Radboud Universiteit

Institutional Voids and Firm Innovation

Examining the role of firm-specific capabilities to mitigate the effects of institutional voids on firm innovation in emerging markets.

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Date:	17-06-2024

Word count: 13.637

Abstract

This thesis examines the relation between institutional voids and firm innovation in emerging markets. Also included are moderator variables in the form of firm characteristics that potentially mitigate the adverse effects of institutional voids on firm innovation. In order to measure these variables, data from the World Bank Enterprise Survey has been used. The statistical analysis has been done through logistic regression. The results show that institutional voids levels do impact innovativeness of firms in emerging markets. Furthermore, the results regarding the moderator variables show positive, direct effects of internationalisation, foreign ownership, and managerial experience on firm innovation. However, no moderating effects have been found. The robustness checks show results in line with the primary analysis, but also deliver some interesting new findings.

Keywords

Firm innovation, institutional voids, emerging markets, formal institutions, internationalisation, foreign ownership, managerial experience firm characteristics.

Paper type

Master Thesis

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1. Introduction

Emerging Markets (EM) as the hidden gems of the economy. Looking at the potential for growth and the opportunities present, one can argue EMs to be just that, hidden gems. As a consequence of the globalisation era (Erixon, 2018), international trade has increased and enormous growth has been realised. The events of globalisation have resulted in the fact that firms in emerging markets increasingly have been faced with opportunities and challenges. With international trade comes an increased level of competition, requiring firms to have both high productivity and arguably more important: innovative capabilities.

Bradley et al., (2012) argue that innovation is key and accounts for a different part of growth compared to the traditional input of labour, capital and scale effects, talking about developed countries. In developing countries, however, innovation has often been focused on as the changes in infrastructure or institutions (Bradley et al., 2012). More recently, more attention has been directed towards market innovation in these parts of the world as well. What must be noted is the fact that in Emerging Markets (EMs) it takes more than motivation or the initial step for investment to foster innovation. According to Khanna & Palepu (2010), countless institutions are necessary to facilitate the simple and more complex transactions between buyers and sellers in different markets. Institutions can be considered the 'rules of the game' in these transactions (Doh et al., 2017) and can reduce transaction costs and uncertainty (Barasa et al., 2017) . In EMs, however, these "specialized intermediaries" are missing. This creates obstacles that firms need to face in order to do business.

The obstacles or market failures in EMs are understood in the literature as '*Institutional Voids'*. Institutional Voids (IVs) can be defined as "the lacunae created by the absence of the missing intermediaries" (Khanna & Palepu, 2010, p.14). In other words, the absence of intermediaries in different markets creates gaps that firms need to bridge. Examples of such obstacles can be the three main sources of market failure identified by Khanna & Palepu (2010), i.e. (1) absent or unreliable sources of market information, (2) an uncertain regulatory environment, and (3) inefficient judicial systems. Other examples of IVs are weak enforcement of regulations and absence of intellectual property rights (Barasa et al., 2017), corruption, excessive rents and market power (Doh et al., 2017).

In some cases, firms can adapt to the circumstances, which are partly caused by IVs, by adopting or developing certain characteristics. Characteristics that might benefit the firm are dependent on several factors, for instance firm age and experience. Since the effect of IVs on firm innovation has been a frequent research topic (Barasa et al., 2017; Saka-Helmhout et al., 2020), this thesis focuses on several moderating firm-specific capabilities that can potentially weaken the adverse effect: (1) internationalisation, (2) foreign ownership and (3) managerial experience.

Firstly, internationalisation allows a firm to take their existing capabilities abroad and engage in a process of exploration and exploitation (Lessard, 2014). In other words, firms can engage in activities outside of their home market to explore and develop new capabilities that can enhance their existing product, service, or process. As a result, for instance, a firm's competitiveness might increase. Also, it might be that the newly developed capabilities can offset some of the negative effects of IVs on firm innovation.

Secondly, as resources are not consistently available in the context of emerging markets, having foreign ownership as an emerging market firm may compensate for this. Emerging firms can potentially draw on the resources, network and institutional environment of the foreign firm. This can potentially enable firms to innovate or take away some of the adverse effects of IVs.

Finally, in a firm managers can acquire experience on operating in these contexts. This may result in the fact that the firm does not experience the adverse effects as negatively as when they started. Because of the managers' experience to deal with the circumstances given, they might opt for different choices and the firm therefore can manoeuvre through the external environment (Barasa et al., 2017).

1.1 Problem Statement

Emerging markets are considered to be the new main sources of economic growth. Both domestic and foreign firms are looking to capture the opportunities present in these markets. Consequently, the context of emerging markets is suitable to research further. To realise growth, firm innovation is the necessary path to take for firms within both developed and emerging markets (Schumpeter, 1934). This, however, is easier said than done in emerging contexts. In EMs, the market opportunities are emerging and there is great potential for growth, as the name of the concept already mentions. When firms start to operate in these settings, it is likely that

the firms will experience a lack of intermediaries, institutions and the infrastructure required to realise this growth, resulting in the concept of 'Institutional Voids'. IVs have an effect on firm innovation in emerging markets, which has been the research topic of various research projects as mentioned before.

For firms, it is crucial to understand how the organisation can be organised to alleviate the difficulties that IVs pose regarding their innovation practices. This thesis aims to identify the effect of IVs on firm innovation and whether firm-specific capabilities can mitigate some of the expected adverse effects of IVs. Thus, as introduced before this section, the three firm-characteristics, that will be further examined, are: internationalisation, foreign ownership, and managerial experience.

1.2 Research Question and Objective

To address the objective fitting with the problem statement, the following research question can be identified:

"What are the effects of institutional voids on firm innovation in emerging markets, and is this relationship moderated by internationalisation, foreign ownership or managerial experience?"

In order to address this research question, first a theoretical framework needs to be established. In this framework, the variables from the direct relation, i.e. IVs and firm innovation, will be discussed in depth, after which the concepts of the moderating relations will be examined, and hypotheses will be established.

1.3 Relevance

Theoretical relevance

Answering the research question identified in paragraph 1.2 holds a great theoretical relevance. As emerging markets are argued to be the new powerhouses of the economy as a consequence of globalisation, conducting research on the direct relation between IVs and firm innovation is highly relevant in the context of EMs. What must be noted is that this relation has been the subject of various research projects, for instance in Saka-Helmhout et al., (2020). So, where this thesis provides novelty is in its approach to this relation in the form of several moderating variables that are examined. The effect of the moderating variable of managerial on firm innovation in emerging markets has been the topic of research before (Barasa et al., 2017). The

effect of foreign ownership on firm performance has been researched by Douma et al. (2006), but the moderating effect of foreign ownership lacks this research. On top of that, research regarding internationalisation, and its moderating effect on this relation has been rather scarce. Therefore, in combination with the examination of foreign ownership and managerial experience, this is the gap that this thesis attempts to fill.

Practical Relevance

Besides the theoretical relevance there is a practical relevance in answering the research question as well. For firms, there is a great relevance in finding out if the variables selected in this thesis moderate the direct relation between IVs and firm innovation. With the results of this research regarding the moderating effects, firms can establish a strategy when operating in emerging markets. Managers can, for instance, strategize in such way that foreign ownership becomes possible or internationalise if the results regarding these moderating variables are significant. Furthermore, firms can hire top managers with experience in these contexts should there be a positive moderating effect present.

1.4 Structure

Now that the problem statement has been discussed, the research question and objective have been identified and the relevance of researching this research problem has been presented, the remainder of this research is organised as follows: after examining the existing literature, a theoretical framework will be developed in the following chapter. Then, in Chapter 3 on *Methods*, all relevant choices regarding the research process will be discussed. Following the methods-chapter, the results of the conducted research will be presented and further elaborated on in Chapter 5 *Discussion.* Finally, in the final chapter of this research, all main findings and results will be summarized, after which recommendations for future research will be provided.

2. Theoretical Framework

This chapter will provide a literature review on the relevant subjects of this thesis: Firm Innovation in Emerging Markets, IVs and the firm-specific characteristics of internationalisation, foreign ownership and managerial experience. First, the concepts of the main relation, i.e. firm innovation and IVs, will be touched upon. Then, the concepts of the moderating relations will be discussed. Based on the literature review on the different concepts, a hypothesis will be established at the end of each paragraph, representing different relations. In the final part of this chapter, a conceptual model will be presented, and a visual representation will be provided in section 2.4 (Figure 1).

2.1 Firm Innovation in Emerging Markets

With the increase of competition due to globalisation and the need for an increase in productivity to remain competitive, innovation has been and still is a key activity on which firms need to focus. The innovative capabilities of firms result in growth i.e. firm growth (Ulku, 2004) and sustainable economic growth (Audretsch et al., 2014). Furthermore, the growth realised by firms not only has a positive effect on the firm or the economy, but also on society and people's well-being, resulting in a higher income per capita and living standards (Ahlstrom, 2010). With the potential growth present in emerging markets and the impact of innovation on growth, the context of firm innovation in emerging markets is relevant to research further.

Among scholars, there is not a clear-cut definition of innovation as different components have been focused on. In some studies, innovation is defined purely as product or process innovation whereas others include several components that, in their eyes, provide a more complete definition. Crossan & Apaydin (2010), for instance, propose such a definition that focuses on several aspects of innovation instead of only the 'doing things differently' (i.e. novel outputs in terms of products and services) perspective of Schumpeter (1934). Aspects that are prominent in their definition are practices that bring value-added novelty in economic and social spheres, the enlargement of products, services and markets, new methods of production and new management formation (Crossan & Apaydin, 2010).

As discussed in the first paragraph of this section, innovation has been become a necessary practice due to increased competition caused by globalisation. As globalisation has caused this competition, the definition of innovation by the Organisation of Economic Cooperation &

Development (OECD) is also highly relevant and will be leading for this thesis. The OECD (2023) defines innovation as: *"the successful development and application of new knowledge" (p.7)*. This definition is rather broad and captures all relevant aspects, from the invention of the innovation to the practices surrounding it. From their definition, the OECD identifies several different types of innovation, namely process and product innovation, breakthrough and incremental innovation (i.e. referring to magnitude) or also known as disruptive and sustaining innovation (referring to impact on the value chain and surrounding activities) (OECD, 2023). After having defined innovation and having seen examples of the types of innovation resulting from these definitions, it is relevant to discuss the reasons for conducting innovative activities. Therefore, the *drivers of innovation* will be explored next.

Drivers of innovation can be considered the reasons for innovative activity. Firstly, as mentioned before, globalisation has caused an increase in competition worldwide. As a response to globalisation, and in order to remain competitive, firms have to increase their productivity through innovative practices (Gorodnichenko et al., 2010). In the research of Fellnhofer (2017), regarding drivers of innovation in sustainable businesses it is found that the strategic choices i.e. strategic- and resource orientation influence the probability of innovation success. Furthermore, it finds that both resource orientation and management orientation increase perceived innovation success. Finally, at the individual level, the reward philosophy and entrepreneurial culture stimulates innovation success.

In emerging markets, however, the drivers of innovation are likely to be different as there are differences between the institutional environment of advanced and emerging markets. Saka-Helmhout et al. (2020) identify several drivers or paths for firms to be innovative in the absence of effective formal institutions. High levels of firm resources and effective informal institutions in the form of high levels of trust, and well-established relationships and/or networks play a key role in facilitating firms to be innovative. Connectedness is that what matters in EMs, not only firm-level resources (Saka-Helmhout et al., 2020).

In the previous sections, innovation has been defined and the reasons why firms engage in innovative practices have been presented for both advanced and even more important emerging markets. Finally, a debate on how the innovation process should look like will be discussed. One of the debates regarding innovation is that of open innovation vs. closed innovation. This unresolved question focuses on whether a firm should make all the decisions regarding product

development themselves, or keep the development process 'open' and allow for the adoption of practices and input of other players (Almirall & Casadesus-Masanell, 2010).

The debate of open vs. closed innovation is relevant in the context of emerging markets as resources are not always readily available for firms. Kafouros & Forsans (2012) argue that emerging-market-firms can benefit from opening up their boundaries of information flow as external knowledge can help them develop technological capabilities and improve their own R&D process. Open innovation can establish itself as a common pool of knowledge, accessible to all (complementary) firms in a given industry (Kafouros & Forsans, 2012). This would be beneficial for firms that might not have the internal capabilities to foster this knowledge. Greenstein (1996) in Almirall & Casadesus-Masanell (2010) argues that openness increases coordination costs due to the cooperation of multiple actors. This is something that firms must consider in these contexts as resources might not be readily available.

2.2 Institutional Voids

Nowadays, in academic research, a common understanding of the concept of IVs has been established. Referring to the work of Khanna & Palepu (2010), IVs can be defined as: *"the lacunae created by the absence of the missing intermediaries*" (p.14).

In emerging markets, buyers and sellers have difficult to enter in transactions in product, labour or capital markets (Palepu & Khanna, 1998). This difficulty is caused by the absence of specialized intermediaries, as discussed in the general definition above. Often, the need for physical infrastructure to facilitate maturation of emerging markets is clear. However, the institutional infrastructure, for instance specialized intermediaries, needed to solve the information- and agency problems in the market are more difficult to observe (Khanna & Palepu, 1998). Furthermore, institutional development is a more complex and extensive process as the country's history, political and social system and culture play key roles (Khanna & Palepu, 2010).

In the literature however, there is an on-going debate among scholars on the influence of IVs on firm innovation. On one side, there is a view that portrays a negative relation, that is – the higher the level of IVs, the lower the innovative output. For instance, Barasa et al. (2017) find that firm innovation does not only depend on firm-level resources, but also on the institutional

environment. Tebaldi & Elmslie (2013) add to this that institutional quality affects a country's rate of innovation. In addition, the impact of institutional quality is not only relevant for countries close to the technological frontier, but also for those far away. On the other side, there are arguments made for a positive relation between IVs and firm innovation. Zhao (2006), for instance, argues that for a firm with the relevant capabilities, IVs can act as an opportunity. Mair & Marti (2009) also argue that IVs can be seen as opportunity spaces for institutional entrepreneurs. Whilst the research of Mair & Marti (2009) focuses on institutional entrepreneurs, it does highlight the fact that there are scholars that do not see IVs as something negative per se.

Concluding, two streams of literature can be identified regarding the influence of IVs on firm innovation. On the first and mainstream side, researchers have argued that IVs represent obstacles and therefore hamper innovation. On the opposite side, there are those that argue that IVs represent opportunities and foster firm innovation. For this thesis, the former perspective will be the leading perspective as the focus of this thesis is to find out whether or not there are firm-specific characteristics that moderate the adverse effects of IVs on firm innovation. Therefore, the following hypothesis can be formulated:

Hypothesis 1: *Institutional Voids have a negative effect on firm innovation in emerging markets.*

2.3 Firm-specific capabilities: Internationalisation, Foreign Ownership & Managerial Experience

Within this section the concepts that have a hypothesized moderating effect on the relation between IVs and firm innovation will be discussed. Firstly, the concept of internationalisation will be discussed. Then, foreign ownership will be explored, and finally managerial experience will be examined. After discussing the existing literature on each of these concepts, a hypothesis will be formulated for each moderating variable.

Internationalisation

In recent years, the amount of outflows from developing and emerging market firms have risen significantly (Luo & Tung, 2007). Companies from emerging markets can be successful in the international arena. Firms, however, may have to approach the internationalisation process

differently to become competitive with competitors from developed countries. One of the reasons for this is that resources in the home country might not be as readily available as in their foreign and developed counterparts (Bianchi, 2009). Consequently, firms can internationalise with the motive of developing the resources to innovate or to become competitive. A firm can internationalise in two ways: (1) Outward internationalisation and (2) inward internationalisation.

Firstly, looking at outward internationalisation process, exporting is most often recognized to be the first step of international expansion (Jones, 2001). As discussed in Idris et al. (2022), previous studies have found that exporting firms are more productive than non-exporting firms. This can be explained by the 'learning-by-exporting' hypothesis (Fassio, 2018). Firms can learn from the interactions in the international value chain and consequently improve their own technologies.

Secondly, a firm can also adopt the strategy of inward internationalisation. As the name suggests, this strategy focuses on the internal processes. Inward internationalisation allows a firm to gain an understanding of the international business environment and gain international experience (Luo & Tung, 2007). This can be through partnerships with developed country MNEs. Cooperative alliances, for instance, can be highly effective to transfer tacit knowledge to local partners, so that knowledge is acquired in several areas such as, but not limited to, production and distribution (Luo & Tung, 2007).

Thus, a firm's international activity can augment their knowledge either by directly acquiring resources or indirectly through an impact on the learning processes of the firm (Meyer et al., 2009). In addition, as a response to developments in the international environments, firms have realised that in order to be internationally competitive, they have to be internationally cooperative (Fletcher, 2001).

After having identified several types of internationalisation through which firms can acquire knowledge or develop capabilities, it is crucial to look at how this can reduce the negative impact of IVs on firm innovation in emerging markets. Luo & Tung (2007) discuss the 'springboard' perspective regarding international expansion. Some key points, which are discussed by Luo & Tung (2007), regarding the aim of firms when using international expansion as a springboard are: compensation of competitive weakness, overcoming of latecomer

disadvantage and the exploitation of a competitive advantage in other EMs. Finally, a point that is relevant for this thesis, is the aim to alleviate institutional and market constraints (Luo & Tung, 2007), or in other words, IVs.

To conclude this section, internationalisation can be achieved through different strategies, or a combination of strategies. Whether it is through one or more strategies, an emerging market firm's international expansion can potentially mitigate the adverse effects of IVs on firm innovation. Therefore, the following hypothesis can be formulated:

Hypothesis 2: *Internationalisation has a positive moderating effect on the relationship between institutional voids and firm innovation in emerging markets.*

Foreign Ownership

The second variable, examined in this thesis, is foreign ownership. Foreign ownership can lead to more innovative activities of emerging market firms. Joe et al., (2019) suggest that foreign corporations have some attributes that promote innovation activity, e.g. monitoring skills, a focus on long-term investment and expertise. This may promote innovation activity in the domestic firm. Guadalupe et al., (2012) find that local firms acquired by foreign firms innovate more through access to larger markets and advanced technologies. Choi et al., (2012) add that foreign firms can aid in the development of technological innovation capabilities and might even push local firms to put more effort into technological development by using ownership shares as leverage. Therefore, firms with more foreign ownership are more likely to be technological innovation performance (Choi et al., 2012).

In addition to the arguments made in the previous paragraph, and more relevant in this thesis, is the fact that foreign ownership can have a mitigating effect on the adverse effects of IVs on firm innovation. Foreign ownership does not only focus on the financial side, but also on the provision of expertise and technical collaborations (Douma et al., 2006). The experience and know-how of the foreign corporation can be attributed to the fact that these corporations often invest in firms related to their core business. The superior resources (technical, organisational and financial) can provide emerging market firms with an opportunity to invest in R&D. In these contexts, however, it is common that firms have trouble benefiting from the resources or knowledge transfers due to IVs. In that case, a firm can draw on the institutional environment of the foreign firm to function as an intermediary in the institutional environment to mitigate

the effects of a weak institutional environment and ensure that emerging market firms still benefit from the resources (Shukla et al., 2023). Examples could be funding or regulatory mechanisms. When emerging market firms draw on the institutional environment of the foreign corporation, the institutional environment can function as a 'social good', compensating for the weak institutional environment whilst making internal markets more efficient (Poczter, 2017).

Thus, foreign ownership can have both a direct and indirect effect on innovation. The direct effect can be recognized in the fact that foreign owners use their expertise to encourage local firms to invest more into innovative activities. The indirect effect refers to the positive moderating effect that foreign ownership can have on the adverse effects of IVs on firm innovation. As mentioned before, firms can draw on the experience and resources of the foreign corporation. Recognizing the role of foreign ownership, the following hypothesis can be established:

Hypothesis 3: *Foreign Ownership has a positive moderating effect on the relationship between institutional voids and firm innovation in emerging markets.*

Managerial Experience

The third moderating variable that this thesis will examine is managerial experience. Previous research has shown a positive effect of managerial experience on the innovative performance of firms (Barasa et al., 2017; Ayyagari et al., 2011; Yuan & Wen, 2018). With the skills and experience that managers have accumulated over time, they can identify and capitalize on opportunities for innovation. Experienced managers can extract value for the firm by bundling unique capabilities that can be used to increase competitiveness (Barasa et al., 2017). It is crucial for an emerging market firm to capitalize on the right opportunities as innovation is a high risk- and resource-intensive process. In addition, a manager's assessment has to be spot on as there could be internal and external factors that are working against or supporting the innovation project (Barasa et al., 2017).

In emerging markets, institutional settings are often not as favourable towards innovation as firms would like to see. Weak institutional settings diminish firm-level resources that are crucial for innovation, since institutions influence the way in which firms can extract value from firm-level resources (Barasa et al., 2017). In this case, hiring a manager that has top-level experience in the industry and in these contexts is highly relevant for firms. Managerial experience in

emerging market contexts can potentially mitigate the institutional influence on firm-level resources as managers can manoeuvre through the environment based on experience. Therefore, this thesis proposes the following hypothesis:

Hypothesis 4: *Managerial experience has a positive moderating effect on the relationship between institutional voids and firm innovation in emerging markets.*

2.4 Conceptual Model

Based on the theoretical framework, discussed previously, a conceptual model can be established (Figure 1). In this conceptual model the main concepts are displayed, as well as their expected direct or moderating relations.

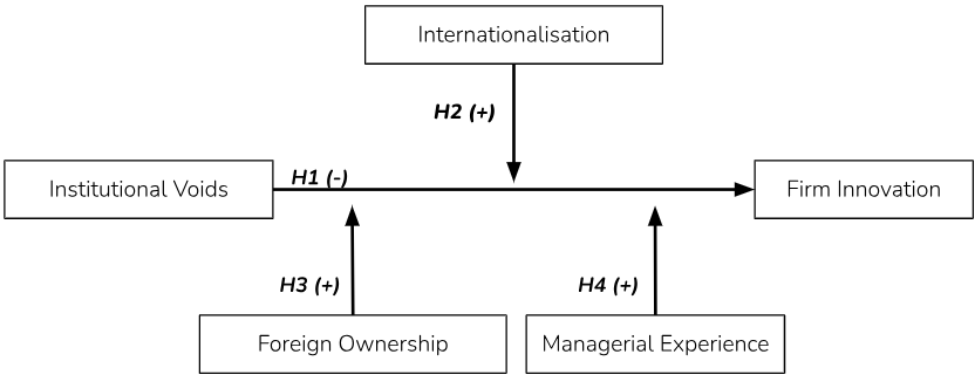

Figure 1: Conceptual Model

3. Methodology

This chapter will set out the methodology that will be used to conduct the research needed to answer the research question and reach the research objective. First, the data collection method and the sample will be presented. Then, in section 3.3, the different variables that are relevant in this research will be examined. Finally, the statistical analysis method and its assumptions will be discussed.

3.1 Data Collection method

For this thesis, the data that will be used to conduct the analysis, will come from the World Bank Group, in the form of the World Bank Enterprise Surveys (WBES). The WBES offers globally comparable data on business topics, firm characteristics and performance measures through a firm-level survey, in which top managers and owners of businesses participate.

To identify which markets are relevant to select and use in this research regarding emerging markets, the MSCI Emerging Market Index will be used. In this index, the countries that are considered emerging are listed and are evaluated each year to provide investors with research data. The status of a country is evaluated on three points: (1) economic development, (2) size and liquidity requirements and (3) market accessibility (MSCI, 2023). From these criteria, a country can be considered developed, emerging, frontier or standalone. Again, for this research the emerging markets are relevant, and the list of emerging markets is presented visually below in Table 1. From the list below, an evaluation will be made, and a sample will be carefully selected in the following section.

AMERICAS	EMEA (Europe, Middle East and Africa)	APAC (Asia-Pacific)
Brazil	Czech Republic	China
Chile	Egypt	India
Colombia	Greece	Indonesia
Mexico	Hungary	Korea
Peru	Kuwait	Malaysia
	Poland	Philippines
	Qatar	Taiwan
	Saudi Arabia	Thailand
	South Africa	
	Turkey	
	United Arab Emirates (UAE)	

Table 1: MSCI Emerging Market Index (2023)

3.2 Sample Description

In the previous section the countries, i.e. emerging markets, which are suitable for this research have been identified. To be able to conduct the analysis with the relevant data, a selection must be performed regarding the list of twenty-four countries in Table 1. Comparing the list in Table 1 with the WBES datasets, the first difference that must be considered is the absence of four countries (UAE, Kuwait, Taiwan and Qatar) in the WBES datasets. Therefore, these countries will be excluded and not taken into account from this point onwards.

Secondly, after examining the available datasets for the countries after exclusion from the four mentioned above, it becomes clear that for some countries the last updated datasets are relatively outdated compared to others. Using a timeframe of five years (i.e. 2019-2023), this leads to the exclusion of four more countries (Brazil, Chile, Thailand and Korea). Again, these countries will not be taken into account from this point onwards. The reasoning behind the selection of a timeframe of 5 years is the fact that if a shorter period was selected, several countries would have to be excluded, compromising the generalizability of the sample.

After exclusion, a sample of 16 countries has been identified, with at least 3 countries representing a region. Combined, these 16 countries accounted for a total of 29,109 firms that took part in the Enterprise Surveys. The majority of the firms can be attributed to India (9376), Egypt (3075) and Indonesia (2955). With India having the most firms that took part in the WBES, this consequently results in the APAC region being the most represented with 15,152 firms. The least represented countries are Czech Republic and Greece, with 502 firms and 600 firms. The sixteen countries that are included in the sample are visually represented in Table 2 on the next page (p.18). In the table, the number of firms per country are given and the percentages are shown.

Country	Number of Firms	Percentage %
AMERICAS	**3228**	**11,09%**
Colombia (2023)	919	3,2%
Mexico (2023)	1322	4,5%
Peru (2023)	987	3,4%
EMEA	**10729**	**36,86%**
Czech Republic (2019)	502	1,7%
Egypt (2020)	3075	10,6%
Greece (2023)	600	2,1%
Hungary (2023)	850	2,9%
Poland (2019)	1369	4,7%
Saudi Arabia (2022)	1573	5,4%
South Africa (2020)	1097	3,8%
Turkey (2019)	1663	5,7%
APAC	**15152**	**52,05%**
China (Hongkong SAR) (2023)	598	2,1%
India (2022)	9376	32,2%
Indonesia (2023)	2955	10,2%
Malaysia (2019)	1221	4,2%
Philippines (2023)	1002	3,4%
Total	**29109**	**100%**

Table 2: Selected Sample

3.3 Measures

Within this section, the variables (i.e. independent, dependent, moderating and control) and the operationalisation of these variables will be presented. First, the variables from the main relation will be discussed. Then, the moderating variables will be examined, after which the control variables will be specified.

3.3.1 Dependent Variable – Firm innovation

For the dependent variable, i.e. firm innovation, the WBES has included two questions that are relevant for this research: (1) *Over the last three years, has the firm introduced new products or services?* and (2) *During the last three years, has the establishment introduced new or*

improved processes? The measurement level of these two questions can be considered binary. This means that either a firm has been innovative over the past three years, i.e. new products/services or processes have been introduced, or a firm has been non-innovative over the past three years, meaning that the firm has not introduced new products, services or processes. For these two questions a dummy variable will be constructed where an innovative firm will be denoted with the value of 1 and a non-innovative firm with the value of 0. For this research, there will not be made a distinction between products and services innovation and process innovation, as the two often go hand in hand. (Goedhuys & Veugelers, 2012).

3.3.2 Independent Variable – Institutional Voids

In order to measure the concept of IVs, this thesis will draw on the operationalisation of institutional quality by Barasa et al., (2017). Following this operationalisation, a composite measure of corruption, rule of law and regulatory quality will be created, whereby several items will be included for each measure – that is, two items for corruption, three items for rule of law and four items for regulatory quality.

For the composite measure of corruption, two items will be included related to questions from the WBES. The first item asks respondents whether they perceive courts to be impartial and independent when resolving disputes. This item is measured on a 4-point scale (1 = strongly disagree, 4= strongly agree). The second item asks respondents whether they perceive corruption as an obstacle in the current operations with the perceived degree of corruption measured on a 5-point scale (0 = no obstacle, 4 = very severe obstacle).

Secondly, for the composite measure of rule of law, three items will be included regarding the degree to which respondents perceive courts, crime, theft and disorder, and political instability as an obstacle to the current operations of the establishment. These three items are measured on a 5-point scale (0 = no obstacle, 4 = very severe obstacle).

Finally, the composite measure of regulatory quality will consist of four items. These four items relate to the degree to which respondents perceive tax rates, tax administration, business licensing and permits, and customs and trade regulations as an obstacle in the current operations of the firm. All of the four items are measured on a 5-point scale (0 = no obstacle, 4 = very severe obstacle).

The values for the composite scores will be established by calculating the mean-value of the values of the items in the scale – that is, for instance, the average of the three items that are used for rule of law. The usage of summated scales, in the form of the composite measure, reduces measurement error and allows for the representation of multiple aspects of a complex concept in a single measure (Hair et al., 2018).

3.3.3 Moderating Variables

Internationalisation

The first moderating variable of 'internationalisation' can be operationalised using ratio of the amount of foreign sales to the amount of total sales (Kafouros et al., 2008). This fits with the question asked in the WBES, namely: *Coming back to fiscal year [insert last complete fiscal year] what percentage of this establishment's sales were direct exports?* A previously used cut-off point to determine whether a firm can be considered internationalised is 25% (Knight et al., 2004; Kuivalainen et al., 2007). It can be argued that firms that are below the 25% cut-off point, but do have direct exports, show some level of internationalisation. Therefore, in this thesis three levels of internationalisation will be used: no internationalisation (0%), low internationalisation (1% - 25%) and high internationalisation (>25%). To include the three levels into the regression analysis, dummy variables will be constructed.

Foreign Ownership

For the moderating variable of foreign ownership, the suitable question in the WBES is the item that asks respondents whether foreign ownership (%) is present or not. As mentioned in Douma et al. (2006), foreign investment is not only expressed in equity, but also in, for instance, technical collaborations and managerial resource sharing. Furthermore, foreign shareholders might find themselves in a relatively better position compared to domestic shareholders in contexts of imperfections in technological, capital and labour markets (i.e. IVs), resulting in an improvement of firm performance. A dummy variable will be constructed, taking the value of 1 when foreign ownership is present and a value of 0 otherwise.

Managerial experience

The moderating variable of 'managerial experience' draws on the operationalisation of several research projects (Ayyagari et al., 2011; Barasa et al., 2017). In line with this operationalisation, the question from the WBES that will be used is: *How many years of experience does the Top Manager have in this sector?* Following Ayyagari et al., (2011) and Barasa et al., (2017), a

dummy variable will be constructed that takes the value of 1 when the manager has more than 10 years of experience and a value of 0 otherwise.

3.3.3 Control Variables

Firm Size

The first relevant variable that will be controlled for, is firm size. Firm size is relevant to control for as results in previous research suggests that bigger firms are more innovative than smaller firms (Ayyagari et al., 2011). To measure this variable, the item regarding the amount of permanent-full time individuals that worked in the establishment will be used. Following the operationalisation of this control variable by Barasa et al., (2017), a dummy variable will be constructed. Therefore, a value of 1 will be attributed to firms with more than 20 employees and a value of 0 when the firm has 20 or less employees.

Firm age

Secondly, firm age is a relevant variable to control for in the analysis as previous studies have found that an inverse relation is present between firm age and innovative output (Ayyagari et al., 2011). Young firms engage in riskier R&D (Coad et al., 2016), and are more likely to introduce new products and services. Following Barasa et al. (2017), the measure for firm age will be computed by looking at the difference between the year of the enterprise survey and the year the firm was established.

R&D investment

The third control variable that is included in the analysis, is the level of R&D investment by a firm. Again using the WBES, the used item asks respondents whether the firm has spent on R&D activities during the last fiscal year. As this is a question with a binary outcome, a value of 1 will be given to a firm that has spent on R&D activities and a value of 0 otherwise. It is expected that firms that spend on R&D activities have a higher innovative output than firms that do not. Therefore, it is relevant to control for this as this might have an impact on the main relation.

Industry

The fourth and final control variable that will be controlled for, is industry. There is a possibility for a discrepancy between innovative-output levels. For this reason, the industries that will be

considered are retail, manufacturing and services (Barasa et al., 2017). In order to include the industries in the analysis, dummy variables will be constructed.

3.4 Analysis Method

For this thesis, the quantitative research method of logistic regression analysis, also known as logit analysis, will be used to conduct the analysis. Logistic regression analysis is much like multiple regression analysis but differs in the fact that the dependent variable can be binary (0 or 1). In this research, the outcome of the dependent variable (i.e. firm innovation) has been formulated to be either innovative or non-innovative. Therefore, logistic regression analysis is a suitable research method for this research. Hair et al. (2018) confirm this by stating that "logistic regression is the preferred method for two-group (binary) dependent variables due to its robustness, ease of interpretation, and diagnostics" (p.557).

In logistic regression analysis, the following equation is of relevance:

$$Y = \beta 0 + \beta 1X1 + \beta 2X2 + \ldots + \beta kXk + e$$

where, Y refers to the dependent variable; $\beta 0$ indicates the intercept; $\beta 1X1 + \beta 2X2 + \ldots + \beta kXk$ are the slope coefficients for the different variables; finally, a random error term is included in the form of *e*. Filling in the logistic regression analysis equation with the relevant variables for this research, and taking into account the interaction effects because of the moderating variables, the following equation is established:

$$\begin{aligned} Firm\ innovation\ =\ & \beta 0\ +\ \beta 1 insVoids\ +\ \beta 2 internationalisation\ +\ \beta 3 ForeignOwnership\ + \\ & \beta 4 managerialExp\ +\ \beta 5 insVoids \times internationalisation\ +\ \beta 6 insVoids \times \\ & ForeignOwnership\ +\ \beta 7 insVoids \times managerialExp\ +\ \beta 8 FirmSize\ +\ \beta 9 firmAge\ + \\ & \beta 10 R\&DInv\ +\ \beta 11 industry\ +\ e \end{aligned}$$

Assumptions

The quantitative research method of logistic regression analysis has several assumptions that need to be taken into account, as discussed in Hair et al., (2018):

1. The dependent variable should be two-group or binary.
2. The overall sample size should be bigger than 400.
3. The observations should be independent.
4. There should be no or little multicollinearity among the independent variables and linearity of the independent variables, especially continuous variables and the logit.

Below, in Table 3, the different variables are shown with their measurement levels, respectively.

Variable	Measurement	Type
Firm innovation	Innovative / Non-innovative	Nominal / Binary
Institutional Voids	5-point scale (0-4)	Interval
Internationalisation	No Internationalisation / Low Internationalisation / High Internationalisation	Ordinal
Foreign Ownership	Foreign ownership present / No foreign ownership	Nominal / Binary
Managerial Experience	Experienced / Not-experienced	Nominal / Binary

Table 3: Variable Measurements

3.5 Research Ethics

To ensure that all the steps of the research process are conducted in an ethical and responsible manner, this thesis follows the Netherlands Code of Conduct of Research Integrity (2018). In this code of conduct, several principals are identified: (1) Honesty, (2) Scrupulousness, (3) Transparency, (4) Independence and (5) Responsibility. When conducting the research, these principles will be adhered to strictly.

The data that will be used for this research comes from the World Bank, in the form of the data collected by the enterprise surveys. The relevance of this data can be found in the comparison of countries regarding the variables identified previously. The data from the World Bank can be considered recent and is updated frequently. Furthermore, the enterprise surveys offer a complete view of an entrepreneur's or manager's view through a great amount of collected data regarding several themes. Again, the dataset that is relevant for this research will be handled with utmost care and carefulness.

4. Results

In this chapter the results of the statistical analysis, put forth in chapter 3, will be presented. First, the descriptives of the different variables will be discussed and analysed. Furthermore, the missing values of the variables will be assessed through a missing value analysis. Then, in section 4.2, the assumptions of the logistic regression method will be presented again and will be tested afterwards. Thirdly, the logistic regression analysis will be presented, and the hypotheses will be evaluated. Finally, in the final section the robustness of the analysis and its results will be discussed.

4.1 Descriptives

This section will show the descriptives of the variables that will be used in the logistic regression analysis. In Table 4 the different variables are shown with their values respectively. In total, 9 variables have been included in the table, i.e. one dependent variable (innovation), four independent variables (IVs, internationalisation, foreign ownership and managerial experience) and four control variables in the form of industry, level of R&D investment, firm size and firm age.

Statistics

		Innovation	Institutional Voids	Internationalisation	Foreign Ownership	Managerial Experience	FirmSize	FirmAge	R&D Investment	Industry
N	Valid	28.994	28.979	28.061	28.260	27.834	28.961	28.367	23.005	29.109
	Missing	115	130	1.048	849	1.275	148	742	6.104	0
Mean		1,14	1,16	1,25	1,05	1,70	1,51	21,792	1,10	1,78
Median		1,00	1,00	1,00	1,00	2,00	2,00	19,000	1,00	1,00
Std. Deviation		,347	1,019	,619	,228	,458	,500	15,6496	,298	,918
Skewness		2,071	,517	2,269	3,913	-,875	-,056	2,344	2,701	,446
Std. Error of Skewness		,014	,014	,015	,015	,015	,014	,015	,016	,014
Kurtosis		2,288	-,820	3,450	13,316	-1,234	-1,997	11,301	5,294	-1,664
Std. Error of Kurtosis		,029	,029	,029	,029	,029	,029	,029	,032	,029

Table 4: Variable Frequencies

Before looking more closely at the missing values and what this entails for the logistic regression analysis, a crucial step in the process of forming the composite measure of IVs must be noted. Mentioned in the previous chapter on the methodology, the composite measure of IVs would consist of three components, i.e. corruption, rule of law and regulatory quality, each consisting of several items relating to questions asked in the WBES. For corruption, two items were selected, namely (1) *courts are independent and impartial when resolving disputes* and (2) *the extent to which corruption is perceived as an obstacle*. After analysing the data, the first item showed missing values of 84% due to the fact that this item was not included in the questionnaire for most of the countries. As the imputation of missing values is not suitable in

this situation, this item was not included in the component of corruption after careful consideration. For the other components, the items identified in the previous chapter have all been included. The reliability analyses for the different components and the final composite measure of IVs have been included in Appendix 8.1.

Missing values can pose a significant threat when conducting research and even though the missing values are already shown in Table 4, it is useful to conduct a missing value analysis as this will show the percentage of missing values. From this percentage, it can be derived whether or not the amount of missing values is problematic and what steps should be taken consequently. In academic research, a threshold of 10% of missing values is often established (Hair et al., 2018). In table 5 below, the missing value analysis is presented with the different variables and their missing value percentage respectively. Almost all of the variables show missing value percentages well below the established threshold of 10% with 4.4% (managerial experience) being the highest. However, for R&D investment, relating to the question whether firms spent on R&D, the missing value percentage can be considered problematic (21%). Since this is a control variable, it is still included in the analysis. Results involving the control variable, however, should be interpreted cautiously.

Univariate Statistics

		Missing	
	N	Count	Percent
Innovation	28.994	115	,4
Institutional Voids	28.979	130	,4
Internationalisation	28.061	1.048	3,6
Foreign Ownership	28.260	849	2,9
Managerial Experience	27.834	1.275	4,4
Firm Size	28.961	148	,5
Firm Age	28.367	742	2,5
R&D Investment	23.005	6.104	21,0
Industry	29.109	0	,0

Table 5: Missing Value Analysis

To see how the nominal and ordinal variables are distributed, frequency tables are constructed in SPSS (Appendix 8.2). For the dependent variable (i.e. innovation), it can be observed that 4.070 firms are considered to be innovative and thus have introduced a new product, service or process in the last three years. On the contrary, 24.924 firms are considered to be not-innovative. For the nominal independent variables (i.e. internationalisation, foreign ownership and managerial experience), it can be noted that 2.766 firms are considered to engage in high

internationalisation, 1.421 firms in low internationalisation and 23.874 are not engaged in internationalisation. Furthermore, it can be observed that 1548 firms have foreign ownership, whilst 26.712 firms have no foreign ownership. Lastly, from the 27.834 firms, 19.497 firms have a top manager with over ten years of experience (i.e. experienced). 8.337 firms do not have an experienced manager.

Finally, it is relevant to look at the skewness and kurtosis of the metric variables (table 4). The skewness and kurtosis describe the spread and height of the normal distribution and are useful to inspect before the logistic regression analysis to ensure correct interpretation of the results. As discussed in DeCarlo (1997), the established thresholds for kurtosis are -3 and +3. Looking at table 4, it can be seen that the control variable of firm age exceeds the threshold of +/- 3 of kurtosis (K=11,301), indicating a leptokurtic distribution (Hair et al., 2018). To counter this problem, a variable can be transformed through logarithmic transformation. After having transformed the control variable FirmAge, the kurtosis is deemed "normal" and the LN_FirmAge variable can therefore be included in the analysis. The descriptive statistics after the transformation are presented below in Table 6.

Statistics

		Innovation	Institutional Voids	Internationalisation	Foreign Ownership	Managerial Experience	FirmSize	LN_FirmAge	R&D Investment	Industry
N	Valid	28.994	28.979	28.061	28.260	27.834	28.961	28.367	23.005	29.109
	Missing	115	130	1.048	849	1.275	148	742	6.104	0
Mean		1,14	1,16	1,25	1,05	1,70	1,51	2,9182	1,10	1,78
Median		1,00	1,00	1,00	1,00	2,00	2,00	2,9957	1,00	1,00
Std. Deviation		,347	1,019	,619	,228	,458	,500	,66545	,298	,918
Skewness		2,071	,517	2,269	3,913	-,875	-,056	-,316	2,701	,446
Std. Error of Skewness		,014	,014	,015	,015	,015	,014	,015	,016	,014
Kurtosis		2,288	-,820	3,450	13,316	-1,234	-1,997	,211	5,294	-1,664
Std. Error of Kurtosis		,029	,029	,029	,029	,029	,029	,029	,032	,029

Table 6: Descriptives after transformation

4.2 Assumptions

Before the logistic regression analysis can be performed, it is crucial at whether or not the assumptions of this type of research are met. Hair et al. (2018) identify several assumptions:

5. The dependent variable should be two-group or binary.
6. The overall sample size should be bigger than 400.
7. The observations should be independent.
8. There should be no or little multicollinearity among the independent variables and linearity of the independent variables, especially continuous variables and the logit.

The first assumption is met as the dependent variable of firm innovation is measured through firms being either innovative (1) or not innovative (0). The second assumption is also met as the total sample consists of 29.109 firms, which is well over the sample size threshold of 400. Thirdly, the assumption of independent observations is also met as each firm included in the data sample has their own specific firm ID. Therefore, it can be assumed that each firm is included only once in the data sample and thus can be considered independent.

In the fourth assumption, no multicollinearity among the independent variables and linearity in the independent variables and the logit are mentioned. According to Hair et al. (2018), high levels of multicollinearity reduce "the unique impact of the independent variables" (p.578). It can consequently cause difficulty when interpreting the model. One measure to assess the multicollinearity among the independent variables is the Variance Inflation Factor (VIF). Often, the cut-off point is a VIF of ten, but VIFs of five and three are also mentioned as cut-off points (Hair et al., 2018). In Appendix 8.4, the VIF-values for the independent variables can be found. As can be observed from the table, the VIF-values are well below the cut-off point of ten, but also well below the values of five and three as they are all close to one. Therefore, the assumption of no multicollinearity among independent variables is met. In addition, a correlation matrix is constructed to verify the result on multicollinearity. As can be observed in the correlation matrix (Table 7), none of the coefficients are greater than 0.5, which has been established as a threshold for problematic values (Field, 2018). Since all coefficients are below this threshold, the result found before is verified and the fourth assumption is therefore met.

		1	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*
1	**Innovation**	1								
		(28.994)								
2	**Institutional Voids**	,061**	1							
		(28.878)	(28.979)							
3	**Internationalisation**	,142**	-,003	1						
		(28.009)	(27.990)	(28.061)						
4	**Foreign Ownership**	,108**	,019**	,249**	1					
		(28.203)	(28.183)	(27.846)	(28.260)					
5	**Managerial Experience**	,050**	,074**	,096**	,019**	1				
		(27.782)	(27.739)	(27.110)	(27.275)	(27.834)				
6	**FirmSize**	,046**	-,006	,198**	,138**	,136**	1			
		(28.847)	(28.831)	(27.959)	(28.139)	(27.709)	(28.961)			
7	**LN_FirmAge**	,021**	,038**	,100**	,037**	,362**	,238**	1		
		(28.275)	(28.248)	(27.466)	(27.662)	(27.299)	(28.242)	(28.367)		
8	**R&D Investment**	,264**	,060**	,193**	,130**	,064**	,105**	,063**	1	
		(22.969)	(22.929)	(22.180)	(22.346)	(21.989)	(22.920)	(22.365)	(23.005)	
9	**Industry**	0,005	-,022**	-,129**	-,025**	-,094**	-,142**	-,149**	-,065**	1
		(28.994)	(28.979)	(28.061)	(28.260)	(27.834)	(28.961)	(28.367)	(23.005)	(29.109)

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

Table 7: Correlation Matrix

Finally, as the second part of the fourth assumption, Hair et al. (2018) talk about linearity in the independent variables and logit. This is regarding continuous variables, and as this research does not use such variables, this assumption is met as well. Therefore, the logistic regression analysis can be performed.

4.3 Regression Analysis

In this section the logistic regression analysis will be discussed. The analysis is conducted following a stepwise hierarchical selection method (Hair et al., 2018). In the first model the control variables will be analysed, following by the predictor variable of IVs in the second model and the moderator variables in the third model. In the two-sided model, significant findings are represented by an asterisk ($p<0,05$). The results of the logistic regression analysis are presented in the table on the next page (Table 8).

Model 1

In the first model of the logistic regression analysis, the control variables, i.e. firm size, firm age, R&D investment and industry, are added to assess the effects of the control variables on the likelihood that firms are innovative. The model explained 9.2% of the variance in firm innovation (Nagelkerke R^2=.092). Looking at the results of model one, it can be observed that both industry and R&D investment had significant effects on firm innovation. Firms operating in the retail industry are 22% more likely to be innovative than firms operating in the manufacturing sector (Exp(B)=1,220). Secondly, firms operating in the services industry are 16,6% more likely to be innovative compared to firms operating in the manufacturing industry (Exp(B)=1.166). Regarding the control variable of R&D investment, the results show that firms that invest in R&D are close to 6 times more likely to be innovative than firms that do not invest in R&D. For this result however, it must be noted that the findings should be interpreted cautiously since a lot of missing values were present. Lastly, for the control variables of firm size and firm age, there were no significant findings in this model.

Variable	Model 1		Model 2		Model 3	
	Sig.	Exp(B)	Sig.	Exp(B)	Sig.	Exp(B)
FirmSize *Large*	,145	1,064	,108	1,071	,062	,920
LN_FirmAge	,163	,957	,024*	,931*	<,001*	,848*
R&D Investment *Investment present*	<,001*	5,828*	<,001*	5,672*	<,001*	4,716*
Industry *Retail*	,003*	1,220*	,007*	1,197*	<,001*	1,315*
Industry *Services*	<,001*	1,166*	<,001*	1,169*	<,001*	1,255*
Institutional Voids			<,001*	1,276*	<,001*	1,337*
Internationalisation *Low Internationalisation*					<,001*	2,511*
Internationalisation *High Internationalisation*					<,001*	1,800*
Foreign Ownership (1)					<,001*	2,187*
Managerial Experience(1)					<,001*	1,447*
Institutional Voids* Internationalisation(1)					,802	1,019
Institutional Voids* Internationalisation(2)					,360	,944
Foreign Ownership(1)* Institutional Voids					,389	,939
Institutional Voids * Managerial Experience(1)					,234	,948
Nagelkerke R^2		,092		,105		,135

Significance at p <.05*

Table 8: Logistic Regression Overview

Model 2

In the second model, the variable of IVs is added to assess the added effect on firm innovation. This model explained 10.5% of the variance in firm innovation (Nagelkerke R^2=,105). A slight increase compared to the previous model can be observed. The variable of IVs turned out to have a significant result, revealing that the levels of IVs do have an effect on the likelihood that firms are innovative . Looking more closely at the Exp(B) value of IVs, it can be observed that firms are 27.6% more likely to be innovative than firms that perceive lower levels of IVs. Finally, after adding the variable of IVs, it is found that the control variable of firm age becomes significant. This indicates that older firms are 6.9% less likely to be innovative in contexts of IVs (Exp=,931).

Model 3

In the third and final model, the moderator variables of internationalisation, foreign ownership and managerial experience are added. This model explained 13.5% of the variance in firm innovation (Nagelkerke R^2=,135), thus again increasing compared to the previous model. All of the variables, added in this model, were found to be significant and to have a direct effect. Firms that engage internationalisation are significantly more likely to be innovative compared to firms that do not engage in internationalisation. This can be recognized in the Exp(B) for both low internationalisation (Exp(B)=2,511) and high internationalisation (Exp(B)=1,800). Furthermore, firms that have foreign ownership are more than twice as likely to be innovative than firms that do not have foreign ownership (Exp(B)=2,187). Finally, firms that have experience managers are 44.7% more likely to be innovative than firms that do not have these experienced managers (Exp(B)=1,447). What must be noted is the fact that none of the added variables have significant results in the interaction with the variable of IVs, from which can be concluded that no significant moderation effects were found.

Hypotheses

In this thesis the main hypothesized effect is the negative effect of IVs on firm innovation in emerging markets. This effect is espoused by theory, but not supported empirically. A significant positive effect can be observed, instead of the hypothesized negative effect. The following three hypotheses focused on the moderating effect of the variables (1) internationalisation, (2) foreign ownership and (3) managerial experience. Whereas theoretical support has been shown in chapter two, the analysis shows no significant moderating effect for these variables. All three of these variables, however, do have significant direct effects on the likelihood that firms are innovative. These findings were not hypothesized beforehand, but are interesting nonetheless. Below, a summary of the hypotheses and whether or not they are accepted can be found (Table 9).

	Hypothesis	**Accepted**
1	Institutional voids have a negative effect on firm innovation in emerging markets.	No
2	Internationalisation has a positive moderating effect on the relationship between institutional voids and firm innovation in emerging markets	No
3	Foreign ownership has a positive moderating effect on the relationship between institutional voids and firm innovation in emerging markets	No
4	Managerial experience has a positive moderating effect on the relationship between institutional voids and firm innovation in emerging markets.	No

Table 9: Overview of hypotheses results

4.4 Robustness

In order to ensure that the findings from the logistic regression analysis can be considered robust, three additional logistic regression analyses are conducted, following the same step-wise approach in terms of the addition of variables in the different models.

In the second logistic regression, the sample is different compared to the primary analysis in the form of exclusion of India in the sample. As mentioned in section 3.2 on sample selection, India represents 32,2% of the total amount of firms in the sample. Since this is a rather big percentage, it is possible that the results are influenced by Indian firms. Therefore, it is relevant to conduct the analysis again whilst leaving out India. Consequently, a third robustness check is performed with only Indian firms in the sample, following the argument made previously regarding the size of India in the original sample. Finally, the fourth logistic regression is performed using a alternative operationalisation of the variable IVs in the form of country-level data of The World Competitiveness Report (TWCR) (Schwab, 2018). It can be argued that the data from the WBES is rather subjective as firms can answer on the basis of their experience. Therefore, this is a relevant robustness check. The process of identifying the relevant items for a composite measure for the variable IVs, through a principal component analysis, is included in Appendix 8.11.

The results of the logistic regression analyses, and their different models, can be found in Appendices 8.7 through 8.10 and, Appendices 8.12 and 8.13.

Robustness check I – Exclusion of India in the sample

In model one, there is a slight decrease in the variance in firm innovation explained by the model, compared to model one in the primary analysis (Nagelkerke R^2=,082). In terms of significance, it is interesting to see that firm size turned out to have a significant value, indicating that large firms are 31.2% more likely to be innovative than small firms. Lastly, compared to model one in the primary analysis, industry is not considered significant anymore. Secondly, in model two the variable of IVs remains significant, and it can therefore be argued that IVs-levels have a positive effect on firm innovation. This model explains the same amount of variance in firm innovation as model two in the primary analysis (Nagelkerke R^2=,105). Thirdly, in model three of the analysis, the explained variance in firm innovation decreased slightly compared to the primary analysis (Nagelkerke R^2=,129). In addition, the second analysis shows the same outcome as the primary analysis, with the variable of

internationalisation, foreign ownership and managerial experience having a direct effect, but not a moderating effect. Finally, an interesting finding is the fact that the control variable of firm size has become significant in model three.

Robustness check 2 – Only Indian firms in the sample

In the first model of robustness check two, the model explains only 3.8% of variance in firm innovation, indicating a decrease in explained variance compared to both the primary analysis and robustness check one (Nagelkerke R^2=,038). Similar to the primary analysis, the control variables with significant results are R&D investment and industry. The second model of the analysis explained only a very small amount of variance more than model one ((Nagelkerke R^2=,039). An interesting finding in this model is the fact that the variable IVs loses its significance and thereby its direct effect. Finally, the variance in firm innovation explained by model three increased to 8.2 % (Nagelkerke R^2=,082), which is still relatively low. It can be observed that the control variable firm size becomes significant, indicating that in this case larger firms are 20.3% less likely to be innovative than smaller firms. Regarding the moderating variables, it can be observed that only internationalisation turned out to be significant, for both high and low internationalisation, similar to the primary analysis. To conclude, an interesting finding is the significant result for the interaction effect of *InstitutionalVoids*Managerial Experience*. To visually represent this effect, an interaction plot is constructed on the next page (Figure 2). From this interaction plot can be interpreted that firms with experienced managers are more likely to be innovative when IVs are perceived as no obstacle. When IVs are perceived as an obstacle, a cross-over interaction effect occurs, indicating that, from that point on, firms with not-experienced managers are more likely to be innovative.

Robustness check 3 – Alternative operationalisation variable Institutional Voids

In the third and final robustness test, the first model explained 9.2 % of the variance in firm innovation, similar to the primary analysis (Nagelkerke R^2=,092). As in the previous analyses, the control variables were added first. Also for this robustness check, both R&D investment and industry were found to be significant. Model two of this analysis explained 16.7%, indicating a major increase compared to the previous model (Nagelkerke R^2=,167). The variable of IVs turned out to be positive and significant. Therefore, it can be said that firms are more likely to be innovative when IVs-levels increase. Lastly, the explained variance in firm innovation

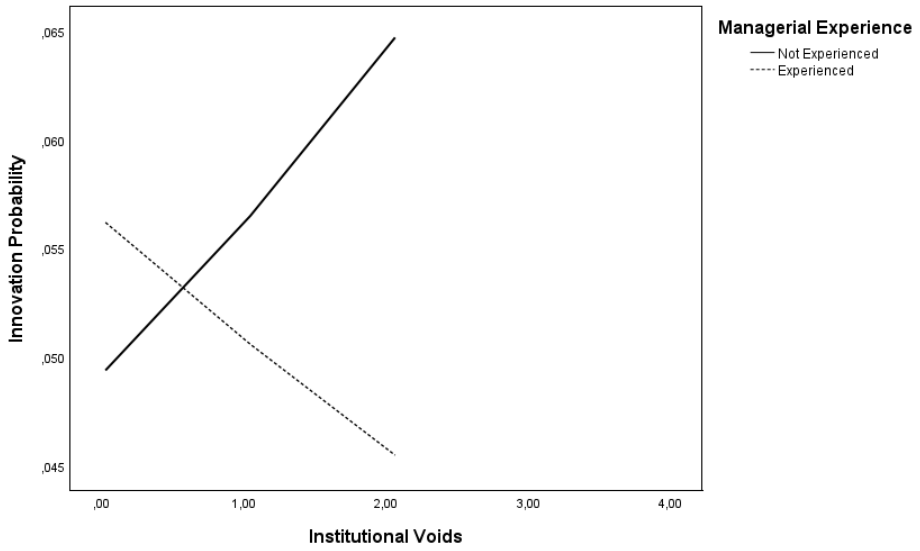

Figure 2: Interaction plot Managerial Experience (I)

accounted for 19.6% in model three (Nagelkerke R^2=,196). This increase in variance explained can be attributed to the addition of the moderating variables, as both internationalisation and foreign ownership are found to have significant direct and moderating effects. Managerial experience also turned out to have a significant moderating effect. Also, firm age gained a significant value in the third model. Again, to visually represent the moderating effects, three interaction plots are constructed on the next page (Figure 3-5).

For internationalisation, it can be observed that firms that engage in internationalisation are more likely to be innovative when IVs levels are around slightly severe and under. In between IVs-level slightly severe and severe however, a cross-over interaction effect occurs. From this point on, firm that do not engage in internationalisation are more likely to be innovative.

Secondly, for foreign ownership it can be said that firms with foreign ownership are more likely to be innovative up to the point of a severe level of IVs. There, a cross-over interaction effect takes place, indicating that after that point, firms that do not have foreign ownership are more likely to be innovative.

Finally, for managerial experience it can be argued that firms with experienced managers are more likely to be innovative from at least the moderate levels of IVs, up to the slightly severe levels of IVs.

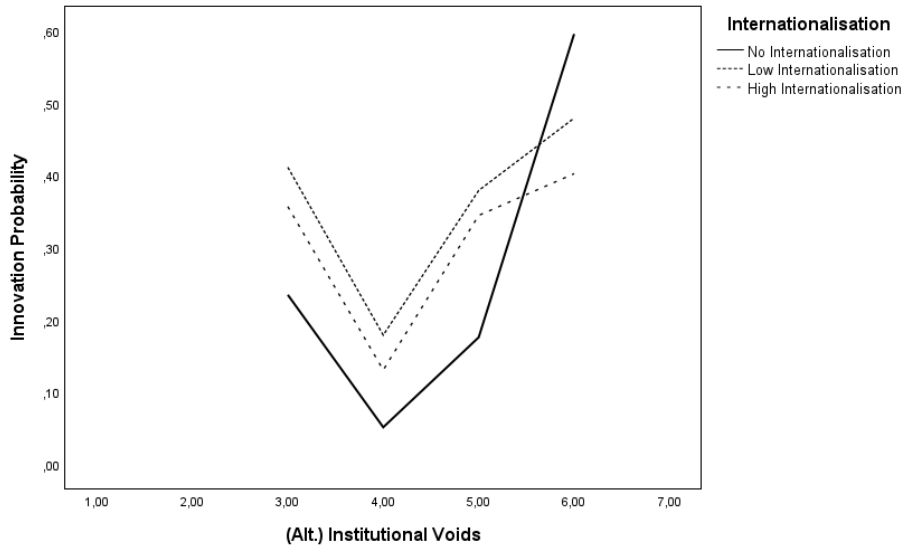

Figure 3: Interaction plot Internationalisation

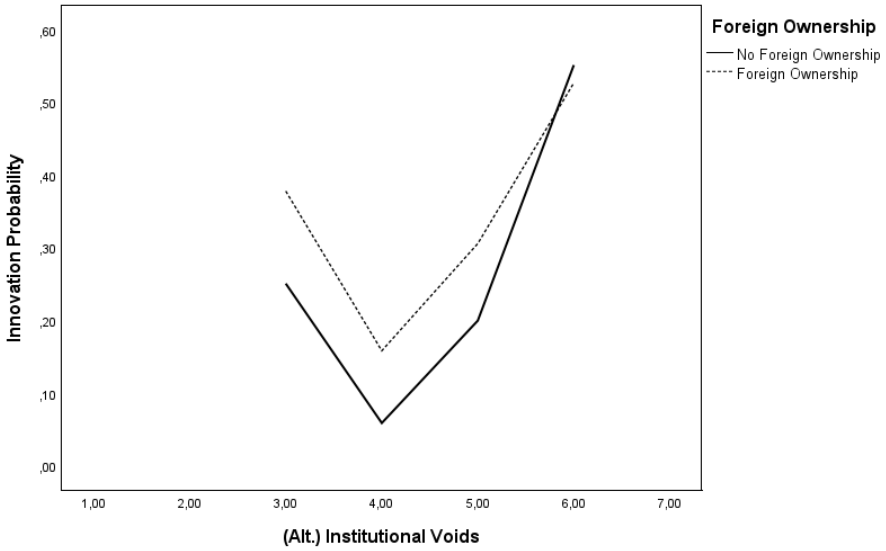

Figure 4: Interaction plot Foreign Ownership

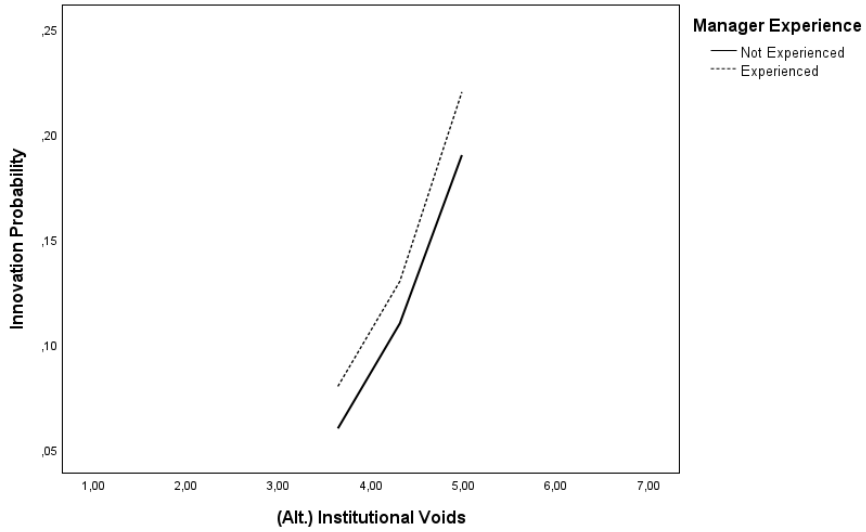

Figure 5: Interaction plot Managerial Experience (II)

5. Discussion

This chapter will focus on comparing the logistic regression results with the current academic literature. None of the hypothesized effects could be observed in the results of the regression analysis. For the main hypothesis, an opposite (positive) significant effect was found. For all three of the moderator variables, the results showed significant direct effects, but no moderating effects. In this chapter, first the primary relation will be discussed, after which the moderator variables will be examined. To conclude this chapter, the control variables will be treated shortly.

5.1 Institutional voids and firm innovation

In this study the first hypothesized effect was that of IVs on firm innovation in emerging markets. This effect was hypothesized as negative, indicating that firms that perceive higher levels higher levels of IVs are less likely to be innovative. In contrast, the empirical result showed a significant, positive effect. This is an unexpected, but not a completely novel finding. This result contributes to the stream of literature that argues that IVs foster innovation rather than hinder innovation, as argued in the mainstream literature.

A feasible explanation as to why IVs have a positive effect on firm innovation can be attributed to firm-level capabilities. Firms, as well as individuals, could develop specific capabilities to deal with the IVs and to approach them as opportunities instead of obstacles (Amini Sedeh et al., 2022; Mair & Marti, 2009). In order to gain access to key resources and opportunities, firms might seek powerful partners in the form of political ties (Dieleman & Widjaja, 2019). Also, firms can gain experience in how to manoeuvre through the institutional environment. As an indicator of IVs, several studies have found corruption to have a positive effect on firm innovation (Barasa, 2018; Krammer, 2019; Nguyen et al., 2016). Firms could engage in low-level corruption to overcome bureaucratic hurdles and political risk. Furthermore, it could be that this is perceived as the only way to gain access to resources in order to introduce innovative practices or in other words, to get things done. Important to note, it is beyond the scope of this study to indicate whether this engagement in low-level corruption is good or bad for the firm in the long-run. It merely seeks support for the explanation for the positive result of IVs on firm innovation.

Another plausible reasoning for the positive effect of IVs on firm innovation could be firms' resource commitments when IVs are present. Liedong et al. (2020) suggest that firms are

encouraged to intensify their resource commitments to overcome IVs. To deal with, for instance, opportunistic behaviour, firms might invest high amounts of resources to gain full control over the process. Consequently, firms can be flexible in making the necessary decisions to be successful. Luo (2004) adds that resource commitment is vital for firms to capture market, product and technological opportunities in emerging markets. Firms might introduce new innovative activities in an attempt to obtain these opportunities (Luo, 2004). This could explain as to why IVs have a positive effect on innovation.

5.2 Firm-specific capabilities

In this study, three firm-specific capabilities were hypothesized to have a moderating effect on the relation between IVs and firm innovation: (1) Internationalisation, (2) foreign ownership and (3) managerial experience. For all of these variables, the results showed a significant direct effect, but no moderating effect. Plausible explanations for the lack of these moderating effects will be discussed in this section.

Internationalisation

The first moderating variable internationalisation showed a significant direct effect on firm innovation, but no moderating effect. Still a relevant finding to mention, but not the effect that was hypothesized. This suggests that firms that engage in internationalisation are more likely to be innovative than firms that do not engage in internationalisation, similar to the findings by (Ding et al., 2021; Zhou et al., 2021). The significant result found in this study relates to the springboard perspective of Luo & Tung (2007), as firms can seek both assets and opportunities to foster innovation and consequently alleviate voids in domestic markets or exploit competitive advantages in emerging markets. Furthermore, the effect of internationalisation on firm innovation can attributed to specific motivations of emerging market firms as discussed in the article of Ramamurti (2012).

A plausible explanation for the lack of the moderating variable can be found in the operationalisation of the variable IVs. This variable was constructed on the basis of items from the WBES, that ask about how certain institutional characteristics are perceived (no obstacle – very severe obstacle). It could be that, similar to the argument made in section 5.1 about perception, firms do not perceive IVs as obstacles, but do engage in internationalisation as a response to IVs, for instance to foster innovation by bringing back technology to the home market (Ramamurti, 2012) . This would explain the interesting findings of robustness check

three in which a more objective operationalisation of IVs is used. In the robustness check, almost all results of the primary analysis hold. On top of that, the results show a significant moderating effect for internationalisation.

Foreign ownership

The moderating variable of foreign ownership showed no significant moderating effect on the relation of IVs on firm innovation but did show a significant direct effect on firm innovation. From the direct effect, it can be argued that firms with foreign ownership are more likely to be innovative than firms without foreign ownership. This result is in line with the findings of the article of Guadalupe et al. (2012). The study of Guadalupe et al. (2012) showed that firms with foreign ownership have increased product and process innovation, which can be attributed to, for instance, a transfer of technological knowledge. Emerging market firms can tap into the resource network of the foreign firm to access this knowledge (Zhou et al., 2021). External technologies may allow emerging market firms become more productive and therefore catch up to competitors, whilst staying R&D intensive (Kafouros & Buckley, 2008).

The lack of the moderating effect could be attributed to the minimal amount of firms with foreign ownership in the sample, which will be put forth as a limitation as well in chapter six. With the support of theory, it was hypothesized that foreign ownership can mitigate some of the adverse effects of IVs on firm innovation, but no empirical evidence was found. Surprisingly, robustness check 3 did show empirical support for the moderating effect of foreign ownership. This finding is relevant to mention, but should be interpreted cautiously.

Managerial experience

The effect of the final moderating variable of managerial experience consisted of a positive direct effect but no significant moderating effect. The positive direct effect of managerial experience on innovation is not surprising and is line with the academic literature (Ayyagari et al., 2011; Barasa et al., 2017; Knoben et al., 2023). Barasa et al. (2017) discuss the fact that experienced managers can better understand the competitive environment, which in turn improves the innovative performance of the firm. The improvements made by experienced managers can take the form of an upgrade in existing products or processes, or the introduction of a new technology (Ayyagari et al., 2011). In this manner, managerial experience directly affects firm innovation in a positive fashion.

A plausible explanation for the absence of a significant moderating effect could be found in the article of Custódio et al. (2019). In this article, the authors find that generalist managers – that is, managers with more diverse business experience – are more likely to be innovative than specialist managers. Because of their experience in different industries, firms and roles, generalist managers can bring knowledge and ideas from other industries into the equation, thereby potentially bringing a solution or innovation to a firm. Furthermore, this type of managers encourages a firm to engage in exploratory research activities, or "to pursue risky innovation opportunities." (Custódio et al., 2019, p.473). In this study, however, the operationalisation, that was used for the variable managerial experience (WBES), focused on the experience of a manager within an industry. This might explain as to why a moderating effect was not found.

5.3 Control Variables

This final section will elaborate on the control variables and their results. The control variables that have been included were firm size, firm age, R&D investment and industry. From these four variables, firm age, R&D investment and industry were found to be significant. The significant result for firm age is as expected but does show that larger firms are 15.2% less likely to be innovative. A finding that is in line with the article of Ayyagari et al. (2011).

The significant results for R&D investment and industry are as expected as firms that invest in research and development are more likely to be innovative similar to the findings of Xu et al. (2021), as well as the fact that industry matters for innovation. The findings regarding industry do differ from the findings from, for instance, the article of Barasa et al. (2017).

A final interesting remark: the control variable firm size has differing results across the analyses. Where firm size was not found to be significant in the primary analysis, it turned out to be significant in one or multiple models of the robustness checks. The reasoning behind these dissimilar results is unclear, and beyond the scope of this study. This provides proving grounds for future research, as will further discussed in section 6.4.

6. Conclusion

In the sixth and final chapter, the main findings will be concluded and implications for practices and theory will be presented. Then, the limitations of this research will be discussed, after which the recommendations for future research will be put forth.

6.1 Summary

The primary focus of this thesis has been on the effect of IVs on firm innovation in emerging markets. A secondary objective of this thesis was to research the potential moderating effect of several variables on the relation between IVs and firm innovation. From the combination of the two objectives, a research question could be established:

> *"What are the effects of institutional voids on firm innovation in emerging markets, and is this relationship moderated by internationalisation, foreign ownership or managerial experience?"*

The methodological approach of this thesis was to conduct the analysis through logistic regression. The results of the logistic regression showed that IVs do have an effect on firm innovation in emerging markets. As mentioned before, several moderator variables have been included in the form of (1) internationalisation, (2) foreign ownership and (3) managerial experience. The results regarding these variables showed no significant moderating effect, whilst a significant direct could be observed for all three variables. This entails that firms with some level of internationalisation (low/high) are more likely to be innovative than firms that do not engage in internationalisation. Furthermore, firms with foreign ownership are more likely to be innovative than firms without foreign ownership. Finally, firms that have an experienced manager are more likely to be innovative compared to firms that do not have this managerial experience.

After the primary analysis, several robustness checks have been performed in the form of three analyses. The first robustness check excludes India from the sample, as India accounted for more than 30% of the sample. Secondly, a robustness check performed, using only the Indian firms in the sample. In the third and final robustness check an analysis was conducted with an alternative operationalisation of the variable IVs. The results of the first robustness check were in line with the results of the primary analysis. In the second robustness check, interesting findings were a non-significant result for IVs and a significant moderating effect for managerial experience. Lastly, using an alternative measure for IVs resulted in several interesting results

worth mentioning. IVs turned out to be positive and significant similar to the primary analysis. Concluding, the moderating variables all showed a significant moderating effect in this analysis.

6.2 Implications

In section 1.3, the relevance of conducting this research was introduced. After the analysis, the results hold several implications for both theory and managers. This section will put forth the different implications, on theory and for managers.

Theoretical implications

This study contributes to the growing stream of literature that argues that IVs have a positive effect on firm innovation. The contextual factors that drive this innovation when IVs are present remain unclear and should be researched further. Furthermore, the moderating variables did not show significant moderating effects, but only direct effects. This sparks a potential debate for scholars, as the question arises whether these capabilities should be looked at as a single concept, or as a bundle of capabilities. Finally, the findings of the robustness checks also provide ground for scholars to build on, as results change on the country level of India and when looking IVs in a more objective manner. Specific future research avenues will be put forth in section 6.4.

Practical implications

The findings of this study also have interesting practical implications. The unexpected findings on the positive effect of IVs on firm innovation, and the positive direct effects of the moderating variable, give managers something to think about when designing the firm's strategy or when making decisions. Especially regarding the moderating variables, firms can consider the engagement in internationalisation, the (partly) acquirement of the firm by a foreign firm, or the hiring of an experienced manager to increase the innovative output of the firm. The results of the robustness checks also provide some stepping stones for strategy. The results of robustness check three, for instance, indicate that a different, more objective operationalisation of IVs will result in additional moderating effects. From the interaction plot, managers can see that at certain levels of IVs, a different choice might be better for innovative output. Think of for instance the cross-over effect of internationalisation (Figure 3).

6.3 Limitations

This study has several limitations that must be taken into account when interpreting its results. First, the moderating variable of foreign ownership could not be measured as wished for due to a lack of firms having foreign ownership. The used item from the WBES focused on the percentage of foreign ownership in a firm. Unexpectedly, the firms with foreign ownership only accounted for 5% of the sample. Therefore, findings should be interpreted cautiously.

Also, similar to the previous limitation, the control variable of R&D investment turned out to have 21% of missing values. However, R&D investment is relevant to include regarding innovation, as it can be assumed that more R&D investment leads to more innovation. Therefore, this control variable was still included, but should be interpreted accordingly.

6.4 Future research

To conclude this research several research avenues are suggested that can be explored in future studies. Starting with the main variables, the findings showed a positive relation between IVs and innovation. Contrary to the hypothesis, the findings indicate that firms that perceive higher levels of IVs are more likely to be innovative. This leads to the question what drives innovation in these firms. To open this black box of innovation in context of IVs, a qualitative research approach is suggested as qualitative research can help to understand the context in which these firms operate (Myers, 2019).

Building on the first suggestion, the formulation of the WBES items, used for the operationalisation of IVs, formulates the questions in such a way that the items are put forth as an obstacle. This may influence the response of firms, as they might not see it as an obstacle. Therefore, formulation could focus more on the presence of the phenomena, rather than the degree to which firms perceive it as an obstacle.

Thirdly, in the primary analysis the firm characteristics showed direct effects, but no moderating effects. Future research could focus on the firm characteristics on a broader level to see if the effects change, or additional effects become present. The firm characteristics would then be examined more as a “bundle” rather than single concepts.

The findings of the robustness checks also can be considered interesting proving grounds for future research. Robustness check two, in which only India was included, showed differing results from the primary analysis. The results showed no significant relation between IVs and firm innovation, and the variable managerial experience gained a significant moderating effect. Therefore, further research on the country-level of India in these contexts should be considered. Secondly, the control variable of firm size showed differing results across the analyses. The rationale behind these findings is unclear and can be researched further in the future. A final suggestion for future research could be a study on the difference in findings between the primary analysis and robustness check three. The former showed no significant moderating effects, while the latter found moderating effects of all moderating variables. Thus, the operationalisation of the variable IVs (subjective/objective) should be examined further.

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8. Appendices

8.1 Descriptive Tables and Reliability Analysis Tables Composite Measures

8.1.1 Corruption

Statistics

How Much of An Obstacle: Corruption		
N	Valid	27.488
	Missing	1.621
Mean		1,28
Median		1,00
Std. Deviation		1,372
Range		4
Minimum		0
Maximum		4

Statistics

Courts are independent and impartial when resolving disputes		
N	Valid	4.667
	Missing	24.442
Mean		3,02
Median		3,00
Std. Deviation		,645
Range		3
Minimum		1
Maximum		4

8.1.2 Rule of Law

Statistics

Rule of Law		
N	Valid	28.778
	Missing	331
Mean		1,0805
Median		1,0000
Std. Deviation		1,03713
Range		4
Minimum		0
Maximum		4

Reliability Statistics

Cronbach's Alpha	N of items
,779	3

8.1.3 Regulatory Quality

Statistics

Regulatory Quality		
N	Valid	28.929
	Missing	180
Mean		1,1240
Median		1,0000
Std. Deviation		1,01488
Range		4
Minimum		0
Maximum		4

Reliability Statistics

Cronbach's Alpha	N of items
,856	4

8.1.4 Institutional Voids – corruption, rule of law and regulatory quality

Statistics

Institutional Voids		
N	Valid	28.979
	Missing	130
Mean		1,16
Median		1,00
Std. Deviation		1,019
Range		4
Minimum		0
Maximum		4

Reliability Statistics

Cronbach's Alpha	N of items
,868	3

8.2 Frequency Tables: Innovation, Internationalisation, Foreign Ownership and Managerial Experience

Innovation

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not innovative	24.924	85,6	86,0	86,0
	Innovative	4.070	14,0	14,0	100,0
	Total	28.994	99,6	100,0	
Missing	System	115	,4		
Total		29.109	100,0		

Internationalisation

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No Internationalisation	23.874	82,0	85,1	85,1
	Low Internationalisation	1.421	4,9	5,1	90,1
	High Internationalisation	2.766	9,5	9,9	100,0
	Total	28.061	96,4	100,0	
Missing	System	1.048	3,6		
Total		29.109	100,0		

Foreign Ownership

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No Foreign Ownership	26.712	91,8	94,5	94,5
	Foreign Ownership	1.548	5,3	5,5	100,0
	Total	28.260	97,1	100,0	
Missing	System	849	2,9		
Total		29.109	100,0		

Managerial Experience

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not Experienced	8.337	28,6	30,0	30,0
	Experienced	19.497	67,0	70,0	100,0
	Total	27.834	95,6	100,0	
Missing	System	1.275	4,4		
Total		29.109	100,0		

8.3 Multicollinearity among independent variables

Coefficients[a]

Model		Collinearity Statistics	
		Tolerance	VIF
1	Institutional Voids	,993	1,007
	Internationalisation	,930	1,075
	Foreign Ownership	,939	1,065
	Managerial Experience	,985	1,016

a. Dependent Variable: Innovation

8.4 Logistic Regression – Model 1

Model Summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	16.819,592[a]	,054	,092

a. Estimation terminated at iteration number 5 because parameter estimates changed by less than ,001.

Variables in the Equation

								95% C.I. for EXP (B)	
		B	S.E.	Wald	df	Sig.	Exp(B)	Lower	Upper
Step 1[a]	FirmSize(1)	,062	,043	2,121	1	,145	1,064	,979	1,157
	LN_FirmAge	-,044	,031	1,950	1	,163	,957	,900	1,018
	R&D Investment	1,763	,051	1.217,353	1	<,001	5,828	5,279	6,435
	Industry			16,324	2	<,001			
	Industry (1)	,199	,066	9,057	1	,003	1,220	1,072	1,388
	Industry (2)	,154	,044	12,153	1	<,001	1,166	1,070	1,272
	Constant	-1,941	,098	395,901	1	<,001	,144		

a. Variable(s) entered on step 1: FirmSize, LN_FirmAge, R&D Investment, Industry

8.5 Logistic Regression – Model 2

Model Summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	16.658,593[a]	,061	,105

a. Estimation terminated at iteration number 5 because parameter estimates changed by less than ,001.

Variables in the Equation

		B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I. for EXP (B) Lower	Upper
Step 1[a]	FirmSize(1)	,069	,043	2,582	1	,108	1,071	,985	1,166
	LN_FirmAge	-,072	,032	5,127	1	,024	,931	,875	,990
	R&D Investment (1)	1,736	,051	1.165,931	1	<,001	5,672	5,135	6,267
	Industry			15,404	2	<,001			
	Industry (1)	,180	,066	7,343	1	,007	1,197	1,051	1,363
	Industry (2)	,156	,044	12,453	1	<,001	1,169	1,072	1,275
	Institutional Voids	,244	,019	163,532	1	<,001	1,276	1,230	1,325
	Constant	-2,145	,100	463,726	1	<,001	,117		

a. Variable(s) entered on step 1: Institutional Voids

8.6 Logistic Regression – Model 3

Model Summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	16.276,287[a]	,078	,135

a. Estimation terminated at iteration number 5 because parameter estimates changed by less than ,001.

Variables in the Equation

		B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I. for EXP (B) Lower	Upper
Step 1[a]	FirmSize(1)	-,083	,045	3,493	1	,062	,920	,843	1,004
	LN_FirmAge	-,165	,034	23,815	1	<,001	,848	,793	,906
	R&D Investment (1)	1,551	,053	872,044	1	<,001	4,716	4,255	5,228
	Industry			31,962	2	<,001			
	Industry (1)	,274	,067	16,591	1	<,001	1,315	1,153	1,500
	Industry (2)	,227	,045	25,19	1	<,001	1,255	1,148	1,371
	Institutional Voids	,291	,039	54,878	1	<,001	1,337	1,238	1,444
	Internationalisation			82,589	2	<,001			
	Internationalisation (1)	,921	,119	59,689	1	<,001	2,511	1,988	3,172
	Internationalisation (2)	,588	,098	36,121	1	<,001	1,800	1,486	2,181
	Foreign Ownership (1)	,782	,119	43,203	1	<,001	2,187	1,732	2,761
	Managerial Experience (1)	,370	,073	25,39	1	<,001	1,447	1,253	1,671
	Institutional Voids * Internationalisation			,980	2	,613			
	Institutional Voids by Internationalisation(1)	,018	,073	,063	1	,802	1,019	,882	1,176
	Institutional Voids by Internationalisation(2)	-,058	,063	,838	1	,360	,944	,835	1,068
	Foreign Ownership(1) by Institutional Voids	-,062	,073	,741	1	,389	,939	,815	1,083
	Institutional Voids by Managerial Experience(1)	-,053	,045	1,415	1	,234	,948	,868	1,035
	Constant	-2,25	,108	434,902	1	<,001	,105		

a. Variable(s) entered on step 1: Internationalisation, Foreign Ownership, Managerial Experience, Institutional Voids * Internationalisation , Foreign Ownership * Institutional Voids , Institutional Voids * Managerial Experience .

8.7 Robustness check 1 – logistic regression overview

Variable	Model 1		Model 2		Model 3	
	Sig.	Exp(B)	Sig.	Exp(B)	Sig.	Exp(B)
FirmSize *Large*	<,001*	1,312*	<,001*	1,294*	,004*	1,155*
LN_FirmAge	,969	,999	,411	,972	<,001*	,858*
R&D Investment *Investment present*	<,001*	3,709*	<,001*	3,570*	<,001*	3,207*
Industry *Retail*	,499	1,052	,776	1,022	,179	1,108
Industry *Services*	,246	,944	,323	,951	,941	1,004
Institutional Voids			<,001*	1,355*	<,001*	1,371*
Internationalisation *Low Internationalisation*					<,001*	1,851*
Internationalisation *High Internationalisation*					,003*	1,402*
Foreign Ownership (1)					<,001*	1,731*
Managerial Experience(1)					<,001*	1,606*
Institutional Voids* Internationalisation(1)					,923	,992
Institutional Voids* Internationalisation(2)					,331	,932
Foreign Ownership(1)* Institutional Voids					,053	,867
Institutional Voids * Managerial Experience(1)					,787	1,014
Nagelkerke R^2		,082		,105		,129

Significance at p <.05*

8.8 Robustness check 1 – leaving out India in sample

Model 1

Model Summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	12.027,349[a]	,055	,082

a. Estimation terminated at iteration number 4 because parameter estimates changed by less than ,001.

Variables in the Equation

		B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I. for EXP (B) Lower	Upper
Step 1[a]	FirmSize(1)	,271	,048	32,381	1	<,001	1,312	1,195	1,441
	LN_FirmAge	-,001	,035	,001	1	,969	,999	,933	1,069
	R&D Investment	1,311	,055	562,106	1	<,001	3,709	3,328	4,133
	Industry			2,496	2	,287			
	Industry (1)	,050	,074	,458	1	,499	1,052	,909	1,216
	Industry (2)	-,058	,050	1,345	1	,246	,944	,856	1,041
	Constant	-1,524	,107	202,929	1	<,001	,218		

a. Variable(s) entered on step 1: FirmSize, LN_FirmAge, R&D Investment, Industry

Model 2

Model Summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	11.837,892[a]	,070	,105

a. Estimation terminated at iteration number 4 because parameter estimates changed by less than ,001.

Variables in the Equation

		B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I. for EXP (B) Lower	Upper
Step 1[a]	FirmSize(1)	,257	,048	28,600	1	<,001	1,294	1,177	1,422
	LN_FirmAge	-,029	,035	,677	1	,411	,972	,907	1,041
	R&D Investment (1)	1,272	,056	519,773	1	<,001	3,570	3,200	3,982
	Industry			1,347	2	,510			
	Industry (1)	,021	,075	,081	1	,776	1,022	,882	1,183
	Industry (2)	-,050	,050	,977	1	,323	,951	,862	1,050
	Institutional Voids	,304	,022	189,661	1	<,001	1,355	1,298	1,415
	Constant	-1,793	,110	265,081	1	<,001	,166		

a. Variable(s) entered on step 1: Institutional Voids

Model 3

Model Summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	11.644,691[a]	,086	,129

a. Estimation terminated at iteration number 5 because parameter estimates changed by less than ,001.

Variables in the Equation

		B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I. for EXP (B) Lower	Upper
Step 1[a]	FirmSize(1)	,144	,050	8,296	1	,004	1,155	1,047	1,274
	LN_FirmAge	-,153	,037	16,970	1	<,001	,858	,797	,923
	R&D Investment (1)	1,165	,057	416,633	1	<,001	3,207	2,868	3,587
	Industry			1,951	2	,377			
	Industry (1)	,103	,076	1,809	1	,179	1,108	,954	1,287
	Industry (2)	,004	,052	,005	1	,941	1,004	,907	1,111
	Institutional Voids	,315	,044	51,059	1	<,001	1,371	1,257	1,494
	Internationalisation			26,997	2	<,001			
	Internationalisation (1)	,616	,129	22,745	1	<,001	1,851	1,437	2,383
	Internationalisation (2)	,338	,115	8,610	1	,003	1,402	1,119	1,757
	Foreign Ownership (1)	,549	,124	19,741	1	<,001	1,731	1,359	2,206
	Managerial Experience (1)	,473	,084	31,721	1	<,001	1,606	1,362	1,893
	Institutional Voids * Internationalisation			,947	2	,623			
	Institutional Voids by Internationalisation(1)	-,008	,079	,009	1	,923	,992	,850	1,159
	Institutional Voids by Internationalisation(2)	-,070	,072	,946	1	,331	,932	,809	1,074
	Foreign Ownership(1) by Institutional Voids	-,143	,074	3,756	1	,053	,867	,750	1,002
	Institutional Voids by Managerial Experience(1)	,014	,051	,073	1	,787	1,014	,918	1,120
	Constant	-1,862	,120	239,375	1	<,001	,155		

a. Variable(s) entered on step 1: Internationalisation, Foreign Ownership, Managerial Experience, Institutional Voids * Internationalisation , Foreign Ownership * Institutional Voids , Institutional Voids * Managerial Experience .

8.9 Robustness check 2 – logistic regression overview

Variable	Model 1		Model 2		Model 3	
	Sig.	Exp(B)	Sig.	Exp(B)	Sig.	Exp(B)
FirmSize *Large*	,422	,918	,383	,911	,042*	,797*
LN_FirmAge	,272	,916	,333	,925	,486	,941
R&D Investment	<,001*	5,939*	<,001*	5,919*	<,001*	4,243*
Investment present						
Industry *Retail*	,006*	1,545*	,005*	1,549*	,006*	1,552*
Industry *Services*	<,001*	1,576*	<,001*	1,580*	<,001*	1,667*
Institutional Voids			,168	,935	,357	1,090
Internationalisation					<,001*	2,936*
Low Internationalisation						
Internationalisation *High Internationalisation*					<,001*	2,860*
Foreign Ownership (1)					,142	1,930
Managerial Experience(1)					,222	1,213
Institutional Voids* Internationalisation(1)					,310	1,249
Institutional Voids* Internationalisation(2)					,134	1,231
Foreign Ownership(1)* Institutional Voids					,858	,947
Institutional Voids * Managerial Experience(1)					,005*	,729*
Nagelkerke R^2		,038		,039		,082

Significance at p <.05*

8.10 Robustness check 2 – only Indian firms in the sample

Model 1

Model Summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	3.601,866[a]	,013	,038

a. Estimation terminated at iteration number 6 because parameter estimates changed by less than ,001.

Variables in the Equation

		B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I. for EXP (B) Lower	Upper
Step 1[a]	FirmSize(1)	-,086	,107	,645	1	,422	,918	,744	1,132
	LN_FirmAge	-,088	,080	1,208	1	,272	,916	,784	1,071
	R&D Investment	1,781	,157	128,027	1	<,001	5,939	4,362	8,086
	Industry			20,563	2	<,001			
	Industry (1)	,435	,157	7,644	1	,006	1,545	1,135	2,104
	Industry (2)	,455	,105	18,591	1	<,001	1,576	1,282	1,938
	Constant	-2,943	,249	139,260	1	<,001	,053		

a. Variable(s) entered on step 1: FirmSize, LN_FirmAge, R&D Investment, Industry

Model 2

Model Summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	3.599,939[a]	,013	,039

a. Estimation terminated at iteration number 6 because parameter estimates changed by less than ,001.

Variables in the Equation

		B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I. for EXP (B) Lower	Upper
Step 1[a]	FirmSize(1)	-,094	,107	,761	1	,383	,911	,738	1,124
	LN_FirmAge	-,078	,080	,939	1	,333	,925	,791	1,083
	R&D Investment (1)	1,778	,157	127,471	1	<,001	5,919	4,347	8,060
	Industry			20,783	2	<,001			
	Industry (1)	,437	,157	7,717	1	,005	1,549	1,137	2,109
	Industry (2)	,458	,106	18,802	1	<,001	1,580	1,285	1,944
	Institutional Voids	-,067	,049	1,898	1	,168	,935	,849	1,029
	Constant	-2,901	,251	133,536	1	<,001	,055		

a. Variable(s) entered on step 1: Institutional Voids

Model 3

Model Summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	3.465,821[a]	,027	,082

a. Estimation terminated at iteration number 6 because parameter estimates changed by less than ,001.

Variables in the Equation

		B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I. for EXP (B) Lower	Upper
Step 1[a]	FirmSize(1)	-,227	,112	4,119	1	,042	,797	,641	,992
	LN_FirmAge	-,061	,087	,484	1	,486	,941	,793	1,117
	R&D Investment (1)	1,445	,165	76,338	1	<,001	4,243	3,068	5,867
	Industry			23,772	2	<,001			
	Industry (1)	,440	,161	7,469	1	,006	1,552	1,132	2,128
	Industry (2)	,511	,108	22,374	1	<,001	1,667	1,349	2,060
	Institutional Voids	,086	,093	,849	1	,357	1,090	,908	1,308
	Internationalisation			37,213	2	<,001			
	Internationalisation (1)	1,077	,318	11,484	1	<,001	2,936	1,575	5,472
	Internationalisation (2)	1,051	,192	29,984	1	<,001	2,860	1,963	4,165
	Foreign Ownership (1)	,658	,448	2,151	1	,142	1,930	,802	4,648
	Managerial Experience (1)	,193	,158	1,492	1	,222	1,213	,890	1,654
	Institutional Voids * Internationalisation			2,864	2	,239			
	Institutional Voids by Internationalisation(1)	,222	,219	1,030	1	,310	1,249	,813	1,919
	Institutional Voids by Internationalisation(2)	,208	,139	2,247	1	,134	1,231	,938	1,616
	Foreign Ownership(1) by Institutional Voids	-,055	,306	,032	1	,858	,947	,519	1,726
	Institutional Voids by Managerial Experience(1)	-,316	,112	8,031	1	,005	,729	,586	,907
	Constant	-3,185	,267	142,149	1	<,001	,041		

a. Variable(s) entered on step 1: Internationalisation, Foreign Ownership, Managerial Experience, Institutional Voids * Internationalisation , Foreign Ownership * Institutional Voids , Institutional Voids * Managerial Experience .

8.11 Alternative operationalisation institutional voids

As mentioned in section 4.4 on robustness, the third robustness check focuses on an alternative, more objective, operationalisation of institutional voids. This operationalisation is based on the TGCR indicators included under the institutional pillar . After careful consideration, five indicators have been identified for further examination:

1. Efficiency of legal framework in challenging regulations 1-7 (best)
2. Burden of government regulation 1-7 (best)
3. Efficiency of legal framework in settling disputes 1-7 (best)
4. Incidence of corruption 0-100 (best)
5. Strength of auditing and reporting standards 1-7 (best)

Before conducting a principal component analysis (PCA) for the five indicators, the discrepancy of measurement level must be addressed. As can be seen, four indicators are measured on a 7-point scale, whilst one indicator is measured on a 101-point scale. In order to be able to perform the PCA, the 7-point scale indicators are transformed to a 101-point scale ((response values – 1) * (100/6)).

Firstly, before the number of components can be identified, the KMO and Bartlett's Test must be assessed. The table below shows a KMO-value of ,683 and a significant result for the Bartlett's Test of Sphericity (at $p < 0,05$). Since the KMO is above the value of 0,5 and the Bartlett's test is significant, the next step in the analysis can be performed (Hair et al., 2018)

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy		,683
Bartlett's Test of Sphericity	Approx. Chi-Square	151.641,262
	df	10
	Sig.	<,001

KMO and Bartlett's Test

Using the latent root criterion, it can be observed that two components should be retained (table below), as they have an eigenvalue greater than one, considered to be the threshold to which a variable must attain to be retained (Hair et al., 2018).

Total Variance Explained

	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
Component	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	3,194	63,871	63,871	3,194	63,871	63,871	2,866	57,320	57,320
2	1,170	23,401	87,272	1,170	23,401	87,272	1,498	29,951	87,272
3	,530	10,606	97,877						
4	,061	1,217	99,094						
5	,045	,906	100,000						

Extraction Method: Principal Component Analysis

The next step in the process is to look at the factor loadings in the component matrix and the rotated component matrix. Immediately, it becomes clear that variable one, two and three load significant on component one, and that variable four loads significantly on component two. Variable five (strength of

auditing and reporting standards) loads on both components. For this variable it is therefore necessary to inspect the rotated component matrix. After rotation, variable five loads significantly on component two and loses its significant loading on component one.

Component Matrix[a]

	Component	
	1	2
Legal Framework (1)	,920	-,342
Burden Government Regulation	,943	-,240
Legal Framework (2)	,972	-,102
Incidence of Corruption	,368	,829
Strength Auditing and Reporting Standards	,614	,545

Extraction Method: Principal Component Analysis
a. 2 components extracted.

Rotated Component Matrix[a]

	Component	
	1	2
Legal Framework (1)	,980	,057
Burden Government Regulation	,960	,160
Legal Framework (2)	,931	,298
Incidence of Corruption	,003	,907
Strength Auditing and Reporting Standards	,343	,746

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.
a. Rotation converged in 3 iterations.

Concluding, after conducting a PCA, two components have been retained. Variable one, two and three load significantly on component one, and variable four and five load significantly on component two. As one composite measure is to be formed, the main aim of the principal component analysis was to find out which variables load on component one. Therefore, the composite measure that will be used in the robustness check will consist of variable one to three and will be referred to as *(Alt.) Institutional Voids*. The composite measure will be formed through taking the average of the items in the scale (Hair et al., 2018). The average will be taken from the original values of the variables (7-point scale) and will be reversed for interpretation purposes (i.e. a higher score indicates a higher level of institutional voids). The scale will take the form of:

1. Very low
2. Low
3. Moderate
4. Median
5. Slightly Severe
6. Severe
7. Very Severe

Before the composite measures can be formed, however, a reliability analysis is conducted.
The reliability statistics show a Cronbach's Alpha of 0,973 for component one. This is clearly above the generally agreed-upon threshold of 0.7. Therefore, the composite measure can be constructed, and the logistic regression can be performed.

Reliability Statistics

Cronbach's Alpha	N of items
,973	3

Reliability Analysis Composite Measure

8.12 Robustness check 3 – logistic regression overview

Variable	Model 1		Model 2		Model 3	
	Sig.	Exp(B)	Sig.	Exp(B)	Sig.	Exp(B)
FirmSize *Large*	,141	1,065	,008*	1,123*	,885	,993
LN_FirmAge	,145	,955	,007*	,918*	<,001*	,861*
R&D Investment	<,001*	5,826*	<,001*	4,179*	<,001*	3,635*
Investment present						
Industry *Retail*	,003*	1,217*	,778	1,019	,320	1,071
Industry *Services*	<,001*	1,163*	,120	1,073	,009*	1,129*
Institutional Voids			<,001*	2,064*	<,001*	2,125*
Internationalisation					<,001*	19,941*
Low Internationalisation						
Internationalisation *High Internationalisation*					<,001*	12,256*
Foreign Ownership (1)					<,001*	10,280*
Managerial Experience(1)					,233	,743
Institutional Voids* Internationalisation(1)					<,001*	,604*
Institutional Voids* Internationalisation(2)					<,001*	,625*
Foreign Ownership(1)* Institutional Voids					<,001*	,677*
Institutional Voids * Managerial Experience(1)					,033*	1,128*
Nagelkerke R^2		,092		,167		,196

Significance at p <.05*

8.13 Robustness check 3 – alternative operationalisation institutional voids

Model 1

Model Summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	16.843,661[a]	,053	,092

a. Estimation terminated at iteration number 5 because parameter estimates changed by less than ,001.

Variables in the Equation

								95% C.I. for EXP (B)	
		B	S.E.	Wald	df	Sig.	Exp(B)	Lower	Upper
Step 1[a]	FirmSize(1)	,063	,043	2,171	1	,141	1,065	,979	1,158
	LN_FirmAge	-,046	,031	2,128	1	,145	,955	,898	1,016
	R&D Investment	1,762	,051	1.217,454	1	<,001	5,826	5,277	6,433
	Industry			15,885	2	<,001			
	Industry (1)	,196	,066	8,861	1	,003	1,217	1,069	1,385
	Industry (2)	,151	,044	11,780	1	<,001	1,163	1,067	1,268
	Constant	-1,934	,097	394,148	1	<,001	,144		

a. Variable(s) entered on step 1: FirmSize, LN_FirmAge, R&D Investment, Industry

Model 2

Model Summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	15.868,975[a]	,097	,167

a. Estimation terminated at iteration number 5 because parameter estimates changed by less than ,001.

Variables in the Equation

		B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I. for EXP (B) Lower	Upper
Step 1[a]	FirmSize(1)	,116	,044	7,018	1	,008	1,123	1,031	1,224
	LN_FirmAge	-,086	,032	7,227	1	,007	,918	,862	,977
	R&D Investment (1)	1,430	,053	725,359	1	<,001	4,179	3,766	4,638
	Industry			2,460	2	,292			
	Industry (1)	,019	,068	,079	1	,778	1,019	,893	1,164
	Industry (2)	,071	,045	2,418	1	,120	1,073	,982	1,173
	(Alt.) Institutional Voids	,725	,023	961,387	1	<,001	2,064	1,972	2,161
	Constant	-4,799	,138	1212,065	1	<,001	,008		

a. Variable(s) entered on step 1: (Alt.) Institutional Voids

Model 3

Model Summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	15.482,339[a]	,113	,196

a. Estimation terminated at iteration number 5 because parameter estimates changed by less than ,001.

Variables in the Equation

		B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I. for EXP (B) Lower	Upper
Step 1[a]	FirmSize(1)	-,007	,046	,021	1	,885	,993	,909	1,086
	LN_FirmAge	-,150	,034	19,246	1	<,001	,861	,805	,921
	R&D Investment (1)	1,291	,054	568,364	1	<,001	3,635	3,269	4,042
	Industry			6,795	2	,033			
	Industry (1)	,069	,069	,990	1	,320	1,071	,935	1,227
	Industry (2)	,121	,047	6,769	1	,009	1,129	1,030	1,236
	(Alt.) Institutional Voids	,754	,051	219,008	1	<,001	2,125	1,923	2,349
	Internationalisation			123,077	2	<,001			
	Internationalisation (1)	2,993	,364	67,446	1	<,001	19,941	9,763	40,733
	Internationalisation (2)	2,506	,283	78,403	1	<,001	12,256	7,038	21,343
	Foreign Ownership (1)	2,330	,338	47,609	1	<,001	10,280	5,303	19,927
	Managerial Experience (1)	-,296	,249	1,421	1	,233	,743	,457	1,210
	(Alt.) Institutional Voids * Internationalisation			80,466	2	<,001			
	(Alt.) Institutional Voids by Internationalisation(1)	-,505	,078	41,605	1	<,001	,604	,518	,704
	(Alt.) Institutional Voids by Internationalisation(2)	-,470	,064	53,717	1	<,001	,625	,551	,709
	Foreign Ownership(1) by (Alt.) Institutional Voids	-,391	,074	27,924	1	<,001	,677	,585	,782
	(Alt.) Institutional Voids by Managerial Experience(1)	,120	,056	4,542	1	,033	1,128	1,010	1,260
	Constant	-4,997	,236	448,079	1	<,001	,007		

a. Variable(s) entered on step 1: Internationalisation, Foreign Ownership, Managerial Experience, (Alt.) Institutional Voids * Internationalisation , Foreign Ownership * (Alt.) Institutional Voids , (Alt.) Institutional Voids * Managerial Experience .