut-off level of acceptance	Recommendation
Moderation Effects	Strenghts	Effect Size (F^2)	Interaction effects measured by full model's effect size less model adjusted for moderator (direct effect). Also called variance accounted for (VAF), showing indirect effects divided by total effects.	VAF > 0.7 shows strong interaction effects	Hair et al. (2014)
	Relevance & Significance	p-test/t-test	Evaluates the structural path coefficients for hypothesised relationships between constructs in a structural model	t- value (coefficient) closer to +1 indicate strong positive relationship	Sarstedt et al. (2014), Hair et al. (2014)

Source: Author's adaptation of various rules of thumb

3.5 Conclusion

This chapter is broken into different sections such as introduction, context of study, data collection and measurement, sampling technique, research methods and finally the pilot test that was run ahead of the final test. As a matter of introduction, quantitative methodology was adopted for this research based on the premise that intrapreneurship and its attendant effects on economic growth of a sector is more of confirmatory than exploratory study, where explanatory and numerical significance as well as testing of hypotheses are predominant.

It then follows that the appropriate research philosophy for this study is scientific paradigm with the underpinnings of positivism which assumes that the real world (realism) is objective, measurable and lies outside the controls of researcher and its instrument.

Having contented with the type of methodology and philosophical paradigm, the environmental or geographical context for this study was premised on a developing nation like republic of Ghana and specifically on her manufacturing sector. The major reason which also complement indigeneity of entrepreneurial research, is that Ghana has of recent witnessed socio-economic transformations in entrepreneurial activities coming from indigenous small and medium manufacturing industries and also from the multinationals entry into the sector.

Primary data were designed to be collected from sampled manufacturing industries using survey questionnaires administered to well experienced and qualified informants within the sector. The questionnaires reflect the research model and the relevant research questions. They are also on a mix of point Likert scales adopted from similar studies and new ones that are developed. Each of the measurement items that underlie the main constructs were operationalised and measured as appropriate.

To collect the data, manufacturing sector in Ghana was sampled into cluster of eight industries from over 25 cluster population.40 individual firms from over 102 firms within the 8 clusters were sampled with fifty respondents each from one firm randomly selected. Thus, having final selection of 400 respondents from 50 firms within 8 clusters of manufacturing industries for the ‘paper and pencil’ survey questionnaire administration.

Following the sampling technique, was the method adopted in analysing and presenting the collected data. First, the descriptiveness of the respondents’ characteristics and the measurement items being the data collected are analysed, followed by relevant data quality checks and normality tests. Second, factor analysis as a statistical method of data reduction was done to ensure reliable reasonable and acceptable correlation and relationship among the data variables measurement for the research constructs. These first data description and analysis was done using IBM SPSS version 24.0 software.

Subsequent to the above, structural equation modelling (SEM) using SmartPLS version 3.2.7 was used to explore further, the factor analysis on one hand, by measuring the reliability and convergent validity of measurement items and the latent constructs and on the other hand, by assessing the path coefficients for the structural path relationships among the construct and testing of the hypothesised relationships.

Finally, a pilot study with not less than 50 respondents from five cluster and five firms within each cluster was administered with the survey questionnaires to ensure reliability and validity before the final test. This means that 10 respondents from each of the five firms. The survey instrument which embodied both the adopted variables of intrapreneurship and sectoral growth and those developed for industry agglomeration, formal and informal institutional variables helped in considering plausible feedbacks that guarantee reliability and validity of the final questionnaire

Chapter 4: Data Analysis and Results

4.1 Introduction

The process and procedure of quantitative methodology discussed in chapter three are followed in analysing and presenting the findings of the research measurement' items and the results of the hypotheses tested. The measurement items are subjected to rigorous testing and statistics, which subsequently form the basis of discussions of the research analysis.

First of the steps taken in this chapter is the descriptive analysis of the respondents' items, measurement items of the main constructs and data quality checks. The data quality checks centres on identifying missing values, non-response bias, outliers, and common method bias. The next step taken was the undertaking of normality test which involves skewedness, kurtosis, Kolmogorov-Smirnov test, and Shapiro-Wilk test.

The descriptive analysis and normality tests are followed by initial confirmatory factor analysis whereby the underlying measurement items that are reflected in the research constructs are extracted as a method of data reduction. IBM SPSS software application was used to extract rotated factors for these measurement (latent) variables.

Lastly, structural equation modelling and analytical procedures were conducted in two stages. First, the measurement model with the view to establishing the dimensionality of the model, model fit, reliability, and validity. In this stage the relationships between measurement items and their constructs are tested. In the second stage, structural equation modelling was conducted to establish relationships among constructs and hypotheses formulated in the model were tested.

This chapter is concluded with the discussions of the summary of statistical tests and analysis and the consequent findings from the results of the hypotheses tested.

4.2 Descriptive Statistics

4.2.1 Sample Statistics and Respondents' Profile Analysis

Following corrections and updates made to some of the measurement scales used in the pilot test, final data collection was embarked upon. Questionnaires for the targeted 400 respondents were circulated between the months of April and May 2020. Appointment for the collection of the questionnaires were scheduled for different timing which has a maximum collection period of 1 month.

Unfortunately, the scheduled data collection periods were substantially hindered by environmental disturbance stemming from the global coronavirus (COVID-19) pandemic. Two

hundred and eighty-eight (288) completed questionnaires (72%) were collected between May and June 2020, while further collection of forty-two (42) questionnaires (10.5%) were collected in the month of July 2020, making the total collection to be three-hundred and thirty (330) completed questionnaires (82.5%).

However, fifteen (15) questionnaires out of the 42 collections in July were partially and improperly completed, hence rendered unusable. The remaining seventy (70) questionnaires (17.5%) were unable to be retrieved from respondents and were considered non-response. Table 17 below shows the sample data statistics.

v

Table 17: Sample data statistics

Questionnaires details	**No.**	**%**
Usable completed questionnaires :		
Early response	288	72.00
Late response	27	6.75
Unusable completed questionnaires	15	3.75
Non-response	70	17.50
Total questionnaires circulated	400	100.00

Source: Field Study, 2020

High response rate of the completed usable questionnaires was as a result of the structured questions that are very simple to understand, coupled with the adequate training given to the field data enumerators. We also frequently sent reminders on calls and SMS texts to the respondents and follow up with several visits. Further, the understanding of the respondents to the fact that the questionnaire is to be solely used for doctoral thesis and their responses will be treated anonymously and confidential also encouraged such magnitude of responses.

Pallant (2011, p53) suggests that the collection of useful data and background information relevant to the characteristics of sampled respondents are very crucial to statistical tests or analysis for a research study that involves human objects. Considering this fact, we run descriptive analysis for the characteristic items of the respondents in terms of statistical mean (*M*) and standard deviation (*SD*).

The descriptive tests of the respondents' characteristics reveal first-level insights of the study. First, the nature of the industry within the manufacturing sector in Ghana (*M=4.52; SD= 2.49*) shows that four clustered industries substantially responded to the questionnaires. Twenty-One percent (21%) of the respondents is from food, beverage and tobacco industry, twenty-one-point six percent (21.6%) from plastic and rubber industry, while thirteen percent (13%) is from plastic and rubber industry. However, few other clustered manufacturing firms designated as 'others manufacturing' constitute 21% of the survey respondents.

The response pattern stems from the fact that Great Accra region is largely the geographical location of manufacturing firms and this gives research enumerators the opportunity of reaching most of the sampled industries. The fact that food and beverage and the plastic and rubber industries are the largest beneficiaries of the government's domestic manufacturing and industrial decentralisation policy (one district-one factory) also give easy visibility and accessibility of administering the survey questionnaires. 'Others manufacturing' category consists of firms locally producing diverse products ranging from cosmetics, paints, ceramics, aluminium doors, roofing sheets and printing materials.

The next characteristic is the firm age within the industry (*M= 3.38; SD= 0.78*). The study shows that 55.6% of the respondent firms have been in the industry for more than fifteen years (15 years), while 1.3% of the respondent firms are aged between one and five years (1-5 years). This response outlines the survival, emergence and stability of entrepreneurial firms in the manufacturing setting of Ghanaian economy. On the average, 43.2% of the respondent firms have been in the industry between five and fifteen years (5-15 years).

The respondent's characteristics of industry technology (*M=2.28; SD=0.84*) shows that 47.3% of the firms within the manufacturing industry in Ghana possess adopted technology, while 8.6% of the respondent firms have imitative technology. This pattern of response means that innovative technology is widely available and adopted by various firms and adoption occurs at different stages of the life cycle of the firms within the manufacturing industry.

The fourth characteristic of the respondents showing the length of work in the industry (*M=2.18; SD=0.82*) reveals that 52.1% of the respondents have spent between six and ten years (6-10 years) in the manufacturing industry while 18.4% of the respondents have the industry experience for not more than five (5) years. This outcome lends credence to the expected expertise from the respondents regarding the entrepreneurial settings of the Ghanaian manufacturing sector. It shows that majority of the respondents are fully aware and understand the contents and importance of the survey questionnaires. Hence the encouraging rate of responses.

Lastly, the characteristic of respondent's position in the manufacturing industry (*M=5.0; SD=0.78*) shows that 56.2% of the respondent are managers, 23.8% are supervisors and team leaders. This result identifies that the core participants who are knowledgeable of the research objectives and the manufacturing sector accord the survey questionnaire the required attention. The category of these participants was also complemented by 2.5% of the respondents who are the directors or general managers and are highly skilled in understanding the entrepreneurship environment of the Ghanaian manufacturing sector and the survey questionnaire.

Table 18 below shows the descriptive statistics of selected respondents' profile.

Table 18: Descriptive Statistics: Respondents' Profile

Control Variables			Frequency (N=315)	Percent (100%)	Mean	Std. Deviation
SEC1	**Nature of business within the manufacturing sector**				**4.52**	**2.49**
		Food Beverage & Tobacco	66	21.0		
		Textile Apparel &Footwear	14	4.4		
		Chemical & Pharmaceuticals	28	8.9		
		Metal iron & steel	41	13.0		
		Plastic & Rubber Products	68	21.6		
		Electrical & electronics	11	3.5		
		Pulp & Paper product	21	6.7		
		Others Manufacturing	66	21.0		
SEC2	**Average Firm Age**				**3.38**	**0.78**
		1 - 5 years	4	1.3		
		5 -10 years	47	14.9		
		10 -15years	89	28.3		
		Beyond 15 years	175	55.6		
SEC3	**Level of technology**				**2.28**	**0.84**
		Proprietary Technology	52	16.5		
		Adopted Technology	149	47.3		
		Pioneered Technology	87	27.6		
		Imitative Technology	27	8.6		

Control Variables			Frequency (N=315)	Percent (100%)	Mean	Std. Deviation
SEC8	**Length of work in industry**				**2.18**	**0.82**
		Less than 5 years	58	18.4		
		6 - 10 years	164	52.1		
		11 - 15 years	71	22.5		
		16 - 20 years	21	6.7		
		More than 20 years	1	0.3		
SEC9	**Position**				**5.00**	**0.78**
		Managing Director	2	0.6		
		Director	1	0.3		
		General Manager	5	1.6		
		Head of Department	55	17.5		
		Manager	177	56.2		
		Others (Supervisors/team leaders)	75	23.8		

Source: Field data,2020

4.2.2 Descriptive Statistics for the Main Constructs

Statistical mean and standard deviation were run for the main constructs to examine the degree of responsiveness to the measurement items underlying the constructs. Standard error of mean was also run for the items to show whether their mean values accurately represent actual population. Smaller value of standard error of mean indicates that the mean accurately represents the population. Acceptable standard error (SE) is within the limit of 0.6

Survey questionnaire for the construct of agglomeration externality was developed on 10 item- questions and scales 1-7 (*AGL01-AGL10*) that were based on the defined conceptual dimensions of industry agglomeration by Delgrado, Porter & Stern (2015), Audretsch and Thurik (2003), and Chatterji, Glaeser & Kerr (2014). Respondents tend to agree with the ten items that underlie the construct as evidenced in the mean (*M=4.0*) for most of the items and their standard deviations are also within acceptable limit (SD<1.5) which shows that the values of the items are closer to their means.

The standard error of mean for the items (*SEM<0.6*) also signals that the mean values of the measurement items accurately represent the values of the population. Table 19 below shows the details:

Table 19: Industry Agglomeration Externality Construct

Scale Measurement items		Mean	Std. Error of Mean	Std. Deviation
Scale1-5 (1=strongly disagree;5=strongly agree)				
	Industry Agglomeration Externality			
AGL01	Firms of similar industrial activities are concentrated in my industry to exploit the benefits of location and nearness	3.867	0.052	0.914
AGL02	My industry stimulates the collective efforts of its firms to innovate	3.686	0.047	0.837
AGL03	My industry stimulates the collective efforts of its firms to renew strategies	3.594	0.051	0.910
AGL04	My industry stimulates the collective efforts of its firms to create new firms	3.562	0.050	0.891
AGL05	There are flows of technology and knowledge from the collective entrepreneurial activities of firms in the industry	3.575	0.050	0.880
AGL06	My industry enables social and spatial interactions among its firms to foster communication	3.346	0.050	0.891
AGL07	My industry enables social and spatial interactions among its firms to foster networking	3.248	0.054	0.962
AGL08	My industry enables social and spatial interactions among its firms to foster knowledge sharing	3.254	0.053	0.944
AGL09	My industry enables social and spatial interactions among its firms to foster social collaboration	3.270	0.049	0.871
AGL10	In my industry, cluster-based policies and obligations are present	3.708	0.048	0.854

Source: Field data,2020

Survey questionnaire for the innovation construct of intrapreneurship was adapted from Zahra (1993). The respondents agree that the extent of innovativeness within the manufacturing industry in Ghana has been on the increase, thus the measurement items underlying this construct has the mean (M=4.0), standard deviation (SD<1) and the standard error of mean (SEM< 0.6). This suggests that the values for the seven (7) items of the construct are closer to their means while the mean values are also representative of the actual population. See table 20 below for the details.

Table 20: Innovation Construct

Scale Measurement items		Mean	Std. Error of Mean	Std. Deviation
Scale1-5 (1=decreased significantly;5=increased significantly)				
	Innovation			
INV01	Emphasis on developing new products	3.838	0.047	0.827
INV02	Rate of introducing new product into market	3.610	0.049	0.861
INV03	Spending on new product development activities	3.556	0.051	0.906
INV04	The number of new products added across firms	3.533	0.052	0.925
INV05	The number of new products introduced across firms	3.527	0.052	0.925
INV06	Emphasis on technological innovation in the industry	3.606	0.053	0.936
INV07	Emphasis on pioneering technological development across firms	3.597	0.050	0.885

Source: Field data,2020

The questionnaires designed for the constructs of corporate venturing and strategic renewal were also adapted from Zahra (1993). Respondents' views on these two constructs of intrapreneurship show that Ghanaian manufacturing industry lays good emphasis on creating new businesses or new ventures, redefining and reorganising the business foundations of various firms within the industry. The mean values of each of the seven (7) measuring items for both constructs construct on the average (M=4.0), signifies good emphasis. Similarly, the standard deviation and standard error of mean for the two constructs respectively show that the values of the measuring items are closer to their means while the mean values accurately represent actual population. See tables 21 and 22 below for the details.

Table 21: Corporate Venturing Construct

Scale Measurement items		Mean	Std. Error of Mean	Std. Deviation
Scale1-5 (1=minor emphasis;5=major emphasis)				
Corporate Venturing				
CRV01	Entering new businesses by offering new lines and products	3.603	0.054	0.967
CRV02	Finding new niches for our products in our industry	3.787	0.047	0.842
CRV03	Pursuing new businesses in new industries that are related to our current business	3.419	0.051	0.901
CRV04	Broadening our business lines in our current industry	3.467	0.049	0.875
CRV05	Stimulating new demand on our existing products in our industry through aggressive advertising and marketing	3.711	0.048	0.853
CRV06	Establishing and sponsoring several new ventures within the industry	3.276	0.051	0.901
CRV07	Expanding its international operations significantly	3.584	0.051	0.911

Source: Field data,2020

Table 22: Strategic Renewal Construct

Scale Measurement items		Mean	Std. Error of Mean	Std. Deviation
Scale1-5 (1=minor emphasis;5=major emphasis)				
	Strategic Renewal			
STR01	Defining our company's mission relative to changes in the industry	3.863	0.038	0.675
STR02	Revising our business concept amidst disruption in the industry	3.597	0.045	0.806
STR03	Redefining the industries in which our company will compete	3.502	0.047	0.842
STR04	Reorganising units and divisions to increase innovation	3.667	0.045	0.790
STR05	Adopting flexible organizational structures to increase innovation	3.597	0.047	0.833
STR06	Establishing procedures to examine new innovation ideas	3.635	0.047	0.839
STR07	Making resources available for experimental projects	3.584	0.049	0.868

Source: Field data,2020

For the formal and informal institutional role constructs, the respondents were favourably disposed towards the presence of good institutions in the Ghanaian manufacturing industry.

The survey questionnaire and scale for the formal institutional roles were developed based on the dimensions conceptualised by Krasniqi & Desai (2016); Álvarez, Amorós, & Urbano (2014) and Simón-Moya, Revuelto-Taboada & Guerrero (2014). The measurement items of the formal institutions mainly revolve around regulation and the construct has on the average, an acceptable mean value (M=4.0). This shows the agreement of the respondents to the items. The standard error of mean and the standard deviation values are also acceptable (SEM<1). See table 23 below:

Table 23: Formal Institutional Role Construct

	Scale Measurement items	Mean	Std. Error of Mean	Std. Deviation
	Scale1-5 (1=strongly disagree;5=strongly agree)			
	Formal Institutional Roles			
FIN01	There are multiple government agencies that moderate business development in my industry	3.832	0.046	0.814
FIN02	There are laws that regulate taxation in my industry	4.076	0.045	0.806
FIN03	In my industry, employment, redundancy, and minimum wages are regulated	3.924	0.048	0.852
FIN04	There are regulations for business start-ups relating to my industry	3.873	0.043	0.772
FIN05	In my industry, movement of investment capital and other financial resources are regulated	3.584	0.050	0.882
FIN06	In my industry, import and export of goods and services are regulated	3.886	0.048	0.844
FIN07	There are laws that regulate finance credits availability to my industry	3.492	0.061	1.078

Source: Field data,2020

Similarly, the survey questionnaire and scale for informal institutional roles were developed based on the defined conceptual dimensions of informal institutions by Krasniqi & Desai (2016), and Simón-Moya, et al. (2014). Considering the measurement items of shared collaboration, networks and social relationships in the informal institutions, the construct has

acceptable mean values (M=4.0) on the average which means that the respondents agree to the items. The standard error of mean and the standard deviation values are also acceptable (SEM<1). See table 24 below:

Table 24: Informal Institutional Role Construct

Scale Measurement items		Mean	Std. Error of Mean	Std. Deviation
Scale1-5 (1=strongly disagree;5=strongly agree)				
	Informal Institutional Roles			
IFN01	Within the industry, firms share similar business and operational practices through informal channels	3.670	0.046	0.813
IFN02	Social rules are mutually shared and enforced informally in the industry	3.483	0.045	0.791
IFN03	Firms in my industry belong to trade associations to share information informally	3.457	0.048	0.856
IFN04	Within the industry, some business activities are done informally	3.441	0.048	0.855
INF05	Firms conduct collaborative market trade-fairs to enhance business	3.505	0.045	0.796
IFN06	Networks and social relationship are used to for routine business activities and contacts	3.537	0.044	0.783
IFN07	Conduct of informal business activities in the industry are not predictable	3.559	0.046	0.813

Source: Field data,2020

The construct of sectoral growth is measured on a scale of 1-7 ranging from 1=very untrue and 7= very true and it was adapted from Zahra (1993). In respondents' view, growth opportunities in the industry are somewhat true (M=5.0). The values for standard deviation and standard error of mean are also within the acceptable limits (SEM<1). See table 25 below for details.

Table 25: Sectoral Growth Construct

Scale Measurement items		Mean	Std. Error of Mean	Std. Deviation
Scale1-7 (1=very untrue;5=very true)				
	Sectoral Growth			
PSG01	Growth opportunities in this industry are abundant	5.479	0.063	1.124
PSG02	This industry offers many attractive opportunities for future growth	5.232	0.061	1.080
PSG03	In this industry there are many opportunities for new product introduction	5.089	0.064	1.134
PSG04	There are few opportunities for growth in this industry	4.168	0.095	1.684
PSG05	In this industry consumer demand for new products is growing	4.883	0.066	1.166
PSG06	In this industry market demand for new products is growing	4.873	0.064	1.133
PSG07	Over past three years, revenues generated from new business is growing	4.616	0.084	1.496

Source: Field data,2020

4.3 Missing Values

Identifying missing data or values from respondents' items is necessary when establishing research data quality. The failure to understand why missing values should be identified, coupled with the absence of underlying reasons for the missing data can lead to bias in research findings and inapt conclusion (Hair et al., 2010).

Using IBM SPSS software to check for missing data shows that there was no finding of missing data or missing values in the three hundred and fifteen (315) responses that were collected from the respondents through administered questionnaires.

4.4 Non-Response Bias

Out of the usable 315 respondents, 72% (*N=288*) was considered early response as they were collected between the months of May and June 2020. Twenty-seven responses (*6.75%*) were considered late because they were collected after a follow up in the month of July 2020. The main reason for the delay was the emergence of the global Coronavirus (COVID-19) pandemic with strong attendant effects on the manufacturing industry in Ghana. This situation resulted

in a country-wide lockdown between June and July 2020 which made it very difficult to collect responses as planned.

Notwithstanding, two approaches were followed statistically, to check for non-response bias in this study. First, the statistical mean values of both responses for all the constructs were compared to establish if the mean difference is significant or not and therefore can be ignored. Second, independent t-test for equality of means using 2-tail significance ($P<0.05$) was run for all the constructs to establish if there is a significant difference between the two groups of response (i.e., early & late).

The results of the two separate tests show that there is a very little indication of non-response bias. Regarding the mean differences, the values for the differences are almost negative and less than the value of -1. This indicates the likelihood of no-response bias. In terms of the independent t-test for equality of means for all the constructs, and assuming equal variances, actual p-values are compared with the $p<0.05$ at 95% significance levels. The results show that most of the actual p-values for measurement items in each of the constructs are higher than the $p<0.05$, therefore showing that the differences between early and late responses are not significant.

Table 26 below shows the details of the two tests.

Table 26: Non-Response Bias (early vs. late response)

				t-test for equality of means
	Early Response (N=288)	Late Response (N=27)		Equal Variances Assumed
Variables	Mean	Mean	Mean Diff	Sig2-tail (P<0.05)
AGL01	3.833	4.222	-0.389	0.034
AGL02	3.656	4.000	-0.344	0.041
AGL03	3.573	3.815	-0.242	0.187
AGL04	3.535	3.852	-0.317	0.077
AGL05	3.549	3.852	-0.303	0.087

				t-test for equality of means
	Early Response (N=288)	Late Response (N=27)		Equal Variances Assumed
Variables	Mean	Mean	Mean Diff	Sig2-tail (P<0.05)
AGL06	3.313	3.704	-0.391	0.029
AGL07	3.188	3.889	-0.701	0.000
AGL08	3.215	3.667	-0.451	0.017
AGL09	3.236	3.630	-0.394	0.025
AGL10	3.691	3.889	-0.198	0.250
INV01	3.819	4.037	-0.218	0.192
INV02	3.590	3.815	-0.225	0.196
INV03	3.542	3.704	-0.162	0.375
INV04	3.517	3.704	-0.186	0.317
INV05	3.490	3.926	-0.436	0.019
INV06	3.580	3.889	-0.309	0.101
INV07	3.569	3.889	-0.319	0.073
CRV01	3.566	4.000	-0.434	0.025
CRV02	3.785	3.815	-0.030	0.859
CRV03	3.403	3.593	-0.190	0.296
CRV04	3.424	3.926	-0.502	0.004
CRV05	3.681	4.037	-0.356	0.038
CRV06	3.229	3.778	-0.549	0.002
CRV07	3.538	4.074	-0.536	0.003
STR01	3.861	3.889	-0.028	0.838
STR02	3.569	3.889	-0.319	0.049
STR03	3.510	3.407	0.103	0.544
STR04	3.667	3.667	0.000	1.000
STR05	3.566	3.926	-0.360	0.032
STR06	3.590	4.111	-0.521	0.002

				t-test for equality of means
	Early Response (N=288)	Late Response (N=27)		Equal Variances Assumed
Variables	Mean	Mean	Mean Diff	Sig2-tail (P<0.05)
STR07	3.556	3.889	-0.333	0.056
FIN01	3.816	4.000	-0.184	0.262
FIN02	4.104	3.778	0.326	0.044
FIN03	3.969	3.444	0.524	0.002
FIN04	3.875	3.852	0.023	0.882
FIN05	3.556	3.889	-0.333	0.060
FIN06	3.910	3.630	0.280	0.099
FIN07	3.424	4.222	-0.799	0.000
IFN01	3.642	3.963	-0.321	0.050
IFN02	3.448	3.852	-0.404	0.011
IFN03	3.469	3.333	0.135	0.433
IFN04	3.399	3.889	-0.490	0.004
INF05	3.469	3.889	-0.420	0.008
IFN06	3.490	4.037	-0.547	0.000
IFN07	3.514	4.037	-0.523	0.001
PSG01	5.503	5.222	0.281	0.214
PSG02	5.226	5.296	-0.071	0.746
PSG03	5.101	4.963	0.138	0.547
PSG04	4.076	5.148	-1.072	0.001
PSG05	4.837	5.370	-0.534	0.023
PSG06	4.833	5.296	-0.463	0.042
PSG07	4.542	5.407	-0.866	0.004

Source: Field data,2020

From the statistical table shown above, the response rate signifies that there is a low bias of non-response. The non-response bias test regarding early and late response as conducted was

to confirm that the respondents who respond late are the likelihood of those that do not respond at all.

4.5 Common Method Bias

In this study, cross-sectional data regarding dependent (i.e., criterion) variables and independent (i.e., predictor) variables are sourced from same respondents. In such an instance, there is a likelihood that the validity of the results deduced from the hypothesised relationships among constructs could be threatened (Podsakoff, Mackenzie, Lee & Podsakoff, 2003; Bagozzi & Yi, 2012). In order to ensure that the validity of the findings of this research is not threatened, common method bias was tested for. Common method bias is a sort of measurement error that is attributable to the characteristics and context of respondents' items (i.e., method factor) rather than to the constructs that the items measure (Podsakoff, Mackenzie & Podsakoff, 2012).

Where method factors are not controlled for, they could impair or bias the reliability and validity of constructs, leading to inaccurate perception of a scale's reliability and convergent validity, and could also affect hypotheses testing, with the consequences of type 1 and type 2 errors (Podsakoff et al., 2003; Williams, Hartman & Cavazotte, 2010).

We checked for three sources of common method bias according to Podsakoff et al. (2003). First, the common rater bias in which the same respondent provides responses to both the predictor and criterion variables. Second, consistency motif bias to see if there are consistent patterns of responding to the survey questions and third, social desirability bias to establish whether responses to the survey questions are as a result of the social acceptability of the respondents rather than their true feelings.

To complement these checks, we tested for the impact of the common method bias, using Harman's single factor to establish if one factor accounts for more than 50% of the variance of all measured factors. The result of the Harman's single-factor analysis using IBM SPSS software shows that there is no presence of common method bias in all the measurement items that measures the constructs. One factor explains 24.65% of the total variances of the thirty-three factors finally retained in this study analysis. See table 26 for extract:

Table 27: Harman's single factor

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	8.133	24.646	24.646	8.133	24.646	24.646	4.562	13.825	13.825
2	2.780	8.424	33.070						
3	1.859	5.635	38.705						
4	1.802	5.462	44.167						
5	1.356	4.111	48.278						
6	1.246	3.776	52.054						
7	1.165	3.532	55.586						
8	0.961	2.913	58.499						
9	0.937	2.839	61.337						
10	0.831	2.517	63.854						
11	0.805	2.440	66.294						
12	0.781	2.366	68.660						
13	0.763	2.312	70.972						
14	0.732	2.218	73.191						
15	0.705	2.136	75.326						
16	0.662	2.007	77.333						
17	0.633	1.918	79.251						
18	0.608	1.841	81.092						
19	0.603	1.828	82.920						
20	0.561	1.700	84.620						
21	0.547	1.659	86.278						
22	0.513	1.554	87.833						
23	0.508	1.539	89.372						
24	0.472	1.430	90.801						

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 %
25	0.452	1.370	92.172						
26	0.418	1.267	93.439						
27	0.379	1.149	94.589						
28	0.359	1.087	95.676						
29	0.354	1.072	96.747						
30	0.304	0.921	97.668						
31	0.285	0.865	98.533						
32	0.278	0.843	99.375						
33	0.206	0.625	100.000						

Extraction Method: Principal Component Analysis.

We further tested for full collinearity variance factor (VIF) as an alternative for identifying common bias method using PLS SEM methodology. If the value of VIF exceeds 3.3, there is a likelihood of common method bias (Kock, 2015). The outcome of the VIF test shows that there is no risk of common bias as the values of the variance factor in each of the measurement items are below the yardstick of 3.3.

In addition to the statistical approach taken to test for common bias as enumerated above, we also took few procedural steps based on the advices of Podsakoff et al. (2012) to proactively address potential common method bias. First and foremost, few items in the survey questionnaires were reversed to ensure that all responses are not resemblance of each other and do not relate to a larger effect. Second, some items that are related to one of the constructs were spread across the questionnaire to avoid redundancy perception by respondents regarding the dispersed items. Third, we ensure that the scales developed for some constructs are free of ambiguity by pre-testing them as pilots before concluding them for survey. Fourth, we avoid the use of double barrel questions in the survey questionnaire in order to ensure that respondents are not mislead and to guarantee content validity.

Lastly, we did not use common scale properties such as scale type, scale points, and anchor labels for all the measurement items that are used to measure different constructs.

4.6 Normality Diagnostics

In a study that is to be analysed using structural equation modelling (SEM), it is ideal to examine the data obtained through survey questionnaire for either univariate or multivariate normality (Hair et al., 2010). In this vein, normality tests were conducted for all the variables to establish whether normality assumptions are validated, and whether the data are normally distributed.

Skewness, Kurtosis, Kolmogorov-Smirnov, and Shapiro-Wilk tests were conducted in the attempt to validate normality assumptions. The skewness and kurtosis are given statistical values of zero of a normal distribution, hence the values above zero are indicative of non-normality. The threshold for the test values of skewness and kurtosis ranges between +/-1.0. The results of the skewness tests for all the items of each construct shows negative values beyond zero value while most of the kurtosis show positive values beyond zero value. These values of skewness and kurtosis indicate that the data are non-normal, and the assumptions of the normality could not be validated.

For the Kolmogorov-Smirnov and Shapiro-Wilk tests, the assumptions for normality are validated when the actual p-value is greater than the significance value $p<0.05$ (at 95% confidence level). The results of the Kolmogorov-Smirnov test of normality shows the t-statistics of $0.175<\alpha<0.407$ and the actual p-value of 0.000 which is less than significance $p<0.05$. Likewise, the result for the Shapiro-Wilk test of normality shows that the t-statistic value is $0.705<\beta<0.923$, and the actual p-value of 0.000 is also less than the significance $p<0.05$.

In essence, the assumptions of normality are not validated with these results, hence the data is non-normal. However, this non normality does not pose a problem for the measurement and structural model analysis of the data.

Table 28 below shows the details of the four (4) normality tests done on all the measurement items:

Table 28: Normality diagnostics

Measurement items	Skewness	Kurtosis	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
			Statistic	**df**	**Sig.**	**Statistic**	**df**	**Sig.**
AGL02	-0.437	0.342	0.262	315	0.000	0.864	315	0.000
AGL03	-0.459	0.278	0.234	315	0.000	0.877	315	0.000
AGL04	-0.595	0.160	0.288	315	0.000	0.862	315	0.000
AGL05	-0.469	0.095	0.267	315	0.000	0.873	315	0.000
AGL06	-0.085	-0.261	0.223	315	0.000	0.890	315	0.000
AGL07	-0.147	-0.430	0.196	315	0.000	0.902	315	0.000
AGL08	-0.207	-0.453	0.214	315	0.000	0.896	315	0.000
AGL09	-0.029	-0.354	0.225	315	0.000	0.886	315	0.000
AGL10	-0.634	0.582	0.288	315	0.000	0.855	315	0.000

Measurement items	Skewness	Kurtosis	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
			Statistic	**df**	**Sig.**	**Statistic**	**df**	**Sig.**
INV01	-1.186	1.839	0.374	315	0.000	0.760	315	0.000
INV02	-0.629	0.632	0.278	315	0.000	0.857	315	0.000
INV03	-0.373	-0.119	0.247	315	0.000	0.884	315	0.000
INV04	-0.573	-0.009	0.284	315	0.000	0.868	315	0.000
INV05	-0.456	-0.358	0.283	315	0.000	0.869	315	0.000
INV06	-0.382	-0.229	0.241	315	0.000	0.887	315	0.000
INV07	-0.560	0.265	0.276	315	0.000	0.867	315	0.000

Measurement items	Skewness	Kurtosis	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
			Statistic	**df**	**Sig.**	**Statistic**	**df**	**Sig.**
CRV01	-0.987	0.498	0.355	315	0.000	0.801	315	0.000
CRV02	-0.611	0.577	0.282	315	0.000	0.854	315	0.000
CRV03	-0.375	-0.093	0.242	315	0.000	0.883	315	0.000
CRV04	-0.400	0.183	0.240	315	0.000	0.877	315	0.000
CRV05	-0.707	0.665	0.302	315	0.000	0.847	315	0.000
CRV06	-0.363	-0.370	0.243	315	0.000	0.877	315	0.000
CRV07	-0.659	0.333	0.286	315	0.000	0.862	315	0.000

Measurement items	Skewness	Kurtosis	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
			Statistic	**df**	**Sig.**	**Statistic**	**df**	**Sig.**
STR01	-1.079	2.663	0.383	315	0.000	0.737	315	0.000
STR02	-0.244	-0.196	0.266	315	0.000	0.864	315	0.000
STR03	-0.327	0.042	0.250	315	0.000	0.873	315	0.000
STR04	-0.581	0.381	0.314	315	0.000	0.837	315	0.000
STR05	-0.527	0.636	0.267	315	0.000	0.857	315	0.000
STR06	-0.627	0.561	0.294	315	0.000	0.851	315	0.000
STR07	-0.526	0.208	0.278	315	0.000	0.866	315	0.000

Measurement items	Skewness	Kurtosis	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
			Statistic	**df**	**Sig.**	**Statistic**	**df**	**Sig.**
FIN01	-1.322	2.527	0.379	315	0.000	0.746	315	0.000
FIN02	-0.836	1.122	0.266	315	0.000	0.820	315	0.000
FIN03	-0.319	-0.525	0.218	315	0.000	0.855	315	0.000
FIN04	-0.950	1.887	0.337	315	0.000	0.798	315	0.000
FIN05	-0.538	0.119	0.281	315	0.000	0.867	315	0.000
FIN06	-0.739	0.974	0.278	315	0.000	0.842	315	0.000
FIN07	-0.678	-0.242	0.291	315	0.000	0.864	315	0.000

Measurement items	Skewness	Kurtosis	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
			Statistic	**df**	**Sig.**	**Statistic**	**df**	**Sig.**
IFN01	-1.436	2.049	0.407	315	0.000	0.705	315	0.000
IFN02	-0.233	-0.051	0.255	315	0.000	0.862	315	0.000
IFN03	-0.326	0.174	0.232	315	0.000	0.876	315	0.000
IFN04	-0.646	0.062	0.299	315	0.000	0.842	315	0.000
INF05	-0.398	0.349	0.263	315	0.000	0.856	315	0.000
IFN06	-0.342	0.074	0.276	315	0.000	0.854	315	0.000
IFN07	-0.566	0.554	0.284	315	0.000	0.850	315	0.000

Measurement items	Skewness	Kurtosis	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
			Statistic	**df**	**Sig.**	**Statistic**	**df**	**Sig.**
PSG01	-1.106	1.425	0.266	315	0.000	0.850	315	0.000
PSG02	-1.068	1.654	0.225	315	0.000	0.860	315	0.000
PSG03	-0.479	0.125	0.205	315	0.000	0.914	315	0.000
PSG04	-0.231	-1.203	0.175	315	0.000	0.907	315	0.000
PSG05	-0.510	0.096	0.216	315	0.000	0.918	315	0.000
PSG06	-0.436	-0.087	0.205	315	0.000	0.918	315	0.000
PSG07	-0.490	-0.496	0.214	315	0.000	0.923	315	0.000

4.7 Factor Analysis

The need to observe patterns of relationship for a large size of measuring items underlying constructs and to determine if such large number of variables can be conducted in a smaller set of variables suggests that factor analysis be conducted. In fact, factor analysis is relevant for classifying data with a large size of sample with the view of establishing reliability and validity. Therefore, conducting factor analysis helps determine whether all the items within 'summated' scale, load on the same construct or they measure more than one construct (Flynn, 1990 pg.267).

All the measurement items that underlie the constructs in this study were factor-analysed and subjected to principal component analysis (PCA) using IBM SPSS software. However, two tests for examining sample adequacy and relationships among the variables using Kaiser-Meyer-Olkin (KMO) measure and Bartlett's test of sphericity were conducted respectively as a precondition for conducting factor analysis further, using SEM.

The result for the KMO measure was 0.873. This is above the threshold of >=0.7, thus verifies that the analysis was done with adequate sampling size. It also shows high correlation among the variables, therefore indicating reliability in the pattern of correlation and the factor analysis. The result for Bartlett's test has chi-square value of 3,576 df.528 and P-value of 0.000 which is less than p=<0.05 (at 95% confidence level). This indicates sufficient correlations and relationships among all the items. See table 29 below:

Table 29: Sampling Adequacy and Correlation Tests

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.873
Bartlett's Test of Sphericity	Approx. Chi-Square	3576.190
	df	528
	Sig.	0.000

After the sampling & correlation tests as above, appropriate steps were taken to factor-analyse all the measurement items with the aim of reducing the larger size of items to a manageable set of scale for extraction, rotation, and total explained variances.

First, principal axis factor is used to identify the underlying dimensions or items of the constructs. Factor analysis at this stage was conducted on the correlation matrix of the variables mainly because of the large sampling size N=315 (Hair et al., 2010).

The next step taken was to determine the relevant number of factors (items) to extract. In this case, principal component analysis (PCA) with varimax orthogonal rotation was used. This is to impose some restrictions on correlations among the factors, so that one factor cannot correlate with another. Further, the number of extracted factors should ensure that each item loads highly on one and only factor as this will indicate whether the construct that embodies those items is either unidimensional or multidimensional.

In the process of extracting factor loadings for the items using the functionality of IBM SPSS software, a minimum limit factor loading of 0.5 was placed as the value of correlation coefficient to extract, hence any items carrying loading below 0.5 is supressed and excluded from the factor extraction. Considering the statistical suppression of items with factors loads, below the cut-off value of 0.5 and considering some multiple factors loading for same construct, a total of 19 items were deleted, leaving the number of factors finally extracted as 33 items. This translates to having 7 factors extracted which explained 55.6% of the total variance with convergence in 7 iterations as against the initial extraction of 12 factors which explained 60.3% of total variance and converged in 21 iterations.

The factor extraction can be explained in a broader definition of the factors that reveal what the 33 items are measuring. The first factor can be described as Innovation (INNOV) and the items measuring this factor are INV01, INV02, INV03, INV04, INV05, INV06, and

INV07. These items are mainly the measures for innovation and corporate venturing constructs within the intrapreneurship domain.

Factor 2 is defined as industry agglomeration externality (AGGLO) and the measures for this construct are AGL01, AGL02, AGL03, AGL04, AGL05 and AGL10. These items were originally intended for measuring the agglomeration externality construct.

Factor 3 is described as strategic renewal (STRAG) and it is measured by items STR01, STR02, STR03 and STR04, which embody the basic foundation renewal, mission and concept definition of a corporate firm.

Factor 4 measures the sectoral growth construct (SEPUT). Items PSG01.PSG02 and PSG03 are loaded unto the constructs. Factor 5 is defined as formal institutional role (FORMI) and is measured mainly by the items of the formal institutional role, namely FIN02, FIN04, and FIN06. These items basically emphasise regulation.

The items of informal institutional roles, namely IFN01, IFB02 and IFN03 measure factor 6 (INFOR) which primarily define informality. The last factor (7) has two items of corporate venturing (VENTU) constructs, which are CRV05 and CRV 06.

However, it turns out that some of the items also measure other factor which results in sub-dimensional view of same constructs. For instance, items STR05, STR06 and STR07 differently measure a factor that describes organisational structure and procedures dimension of strategic renewal, while items AGL06, AGL07 and AGL08 specifically measure another separate factor that depicts knowledge sharing within the industry, which is a dimension of industry agglomeration externality. The sectoral growth items PSG04, PSG05, PSG06 and PSG07 were also measuring different growth opportunities in a separate factor.

Nonetheless, the factor analysis on the average has shown that majority of the measurement items do measure the constructs that they are originally intended to measure. The multiple factors loading for some constructs as identified, together with some items with loading values below the suppression cut-off value of 0.5 were appropriately deleted to give a sense of reliability to the model.

4.8 Measurement Model

This is the first stage of SEM analysis where the outer model is evaluated to determine reliability and convergent validity of the formative or reflective indicators that measure the underlying latent constructs. In this study, both the exogenous and endogenous variables have reflective measurement items. Anderson and Gerbing (1988) suggests that the testing of measurement model should precede the full estimation of structural model.

Indicator reliability and convergent validity

First, the factor loading values for each individual items or indicators within the outer measurement model was examined. This is followed by the evaluation of internal reliability of the constructs which is measured using Cronbach Alpha (α), Composite Reliability (CR) and Average variance Extracted (AVE). Variance Inflation factor (VIF) was also established for each measurement items to determine whether there is a multicollinearity issue.

Factor loading for individual measurement items should not be less than 0.7. However, where the measurement scales used are a mix of adaptation of existing ones and new scale development, the loading cut-off of 0.5 may be used (Chin,1998). On the construct's reliability, Hair et al. (2016) recommends the thresholds of ≥0.6 for Cronbach α, ≥0.7 for composite reliability and ≥0.5 for average variance extracted. According to Hair et al. (2014), VIF value ≤5.0 or the tolerance of 2.0 are acceptable limits for determining multicollinearity issues. However, Kock (2015) suggests VIF value of ≤ 3.3 as an acceptable limit.

The reliability and convergent validity tests carried out on the measurement items for this study shows positive results in most cases. First and foremost, the standardised factor loadings for the majority of the measurement items are greater than 0.7. This implies that the shared variance between the items and their constructs is more than the error variance. Therefore, the extent to which the seven constructs are measured on a multiple items scale, reflects the true score of the constructs relative to their error.

The reliability test of Cronbach Alpha (α), Composite Reliability (CR) and Average Variance Extracted (AVE) indicates the existence of adequate internal consistency of the latent constructs and evidenced that the measurement items indeed measured the latent variables they are intended to measure, therefore demonstrating convergent validity.

Agglomeration externality construct has the Cronbach (*α=0.76*), Composite Reliability (*CR=0.83*) and Average Variance Extracted (*AVE=0.50*). Innovation construct on the other hand has the Cronbach (*α=0.87*), Composite Reliability (*CR=0.89*) and Average Variance Extracted (*AVE=0.55*). The construct of strategic renewal has the Cronbach (*α=0.71*), Composite Reliability (*CR=0.82*) and Average Variance Extracted (*AVE=0.53*). Corporate venturing construct has the Cronbach (*α=0.38*), Composite Reliability (*CR=0.76*) and Average Variance Extracted (*AVE=0.62*).

Although, the construct of corporate venturing has a lower Cronbach (α=0.38) that is below the threshold of 0.7, it is as a result of the construct's five of the seven items measuring separately a sub-dimension of the construct which was not retained in the study model. However, with the strong value of its Composite Reliability (*CR=0.76*), the construct's

reliability is ensured. Fornell and Larcker (1981) attested to the fact that Composite Reliability is superior to Cronbach α for the fact that it measures construct reliability using the factor loadings of the items that are obtained from the theoretical model of a given study.

The construct of formal institutional role has the Cronbach (α=0.64), Composite Reliability (*CR=0.81*) and Average Variance Extracted (*AVE=0.58*). These outcomes indicate that there is internal consistency and convergent validity for the construct of formal institutional roles. Similarly, for the construct of informal institutional roles. The results show that construct has the Cronbach (*α=0.68*), Composite Reliability (*CR=0.82*) and Average Variance Extracted (*AVE=0.60*).

Lastly, the construct of sectoral growth has the Cronbach (*α=0.79*), Composite Reliability (*CR=0.88*) and Average Variance Extracted (*AVE= 0.71*). These results also demonstrate that the measurement items for the endogenous variable of sectoral growth have internal consistency and convergent validity.

Conclusively, the suggestion that construct with Cronbach α of 0.6 can be considered appropriate and reliable (Churchill, 1979), it means that all the constructs under this study have demonstrated convergent validity and their measurement items are deemed appropriate and reliable for their intended construct measurement.

*4.8.1 **Multicollinearity***

The result for multicollinearity test shows that the measurement items within their constructs are not highly correlated, hence there is no redundancy of the variables. This is evident by the fact that all the items have variance inflation factor below the value of 5.0 as recommended by Hair et al. (2014) and below the value of 3.3 as suggested by Kock (2015).

The detail analysis of the outer measurement model is shown in table 30 below.

Table 30: Indicator and Construct Reliability

Construct	Item	β (FL)	t-value	CA (α)	CR	AVE	VIF
AGGLO				**0.760**	**0.828**	**0.501**	**1.643**
	AGL02	0.727	19.786				1.424
	AGL03	0.788	29.294				1.603
	AGL04	0.763	24.371				1.628
	AGL05	0.625	8.842				1.317
	AGL10	0.475	5.317				1.226
	AGL01	0.600	7.979				1.278
INNOV				**0.865**	**0.896**	**0.552**	**1.847**
	INV01	0.707	15.398				1.698
	INV02	0.795	33.707				1.989
	INV03	0.733	23.638				1.642

Construct	Item	β (FL)	t-value	CA (α)	CR	AVE	VIF
	INV04	0.791	30.173				2.136
	INV05	0.746	22.815				2.026
	INV06	0.766	29.284				1.954
	INV07	0.656	13.830				1.593
VENTU				**0.383**	**0.762**	**0.617**	**1.350**
	CRV05	0.837	10.334				1.059
	CRV06	0.730	8.418				1.059
STRAG				**0.705**	**0.816**	**0.528**	**1.583**
	STR01	0.679	8.561				1.315
	STR02	0.695	11.712				1.343
	STR03	0.722	14.815				1.292
	STR04	0.803	25.620				1.385
FORMI				**0.639**	**0.805**	**0.580**	**1.553**
	FIN02	0.814	16.225				1.301
	FIN04	0.782	13.319				1.281
	FIN06	0.682	7.934				1.200
INFOR				**0.676**	**0.819**	**0.603**	**1.577**
	IFN01	0.820	17.429				1.302
	IFN02	0.800	15.128				1.351
	IFN03	0.704	8.298				1.294
SEPUT				**0.793**	**0.879**	**0.708**	
	PSG01	0.846	34.817				1.822
	PSG02	0.885	56.237				2.104
	PSG03	0.791	27.578				1.486
Moderating Effect 1				**0.959**	**0.958**	**0.525**	
	FIN02 * INV01	0.803	2.496				
	FIN02 * INV02	0.825	2.431				
	FIN02 * INV03	0.840	2.690				
	FIN02 * INV04	0.877	2.919				
	FIN02 * INV05	0.731	3.051				
	FIN02 * INV06	0.894	3.201				
	FIN02 * INV07	0.885	3.174				
	FIN04 * INV01	0.981	3.484				
	FIN04 * INV02	1.035	3.484				
	FIN04 * INV03	1.018	3.596				
	FIN04 * INV04	1.077	3.569				
	FIN04 * INV05	0.918	2.524				
	FIN04 * INV06	1.051	3.346				
	FIN04 * INV07	0.984	3.181				
	FIN06 * INV01	0.897	2.895				
	FIN06 * INV02	0.944	3.114				
	FIN06 * INV03	0.883	2.851				
	FIN06 * INV04	0.852	2.642				
	FIN06 * INV05	0.638	2.210				
	FIN06 * INV06	0.782	2.369				

	FIN06 * INV07	0.759	2.237				
	Item	**β (FL)**	**t-value**	**CA (α)**	**CR**	**AVE**	**VIF**
Moderating Effect 2				**0.813**	**0.850**	**0.495**	
	FIN02 * CRV05	1.073	8.158				
	FIN02 * CRV06	0.743	4.108				
	FIN04 * CRV05	1.081	9.394				
	FIN04 * CRV06	0.746	3.767				
	FIN06 * CRV05	0.984	4.821				
	FIN06 * CRV06	0.675	3.188				
Construct	**Item**	**β (FL)**	**t-value**	**CA (α)**	**CR**	**AVE**	**VIF**
Moderating Effect 3				**0.873**	**0.881**	**0.392**	
	FIN02 * STR01	0.962	3.741				
	FIN02 * STR02	0.666	2.476				
	FIN02 * STR03	0.778	2.901				
	FIN02 * STR04	0.783	3.151				
	FIN04 * STR01	1.069	3.630				
	FIN04 * STR02	0.826	3.031				
	FIN04 * STR03	0.885	3.236				
	FIN04 * STR04	0.934	3.430				
	FIN06 * STR01	0.729	2.193				
	FIN06 * STR02	0.500	1.604				
	FIN06 * STR03	0.569	1.964				
	FIN06 * STR04	0.622	2.202				
Construct	**Item**	**β (FL)**	**t-value**	**CA (α)**	**CR**	**AVE**	
Moderating Effect 4				**0.950**	**0.954**	**0.501**	
	IFN01 * INV01	0.876	4.568				
	IFN01 * INV02	0.910	4.603				
	IFN01 * INV03	0.831	4.377				
	IFN01 * INV04	0.921	4.835				
	IFN01 * INV05	0.846	5.436				
	IFN01 * INV06	0.906	4.903				
	IFN01 * INV07	0.891	4.768				
	IFN02 * INV01	0.654	4.941				
	IFN02 * INV02	0.739	5.087				
	IFN02 * INV03	0.688	4.831				
	IFN02 * INV04	0.779	5.301				
	IFN02 * INV05	0.709	4.919				
	IFN02 * INV06	0.789	5.646				
	IFN02 * INV07	0.750	5.173				
	IFN03 * INV01	0.801	4.546				
	IFN03 * INV02	0.898	4.852				
	IFN03 * INV03	0.837	4.615				
	IFN03 * INV04	0.890	5.049				
	IFN03 * INV05	0.795	5.213				
	IFN03 * INV06	0.854	5.032				

	IFN03 * INV07	0.879	4.971				
Construct	**Item**	**β (FL)**	**t-value**	**CA (α)**	**CR**	**AVE**	**VIF**
Moderating Effect 5				**0.803**	**0.839**	**0.473**	
	IFN01 * CRV05	1.005	9.612				
	IFN01 * CRV06	0.805	6.173				
	IFN02 * CRV05	0.949	8.073				
	IFN02 * CRV06	0.573	3.501				
	IFN03 * CRV05	0.933	6.663				
	IFN03 * CRV06	0.670	4.050				
Construct	**Item**	**β (FL)**	**t-value**	**CA (α)**	**CR**	**AVE**	**VIF**
Moderating Effect 6				**0.890**	**0.905**	**0.446**	
	IFN01 * STR01	0.937	3.924				
	IFN01 * STR02	0.792	3.031				
	IFN01 * STR03	0.724	3.394				
	IFN01 * STR04	0.868	3.986				
	IFN02 * STR01	0.921	4.736				
	IFN02 * STR02	0.644	3.126				
	IFN02 * STR03	0.699	4.016				
	IFN02 * STR04	0.734	4.239				
	IFN03 * STR01	0.996	5.510				
	IFN03 * STR02	0.699	3.465				
	IFN03 * STR03	0.726	4.123				
	IFN03 * STR04	0.857	5.212				

**Key:*

Moderating Effect 1: Formal Institutional Roles * Innovation

Moderating Effect 2: Formal Institutional Roles * Corporate Venturing

Moderating Effect 3: Formal Institutional Roles * Strategic Renewal

Moderating Effect 4: Informal Institutional Roles * Innovation

Moderating Effect 5: Informal Institutional Roles * Corporate Venturing

Moderating Effect 6: Informal Institutional Roles * Strategic Renewal

*4.8.2 **Content Validity***

The validity of the contents of the instrument (i.e., the survey questionnaire) used in this study was assessed during the development of the questionnaire and further examined after the pilot-test, having taken necessary corrections and update into consideration.

Some of the measurement items originally intended to measure formal and informal institutional roles were changed and replaced after careful assessment by my supervisor coupled with a peer-assessment by a colleague who was also a doctoral candidate.

Further, the self-developed measurement scales for industry agglomeration externality constructs, formal and informal institutional roles were duly evaluated based on the adaptations of scholars' conceptual definitions and meanings for those items to ensure that they fully

capture the theoretical concepts of the intended constructs and establish that the items are relevant and represent the constructs they intend to measure (Onwuegbuzie & Johnson, 2006).

*4.8.3 **Criterion Validity***

Although criterion validity was not essentially tested for the constructs, however expert opinions were sought on the structure of the questionnaire as well as the relevance and representativeness of the items contained in the instrument.

Discriminant Validity

Discriminant validity was assessed to determine the extent to which a construct is different from other constructs in terms of their correlation and in terms of how its measurement items distinctly measure and represent the construct compared to how the items measure the other constructs. We follow the recommendations of Hair, Sarstedt, Matthews and Ringle (2016), and Henseler et al. (2015) in testing for the discriminant validity on the basis of (a) Item-cross-loadings, (b) Fornell-Larcker criterion, and (c) Heterotrait-Monotrait (HTMT) criterion.

*4.8.4 **Cross-Loading***

The rule of the cross-loadings state that a measurement item should load higher correlation value onto the construct it is intended to measure than to other constructs in the same model. The result of the cross-loading for all the thirty-three items retained in the model shows that all the items distinctly loaded higher correlation values on the latent constructs they were intended to measure than any other latent constructs in the model. In the table 31 below, the loadings in bold signify higher values loaded onto the constructs that the reflective indicators intended to measure.

Table 31: Cross Loadings

	AGGLO	INNOV	VENTU	STRAG	FORMI	INFOR	SEPUT
AGL01	0.600	0.139	0.276	0.103	0.262	0.255	0.217
AGL02	0.727	0.367	0.189	0.136	0.229	0.283	0.273
AGL03	0.788	0.350	0.215	0.245	0.243	0.299	0.297
AGL04	0.763	0.239	0.228	0.206	0.221	0.335	0.275
AGL05	0.625	0.185	0.176	0.162	0.281	0.336	0.200
AGL10	0.475	-0.040	0.189	0.120	0.193	0.307	0.036
INV01	0.292	0.707	0.241	0.337	0.283	0.256	0.290
INV02	0.348	0.795	0.264	0.326	0.230	0.294	0.358
INV03	0.264	0.733	0.233	0.310	0.172	0.303	0.318
INV04	0.310	0.791	0.186	0.335	0.154	0.294	0.312
INV05	0.187	0.746	0.174	0.359	0.063	0.282	0.263
INV06	0.254	0.766	0.077	0.340	0.152	0.254	0.323
INV07	0.167	0.656	0.204	0.371	0.224	0.226	0.252

	AGGLO	INNOV	VENTU	STRAG	FORMI	INFOR	SEPUT
CRV05	0.260	0.128	0.837	0.173	0.258	0.231	0.190
CRV06	0.220	0.315	0.730	0.392	0.083	0.318	0.134
STR01	0.099	0.220	0.185	0.679	0.193	0.186	0.229
STR02	0.145	0.311	0.197	0.695	0.190	0.226	0.191
STR03	0.243	0.305	0.280	0.722	0.176	0.221	0.186
STR04	0.211	0.439	0.306	0.803	0.120	0.221	0.297
FIN02	0.210	0.175	0.191	0.179	0.814	0.263	0.305
FIN04	0.314	0.214	0.176	0.234	0.782	0.243	0.278
FIN06	0.280	0.183	0.152	0.084	0.682	0.223	0.218
IFN01	0.365	0.294	0.331	0.257	0.259	0.820	0.267
IFN02	0.331	0.300	0.278	0.226	0.203	0.800	0.238
IFN03	0.309	0.264	0.154	0.192	0.302	0.704	0.171
PSG01	0.298	0.278	0.165	0.240	0.328	0.258	0.846
PSG02	0.347	0.356	0.207	0.264	0.303	0.252	0.885
PSG03	0.241	0.408	0.155	0.296	0.262	0.240	0.791

4.8.5 Fornell-Larcker Criterion

This criterion posits the usefulness of average variance explained (AVE) in determining the appropriateness of discriminant validity and the rule is that the square root of each latent construct needs to be higher than the correlation coefficients of two latent constructs. According to Fornell and Larcker (1981), the AVE of a certain latent construct should be greater than the variance shared between that construct and any other latent construct in the same model. This means that a latent construct should share more variance with the items that measured it than it shares with the items that measure other latent construct.

The result of the discriminant validity using Fornell-Larcker criterion shows that all the latent constructs differ from one another as the square root of the AVE for each construct is higher than the correlation coefficients of other latent constructs as shown in the correlation matrix table 32 below. In the table, the diagonal elements which are the square root of AVE are larger than the elements in the off-diagonal rows and columns.

Table 32: Fornell-Larcker Criterion

	AGGLO	FORMI	INFOR	INNOV	SEPUT	STRAG	VENTU
AGGLO	0.672						
FORMI	0.345	0.762					
INFOR	0.432	0.319	0.776				
INNOV	0.361	0.249	0.368	0.743			
SEPUT	0.352	0.354	0.297	0.411	0.842		
STRAG	0.248	0.224	0.293	0.451	0.316	0.726	
VENTU	0.307	0.228	0.342	0.267	0.209	0.342	0.785

4.8.6 Heterotrait-Monotrait (HTMT) Criterion

Henseler, Ringle and Sarstedt (2015) further stressed the assessment of discriminant validity by computing a ratio of HTMT. The ratio shows that the correlation coefficients of indicators measuring different constructs (i.e., Heterotrait-Heteromethod) is divided by the correlation coefficient of indicators that measure same construct (i.e., Monotrait-Heteromethod). Henseler et al. (2015) recommends HTMT ratio of 0.85 to ensure discriminant validity of a reflectively modelled constructs.

The result of the HTMT criterion for this study reveals that all values of the coefficients of the construct as shown in the table 33 below the suggested threshold of 0.85.

Table 33: Heterotrait-Monotrait Criterion

	AGGLO	FORMI	INFOR	INNOV	SEPUT	STRAG	VENTU
AGGLO							
FORMI	0.513						
INFOR	0.625	0.497					
INNOV	0.397	0.332	0.478				
SEPUT	0.419	0.491	0.396	0.493			
STRAG	0.319	0.336	0.420	0.568	0.416		
VENTU	0.578	0.435	0.657	0.499	0.374	0.673	

4.9 Structural Model

In this second stage of the complete structural equation model (SEM), the relationships among the seven constructs were established using bivariate correlation matrix, followed by the assessment of the structural paths of the fifteen hypothesised relationships among the latent constructs. Finally, model fit indices were examined to ensure that the overall model sufficiently reflects or replicates the observed data (Hair et al., 2014).

Three separate structural models were considered. Model 1 considers only the relationships between four control variables and the sectoral growth. On the second model (Model 2), the six exogenous variables were added to the four control variables to examine the relationships of all the ten variables on sectoral growth. Model 3, the complete model adds the moderating effects of the formal and informal institutional role variables to the model 2.

4.9.1 Bivariate Correlation

Prior to assess the path coefficients for determining the extent to which the constructs are related and consequent testing of hypotheses, bivariate correlation analysis that depicts the relationships among all the variables was made using Pearson correlation matrix.

Table 34 below shows the bivariate correlation among the constructs.

Table 34: Latent Variable Correlations

	AGGLO	FORMI	INFOR	INNOV	SEPUT	STRAG	VENTU	BTYP	FAGE	TECH	TURN
AGGLO	1.000										
FORMI	0.345	1.000									
INFOR	0.432	0.319	1.000								
INNOV	0.361	0.249	0.368	1.000							
SEPUT	0.352	0.354	0.297	0.411	1.000						
STRAG	0.248	0.224	0.293	0.451	0.316	1.000					
VENTU	0.307	0.228	0.342	0.267	0.209	0.342	1.000				
BTYP	-0.134	-0.183	-0.107	-0.049	-0.243	-0.102	-0.037	1.000			
FAGE	0.103	-0.153	-0.019	0.210	0.028	0.058	-0.078	0.166	1.000		
TECH	0.102	0.068	0.158	0.201	0.187	0.113	-0.023	-0.287	-0.043	1.000	
TURN	0.204	0.027	0.059	0.313	0.190	0.136	0.028	-0.117	0.379	0.201	1.000

All latent DVs & IVs are significant at p<0.05

FAGE → AGGLO, STRAG → BTYP, TECH → AGGLO, TECH → STRAG are significant at p<0.1

Other CVs relationships are not significant at either p<0.05 or p<0.1

In the above correlation table, the relationships among the seven constructs are all positive. However, there are negative relationships between some control variables and latent constructs. Nonetheless, the relationship between strategic renewal and innovation constructs shows strongest positive correlation (*45.1%*), while the weakest correlation among latent constructs is the relationship between corporate venturing and sectoral growth constructs (*20.9%*). All values of the correlation coefficients for latent constructs are significant at the 95% confidence level (i.e., $p<0.05$).

4.9.2 Path Coefficient Assessment

Hypotheses were tested by estimating the path coefficient between each of the variables and the sectoral growth which is the dependent variable. The sign (+/-), size, and statistical significance of the path coefficients using t-values were looked at. Bootstraps resample procedures of the Smart PLS were taken using 5,000 sub-samples as against the original 315 samples in order to assess the significance of t-values (Hair et al. 2016).

Further, the probability values (i.e., p-values) that are associated with the path coefficient and the t-values for each of the path were also assessed. These procedures assist to provide inference and results for the hypotheses testing. Therefore, hypothesis is considered supported if its path coefficient is significant in terms of the associated t-value which should be higher or equal to 1.96 at the significance level 0.05. Similarly, the corresponding probability value should also be less or equal p-value of 0.05.

In addition, the explanatory power of variance (R^2) for the sectoral growth, effect size (F^2) of the independent variables and model fit index were also assessed for the structural path models.

Three separate structural models were assessed for the relationship paths. The first model (Model 1) identifies four relevant control variables in which explanations are established for the impacts of those control variables on the endogenous construct of sectoral growth. The control variables are industry type (BTYP), average firm age (FAGE), industry technology (TECH), and average firm turnover (TURN).

The second model (Model 2) shows the inclusion of the six exogenous constructs (i.e., the independent variables) to the existing control variables, making the total variables under the paths coefficient assessment to be thirteen exclusive of the dependent variable (SEPUT). The independent variables are industry agglomeration externality (AGGLO), Innovation (INNOV), corporate venturing (VENTU), strategic renewal (STRAG), formal institutional role (FORMI) and informal institutional role (INFOR).

In the third model (Model 3), the moderating effects showing the extent to which dimensions of intrapreneurship impact sectoral growth through the moderation of both formal and informal institutional roles were added to the variables in the Model 2, thus making it a complete model for this study. This complete model therefore contains seven latent constructs of which six are exogenous and one is endogenous. Out of the six exogenous variables, two moderating variables are also considered endogenous. The model also contains fifteen hypotheses and thirty-three indicators that are spread across the seven constructs.

The complete model 3 is focused for detailed presentation, being the crux of the hypothesised relationships among the theoretical constructs and for which their support or otherwise form the basis to justify this research study.

Model 1 (Control Variables Only Model)

Figure 4 below shows the structural model of the four control variables with the resultant effects of factor loadings, path coefficients and variance (R^2) on the sectoral growth.

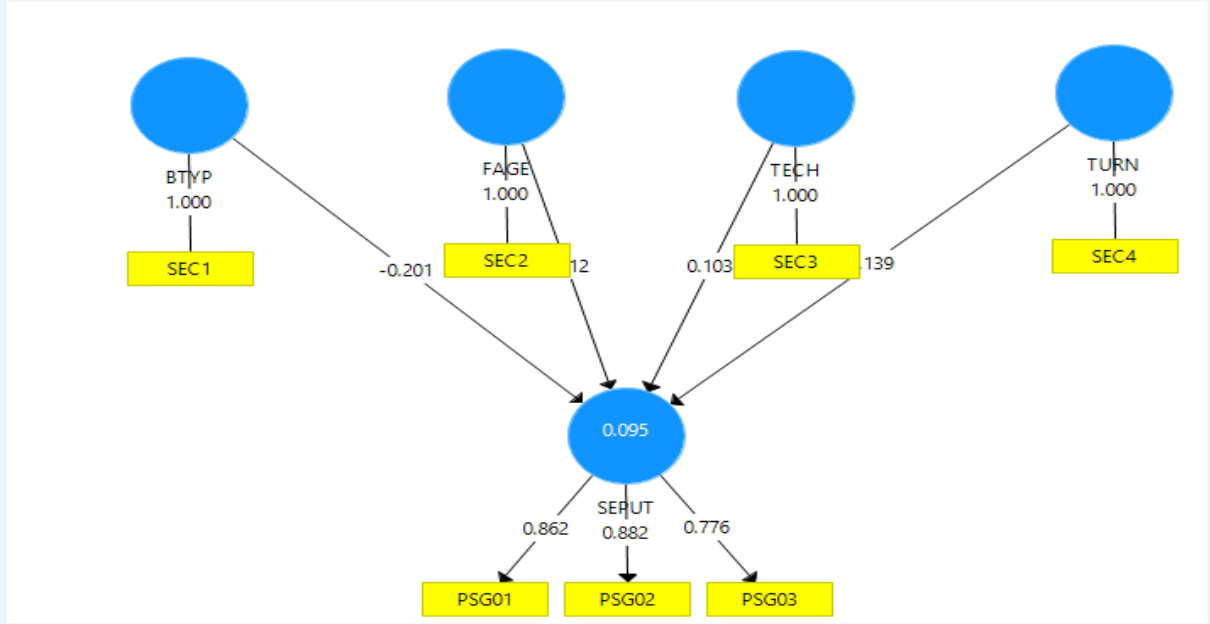


Figure 4: Model 1: Effects of Control Variables on Sectoral Growth

In this model, the four control variables explain 9.5% of the variance (R^2) in the sectoral growth. This signifies that approximately 10% of the changes in the sectoral growth of the Ghanaian manufacturing industry is due to these four control variables. However, out of these four variables, industry type (BTYP) was negatively correlated to sectoral growth (-0.20) meaning that the variable moves in opposite direction to the changes in the sectoral growth. The other three control variables maintain positive relationships with the sectoral growth; however, their relationships are not significant because of their lower path coefficients.

Model 2 (Control Variables and Independent Variables)

The combination of the six control variables and the six independent variables of agglomeration externality, innovation, corporate venturing, strategic renewal, formal institutional roles, and informal institutional roles are assessed in terms of their relationships.

Figure 5 shown below is the structural model 2 with the resultant path coefficients for the relationships among all the variables.

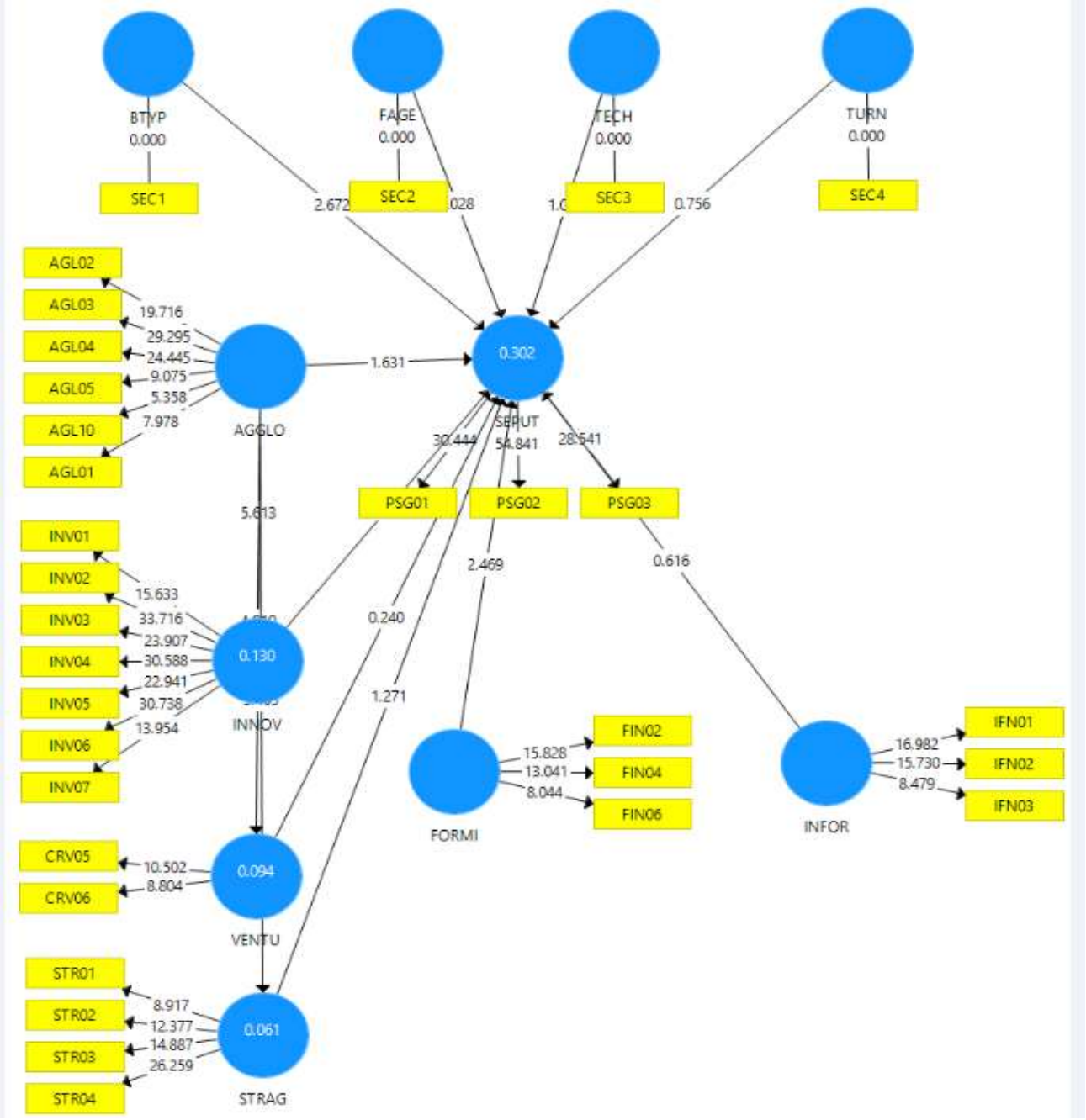


Figure 5: Model 2 showing control and independent variables.

With the addition of six independent variables to the control variables, the coefficient of determination (R^2) increased to 0.302. This means that 30% of the changes in the value of sectoral growth is now explained by all the variables in model 2 as against the 9.5% explanation in model 1. It is also worthy of note that 13% of the changes in innovation, 9% of the changes in corporate venturing and 6% of the changes in strategic renewal are explained by industry agglomeration externality, respectively.

Although, the path coefficients for all the exogenous variables are positive, only five out of the nine hypothesised relationships among the variables are supported, while the remaining four are not supported because their t-values and p-values are below the significance threshold. It is also important to note that the negative relationship between industry type and sectoral growth persists in this model, however, it is only relationships from control variables that is significant at $p<0.05$.

The relationships between industry agglomeration externality and the three exogenous constructs of intrapreneurship, namely: the innovation, corporate venturing and strategic renewal are positive and significant; thus, the construct of industry agglomeration externality has significant effects on the intrapreneurship within the manufacturing industry. Similarly, the relationship between innovation and the sectoral growth and that of formal institutional role and sectoral growth are positive and significant.

However, our hypotheses on H4 (AGGLO → SEPUT), H6 (VENTU → SEPUT), H7 (STRAG → SEPUT) and H9 (INFOR→ SEPUT) are not supported because their t-values and p-values are below the significance levels, irrespective of their positive path coefficients.

Model 3 (Complete Model inclusive of all variables and the moderating effects)

This is the complete model that encompasses all the constructs and the hypothesised relationships among all the variables inclusive of the moderating effects of the relationship.

The complete model with path coefficients and moderating effects is shown if figure 6 below:

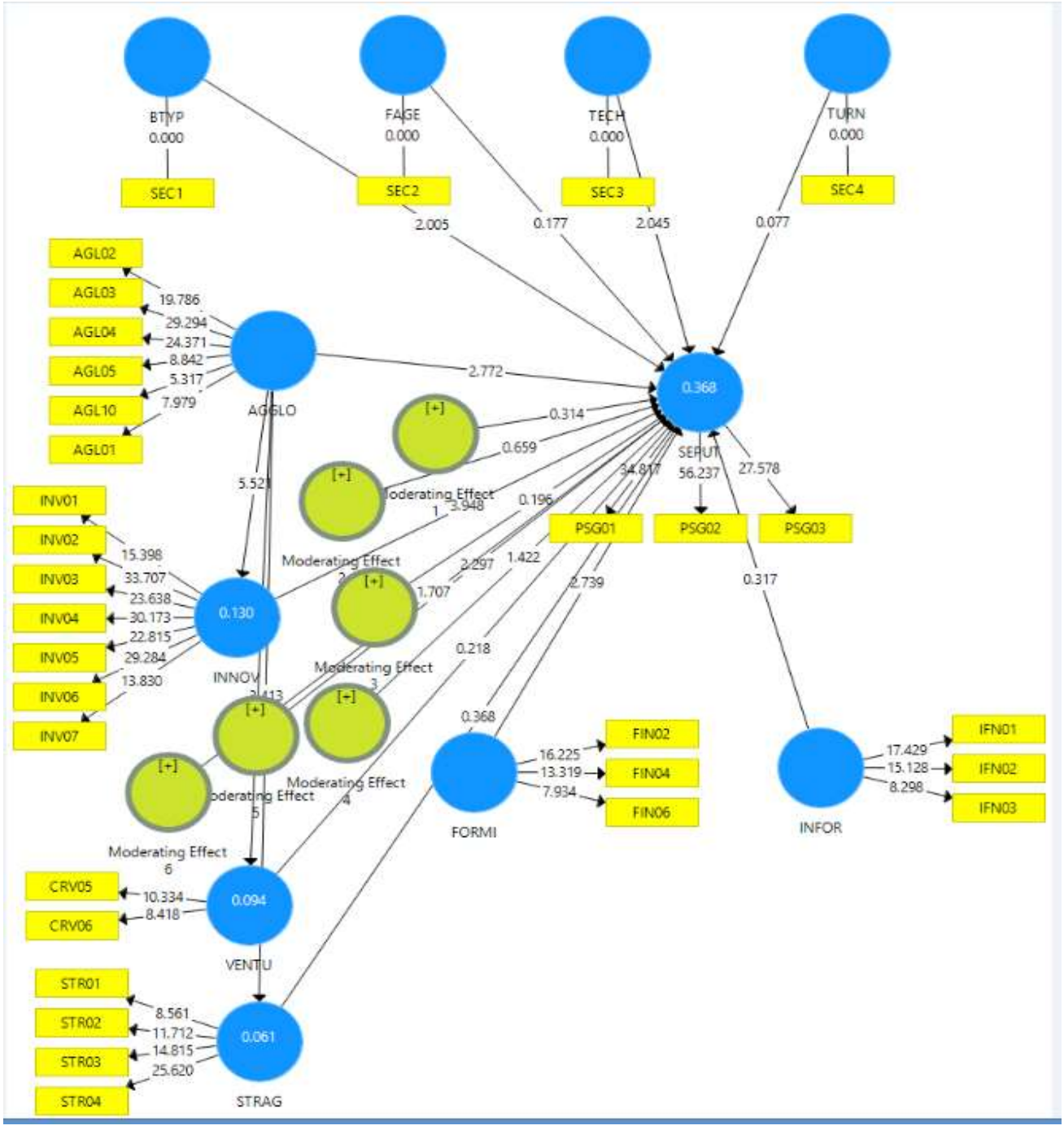


Figure 6: Model 3 complete structural model with all variables and moderating effects

Eight hypotheses out of the overall fifteen hypotheses were supported. Seven were supported at $p<0.05$ significance, one at $p<0.1$ significance while the remaining seven hypotheses were not supported. The variance (R^2) is further increased to 0.368 compared to the model 2 ($R^2=0.302$) which was without moderating effects of formal and informal institutional roles. This signifies that 37% of the changes in the sectoral growth in Ghanaian manufacturing sector

is explained by the combination of the six exogenous constructs and the four control variables without the effects of the moderators.

At this junction, the control variables of industry type (BTYP → SEPUT) and industry technology (TECH → SEPUT) have significant relationship with the sectoral growth, although industry type still shows negative relationship (*-0.097*) while industry technology is positively correlated with the sectoral growth (*0.091*).

Table 35 below shows the results of the structural paths for the three models.

Table 35: Path Coefficients-The three models

Results of Structural Equation Model (SEM) Analysis

Relationships between intrapreneurship, institutions and sectoral growth

	Model 1		Model 2		Model 3		
Variable	**β**	**t-value (bstrp)**	**β**	**t-value (bstrp)**	**β**	**t-value (bstrp)**	**Hypothesis**
Control							
Industry Type	-0.201		-0.146	2.672	-0.097	2.005	N/A
Average Firm Age	0.012		0.002	0.028	0.011	0.177	N/A
Industry Technology	0.103		0.047	1.028	0.091	2.045	N/A
Average Firm Turnover	0.139		0.046	0.756	-0.004	0.077	N/A
Industry Agglomeration Externality							
Industry agglommeration externality on innovation			0.361	5.613	0.361***	5.521	Supported
Industry agglommeration externality on corporate venturing			0.307	4.910	0.307***	4.953	Supported
Industry agglommeration externality on strategic renewal			0.248	3.465	0.248***	3.413	Supported
Industry agglommeration externality on perceived sectoral growth			0.126	1.631	0.192***	2.772	Supported
Intrapreneurship							
Innovation on perceived sectoral growth			0.228	2.902	0.262***	3.948	Supported
Corporate venturing on perceived sectoral growth			0.015	0.240	-0.012	0.218	Not Supported
Strategic renewal on perceived sectoral growth			0.098	1.271	0.025	0.368	Not Supported
Institutions							
Formal institutional roles on perceived sectoral growth			0.184	2.469	0.186***	2.739	Supported
Informal institutional roles on perceived sectoral growth			0.040	0.616	-0.020	0.317	Not Supported
Moderators							
Formal institutional role x innovation					0.039	0.314	Not Supported
Formal institutional role x corporate venturing					-0.042	0.659	Not Supported
Formal institutional role x strategic renewal					-0.013	0.196	Not Supported
Informal institutional role x innovation					0.139	1.422	Not Supported
Informal institutional role x corporate venturing					-0.156*	2.297	Supported
Informal institutional role x strategic renewal					-0.15†	1.707	Supported
R^2		0.095		0.302		0.368	

Adjusted R^2	0.084	0.279	0.334
NFI		0.648	0.648
Q^2			0.224

ŧ p<0.10
* p<0.05
** p<0.01
*** p<0.001

4.9.3 Effects of industry agglomeration externality on the constructs of innovation, corporate venturing, strategic renewal, and sectoral growth

The hypothesis (H1) that industry agglomeration externality has positive relationship with innovation is supported (*β=0.361, t=5.521, p=0.000*). This affirms that manufacturing industry in Ghana stimulates the collective efforts of its clustered firms to innovate. As a result, access to natural endowment of inputs, availability of pool of labour and spillover of intellectual assets and technology are enabled in the creation of innovation for the industry.

The second hypothesis (H2) that industry agglomeration externality has positive relationship with corporate venturing is also significantly supported (*β=0.307, t=4.953, p=0.000*). It means that the collective efforts of manufacturing industry to create new ventures and business are stimulated by the industry agglomeration. Hence the growth of firms within manufacturing cluster in Ghana has the effects of attracting new manufacturing firms into the sector through the agglomeration benefits of entrepreneurial capital, labour pool, and availability of intermediate inputs. Such growth in the industry in terms of creation of new firms, new products and new technological processes was witnessed within the last fifteen years.

For the hypothesis H3, the positive relationship of industry agglomeration externality with strategic renewal is supported (*β=0.248, t=3.413, p=0.001*). This shows that the manufacturing sector of Ghanaian economy enjoys the benefits of having its structural, process and content foundation renewed in order to confront the evolving innovation activities within the industry.

The fourth hypothesis (H4) that there is a positive relationship between industry agglomeration externality and sectoral growth is also supported (*β=0.192, t=2.772, p=0.006*). This signifies that the manufacturing firms within the industrial sector of Ghanaian economy benefit better from the internal and external economies of industry agglomeration and also from the dynamics of innovation and knowledge spillover within the sector. The industry agglomeration provides the vehicle whereby the collective entrepreneurial efforts of clustered

firms in terms of innovation, spillover of technology and knowledge, creation of new firms and strategic renewal lead to positive effects on the productivity of the manufacturing sector.

*4.9.4 **Effects of the Innovation, Corporate venturing, and Strategic Renewal dimensions of intrapreneurship on the Sectoral Growth***

Hypothesis H5 stating that innovation dimension of intrapreneurship has a positive relationship with the sectoral growth in Ghanaian manufacturing sector is supported (*β=0.262, t=3.958, p=0.000*). In the past three years, manufacturing industries in Ghana have laid significant emphasis on the introduction of new products, new process, and new technology. There has been pioneering technological development in the industry and the number of new products added to the market have been significant.

Hypothesis H6 that corporate venturing dimension of intrapreneurship has a positive relationship with the sectoral growth in Ghanaian manufacturing sector. The relationship between corporate venturing and sectoral growth turns out to be negative contrary to our hypothesis, therefore not supported (*β=-0.012, t=0.218, p=0.827*). This means that the broadening of current businesses, establishment of new ventures within the current businesses as well as the pursuits of novel and innovative ventures within manufacturing industry in Ghana has opposite direction to the changes in sectoral growth. This also means that the extent to which corporate venturing activities are emphasized has shown to be insignificant enough for the growth of the Ghanaian manufacturing industry.

Hypothesis H7 stating that strategic renewal dimension of intrapreneurship has a positive relationship with the sectoral growth in Ghanaian manufacturing sector is also not supported (*β=0.025, t=0.368, p=0.713*). Although, the direction of the correlation is positive as expected, however the relationship is not significant at both the t-test and p-value. This means that the emphasis that the manufacturing sector in Ghana gives to strategic renewal activities of its industries in terms of redefinition of corporate mission and concepts, adoption of flexible organisational structure and redefinition of industry-wide competition are not significant enough to lead to positive growth of the sector.

4.9.5 Effects of Formal Institutional Roles on the Sectoral Growth

Hypothesis 8 states that formal institutional role have positive relationship with the sectoral growth in Ghanaian manufacturing sector. This hypothesis is supported (*β=0.186, t=2.739, p=0.006*). This shows that various regulations, rules, and measures governing manufacturing activities in Ghana have positive impacts on the growth and productivity of the sector. In

essence, the government regulations on taxes, employment, minimum wage, business start-up and import-export of goods and services have significant effects on the growth of manufacturing sector of Ghana economy.

4.9.6 Effects of Informal Institutional Roles on the Sectoral Growth

Hypothesis 9 states that informal institutional roles have negative relationship with sectoral growth. Although the direction of relationship is negative as expected, however the hypothesis is not supported (*β=-0.020, t=0.317, p=0.751*), This means that the informal channels of sharing information and knowledge, communicating, enforcing social rules, and networking are not strong enough to lead to growth and to enhance productivity in the manufacturing sector of Ghanaian economy.

The effectiveness of the industry specific trade association coupled with the extent to which similar business and operational practices are shared to inspire innovation and increase industry growth are in opposite direction to the growth of sectoral growth.

4.10 Effects of the moderating variables of formal and informal institutional roles on the sectoral growth

4.10.1 Moderating Effects of Formal Institutional Roles

Hypothesis H10 that states formal institutional role moderates the effects of innovation on sectoral growth is not supported (*β=0.039, t=0.314, p=0.753*). This means that the extent to hwhich innovation is positively related to sectoral growth is not moderated through regulations, rules, governance that are embodied in the formal institutions.

In the same vein, hypothesis H11 that states formal institutional role moderates the effects of corporate venturing on sectoral growth is not supported (*β=-0.042, t=0.018, p=0.510*). The moderation effects came as negative against expectation. Thus, the relationship between the corporate venturing and sectoral growth is not strengthened by either regulations, rules, or governance.

The third moderating hypothesis (H12) which states that formal institutional roles moderate the effect of strategic renewal on sectoral growth is not supported (*β=-0.013, t=0.196, p=0.845*). Like H11, the moderation effects came as negative against expectation. This indicates an opposite direction of strategic renewal activities to the changes in sectoral growth in the manufacturing sector in Ghana. It therefore connotes that formal institutional

roles of regulations, rules, and governance do not strengthen the relationship between strategic renewal and sectoral growth in the manufacturing sector of Ghanaian economy.

4.10.2 Moderating Effects of Informal Institutional Roles

Hypothesis H13 is not supported (*β=0.139, t=1.422, p=0.155*). Informal institutional role does not moderate the effects of innovation on sectoral growth. This finding shows that the extent to which informality, knowledge sharing and social ties influence innovation in the nexus of sectoral growth is insignificant.

In contrast, hypothesis H14 is supported, although on a negative direction (*β=-0.156)*. This result shows that informal institutional role moderates the effects of corporate venturing on sectoral growth, and the moderation is statistically significant *(t=2.297, p=0.022*). Thus, the relationship between the corporate venturing and sectoral growth is strengthened by informality, knowledge sharing, and social ties that are established among the manufacturing industries within the sector.

The moderating hypothesis H15 is also supported but at $p<0.1$ (*β=-0.150, t=1.707, p=0.088*). This means that the informal institutional roles of informality, knowledge sharing, and social ties strengthen the relationship between strategic renewal and sectoral growth in the manufacturing sector of Ghanaian economy. Although the relationship is in negative direction to the sectoral growth of the manufacturing sector in Ghana.

4.10.3 Assessment of the R2 and Adjusted R2

The level of R^2 is defined as the coefficient of determination and it is used to measure the amount of variance in the dependent variable that is explained by the independent variable(s). According to Hair et al. (2016) the level of R^2 indicates the explanatory power of the model.

The overall effect size (R^2) for the complete model in this study is 0.368, meaning that ~37% of the changes in sectoral growth (being the ultimate endogenous construct) is explained by all the exogenous, control variables and the moderators that were tested for in the model.

Adjusted (R^2) for this model is 0.334. This means that the exogenous and control variables could explain 33% of the changes in sectoral growth after bias that may emanate from addition made to exogenous variables (i.e., bias) in the model. The overall coefficient of determination is significant at $p<0.05$ and at t-value ≥ 1.96.

Innovation, corporate venturing, and strategic renewal are also endogenous variables resulting from their relationships with industry agglomeration. it takes that approx. 13% of the

changes in innovation, 9% of the changes in corporate venturing and 6% of the changes in strategic renewal are explained by the construct of industry agglomeration externality.

The table below shows the explanatory power of R^2 in the complete model.

Table 36: R Square & Adjusted R Square

R Square	β (coeff.)	t-value (Bootstrap)	p- value (*p<0.05*)
INNOV	0.130	2.720	0.007
SEPUT	0.368	7.591	0.000
STRAG	0.061	1.612	0.107
VENTU	0.094	2.452	0.014

R Square Adjusted	β (coeff.)	t-value (Bootstrap)	p- value (*p<0.05*)
INNOV	0.127	2.653	0.008
SEPUT	0.334	6.541	0.000
STRAG	0.058	1.528	0.126
VENTU	0.091	2.369	0.018

4.10.4 Assessment of the Effect Size (f2)

The complete structural model was also tested for the effect sizes (f^2) for each of the six exogenous variables to determine whether their individual impacts on the changes in the determination coefficient (R^2) of sectoral growth is substantial or not. Similarly, the three hypothesised relationships among agglomeration and constructs of intrapreneurship such as innovation, intrapreneurship and strategic renewal were also tested for.

Effect Size f^2 is a measure how large or small a proportion of the unexplained variance (i.e., 1-R^2) is accounted for by changes in the overall effect size (Hair et at., 2014). Smaller effective size indicates non-substantial impacts on the R^2changes, while medium to larger size emphasise significant effects.

The effect of an exogenous variable is small if the size (f^2) is $0.02 \geq f^2 \leq 0.15$, it is medium if $0.152 \geq f^2 \leq 0.35$ and it is large if the $f^2 \geq 0.35$ (Hair et al., 2014). The size refers to the beta coefficients values. These values are also not significant considering the associated t-values (1.96) and the p-values ($p<0.05$)

The table below shows the details of the effect size for the nine hypothesised relationships.

Table 37: F Square

f Square	β (coeff.)	t-value (Bootstrap)	p- value (*p<0.05*)	Inference
AGGLO → INNOV	0.150	2.236	0.025	Medium Size
AGGLO → SEPUT	0.035	1.329	0.184	Large Size
AGGLO → STRAG	0.065	1.418	0.156	Large Size

f Square	β (coeff.)	t-value (Bootstrap)	p- value (*p<0.05*)	Inference
AGGLO → VENTU	0.104	2.134	0.033	Small Size
INNOV → SEPUT	0.059	1.710	0.087	Large Size
VENTU → SEPUT	0.000	0.027	0.979	Nil
STRAG → SEPUT	0.001	0.079	0.937	Nil
FORMI → SEPUT	0.035	1.198	0.231	Medium Size
INFOR → SEPUT	0.000	0.066	0.947	Nil
FIN*INV → SEPUT	0.001	0.042	0.966	
FIN*CRV → SEPUT	0.002	0.255	0.799	
FIN*STR → SEPUT	0.000	0.026	0.979	
IFN*INV → SEPUT	0.012	0.580	0.562	
IFN*CRV → SEPUT	0.031	1.218	0.223	
IFN*STR → SEPUT	0.020	0.818	0.413	

4.10.5 Model Fit Indices

Standardised Root Mean Square Residual (SRMR) and Normed Fit Index (NFI) are considered the fit index measures for this model. SRMR measures the approximate fitness of a model by assessing the difference between the observed correlation matrix and the model-implied correlation matrix. Recommended threshold is ≤ 0.08 SRMR indicates better fit.

On the other hand, Normed Fit Index (NFI) compares tested model with a restricted null model that assumes observed variables are uncorrelated. NFI lies between 0 and 1, with value tending towards 1 indicates good model fit (Bentley, 1990; Smith & Macmillan, 2001).

The complete Model 3 has the SRMR of 0.071 and NFI of 0.648. These two indices indicate a good model fit at the saturated level.

Table 38: Model Fit

	Saturated Model
SRMR	0.071
Chi-Square	1190.381
NFI	0.648
Chi-Square/df	2.2545

4.10.6 Predictive Relevance (Q2) of the Model

Predictive relevance of a research model is vital, as it gives the reflectively modelled dependent variable, the power of being able to be predicted by the independent variables. Blindfolding procedure of SmartPLS 3.3 was used to estimate the growth of Stone-Geiser Q^2.

The value of Q^2 must be greater than zero (0) to indicate that the model is predictive of

the dependent variable, if the value is zero (0) or negative, it shows that the model is not relevant for the prediction of the dependent variable. The size of the Q^2 also matters. $0.02 \leq Q^2 \leq 0.15$ denotes small size, while $0.15 \leq Q^2 \leq 0.35$ represents medium size. Large size is indicated as value >0.35 (Chin, 1998).

The results of the predictive relevance for this research model are Q^2 value of 0.224. This means that the six independent variables can predict 22% of the growth in the manufacturing sector in Ghana. Likewise, industry agglomeration externality can also predict the 6.4% of innovation outcomes, 5.2% of corporate venturing outcomes and 2.4% of the strategic renewal outcomes, respectively.

Table 39: Predictive Relevance (Q2)

Endogenous Construct	Q^2
INNOV	0.064
SEPUT	0.224
STRAG	0.024
VENTU	0.052

4.10.7 Multigroup Analysis (MGA)

Data for this research study was further analysed in terms of Multigroup that is pre-defined into two multigroup: industry experience (IndExp) group and education qualification EducQ) group. PLS-MGA procedure of SmartPLS methodology was used to test significant differences in each of the group's path coefficient in their relationship with the fifteen (15) hypothesised relationships and the control variables.

Multigroup Analysis can be done using parametric and non-parametric procedures that are based on bootstrapping. The procedures are basically the (i) parametric, (ii) Welch-Satterthwait and (iii) PLS-MGA non-parametric (Sarstedt, Henseler and Ringle 2011; Henseler, Ringle and Sinkovics ,2009). Basic parametric multigroup analysis assumes equal variance across the groups while Welch-Satterthwait parametric analysis do not assume equal variances across the groups.

PLS-MGA non-parametric analysis was followed as suggested by Henseler et al. 2009, coupled with the fact that the data used in the study are non-distributed. One-tailed 95% significance level (i.e., $p<0.05$) is considered in the analysis of the two multigroup.

*4.10.8 **Industry Experience Group***

This multigroup has two groups of respondents with different years of experience in the Ghanaian manufacturing industry. The first group are the respondents with 15 years and below (N=58), while the second group are the respondents with above 15 years (N=257). The following table shows the MGA.

Table 40: PLS-MGA: Industry Experience Group Difference

Path	β Industry experience ≤15years	β Industry experience ≥ 15 years	Difference (Experience ≤15years – Experience above 15 years)	p-Value original 1-tailed (Experience ≤15years vs Experience ≥ 15 years	
AGGLO → INNOV	0.398	0.341	**0.057**	0.334	not significant
AGGLO → SEPUT	0.325	0.125	**0.199**	0.141	not significant
AGGLO → STRAG	0.215	0.285	**-0.070**	0.653	not significant
AGGLO → VENTU	0.396	0.267	**0.129**	0.165	not significant
FORMI → SEPUT	0.056	0.174	**-0.119**	0.698	not significant
INFOR → SEPUT	0.307	-0.041	**0.348**	0.036	significant
INNOV → SEPUT	0.170	0.349	**-0.180**	0.840	not significant
STRAG → SEPUT	0.044	-0.037	**0.081**	0.347	not significant
VENTU → SEPUT	-0.103	-0.056	**-0.048**	0.614	not significant

The results from the above table shows that different years of experience of the respondents in the manufacturing industry of Ghana are not significant in the hypothesised relationships that are tested in this study, except for H9 (INFOR → SEPUT). This evidence indicates that both groups of respondents have same responses in terms of supports or non-supports for the results of the hypotheses that were tested.

*4.10.9 **Educational Qualification Group***

This is the second multigroup tested and it has two groups of respondents with different educational qualifications in the Ghanaian manufacturing industry. The first group are non-

graduate respondents (N=49), while the second group are the respondents with graduate and above qualifications (N=266). The following table shows the MGA.

Table 41: PLS-MGA: Education Qualification Group Difference

Path	β Non-Graduate	β Graduate And above	Difference (Non-Graduate-Graduate And above)	p-Value original 1-tailed (Non-Graduate vs Graduate and above)	
AGGLO → INNOV	0.117	0.375	**-0.258**	0.815	not significant
AGGLO → SEPUT	-0.277	0.238	**-0.514**	0.988	not significant
AGGLO → STRAG	0.319	0.248	**0.070**	0.292	not significant
AGGLO → VENTU	0.350	0.362	**-0.012**	0.357	not significant
FORMI → SEPUT	0.262	0.165	**0.097**	0.313	not significant
INFOR → SEPUT	-0.085	-0.016	**-0.069**	0.622	not significant
INNOV → SEPUT	0.161	0.282	**-0.121**	0.715	not significant
STRAG → SEPUT	0.010	0.012	**-0.002**	0.508	not significant
VENTU → SEPUT	0.345	-0.030	**0.374**	0.082	not significant

The results from the above table indicates the fact that the differences in the educational qualifications of the respondents have no significance in the hypothesised relationships tested in this study. This also means that both groups of the respondents have same responses in terms of supports or non-supports for the results of the hypotheses that were tested.

4.11 Summary of the findings

This chapter examines data collection technique, data analysis, the measurement, and structural models of relationships among the seven latent constructs of industry agglomeration externality, innovation, corporate venturing, formal and informal institutions, and sectoral growth. Control variables and moderating effects were also analysed. Fifteen hypothesised theoretical relationships among the seven latent constructs were tested using statistical tools of IBM SPSS version 24 and Smart PLS version 3.2.7.

Initial data quality checks, normality tests and factor analysis were done before proceeding to the measurement and structural equation modelling (SEM) where three different models were statistically explored and presented. In the first section, descriptive analysis of the respondents' data, measurement items of the latent constructs, data quality and normality tests were presented. The measurement of the characteristics of respondents using statistical

frequency, means and standard deviation shows satisfactory response rates (78.8%) on the average.

Similarly, the degree of responsiveness to the reflective measurement items that underlie the main constructs, and which were measured using statistical means, standard deviation and standard error of means were also acceptable. The standard error of mean for most of the items were within the limit of 0.6. Hence, the value of the means for the measurement items accurately represents actual population.

Common method bias test was done using multicollinearity test of Variance Inflation Factor (VIF) and Harman's single factor analysis. It was found that the values of VIF for the measurement items and latent constructs are below 3.3 suggested by Kock (2015). The result of the Harman's single factor shows that one factor explains 24.6% of the total variances of the thirty-three factors that were finally retained in this study. The outcome of the two tests suggests that there is no common method bias, hence the issue of multicollinearity does not arise.

Normality diagnostics were done using Skewness, Kurtosis, Kolmogorov-Smirnov, and Shapiro-Wilk tests. The results of these tests point to non-normality of the data. This means that the assumptions of parametric (normal) distribution of the data collected and used cannot be validated. Non-normally distributed data are acceptable for subsequent statistical analysis using SEM. Lastly, there were no missing values.

Section 2 of this chapter establishes factor analysis the necessity to conduct the analysis is to determine if all the measurement items within the defined scales, load on the same construct or on more than a construct. Principal component analysis (PCA) of SPSS software was used to analyse the factor loadings.

The results from the factor analysis were based on three outcomes. First, Kaiser-Meyer-Olkin (KMO) test of correlation assumption, followed by Bartlett's test of relationship assumption and lastly, the factor loading extraction using varimax orthogonal rotation.

The KMO measure shows result of 0.873. This means that there is high correlation among the variables which indicates reliability in the pattern of correlation and the factor analysis. Bartlett's test shows result of chi-square (3,576), degree of freedom (df.528) and significance value ($p<0.05$). This means that there are strong relationships among the hypothesised variables that are considered in this study, hence the reliability in the factor analysis. Lastly, the rotated factor matrix shows that seven factors were finally extracted and loaded on their appropriate constructs to measure. There are thirty-three measurement items

that underlie the extracted factors. These results depict that the measurement items that were loaded did actually measure the latent constructs that they originally intended to measure.

The final part of this chapter shows how the complete structural equation modelling (SEM) was conducted using Smart PLS 3.2.7 version. SEM was analysed in two stages: first, the outer measurement model which measures the relationship between measurement items and their latent constructs. This model was assessed for reliability, convergent validity, and discriminant validity. The results of the reliability tests show that cross loading coefficients for each item is greater than 0.7 threshold suggested by Chin (1998), the composite reliability, Cronbach alpha and AVE values are greater than the thresholds recommended by Hair et al, (2016).

Next is the inner measurement model that tests the relationships among the 7 latent constructs and the associated fifteen hypotheses formulated. This model was fully assessed having ensured that the measurement model is reliable. Bootstrapping procedure of Smart PLS SEM tool was used to determine significance levels of the structural path coefficients for the hypothesised relationships among the constructs. Resampling iteration method, using 5,000 sub-samples in replacement of the original 315 samples was adopted following the recommendation of Henseler et al. (2015). The results of the structural model assessment show that eight (8) out of the fifteen (15) hypotheses were supported.

On the robustness of the complete model, the level of coefficient determination (R^2) shows that 37% of the variance or changes in the sectoral growth is explained by the model, while the assessment of effect size (f^2) for each independent variable on the sectoral growth is smaller and not significant.

The model demonstrates good predictive relevance (Q^2). The result shows that the six exogenous constructs can predict at least 22% of the sectoral growth of the manufacturing sector of Ghanaian economy.

Finally, multigroup analysis was done using two separate categories: industry experience and educational qualifications. Each category has two groups. Industry experience has a group with 15 years and below experience on one hand and on the other hand, experience above 15 years. Regarding education qualifications category, the first group consists of non-graduate while the other group comprises graduate and above.

The results of the two categories shows that there are no significant differences in the responses of the informants from either group irrespective of their differences in industry experience or in their educational qualifications.

Chapter 5: Discussion and Conclusions

5.1 Introduction

Intrapreneurship in relation to economic growth has consequence of industrial growth through economic activities of aggregate firms within an industry. This is because entrepreneurial activities have been found to contribute positively to the evolution of industries and foster economic growth. Strong industrial cluster provides high employment growth and wages for firms within the cluster and also from a related industry, while new growth opportunities from emerging industries are encouraged (Delgado, Porter & Stern, 2012). A region or a country with many entrepreneurial firms enjoy better economic growth. However, the higher the entrepreneurial activities in an industry, the greater the turbulence in that industry with the consequence of numerous entries and exit of firms (Audretsch & Thurik, 2003).

Studies also have it that the relationship of entrepreneurial activity and economic growth is driven by formal and informal Institutional factors in a diverse way. There is evidence that informal institutional roles of corruption control and skill confidence have impacts on the nexus of entrepreneurial activity and economic growth more that the formal institutional role of regulation has (Aparicio, Urbano & Audretsch, 2015). There is also an evidence that the impacts of formal institutions on the economic growth depends on the degree of economic development (Álvarez, Amorós, & Urbano, 2014). In this respect, unemployment regulations have positive impacts on intrapreneurship in developed countries but not in the developing nations.

Similarly, economic activities of government impact the relationship of intrapreneurship and economic growth differently. While production and financing activities of the government positively influence the relationship, welfare activities of the state negatively impact such relationship (Bjørnskov & Foss, 2013).

In the extant literature, collocation of industry has also been focused as a precursor in the relationship of intrapreneurship and industrial growth. The case of natural resources endowment driving industry agglomeration and creating industries and urban employment is an evidence of a significant relationship between intrapreneurship and urban employment growth (Glaeser, Kerr & Kerr, 2013). However, heterogeneity of firms within an industry cluster, industry type, and spatial proximity of the industry do have significant influence on the growth and performance of clustered firms within their location (Duschl, Scholl, Brenner, Luxen & Raschke, 2014).

In this study, the research questions highlighted in chapter one was fully answered and some of the hypothesised relationships among the constructs were supported. Some of the findings of this study show that firms of different manufacturing activities in Ghana cluster within the sector to exploit benefits of location and nearness. This suggests that the manufacturing sector of Ghanaian economy was able to stimulate collective efforts of its clustered industries to innovate, renew entrepreneurial strategies, create new firms, and enable technology and knowledge spillover.

5.2 Summary of major findings

The effects of all the independent latent variables on the sectoral growth in the manufacturing sector of Ghana were analysed and presented in three different structural models. Model 1 analyses only the effects of the four control variables on sectoral growth. This means that the relationship among industry type, firm age, industry technology, firm turnover and the sectoral growth were established and the effects of the four control variables on the sectoral growth were investigated.

The major findings in this model shows that three out of the four control variables (firm age, industry technology and firm turnover) have positive relationships with the sectoral growth of the manufacturing sector in Ghana, while industry type has negative relationship with the growth. This model also established that 9.5% of changes or variances (R^2) in the sectoral growth are explained by the four control variables.

The second structural model (Model 2) combines the four control variables with the six independent variables to analyse the relationships and effects of all the exogenous latent variables on the sectoral growth in the manufacturing sector. In this model, nine hypotheses (H1-H9) were tested alongside the four control variables. The determination coefficient (R^2) of the model increased to 0.302 from 0.095 in the prior model, suggesting that the six independent and the four control variables were able to explain at least 30.2% of the changes in the sectoral growth of Ghanaian manufacturing sector.

However, five of the nine hypotheses tested (H1, H2, H3, H5, and H8) were supported while the other four hypotheses (H4, H6, H7 and H9) were not supported. The pattern of relationships and effects of the four control variables on the sectoral growth remains as they were in model 1, except that industry type variable has become significant.

The third and the last structural model focuses on the detailed analysis and presentation in this study. This model adds the six moderating effects to the model 2 to establish both the

relationships and effects of all the exogenous variables and the moderators on the sectoral growth in the Ghanaian manufacturing sector.

Having ensured that the measurement model is reliable, the significance levels of the structural path coefficients for the fifteen hypothesised relationships among all the constructs were determined. Bootstrapping procedure of resampling iteration method using 5,000 sub-samples in replacement of the original 315 samples was adopted to establish the significance levels of the hypothesised relationships, following the recommendation of Henseler et al. (2015). The results of the structural paths of the tested relationships show that eight out of the fifteen hypotheses tested were supported, while the remaining seven hypotheses were not supported. In the hypothesised relationships excluding moderators, six out of the nine hypotheses (H1, H2, H3, H4, H5 and H8) were supported while the remaining three hypotheses (H6, H7 and H9) were not supported. Out of the six moderators, two moderating effects (H14 and H15) were supported while the remaining four moderating effects (H10, H11, H12, and H13) were not supported.

It follows that all the exogenous variables combined with the control variables and the six moderators' effects explain 36.8% of the variances in the sectoral growth. This shows a further improvement in the determination coefficient (R^2) in this model compared to the 30.2% in model 2. The intrapreneurship dimensions of innovation, corporate venturing and strategic renewal are also seen as endogenous variables relative to the industry agglomeration externality and sectoral growth. Hence, the agglomeration externality explains 13% of the changes in innovation, 6.1% of the changes in strategic renewal and 9.4% of the changes in corporate venturing.

The assessment of predictive relevance (Q^2) using cross validated redundancy approach of blindfolding in SEM results in a value of 0.224 which is greater than zero as suggested by Henseler et al, (2009). This means that the model could predict up to 22.4% of the sectoral growth given new sets of data of the exogenous variables or omitted data of such variables. In the same manner, industry agglomeration externality could predict 6.4% of innovation growth, 2.4% of strategic renewal growth and 5.2% of corporate venturing growth, respectively.

The overall fit for this model as depicted by SRMR and NFI indicate fit values of 0.071 and 0.648, respectively. These two indices show that the model demonstrates good fit (Smit et al., 2001; Bentler, 1990).

5.3 Discussion of results

The findings of the fifteen hypothesised relationships that are subjected to empirical test are discussed below:

5.3.1 Industry agglomeration externality and Innovation dimension of intrapreneurship:

In hypothesis 1, it is argued that industry agglomeration externality has a positive relationship with innovation dimension of intrapreneurship. Findings from this study support the argument with significant relationship. The result also shows that the relationship between the two constructs is statistically significant. This finding is an evidence to the fact that sectoral aggregation of manufacturing firms in Ghana is an important factor in innovation and it enables the clustered manufacturing firms to exploit the benefits of technological changes and knowledge spillovers which consequently define innovative products, process, technology and other disruption in the sector. This result supports Fujita and Thisse (2003) who argue that agglomeration has positive impacts on innovation, particularly when there is a trade-off between industry growth and spatial equity. This means that industry agglomeration enhances sectoral growth when its impacts on innovation outweigh and compensate for the loss of industry that accompanied the innovation.

Most of the manufacturing industries in Ghana are clustered in Greater Accra region, particularly in Tema industrial zone. This spatial agglomeration affords the industries the opportunities to exploit the benefits of the locational externalities such as diversity, competition, resource pooling and knowledge spillovers to foster innovation in new products, new processes and new technology.

For instance, local manufacturers such as Kasapreko, Fan Milk, Voltic and Twellium among others, were able to innovate their products and processes resulting in new varieties of beverages and also replacing their old-known glass bottling packaging with new plastic packaging. This consequently impacted plastic and rubber industry with knowledge spillover innovation. The clustering of the Ghanaian manufacturing firms has also shown innovativeness in the process of reaching their customers via on-line and digital marketing, thus signalling departure from the traditional customer facing marketing.

This agglomeration driven innovation in Ghanaian manufacturing sector attests to the literature which emphases that industry agglomeration improves sharing of information and flow of ideas to foster product, process and technology innovation (Ellison et al., 2010) and also the existence of a meso-level collaboration among clustered firms positively impact innovation within the industry (Block et al., 2016).

The result also lends credence to Acs and Varga (2005) who found that industry agglomeration effects on innovation via technological changes and knowledge spillovers is positive and statistically significant.

5.3.2 Industry agglomeration externality and Corporate Venturing dimension of intrapreneurship:

The second hypothesis which states that there is a positive effect of industry agglomeration externality on corporate venturing is also supported and such relationship is significant. The study shows that the Ghanaian manufacturing sector stimulates the collective efforts of its agglomerated firms to create new firms and new entrepreneurial ventures. This research finds support for Baptista and Swann (1999) whose empirical result shows that the strength of an industrial subsector in a particular location or region attracts entry of new firms. Similarly, Block et al. (2016) affirm that industry cluster positively influences entry of start-up firms.

Within the past five to ten years, the Ghanaian manufacturing sector has witnessed emergence of new firms within the clustered industries, predominantly in the plastic and rubber industry and food and beverage industry. The study affirms that agglomeration externalities of the existing firms contributed immensely to the births of the new firms. However, the study also noted that the effects of industry agglomeration on the creation of new entrepreneurial firms and new ventures are still sparse in context of Ghanaian manufacturing sector.

5.3.3 Industry agglomeration externality and Strategic Renewal dimension of intrapreneurship:

The hypothesis that industry agglomeration externality positively relates to corporate strategic renewal is supported and the relationship is significant. This study finds evidence that the manufacturing sector of Ghanaian economy inspires collective efforts of its clustered industries to renew their foundational strategies and strategic directions. There are further evidences that show that some of the firms within the plastic and rubber industry, food and beverage industry and pharmaceutical industry took the opportunity of the growing clusterisation of their industries, coupled with emergence of technology innovation to redefine their organisational structures and processes as well as repositioning their business models to adapt to the constantly changing and disruptive industry.

Manufacturers such as Promasidor, Duraplast, Fan Milk, among others are few to mention regarding strategic renewal of their entrepreneurial foundations which are driven by some of the externalities of agglomeration such as competition and diversity, to mention few.

It is very clear that these emerging disruptions that are influenced by new technology and discovery of new opportunities within the sector are key challenges to the long-term stability and prosperity of some of the firms in the industry if they fail to innovate and reposition themselves strategically to cope with those industry-wide disruptions. This situation has made plastic and rubber industry and the food and beverage industries seen strategic shifts in organisational structure, business models and industry composition in the past ten years.

5.3.4 Industry agglomeration externality and Sectoral Growth:

With regard to hypothesis that the relationship between industry agglomeration externality and sectoral growth is positive, this study finds positive and significant relationship. This finding is in line with some related studies that found industry agglomeration as a positive influence of industry growth and also a significant variable that encourages the pace at which the industrial sector grows (Block et al., 2016; Duschl, Scholl, Brenner, Luxen & Raschke, 2014; Brülhart & Sbergami, 2008).

This study shows evidence that agglomerated manufacturing industry in Ghana offers diverse opportunity for growth in market demands, consumer demands and new product introduction over the past three years. It also affords the sector, various opportunities for future growth considering the emergence of new businesses and ventures within the sector in the last five to ten years. This result also supports Kerr and McDougall (2019), stating that the existence of agglomeration economies in Ghanaian manufacturing sector has largely contributed to the employment and productivity growth in the country's manufacturing industry. It also supports the literature which suggests that clusterisation of firms within a certain industry should have potentials for higher growth (Delgrado et al., 2012).

Unlike related studies in Ghanaian economy that define sectoral growth in terms of employment growth (Kerr and McDougall, 2019), we define sectoral growth in terms of the growth in aggregate firms' growth of the manufacturing sector in Ghana. The structure of the survey questionnaire to elicit response helps in getting evidence as to how the industry agglomeration contributes to the growth in growth of the sector. The combination of innovation disruptions, emergence of new manufacturing firms and the ability of some of the industry to reshape its foundations culminate in the growth of manufacturing sector in the last three years.

In line with the postulation of Stuetzer et al. (2017), this study shows that manufacturing sector in Ghana exhibits considerable level of industry agglomeration that tends to grow the sector's growth that are driven by externalities such as competition, diversity, resource pools, knowledge spillovers, specialisation and other locational advantages within the Greater Accra industrial zone.

5.3.5 Innovation and Sectoral Growth

Part of the objectives of this study is to empirically test for the relationship between innovation dimension of intrapreneurship and sectoral growth in the Ghanaian manufacturing sector. This hypothesis is found to be supported and significant. The size of the beta-coefficient indicates that if innovation expands within the sector by 1%, the sector will witness a corresponding growth of 26.2%.

This finding confirms some of previous related studies. For example, Zahra (1996,1993) finds that in a dynamic environment of clustered manufacturing industries, innovative dimension of intrapreneurship has a positive and significant relationship with industry performance in terms of sales and profitability growth. Galindo and Méndez-Picasso (2013) also found that innovations have positive influence on sectoral economic growth and majority of factors or processes that encourage innovation in an industry also stimulate the growth of such industry.

This study reveals that manufacturing sector in Ghana lays good emphasis on development of new products and also encourage the rate at which the new products are introduced into the market. In the past three years, the food and beverage industry and plastic and rubber industry have witnessed various form of innovation in their products, processes and technology, while new products have also been introduced in remarkable significance. Promasidor, Twellium, Kasapreko, Duraplast, Interplast among others have introduced new products or new variants of their existing products. In addition, most of these firms have been enabled by the emerging disruption in logistics and marketing to embrace new process and technology in moving their products and reaching their customers via various digital platforms and on-line business models.

There is no gainsaying the fact that the emerging innovation which has impacted the sectoral growth positively was accompanied with increased spending in research and development (R&D) costs as well as advertising costs. The finding shows that the emphasis that the manufacturing industries lay on the amounts spent on innovation activities are good and significant, hence the resultant effects on the growth of the sector turns out to be positive and significant.

This study also finds that Ghanaian manufacturing sector largely embraces adopted technology that is peculiar to a category of industries that are clustered within the sector. This means that the technology process of manufacturing might be common in the industry, but is usually adopted by various firms at different stages. However, with emergence of disruption in technology, the rate at which the new technology would further be adopted might be

influenced and this may also have some attendant effects on the growth in the sector's economic growth.

Beyond the technology adoption, few industries within the sector are found to be pioneers in a new technology. Plastic & Rubber industry and Metal and Iron Steel industry are instances. Thus, the technological innovation in the sector is largely premised on these two variants and this is evidenced in the research finding that a good emphasis is laid on technological innovation and pioneering technological development in the manufacturing industries in Ghana.

5.3.6 Corporate Venturing and Sectoral Growth:

One of the hypotheses on intrapreneurship dimensions is that the birth of new businesses and ventures through corporate venturing is positively related to sectoral growth (in the manufacturing sector of Ghana. This hypothesis was not supported. This argument that new manufacturing firms and/or new ventures emerging in the sector will grow the growth of the sector was neither supported nor significant (β*=-0.012; p=0.827*).

Our finding in this aspect was contrary to the findings of a related study of Zahra (1993) which affirms that in a dynamic environment of clustered manufacturing industries, corporate venturing dimension has a positive and significant relationship with the industry sales growth and most importantly with the industry financial performance such as profitability.

In this research, it turns out to be that the corporate venturing activities and entrepreneurial initiatives thereof, lead to opposite direction of growth in the Ghanaian manufacturing industry. Hence, the negative relationship between the corporate venture and sectoral growth in the industry. Although, some new products and new firms have been observed in the food and beverage manufacturing and plastic industries in the last three years, the establishment and sponsoring of several new firms as well as expansion of current business operations to tap into the emerging disruption opportunities in the sector have not been very successful, hence the adverse effects on the growth in the sectoral growth.

It is also evident from the findings of this study that irrespective of good emphasis that is placed on pursuits of new businesses in new industries that are related to the existing textile and apparel, chemical and pharmaceuticals and pulps and paper industries, the corporate venturing efforts in this direction do not lend positive results to the growth in the growth of such industries. Similarly, the efforts of finding new niches for the existing products in these industries yield no positive correlation to the growth of these industries. Leaning on Lin and Lee (2011), corporate venturing as a dimension of intrapreneurship, does impact sectoral

growth in "*contingency with industrial characteristics*" but it seems rarely impact growth alone. However, having high spatial proximity of manufacturing industries in Greater Accra and in Kumasi is expected to inspire the creation of new manufacturing firms or ventures.

5.3.7 Strategic Renewal and Sectoral Growth:

Following the hypothesis on the nexus of corporate venturing and sectoral growth, another hypothesis made on the dimension of intrapreneurship and sectoral growth is that strategic renewal has a positive relationship with the sectoral growth in the manufacturing sector of Ghanaian economy.

This hypothesis was not significant in spite of the fact that the two variables are actually positively related. This means that in the dynamic environment of manufacturing industry in Ghana, the activities of its clustered firms in terms of reformulation or reconstruction of their missions, business foundation and changes in their entrepreneurial visions are not significant enough to grow the growth of the sector. This finding is opposite to the previous related study by Zahra (1993) which found that in a cluster of manufacturing industries, strategic renewal dimension of intrapreneurship is positively related to the growth of sales and financial performance of the industry, and the relationship was statistically significant.

The major implication of this hypothetical relationship as shown in this finding is that the emphasis that the manufacturing sector has laid on the redefinition of its industries to compete, adoption of flexible organisational structure to examine new innovation ideas, and making required resources available for experimental projects are all inadequate to influence the growth of the sectoral growth and to encourage future growth opportunities.

With this finding ($\beta=0.025;\ p=0.713$), some of the strategic renewal efforts of the selected sample of industries within the manufacturing sector are placed on good emphasis, however, the relationship is seen as not significant enough to improve growth in the growth of the sector. Although, strategic renewal activities of the intrapreneurship have positive or negative consequences for the manufacturing firms in the industry in which they compete, such activities may surpass industry transformations or structural changes and can fail the industry in achieving required growth, especially if the causes for the renewal is not well comprehended or the underlying conditions for the renewal was not given thorough examination (Basu & Wadhwa, 2013).

This finding also reveals the dark side of strategic renewal in the literature which stresses that strategic renewal could either be in form of continuous incremental changes or discontinuous transformations. Nonetheless, the impact of strategic renewal goes beyond mere

technological innovations to enable growth of any organisation or industry (Agarwal & Helfat, 2009).

5.3.8 Formal Institutional Roles and Sectoral Growth:

Institutional environment in which the clustered manufacturing firms operate in Ghana was also hypothesised as one of the exogenous variables that drive sectoral growth in the country. In this respect, the hypothesis that states that formal institutional roles are positively related to sectoral growth was supported, and the positive relationship was also significant (*β=0.186; p=0.006*). The formality of institutions that was considered in this study is basically the government regulatory environment which embodies taxes, supports for business start-ups, finance and investment credits, import and exports regulations to guide and support different manufacturing industries within the sector.

Our finding confirms that, relevant regulatory agencies of government do have direct influence on the growth of manufacturing sector in Ghana. There are enacted laws that regulate corporate and personal taxation, employment and related labour wages in the country and with specifics to the Ghanaian entrepreneurship business development. These laws are seen to be effective and positively encourage the growth of growth in the Ghanaian manufacturing industries.

This particular finding is in consonance with some related studies on the effects of regulations and public policies on intrapreneurship and economic growth (Aparicio et al. 2015; Bosma, Contents, Sanders & Stam, 2018; Bjørnskov & Foss, 2013) which support our hypothesis that formal institutional roles positively promote aggregate firms' growth within the Ghanaian manufacturing sector

There are also some effective policy regulations that are specifically put in place to encourage and support business start-ups and nascent innovation, provide finance capital and credit assistance, enhance export orientation and domestic productivity in the manufacturing sector of the economy. For instance, a comprehensive industrial policy was launched in 2011 with the aim of enhancing the growth, diversification, productivity and competition of Ghana's manufacturing sector. The enabling contexts and instruments of this industrial policy focused on making Ghana a middle-income country by 2020. In recent time, the government policy of one district one factory and one village one dam has also demonstrated the success paths to the growth of manufacturing sector in the country.

In the context of literature review, this study finds support for the evolutionary understanding of regulation as one of institutional roles that directly relates to and affect

growth of sectoral economic growth. Bradley and Klein (2016) argue that "*political regulatory*" plays vital roles in promoting or constraining entrepreneurship and its consequences, because institutions are the "*rules of the game*" which legally permits or set boundaries for entrepreneurship behaviours and actions that determine economic performance.

However, the focus on meso-level institutions with specific policies geared towards manufacturing industry and clusterisation provides this study with some leverage to bridge gaps between macro and micro levels of institutions through agglomeration environment that is composed of various stakeholders, of which the regulatory agencies of government is prominent.

5.3.9 Informal Institutional Roles and Sectoral Growth:

The negative relationship between informal institutional roles and sectoral growth as hypothesised was not significant. Although, the hypothesised relationship was found to be negative (β=*-0.020*), the relationship was neither supported nor significant (*P=0.751*). In this case for instance, if collaboration and information sharing efforts among the clustered industries deteriorate by 1 unit of measure, then the growth in the industry would fall by 0.02 unit. However, the negative relationship is not significant to support the hypothesis.

This result indicates that the informal channels of sharing industry-wide knowledge, collaborating to conduct informal business activities, networking, and building social relationship were not significant enough to impact the growth of Ghanaian manufacturing sector in spite of the fact that those informality variables move in the same direction with the sectoral growth as hypothesised. This finding also confirms the result of related research that suggests that informal institutions play fewer dynamic roles in 'direct relationship' with economic growth (Thornton et al., 2011).

In the literature, informal institutions either in form of political or socio-cultural role, is expected to create shared values for all the stakeholders within the business environment and also expected to complement or compensate for the weakness or gaps in the formal institutions (Zoogah, et al., 2015; De Castro et al., 2014). Our finding suggests that the conduct of informal business activities within the manufacturing sector are not predictable, hence the expected complements or compensation for formal institutions might be missing.

5.3.10 Moderating Effects of Formal Institutional Roles on Innovation and sectoral growth relationship:

There is no evidence in this study to show that the extent to which innovation is related to sectoral growth in Ghana's manufacturing sector is moderated by the regulations of tax, employment, labour wages, financial capital, financial credit, and export and import. Hence our hypothesis that states the nexus of innovation and sectoral growth was moderated by formal institutional roles was not supported. This result contrasts Bjørnskov and Foss (2013) that argue that institutional policies either moderate or mediate the effects of entrepreneurial activities on growth.

This finding therefore reveals that innovative activities of the clustered manufacturing industries in bringing new products, new process and new technology for the growth of the sector were not significantly influenced by various regulatory regimes of the Ghanaian government agencies. There is possibility that the industry might often find those regulatory policies complex and counter-productive to the growth of the manufacturing sector and to some industry-specific innovative projects, hence they tried as much as possible to avoid such regulations to a large extent (Gnyawali & Fogel, 1994; Aparicio et al., 2015).

We therefore argue in support of our finding that, discovery of innovative opportunities in Ghanaian manufacturing industries is not significantly influenced or moderated by the current regulatory environment. Hence, the formal institutions can hardly be posited as an important determinant in the moderation of innovation in the manufacturing sector of Ghana.

5.3.11 Moderating Effects of Formal Institutional Roles on Corporate Venturing and sectoral growth relationship:

Similar to the outcome of the hypothesis on innovation moderation, formal institutional roles do not moderate the effects of corporate venturing on sectoral growth in Ghana's manufacturing industries. This finding aligns with related studies which found that start-ups businesses are discouraged with so many rules, procedures and regulations to follow (Álvarez & Urbano, 2011; Aparicio et al., 2015). This subsequently have negative impacts on the entrepreneurship growth for a sectoral economy or country's economy at large.

The negative correlation (β =-0.042) of the moderating effect indicates that, the complex or costly the regulations on taxes, employment or incentives are, the less the emergence of new industries or ventures that could lead to the growth of the sectoral economy. This correlation already substantiates the negative direct relationship between corporate venturing and sectoral growth.

Further, the regulatory environment is dictated by the level of economic development across sector or country and this implies that the effects of moderation on start-ups will be of different dimension. For instance, Klapper, Laeven and Rajan, (2006) found that "*costly regulation*" is perceived as impediments to start a new business in the industry that is naturally inclined to high entry. This situation can also be likened to Ghana's manufacturing sector which is opened to high entry of new manufacturing industries. However, the ranking of ease of doing business in Ghana has deteriorated in year 2020 when compared with previous years (World Bank).

5.3.12 Moderating Effects of Formal Institutional Roles on Strategic Renewal and sectoral growth relationship:

The third moderating effects of formal institutional roles as hypothesised in this study was also not supported. The roles of government regulation in terms of tax, labour wage, employment and financial credits do not influence the nexus of strategic renewal and sectoral growth in the Ghanaian manufacturing sector.

Our finding reveals that the extent to which the regulations affect the 'renewal-growth' relationship is negative (β =*-0.013*). This means the more the regulations, the less the industries see the impacts of their structural changes, vision shifts, leading to growth in the growth of the sector. This situation can be seen as a furtherance of the non-significant effects of direct linkage between strategic renewal efforts of manufacturing industries and the growth in growth of the sector.

In the literature, strategic renewal aims at helping entrepreneurial firms reshaping their business models, visions and foundations to cope with or influence their external environment (Agarwal & Helfat, 2009). However, this fundamental changes at times are influenced by various government policies and regulations which may enable the firms to strategically transform themselves or otherwise. With our finding, there is no positive momentum at which regulations moderate strategic transformation of Ghanaian manufacturing industries to improve growth of the sector.

5.3.13 Moderating Effects of Informal Institutional Roles on Innovation and sectoral growth relationship:

The positive relationship between innovation and sectoral growth in Ghana's manufacturing sector was not moderated by the informal institutional roles of collaboration, informal channels of sharing information, mutual social rules and networking. Hence our hypothesis

H13 was not supported. Our finding shows that the growth of the clustered industries within the manufacturing sector was not influenced by the presence of informal channels of trade groups like Association of Ghana Industries, Ghana Manufacturers Association, etc neither by the network and social rules within the clustered environment.

Although, informal institutions can either enable or constrain the dimensions of intrapreneurship in achieving or improving sectoral growth, our hypothesis (*H13*) suggests that the meso-level institutional roles stated above exert some influences on the innovative activities of the manufacturing industries in Ghana. An explanation for this result could be that the high level of informality in Ghanaian economy might have created so many limitations to the organised manufacturing sector which leads to the clustered industries redefining their choices and fill the gaps in their own ways rather than optimising the collaborative and social relationships that have been created in the sector. Thus, weakening the fabrics of networking among the manufacturing industries.

5.3.14 Moderating Effects of Informal Institutional Roles on Corporate Venturing and sectoral growth relationship:

On the contrary to our hypothesis (*H13*), informal institutional roles moderate the emergence of new manufacturing industries that grows the sector. This evidence supports our hypothesis (H14). However, the correlation coefficient is negative ($\beta = -0.156$), meaning that the informal roles of Ghanaian institutions move in opposite direction to the new firms' creation within the industrial sector. In this instance, if the collaborative efforts, networking and social rules are reducing by 1%, there is 15.6% probability of new firms being created that will harness the growth of the sector.

This evidence in reality suggests that intense collaboration, informality in channels of communication or sharing knowledge do not help the sector create new firms, rather the diminutiveness of those activities facilitates the emergence of new industries within the manufacturing sector. As observed earlier, our hypothesis on the direct relationship between corporate venturing and sectoral growth was not supported. The relationship was also negatively directional.

Nonetheless, this study supports some related research on the influence of informal institutions on corporate venturing dimension of entrepreneurship (Estrin, Korosteleva & Mickiewicz, 2013; Aparicio, et al., 2015) particularly on the skills and confidence endowed with individual industries to create new firms rather than shared knowledge or collaboration

among the industries which might likely be seen as weak roles coupled with unpredictable conduct of informal businesses of the industries within the sector.

5.3.15 Moderating Effects of Informal Institutional Roles on Strategic Renewal and sectoral growth relationship:

The moderating effects of the informal institutional roles on the strategic transformation of manufacturing industries in Ghana are significant enough to improve the growth of the sector. With this finding, our hypothesis H15 was supported, albeit at 99% level of confidence (*p=0.088*). This evidence allows for the proposition that strategic renewal and transformations of entrepreneurial industries can be influenced by the degree of collaboration, effective networking and sharing of knowledge and relevant industry information. This observed moderating relationship has shown an impactful growth in the growth of the Ghanaian manufacturing sector.

Accordingly, some manufacturing industries in Ghana have shown to reposition their business models, strategic visions and corporate objectives. For instance, Kasapreko extends its business territory beyond Ghana to take exports opportunities, while Duraplast has also extended its focuses of production and selling of pipeline products to the industry plastic tanks and plumbing engineering services to take advantage of prevalent disruptions in the industry.

5.4 Multigroup Analysis: Industry Experience

The result of the multigroup analysis that was done on the two categories of industry experience of the respondents to our survey questionnaire do not show significant differences in responses to the hypothesised paths of relationships. We classified the two groups as group 15 years or below and the other group as 15 years and above.

Industry experience is very critical to the content validity of the survey questionnaire we administered in this study because those respondents that are well versed in the manufacturing industry in Ghana and understand the entrepreneurial activities of most of the industries, would understand better and appreciate the contents of the survey instruments. As a result, their sense of judgement on the questionnaire items could prove to be reliant upon.

In our finding, the difference in the responses relating to the paths of industry agglomeration externality and intrapreneurship dimensions are not significant as the probability values of the difference is higher than the statistical significance value ($p<0.05$). However, the link of the relationships was seen to be stronger in the group of respondents who have the industry experience for 15 years and above.

Similarly, for the institutional roles and sectoral growth relationships, the linkage is seen stronger in the group with experience above 15 years. However, there is a significant difference in responses for informal institutional roles and sectoral growth ($p=0.036$). In this instance, the negative correlation of the relationship ($\beta = -0.041$) was influenced by 257 respondents, whereas the correlation of the relationship ($\beta = 0.307$) was seen positive by the remaining 58 respondents. This significant difference could be informed of constantly changing informality regarding knowledge sharing, level of collaboration, evolving networking in the recent times which are changing the perceptions of the older experienced respondents of some antecedents of the past.

Finally, the relationship between the three dimensions of intrapreneurship and sectoral growth was seen stronger mostly in the group of respondents with 15 years and below, except for the nexus of strategic renewal and sectoral growth.

5.5 Multigroup Analysis: Education Qualification

The second multigroup analysis done was on the differences in respondents of the group that are non-graduate compared with the ones that are graduate and/or professional. In this analysis, 49 of the respondents are non-graduate, meaning that they do not have university or Diploma qualifications. The other group has 266 of the respondents with university qualifications and some professional certificates.

To seek content reliability and validity further, we attach reasonable sentiments of educational knowledge in addition to years of industry experience. Reasonably educated respondents would be able to read and understand the survey questionnaire by themselves without seeking undue assistance in completing the questionnaire from someone else. This means that the responses to our questionnaire will be adjudged independently completed and influence-bias is avoided.

Our evidence on the finding, shows no significant differences in responses between non-graduate and graduate respondents. This indicates that for all the hypothesised paths of relationships, graduate respondents have the same views as those of non-graduate respondents. Except for the industry agglomeration externality and corporate venturing nexus, the other paths for industry agglomeration externality relationships are seen stronger in the respondents who are non-graduate.

Likewise, for the intrapreneurship dimensions paths of relationship with the sectoral growth, the linkage was seen to be stronger for non-graduate respondents, except for the link between corporate venturing and sectoral growth. However, the linkage between the

institutional roles and sectoral growth was seen to be stronger in the respondents that are graduate and above.

5.6 Implications of the findings

Contributions to the literature and empirical dimensions of entrepreneurship and institutions phenomena through the systematic reviews and the findings from the testing of hypothesised relationships of explanatory and criterion variables that are focused in the study cannot be over emphasised. Valuable insights and appropriate policy recommendations on the gaps observed in the policies and strategic framework of intrapreneurship in the manufacturing sector of Ghana were also provided to the relevant policy stakeholders and key intrapreneurs in the industry.

Further, the attention of scholars was directed to the need to expand the frontiers of intrapreneurship beyond the micro and macro concepts of entrepreneurship domain. It is now ripe to position the concept of 'sectoral entrepreneurship' on a meso-level of entrepreneurship domain, and hinged it on the agglomeration of industries by focusing industrial sector as a unit of observation and analysis.

In essence, the bridging of the theories of new institutionalism, new (endogenous) growth and externality into a unique platform of sectoral entrepreneurship shows the remarkable contributions the study has made to the literature and theory development. Of equal importance to the domain of entrepreneurship is also the contributions to the improvement in existing policy framework and strategy for developing intrapreneurship activities of innovation, new business creation and strategic renewal in the manufacturing sector of republic of Ghana in the form of recommendations and strategic insights.

The theoretical implication of the study offers two significant contributions to the extant literature. First, the adoption of the theory of new institutionalism as the base theory that encompasses diverse issues across the domains of entrepreneurship, economic performance and industry. Although, the theory of new institutionalism stresses the imperatives of formal and informal institutions, it is largely focused on informal roles of institutions, and connotes that the structure of industries is embedded in the social and political environment where the intrapreneurial activities are seen as reflections or responses to the rules, norms, beliefs and conventions that prevail in the immediate and larger environment.

We established that the theory of new institutions is reflected in the domain of industrial sector where it ensures social stability among the clustered industries, enforce legality within the sector and facilitate economic growth of the sector. The theory also manifests in the

endogenous growth theory where economic policies and institutional settings are critical to long-run growth of the manufacturing sector driven largely by innovation and technological improvement. It also follows that informants' response to our survey questionnaires reveal wider representation of institution constructs across the domain of study. Thus, positing institutions as a base theory that encompasses and unifies most of the issues problematised in the domains of study.

The second theoretical implication is the bridging of the three theories adopted in the study; new institutional theory, new (endogenous) growth theory and theory of externality. We take a novel approach to the theory-binding by synthesised the phenomenon of sector-based entrepreneurship, adopted systemic reviews of the domains and their related theories, and conceptualised 'all-inclusive' model of relationship among the constructs. The distance between micro and macro concepts of entrepreneurship was not only established but also contextualised in terms of meso-level where unit of observation and analysis is a sector of the aggregate manufacturing industry in Ghana.

However, our research does not lose the sight of the common antecedents alluded to intrapreneurship such as innovation, corporate venturing and strategic renewal. This is an attempt to remedy the failure of management scholars in binding and unifying diverse theories that are embedded in the domains of entrepreneurship.

The empirical and methodological implications of the study stems from the fact that the heterogeneity of intrapreneurship dimensions of innovation, new business creation and strategic renewal across industries, institutions and growth performance limits the expectations of empirical rigours to appropriately measure and investigate the linkage of institutional roles to industry characteristics and the growth of the industry as performance consequence of the linkage. To this effect, the study made significant contributions to adopt informal and formal institutional roles as constructs that moderate the linkage of intrapreneurship to the sectoral growth in the manufacturing sector of Ghana.

Formal institutional role of regulations and informal institutional roles of shared values, social networking is primarily focused as variables that influence the relationship between the intrapreneurship activities of innovation, corporate venturing, strategic renewal and the growth outcomes of the manufacturing sector. The hypothesised relationships were empirically investigated and compared with similar studies to ensure that standards for empirical rigours were established.

On the other hand, these relationships were clearly defined to show no bias of endogeneity. There are no indications of bidirectional issues from the findings, as the focus is

primarily on the direct relationship between intrapreneurship within the domain of manufacturing sector, and the growth of the sector. The extent of the interactions to strengthen the sectoral growth is moderated by the influences of regulations, shared values and social networking.

Not only the contributions to strengthening empirical rigours were made, the study has also made huge and remarkable contributions to the methodology designs in the study of industry agglomeration externalities, formal and informal institutional roles. In the problem statement, we stated that in the extant literature of economics and entrepreneurship, there is a lack of measurement scales and standardised questionnaires that are formally developed and adopted for the constructs of industry agglomeration externality, formal institutional roles and informal institutional roles in the context of intrapreneurship and sectoral growth relationship.

This follows that, the lack of data instrument that establishes psychometric properties of measuring industry agglomeration externality and institutional roles in the relationship of intrapreneurship and sectoral growth is a gap that is due to apparent lack of methodological rigours, as what exist in the extant literature are mostly not relevant or compatible with an intended empirical investigation of the relationship among industry agglomeration externality, intrapreneurship dimensions and sectoral growth on one hand, and the relationship between the institutional roles and the sectoral growth on the other hand.

In resolving the gap and de-emphasise why standardised questionnaires and Likert scales were not normalised in the literature for these constructs, new scale items regarding novel questions and Likert measurement scales were developed for the constructs of industry agglomeration externality, formal institutional roles and informal institutional roles respectively.

In the case of industry agglomeration externality, ten (10) items on a five (5) Likert scales were developed based on the conceptual dimensions of industry agglomeration espoused by Delgrado, Porter and Stern (2015), Audretsch and Thurik (2019, 2003), and Chartterji, Glaeser and Kerr (2014), although six (6) of them were confirmed after factor analysis (CFA). In the case of formal and informal institutional roles, seven (7) items on a five (5) Likert scales were developed for each of the constructs separately, and the question items and the Likert measurement scales were based on the conceptual dimensions advocated by Krasniqi and Desai (2016), Álvarez, Amorós and Urbano (2014), and Simon-Moya, Revuello-Taboada and Guerrero (2014). Three (3) items were confirmed for each of the constructs after CFA.

In developing the new Likert-scaled questionnaires for the three constructs, we follow deductive approach where the constructs have already been conceptualised theoretically, and premised the relevant steps of creating scales and items using the approaches enunciated by Capenter (2018), Tay & Jebb, (2017), Morgado, Meireles, Neves, Amaral and Ferreira (2017), and Churchill (1979). First, as mentioned earlier, the constructs were well defined in line with the conceptual meanings and breadth given to them by scholars who have studied and empirically investigated the constructs. Afterwards, the well-defined constructs were subjected to conceptual labels through coding in order to identify potential dimensions of the codes. From these coded potential dimensions, relevant questions were derived and the brevity of the itemised questions and Likert scales were also established. We bear it in mind that having measurement scales with many items would be more reliable with the higher Cronbach Alpha value (De Vellis, 2003) and short scales are better for Likert measurement than the long scales (Morgado et al., 2017).

The developed scaled questionnaires which were subjected to critique and reviews from academic colleagues and my supervisor, were later pilot-tested (Hair, Money, Samuel & Page 2002). Necessary reviews were made and the instruments were normalised and standardised for final survey administration to the study informants. The success of the developed scaled items coupled with the impressive rate of responses have helped to resolve the methodology gaps concerning the lack of reliable and valid data sourcing instruments for the constructs of industry agglomeration externality and institutional roles as raised in the problem statement.

With these remarkable contributions to the improvement of methodology designs, the developed measurement scale items can be adapted by scholars to operationalise data for similar or related research studies.

Equally, the methodology gap concerning the operationalisation and measurement of growth in the sectoral economy is resolved. In extant literature, growth of an industrial sector has widely been posited as economic growth of the sector which is usually depicted by gross domestic product (GDP) or related sectoral output indicators such as industrial productivity growth, labour productivity growth, employment growth etc. In the analysis of sectoral economic growth, the conventional macro-economic definitions and measurement of growth, has become a subject of complexity and ambiguous (Aitken, 2019).

In this context, the conventional sectoral economic growth metrics of GDP, labour productivity growth, employment growth, etc., are replaced with the simple to understand scaled items that reflect proxies to the same growth metrics. Hence, the adoption of perceived growth as alternative to the conventional economic growth. The analysis of the responses of

the proxied metrics using standardised questionnaires has revealed findings that are similar to the related studies in which secondary data were sourced and regression analysis was employed.

It follows that the use of perceived growth measures that are proxied for conventional growth in the manufacturing sector of Ghana also afford scholars the opportunity for simplicity in prediction ability where combined independent variables can predict the potential outcomes of the dependent variable. This predictive ability represents one of the robust checks embedded in the methodology adapted without recourse to a multiple and cumbersome ways of robust checks using secondary data and econometric analysis.

Correspondingly, the complexity and rigours of secondary data and econometric analysis that are usually deployed to intrapreneurship unit of analysis, has been demystified by identifying industry-specific growth variables of which data are directly and reliably sourced from the informants in the industry and analysed using alternative regression in form of structural equation modelling (SEM). Our adaptation of Zahra (1993)'s construct of sectoral growth in the manufacturing sector of Ghana has helped further problematise the issue of data source and measurement as a key determinant in the differences that emanate from empirical findings of related studies in entrepreneurship and sectoral economic growth research.

The other implication for this study is the potential contributions to the policies, framework and strategy of entrepreneurship in form of policy suggestions and recommendations to the two major stakeholders; the government and the entrepreneurial managers within the industry. Several scholars have argued the importance of institutions and intrapreneurship in the development of sectoral and national economy (Acs, et al., 2018; Audretsch, Belitski & Desai, 2015). This inference was justified by the findings of this study.

We found that innovative dimension of intrapreneurship and regulation dimension of formal institutions do influence the growth of the manufacturing sector of Ghanaian economy. Industry collaboration and knowledge sharing were also confirmed to moderate the effects of corporate venturing and strategic renewal on the sector's growth. In the long term, this growth trajectory can lead to economic development and stability of the manufacturing sector in Ghana.

From the perspective of government policy on entrepreneurship development in Ghana, this study offers some salient insights on what institutional and entrepreneurial activities impact economic growth and development most, particularly in the manufacturing sector. In 2011, Government of Ghana launched industrial policy that aims at positioning the country as a middle-income nation by the year 2020. The policy mainly focused on the growth,

diversification, upgrading and competitiveness of Ghana's manufacturing sector. The policy has 21 thematic areas to hinge its context, objectives and prescriptions, and was broken down into 4 components, namely; production and distribution, technology and innovation, incentives and regulatory, cross-cutting issues.

As laudable as the policy is, its strategic thrusts are yet to optimally manifest in the growth of the manufacturing sector in the country. In this context, we suggest that the committees and policy stakeholders that are saddled with the execution of the industrial policy might find this study useful to fully implement the policy and to bridge gaps that might have been impending flawless execution.

First, the opportunities offered by clusterisation of manufacturing industries in geo-locations like Tema, Spintex Road and Kumasi have not been fully explored by the government to enhance innovation, corporate venturing and strategic renewal. These opportunities which are flow of inputs, labour pooling, diversity, competition, specialisation, logistic costs optimisation and knowledge spillover are abundantly visible in the agglomeration externalities of the industries.

We recommend that the current industrial policy (2011) be reviewed to accommodate reforms in the incentives regime of industry agglomeration in Ghana. In this instance, an expansion of manufacturing free zone and strategic industry parks in selected cities across Ghana could help expand and grow the manufacturing sector significantly.

Second, this study reveals those innovative activities of the manufacturing industries in Ghana, particularly in the food and beverage and plastic industries are positively related to the growth of the sector. Nonetheless, the relevant institutions and government agencies to drive innovation in the industry (e.g., Ministry of Science and Technology) are not well connected to the industrial environmental disruption and as such, are unable to exploit industrial and technology innovation and knowledge spillover required to grow the sector.

In the light of this study, we strongly recommend that the government policy on industrial funding of research and development (R&D) be reviewed with the objective of eliminating restrictive regulations that hinder the efficiency of R&D. Further, government should improve the access to grants and incentives to manufacturing industries to help explore and exploit innovations. Similarly, research centres and academic institutions for innovation and technology development should be properly funded to help build skills, capacities and capabilities across the manufacturing industries in Ghana. This can be done with the collaboration of the association of Ghana industries and association of manufacturers in Ghana.

Lastly, it is evident in this study that formal institutional roles positively relate to the growth of the Ghanaian manufacturing sector but informal institutional roles do not. Consequently, both institutional roles do not moderate the effects of innovation dimensions of the intrapreneurship on the sectoral growth. In this context, there is possibility that the prevailing regulations on taxes, employment, access to credit, etc. have become barriers rather than supports and prevent the industries to exploit innovative opportunities.

For the policy makers in the Ghanaian manufacturing sector, we recommend that the industry policy (2011) together with the prevailing investment policy and trade policy be calibrated to include thematic areas that are specifically directed to the following:

- Focus on reducing cost of establishing manufacturing industry and operating such (i.e., cost of doing business)
- Reduce barriers to localisation of manufacturing industries and cross-border trade activities
- Ensure safety and protection of manufactures through effective courts and legal infrastructure (e.g., property rights)
- Help setting good standards within the industry that enable adaptation to disrupting technology
- Encourage and support multilateral programmes that enhance industry affiliation, collaboration and networking (i.e., trade-fairs, industry tours, innovation awards, etc)

Not only that this research study contributes immensely to the literature and government policy of intrapreneurship, it also has implications for the entrepreneurial managers who steer the activities of innovation, new business creation and business transformation, and also for other key stakeholders such as manufacturers associations, chamber of commerce and industry.

One of the findings in this study is that informal institutional roles of collaboration, networking, social rules, etc., moderate the effects of new business creation and corporate business transformation on the growth of manufacturing sector in Ghana. This therefore signifies the important roles of entrepreneurial managers in harnessing relevant knowledge, information and social capital from within the sector to complement their skills and capabilities.

Manufacturers, directors and managers that are saddled with the responsibilities of strategic thinking, innovation-seeking and opportunity discovery would find this study helpful in strategizing entrepreneurial opportunities of different dimensions including institutions and

industry agglomeration orientations. The study has demonstrated that entrepreneurship conceptualisation goes beyond firm and country levels. Industry focus as a meso-level of entrepreneurship would equip intrapreneurs with knowledge base that offers competitive advantages. This is because of the findings that networking, sharing of industry or sector specific information, collaboration are key ingredients to the development of managerial and technical competence of the industry managers and industry knowledge spillover.

Good business strategies are devoid of information asymmetry, ambiguity in environmental analysis and inconsistent strategic vision. This study affords opportunity in terms of theory binding, multi-disciplinary approach to intrapreneurship, novel antecedent in form of sector-based entrepreneurship, all of which helps in the navigation of entrepreneurial strategy that are beneficial to the manufacturing industry owners, managers, industry associations, etc., for formulation and execution.

On the other hand, this study would facilitate the thinking and acting of sectoral entrepreneurship in the process of manufacturers building economic growth. Simply because corporate managers would be more exposed and disposed towards accumulating social capital values that will see the sector growing, truly competitive, innovative, technologically developed and less rivalry.

5.7 Limitations of study

The contributions of this study to the literature, theory-building, policy making and entrepreneurial strategy as enunciated above, cannot be overemphasised. However, this study also faces some theoretical and empirical limitations. These constraints define the boundary of the research and therefore calls for further research.

The theoretical limitation is linked to the concept of sectoral entrepreneurship and industry agglomeration externalities, while the empirical limitation is related to sampling size and data analysis.

To begin with, there is no clear-cut position of ‘sectoral’ entrepreneurship in the literature. Several authors have adopted the concept of industry as a unit of analysis (Audretsch & Thurik, 2003; Braunerhjelm, 2010), but this has no semblance of the meaning of sector-based entrepreneurship espoused by De Massis, Kotler, Wright and Kellermans (2018). This difference might cause confusion as the industry context of entrepreneurship would be interchanged for sectoral economy. In a separate ambiguity, clusters are often used by economics scholars to define group of industries and by extension as a sector. This also is

undoubtedly misrepresenting the definition of a sector as against the concept of cluster being defined as an agglomeration of industries irrespective of sectoral affiliation.

Sectoral economy is a subset of national economy and it is composed of a clustered industry of like businesses. On the other hand, industry is an aggregate of like firms. This is the more reason that this research study has positioned sector as a meso-level of economic activity, and followed the concept of *'sector-fluidity'* of De Massis et al. (2018) to argue that the concept of industry is significantly different from the concept of sector in the study of entrepreneurship phenomenon.

The next theoretical limitation is the potentiality of bi-directional relationship between industry agglomeration externalities and the intrapreneurial constructs of innovation, corporate venturing and strategic renewal. In entrepreneurship research, it is not uncommon to see the relationship between criterion and predictive variables being studied on a bi-directional approach (Elert & Henrekson, 2017; Hartog, parker, van Stel & Thurik, 2010) to inform researcher on possible intrinsic behaviours that might be hidden in bivariate relationship.

In a sectoral-based entrepreneurship, the thrust of relational influence is the industry agglomeration, because industry co-location breeds a sector. It is in this respect that we hypothesised and investigated that industry agglomeration externalities positively influence innovation, new business creation and strategic transformation but not the otherwise.

Given that those dimensions of the intrapreneurship might also shape the relationship and outcome of industry agglomeration externality, further study should be extended to conceptualise the influence of those intrapreneurship dimensions on industry agglomeration.

The third theoretical limitation is that the construct of industry agglomeration externality is given holistic analysis in this study rather than individual components. This approach therefore, limits the study to the commonality of the agglomeration externalities, and do not posit the operationalisation and measurement of individual externality. For instance, notable externalities of industry agglomeration have been defined as diversity, specialisation, competition, knowledge spillover, labour pooling, suppliers pooling, natural endowment, transport and logistic cost advantages (Ellison, Glaeser & Kerr, 2010; Parr, 2002; Glaeser, Kallal, Scheinkman, & Shleifer, 1992).

Alongside the theoretical limitations, there were also some empirical limitations. First, this study focuses on a single sector rather than multi sector analysis. By focusing on sampled industries of a single sector, this study may not benefit from the hindsight of what sector

largely drive the performance of Ghanaian economy. Multi-sector analysis may provide these insights in terms of comparisons, impact assessment, and sector peculiarities.

Undertaking the approach of multi-sectoral analysis in a study of entrepreneurship with the context of sectoral aggregation of industries can illuminate the understanding of sectoral performance better than industry performance within a given sector (Bryan, Jones & Munday, 2005; Cecchetti & Kharroubi, 2014).

Second, the simplicity of survey data collection employed in this study ignores the actual quantitative performance of the sector that the secondary data would have offered. In the survey questionnaire administered, responses were sought on the performances of the sampled industries within the manufacturing sector on scaled items. Although, these items are proxies for the actual performances, the statistical data from Bank of Ghana on the performance of the sector as against individual industries performance may provide deeper findings for the research. In this context, the mix of primary and secondary data is likely to offer bi-dimensional data analysis where data required for dependent variables (i.e., the criterion) could be sourced from secondary data and the one for the independent variables (i.e., predictors) could be sourced using survey questionnaire.

Third, the study adopts cross sectional data instead of longitudinal studies primarily because of the peculiarity of doctoral research which has a defined boundary and timing limitation. The possibility to widen the scope of the study from just establishing relationship or correlation to include an inference of causality and ability to control heterogeneity, can be facilitated when the study is subjected to longitudinal studies. Particularly for the sectoral growth data where the variables can be observed repeatedly for some numbers of periods within the defined timeline of the dissertation.

5.8 Suggestions for future research

Our suggestions for future research are focused on two important premises. First, the limitations highlighted in this study, and second, the quest to bridge the gap in the literature between micro and macro-level entrepreneurship by expanding the frontiers of industry sectors to leverage on meso-level study of entrepreneurship.

First and foremost, we believe that the academics should pick up debate on sectoral entrepreneurship as a concept that is different from the industry view of entrepreneurship, irrespective of the fact that they are usually interchanged. Since this concept is currently not popular or underplayed in the extant literature, there is a need to deepen the understanding of the antecedents and consequences of the concept of sector-based entrepreneurship as the third

layer (i.e., meso-level) of the notion of entrepreneurship aside the firm (i.e., macro) and country (i.e., macro) levels of entrepreneurship. It is therefore suggested, that entrepreneurship research efforts should be geared towards the correction of ambiguity in extant literature that links intrapreneurship to economic growth and growth.

The next suggestion is that entrepreneurship study should further research into the combination of institutional roles and industry agglomeration. In this context, focus on how and why institutional roles is related to the industry agglomeration which influences sectoral entrepreneurship should be given prominence. Economics scholars have written on both concepts, but separately and with little or no linkage. Our attempt in this study to integrate the domains of institutions and industry agglomeration would be complemented with the conceptual framework and empirical findings from this suggested research focus and could also provide extensive findings on the importance of institutions and policy making on sectoral entrepreneurship.

Closely related to the suggestion above is the endeavour to extend further study on the mediating effects of industry agglomeration externality on innovation, new firm creation and industry transformation to achieve growth in the growth of manufacturing sector. This study does not investigate mediating roles but moderating roles focusing on institutional roles and the aforesaid dimensions of intrapreneurship.

The main reason for this suggestion is that the concept of sector defines clusterisation as the route for a sector to economically flourish industries. Hence, industry agglomeration externality should be tested for mediating effects to establish if the innovation, corporate venturing and strategic renewal dimensions of the intrapreneurship could only achieve growth for the manufacturing sector through the agglomeration externalities. On the other hand, research study in this area has been sparse.

Another area for furthering this research is the suggestion for decoupling the construct of industry agglomeration externalities into components as defined in the literature (Ellison et al., 2010). This study takes the holistic view of the externalities of industry agglomeration into consideration when establishing the relationship between the dimensions of intrapreneurship and the externalities.

We suggest that further research should deepen empirical investigation on the relationship between the dimensions of intrapreneurship and one or more of the individual components of the externalities such as specialisation, diversity, competition, natural endowments, labour pooling, suppliers pooling, transport and logistic cost optimisation and knowledge and technology spillover.

The decoupling suggestion could bring additional values to the empirical evidence by strengthening a particular component of industry agglomeration externality in terms of its peculiar effects as well as its impacts on other components and the whole externality itself. This could inform policy makers on enacting specific policy instruments and intrapreneurs deploying peculiar strategy that are appropriate to the focused externality rather than 'one solution fits all' approach.

The main focus of a good doctoral thesis is to problematise issues or gaps of significant and narrow phenomenon, sampling and unit of analysis. With this respect, this study focuses on a single sector of Ghanaian economy (i.e., manufacturing) rather than focusing on multi-sectoral unit of analysis. In order to deepen this study in terms of comparison among other sectors within same Ghanaian economy, it is suggested that further research should include one or two non-manufacturing sectors particularly the financial and information technology sectors, to confirm or reject the empirical findings of this study.

This quest for multi-sectoral investigation could expose researcher to the peculiarities of certain sectors that complement some commonality of entrepreneurial challenges and opportunities in the Ghana economy which could inform policy calibration and transformation of any aspect of the Ghanaian sectoral economy.

Furthermore, an opportunity to employ the mix of primary and secondary sources of data could further improve the validity of the methodology in this type of research. Recent studies are taking the approach of multiplicative heteroscedasticity estimation methodology espoused by Harvey (1976) to analyse responses from survey questionnaires and data collected from secondary sources (Shirokova, Osiyevskyy, Laskovaia & Mahdavimazdah, 2020; Sintra & Osiyevskyy, 2018).

The idea of this approach is to investigate the effects of independent variables on the dependent variable using data collected from both primary and secondary sources concurrently. The data for the dependent variable is measured by the secondary data in two-fold. First, the *mean equation* which measures the level or actual value of the dependent variable and second, the *variability equation* which measures the extent of deviation of the actual values of the dependent variable from the predicted mean values, with higher deviation reflecting less reliability. However, the data for independent variables are measured by the responses obtained from the primary sources through the administration of survey questionnaire to the sampled informants.

Implication for this study is that the sectoral growth operationalised as growth could be measured by sourcing for growth data (e.g., sectoral GDP, industrial productivity growth,

sectoral employment growth, etc) from the Bank of Ghana or World Economic Growth (WEO) data of the World Bank. This data could then be analysed in two-fold. First, the level of the growth which is the annual growth rate and second, the degree at which the annual growth rate is deviated from the conditional or predicted mean of the growth rate. This is referred to as the variability of the mean growth rate.

The data for the independent variables of industry agglomeration externalities, innovation, corporate venturing, strategic renewal, formal institutional role and informal institutional roles can be obtained from same industry respondents via the administration of structured survey questionnaire.

It is expected that this suggested methodology could bring values to the findings on the growth of Ghanaian manufacturing sector as the actual quantitative growth data values are collected as against the proxies of growth obtained from survey respondents. Further, the variability in the growth rate as might be established using this suggested methodology could also shed some lights on the relationship between the emerging pattern or disruption in the innovation, technology and new business creation in the manufacturing sector of Ghana.

Apart from the suggestions enumerated above, this research study also made three propositions which are suggested for empirical investigation. The first proposition is that the simultaneous effects of strategic renewal dimension of intrapreneurship and sectoral affiliation dimension of institutions positively influence the perceived sectoral growth.

The second proposition is that the simultaneous effects of innovation dimension of intrapreneurship and cultural dimension of institutions negatively influence the perceived sectoral growth. While the third and the last proposition is that the simultaneous effects of corporate venturing dimension of intrapreneurship and governance dimension of institutions negatively influence the perceived sectoral growth.

The three propositions are suggested for quantitative research so as to emphasise the importance of simultaneity effects of the diverse and interconnected variables that we study and analyse in entrepreneurship research. Simultaneity means that two or more events are assumed to be happening concurrently within a given setting. Our suggestion to deepen empirical investigation into the three propositions could help the further findings as to whether the relationship between institutional roles and dimensions of the intrapreneurship on one hand, and that of the intrapreneurship dimensions and sectoral growth on the other hand, could be assumed to happen at the same time.

5.9 Summary of chapter

This last chapter of the study presents the summary of results of the hypothesised relationships among the constructs of agglomeration, intrapreneurship, institutions and the sectoral growth. The findings of the study were fully discussed and the research questions as to why innovation, corporate venturing, strategic renewal, agglomeration externality and institutions matter for growth in the growth of economy at the sectoral (meso) level were answered.

Not only that industry agglomeration externality has positive and significant relationship with innovation, new business creation and business transformation dimensions of intrapreneurship, it also has a direct positive relationship with the growth of manufacturing sector in Ghana. This study also finds that innovation and formal institutional role of regulation both have positive relationship with the growth of Ghana manufacturing sector.

However, the direct relationships of corporate venturing, strategic renewal and informal institutional roles, with the growth of Ghanaian manufacturing sector was found to be insignificant. Similarly, this study finds that the relationships between the three dimensions of intrapreneurship were not moderated by the regulatory institutions of the Ghanaian government. In the same vein, the informal institutional roles of industry collaboration, networking, shared knowledge do not influence the relationship between innovation and growth of manufacturing industries in Ghana. In contrast, the study findings reveal that the relationships between corporate venturing and sectoral growth on one side, and that of the strategic renewal and sectoral growth on the other side were both influenced by the informal institutional roles.

Aside the results of the hypotheses, this study proceeded to establish multigroup analysis to investigate if there are significant differences in respondents' characteristics that might likely impact or moderate the hypothesised relationships of the research variables. In this respect, two distinct groups in form of industry experience and educational qualifications were analysed on the survey responses sampled.

The finding was that, for all of the hypothesised relationships, there is no significant differences in responses of informants with either short- or long-term experiences in the manufacturing industry in Ghana. So also, in the responses of informants with or without graduate educational qualifications. These results affirm the content validity of the structured items and scale in the survey instrument as well as the sample methodology that was adopted.

In this chapter, the implications and limitations of the study were presented. Further research studies that could help expand the conceptual and empirical notions of sectoral entrepreneurship that go beyond firm, regional and country levels were also suggested. With

respect to the study implications, this research offers contributions to both the theoretical and methodological realms of intrapreneurship.

First, the study has attempted to integrate or bind theories of entrepreneurship, agglomeration, institutions and performance into a unique domain of sectoral entrepreneurship. With the critique, synthesis and reviews of theories and empirical evidences from diverse research studies from scholars in the field of economics, management, strategy, industrial sociology, economic geography, etc., this study has come out with a novel model that conceptualise sectoral entrepreneurship, and the theoretical framework was subjected to empirical test in the manufacturing sector of Ghana.

Second, this study not only highlights areas of policy gaps in the development of entrepreneurship in Ghana, it recommends some possible solutions for the policy makers and corporate stakeholders to take advantage of. The current industrial policy in Ghana which is the main road map to industrialise the manufacturing sector of Ghanaian economy needs complete overhaul. The policy framework of manufacturing Industry agglomeration also needs to be strengthened to allow for transformation, technology innovation and new crops of manufacturing firms and ventures.

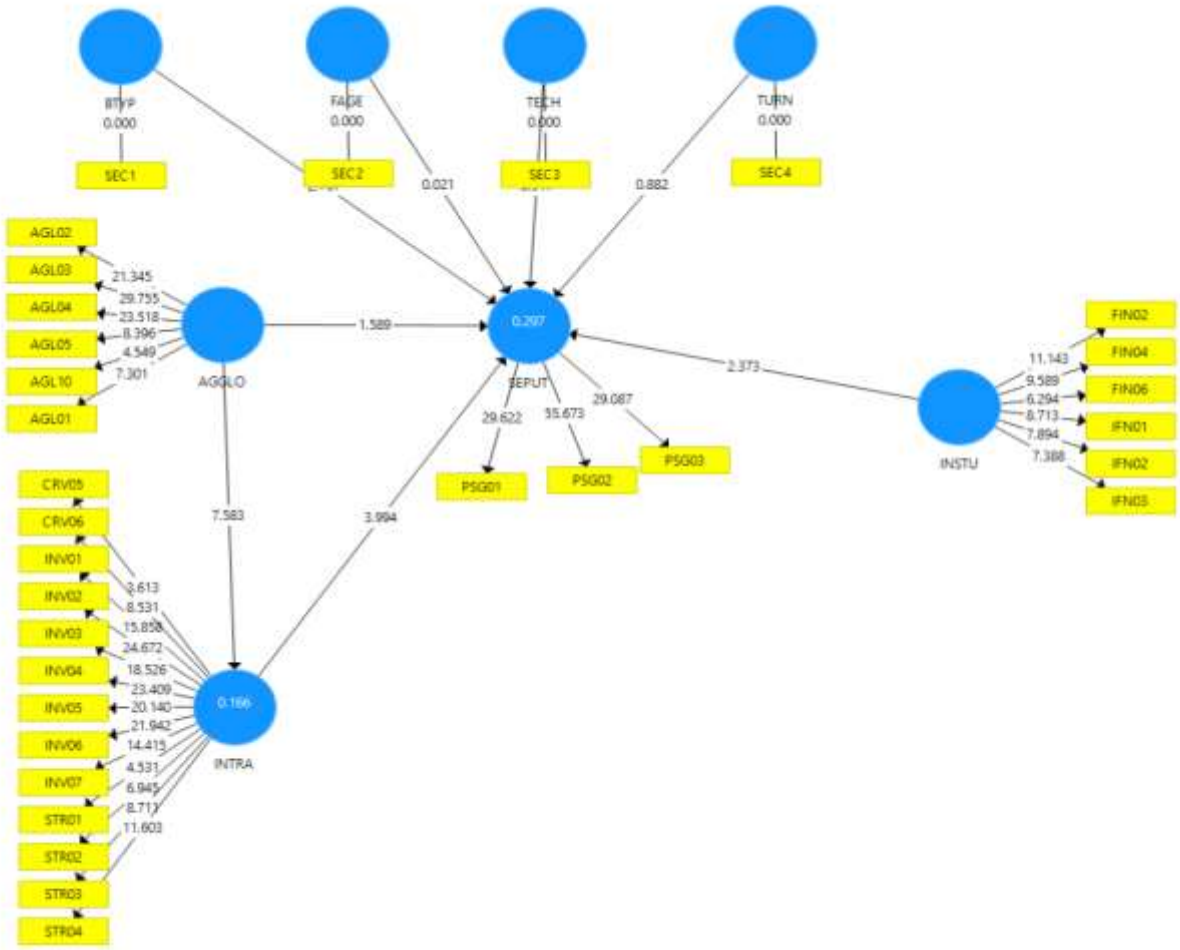
This dissertation put forward some limitations and suggested that some of them need further theoretical and empirical studies to expand the frontier of the intrapreneurship research. Few of these limitations are; (i) inability to study multi-sectors in the Ghanaian economy rather than the single sector study, (ii) the ambiguity and no clear-cut definition of sectoral entrepreneurship which has widen the dichotomy of industry and sector analysis in the study of entrepreneurship, and (iii) focus on the holistic approach in the operationalisation of the construct of industry agglomeration externalities, instead of decoupling the construct into its components and focus on one or two of them.

Lastly, there are three propositions that were made in this study but were not tested. This is an attempt to bring into focus of literature, the significance of simultaneity of the research variables conceived in the relationships that were hypothesised in this study. It is of interest that future study looks deeper into the simultaneous effects of some of the relationships that we hypothesise for the seven constructs and in particular the three propositions suggested.

For instance, an empirical finding should be endeavoured for the simultaneous effects of innovation and regulatory policy on the growth of manufacturing sector in Ghana. In conclusion, this research study has been able to achieve its objectives of theory critique, synthesis and integration as well as developing and testing conceptual model of sectoral entrepreneurship.

Appendix A

Composite conceptualisation of the phenomenon of Intrapreneurship



The findings as shown above confirm the widely held belief in the extant literature concerning the composite conceptualisation of the constructs of intrapreneurship and institutions.

Appendix B

SMARTPLS Output: Intrapreneurship Composite Conceptualization Model

Structural Model

Latent variable Correlation

	AGGLO	INSTU	INTRA	SEPUT
AGGLO	1.000			
BTYP	-0.136			
FAGE	0.114			
INSTU	0.468	1.000		
INTRA	0.408	0.434	1.000	
SEPUT	0.358	**0.402**	**0.443**	1.000
TECH	0.110	0.135	0.184	0.186
TURN	0.221	0.051	0.284	0.191

Structural Path	**β (coeff.)**	**t-value (Bootstrap)**	**p- value (p<0.05)**
AGGLO -> INTRA	0.408	7.583	0.000
AGGLO -> SEPUT	0.119	1.589	0.112
INSTU -> SEPUT	0.189	2.373	0.018
INTRA -> SEPUT	0.279	3.994	0.000

Specific Indirect Effects	**β (coeff.)**	**t-value** (Bootstrap)	**p- value** (*p<0.05*)
AGGLO X INTRA -> SEPUT	0.114	3.373	0.001

Total Indirect Effects	**β (coeff.)**	**t-value** (Bootstrap)	**p- value** (*p<0.05*)
AGGLO -> SEPUT	0.114	3.373	0.001

R Square	**β (coeff.)**	**t-value (Bootstrap)**	**p- value (*p<0.05*)**
INTRA	0.166	3.678	0.000
SEPUT	0.297	4.751	0.000

Model Fit Summary

	Saturated Model	**Estimated Model**
SRMR	0.078	0.089
d_ULS	3.197	4.200
d_G	0.671	0.704
Chi-Square	1176.602	1209.446
NFI	0.652	0.643

Note on the constructs: **AGGLO**-Agglomeration Externality; **INTRA** – Intrapreneurship; **INSTU** - Institutions

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