Transformational leadership as enabler of organizational innovation in Malaysia - An analysis of the impact of contextual factors on the effectiveness of leadership

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The President:

Prof. Dr. Thomas Bieger

My dissertation is dedicated with thanks to
Cheong Yuk Wai for his inspiring presence and guidance.

‘Life just is. The rest is up to me to make it happen.’

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St. Gallen, November 2, 2015 Susanne Fabjan

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List of abbreviations

ADB	Asian Development Bank
APEC	Asia Pacific Economic Cooperation
ASEAN	Association of Southeast Asian Nations
CFA	Confirmatory Factor Analysis
CIA	Central Intelligence Agency
CIS	Community Innovation Survey
CR	Contingent Reward
CSR	Corporate Social Responsibility
EC	Empowerment Climate
ED	Environmental Dynamism
Eff	Effectiveness
EUMCCI	EU-Malaysia Chamber of Commerce and Industry
ExC	External Communication
ExEf	Extra Efforts
GDP	Gross Domestic Product
GLOBE	Global Leadership and Organizational Behaviour Effectiveness Research Program
HDI	Human Development Index
HDR	Human Development Report
H-L	Hosmer and Lemeshow
IC	Individualized Consideration
ICT	Information and Communication Technology
IIA	Idealized Influence Attribute
IIB	Idealized Influence Behaviour
IM	Inspirational Motivation
IS	Intellectual Stimulation
LF	Laissez Faire
MbeA	Active Management-by-Exception
MbeP	Passive Management-by-Exception
ML	Maximum Likelihood
MLQ	Multifactor Leadership Questionnaire
MLR	Multiple Linear Regression
MYR	Malaysian Ringgit
NEP	New Economic Policy
OECD	Organisation for Economic Co-operation and Development

OLS	Ordinary Least Squares
PL	Passive Leadership
Sat	Satisfaction
SD	Standard Deviation
Sdn Bhd	Sendirian Berhad
SLR	Simple Linear Regression
SME	Small and Medium Sized Enterprises
SP	Subordinates' Professionalism
TA	Transactional Leadership
TF	Transformational Leadership
UNDP	United Nations Development Program
UNESCO	United Nations Educational, Scientific, and Cultural Organization
VIF	Variance Inflation Factors
WBCSD	World Business Council on Sustainable Development

Summaries of research project and principal findings

'Leadership is one of the most observed and one of the least understood phenomena on earth.'
James MacGreagor Burns, 1978: 2

Even though *leadership* has now blossomed into one of the most heavily researched topics in today's business literature, existing studies mainly focus on Western countries whose research results cannot be fully applied to the Asian context. Indeed, the importance of leadership and the behaviours of leaders vary considerably across countries and cultures. Looking at Malaysia, the relevance of *transformational leadership* has already been confirmed by several scholars, but authors disagree about the *predominant* leadership behaviours. By addressing this gap, the dissertation analyses leadership behaviours at the level of small and medium sized enterprises (SMEs) operating in the information and communication technology (ICT) sector of Kuala Lumpur, Malaysia. In a second step, the study evaluates the influence of leadership behaviours on *organizational innovation* in its unaltered form, which has as yet been only rarely empirically studied. In this study, the author accounts for the essential role of innovation as an integrated part of today's organizational life. As leadership-innovation relationships always occur within specific contexts, a research model is established which illustrates the analysis of selected contextual conditions and their impact on the effectiveness of leadership in terms of enhanced organizational innovation. Besides its relevance for academic research, the study offers important implication for Malaysian ICT SMEs.

Through a multiple triangulation research design, the author analysed the responses of 42 SME leaders, 52 of their direct subordinates and 3 representatives of local institutions. Quantitative and qualitative research results of this sample reveal that leadership behaviours are more often transformational, than transactional. Compared with other leadership styles and behaviours, transformational leadership has the greatest positive impact on procedural, structural and inter-organizational innovation, viewed singly or in aggregate, and also on most of their sub-types. Findings additionally show *when* contextual variables change the effectiveness of leadership (moderation models), and *how* leadership has an impact on organizational innovation (mediation models). While *subordinates' professionalism* and *external communication* at times offset the positive influence of transformational leadership, *empowerment climate* strengthens its positive impact. Finally, the *Corporate Social Responsibility (CSR) engagement* acts as a mediator of the leadership-innovation relationship, whereby the influence of leadership is limited to its impact on CSR activities in cases when firms have a CSR agenda.

Zusammenfassung

'My job is to not be easy on people. My job is to make them better.'
Steve Jobs, 2008

Transformationale Führung bedeutet nicht, dass es die Aufgabe der Führungskräfte ist es den Mitarbeitern leicht zu machen, ganz im Gegenteil. Die Mitarbeiter werden gefördert, aber auch gefordert und zur Höchstleistung motiviert; stets basierend auf gegenseitigem Vertrauen, Respekt sowie individueller Wertschätzung. Durch ihre Rolle als Coach und Mentor sowie ihre charismatischen und inspirierenden Persönlichkeiten, nehmen transformationale Führungskräfte eine Vorbildfunktion ein, vermitteln fundamentale Werte und wecken in ihren Mitarbeitern Begeisterung und Bewunderung. Obgleich die Relevanz dieses Führungsstils im malaysischen Kontext bereits bestätigt wurde, besteht nach wie vor Uneinigkeit über vorherrschende Verhaltensmuster auf der Führungsebene. Aus dieser Diskussion entspringt der erste Forschungsfokus der Dissertation: Die Analyse typischer Verhaltensweisen von Führungskräften malaysischer Klein- und Mittelunternehmen. In einem zweiten Schritt wird untersucht *wie* das Führungsverhalten *organisationale Innovation* beeinflusst, eine Innovationsform die bislang nur begrenzt empirisch untersucht wurde. Doch wie verhaltet sich dieser Zusammenhang zwischen Führung und organisationaler Innovation unter Berücksichtigung gewisser Kontextvariablen?

Auf der Basis eines triangulierten Forschungsdesigns werden die Rückmeldungen von 42 Führungskräften, 52 Mitarbeitern (ohne Führungsaufgabe) und 3 Vertretern lokaler Institutionen analysiert. Quantitative und qualitative Forschungsergebnisse deuten auf vorwiegend transformationale Verhaltensweisen hin, welche – im Vergleich zu einem transaktionalen oder passiven Führungsstil – den stärksten positiven Einfluss auf organisationale Innovation ausüben. Die Analyse dieser Beziehung zwischen Führung und Innovation unter Berücksichtigung spezifischer Kontextvariablen zeigt, dass die jeweilige Situation, in welcher sich das Unternehmen befindet, eine signifikante Auswirkung auf den Einfluss der Führungskultur auf organisationale Innovation hat (Moderation) und auch bestimmt, *wie* das jeweilige Führungsverhalten organisationale Innovation beeinflusst (Mediation). Die vorliegenden Forschungsergebnisse zeigen, dass *professionelle Mitarbeiter* und *ausgeprägte externe Netzwerke und Kontakte* die positive Wirkungskraft von transformationalen Führungskräften reduzieren, sodass diese nur noch einen bedingten Einfluss auf organisationale Innovation ausüben. Demgegenüber stärkt ein von *Empowerment* geprägtes Unternehmensklima die positive Kraft von transformationalem Führungsverhalten. Auch das *Engagement* der Unternehmen in *Corporate Social Responsibility Aktivitäten*, welches positiv von transformationaler Führung beeinflusst wird, stärkt organisationale Innovation.

1 Introduction

In today's rapidly changing environment, driven by ongoing globalization and growing complexity, leadership issues become increasingly prominent. Even though leadership is one of the world's oldest concepts with more than 850 definitions, no common understanding has been developed as to what differentiates leaders from non-leaders, and effective from ineffective leaders (Bennis and Nanus, 2007). Today's great diversity of leadership styles indicates that there might be as many different styles of leadership as there are different leaders (Bass and Stogdill, 1990). Hence, leadership is a complex and continuously evolving phenomenon that can, or rather must, be analysed within specific contexts (Yukl, 1994). This is the core aim of the present study, which contributes to the existing leadership literature in several ways and has important managerial implications.

Leadership literature and research continues to focus on Western perspectives that cannot be fully applied to Asian contexts (Jogulu and Ferkins, 2012). In fact, leadership practices evolve from a nation's unique social structure and culture (Jogulu and Wood, 2006; Shahin and Wright, 2004). By addressing the limitations of existing literature on Asian leadership, the study analyses leadership within the context of Malaysia, which is marked by a diverse society, different ethnic and religious backgrounds and traditions, its British colonial heritage as well as a remarkable economic transformation and growth within the last three decades (Jogulu and Ferkins, 2012). It is suggested that these distinct characteristics of Malaysia require a leadership approach which treats subordinates differently depending on their individual needs and capabilities, whereby leadership provides meaning and direction to this diverse group of subordinates, challenges innovation and is capable of responding positively to change, enabling organizations to continually adapt and change (Bass, 1985; Bass and Avolio, 1990). As existing research confirms the importance of transformational leadership across various cultures (Avolio and Bass, 2004) and its significant relevance within the Malaysian context (Jogulu and Ferkins, 2012), the study builds on this concept. However, it has to be noted that most existing studies neither focus on SMEs (e.g. Arshad et al., 2013) nor do they provide consistent results as some of them show that Malaysian leaders are more transactional than transformational in their approach to leadership (e.g. Amirul and Daud, 2012).

Transformational leadership has fundamentally shaped the last decades in leadership research (Eisenbeiß and Boerner, 2013), as it fulfils the complex requirements of today's demanding environment by actively changing ingrained habits and ways of

thinking, and by building high levels of trust and commitment (Bass, 1985; Howell and Avolio, 1993). Transformational leaders inspire subordinates to perform at the highest levels, make extra efforts and generate creative and innovative ideas, which are needed to attain organizational success and gain a competitive edge (Jong and Hartog, 2007; Pieterse et al., 2010). Thereby, they acknowledge that subordinates are indispensable (Avolio and Bass, 2004) for reshaping organizational practices to adapt to environmental changes and turbulent conditions (Bennis and Nanus, 2007). In this context, transformational leadership has been recognized as an essential driving force for organizational innovation by many scholars (e.g. Gumusluoglu and Ilsev, 2009 and 2009a; Noruzy et al., 2013). Especially at the level of SMEs, transformational leadership behaviours have a strong impact on the different performance indicators of a company and its ability to innovate (e.g. Aziz et al., 2013; Yang, 2008).

Organizational innovation refers to the introduction of new organizational methods in a firm's business practices, workplace organisation and external relations with other firms or institutions (European Commission, 2010; OECD, 2005). In contrast to the wide range of innovation literature with its long tradition, empirical research on organizational innovation is limited and diverse (Camisón and Villar-López, 2014), especially in the context of Malaysian SMEs (e.g. Alshammari et al., 2014). Further research is hindered by the lack of a common definition, a coherent theoretical framework and common standards for modelling this complex phenonomen (Armbruster et al., 2008; Sapprasert and Clausen, 2012). By addressing these shortcomings, the study contributes to an improved understanding of organizational innovation at the level of SMEs in Malaysia.

Finally, the author analyses the impact of the specific context within which this leadership-innovation relationship occurs by dividing the company's environment into an outer and inner perspective (Pettigrew, 2012). Both perspectives are assumed to involve factors that might influence organizational change as well as the effectiveness of leadership. Based on existing research, the author analyses *when* specific contextual variables strengthen or reduce the effectiveness of leadership to enhance organizational innovation (moderation models), and also *how* leadership has an impact on organizational innovation (mediation models) (Baron and Kenny, 1986).

In fact, prior research found that *subordinates' professionalism* and the *empowerment climate* have the power to negatively moderate or even offset the impact of transformational leadership (e.g. Nübold et al., 2013). Looking at external factors,

findings point to a greater effectiveness of transformational leadership within high *dynamic environments* (e.g. Purvee and Enkhtuvshin, 2014) as well as under *higher external support* (e.g. Gumusluoglu and Ilsev, 2009a). In addition, very few existing studies analyse the role of *CSR engagement* – which concerns the economic, legal, ethical and philanthropic responsibilities of a company – as an internal mediator of the leadership-innovation relationship. Even though – to the best of the author's knowledge – no study focuses on the impact of transformational leadership on organizational innovation, existing research shows that CSR practices act as a mediator of the association between transformational leadership and other organizational outcome variables, such as job satisfaction (e.g. Nazir et al., 2014).

1.1 Problem statement and relevance of the research project

The purpose of the study is threefold. First, it seeks to improve the understanding of predominant leadership behaviours at the level of SMEs in the multi-ethnic setting of Kuala Lumpur, Malaysia. Second, the study aims to enhance the understanding of organizational innovation at the level of Malaysian SMEs as well as the impact of leadership on this special form of innovation. Third, it seeks to fill the gap in existing research as to how the effectiveness of leadership is influenced by contextual factors that act from within as well as from outside the company.

In order to address respective gaps in existing research, which are apparent to the author as a result of her broad review of the literature, the main research question is formulated as follows: *How do contextual conditions moderate or mediate the relationship between transformational leadership and organizational innovation?* In other words: *How do contextual conditions moderate or mediate the effectiveness of transformational leadership in terms of enhanced organizational innovation?* Breaking down this main research question into sub-questions according to the threefold purpose of the study has been necessary in order to address specific shortcomings of existing research in a structured and in an appropriate manner. Thereby, the author contributes to the existing body of knowledge in several ways.

First, the present study contributes to the ongoing discussion about the predominant behaviours of Malaysian leaders; a discussion characterized by different and partly conflicting results. While one group of scholars confirm the greater role of *transformational leadership* within the Malaysian context (e.g. Arshad et al., 2013), others point to more *transactional leadership* behaviours (e.g. Amirul and Daud, 2012). Most of these studies do not sample SMEs. The author takes account of the

unique SME environment and considers how leadership differs as a function of cultural factors, which play a crucial role in determining leadership styles (Lo et al., 2010; Pawar and Eastman, 1997).

Second, the author improves the understanding of *organizational innovation*, its emergence and its support through the specific qualities of Malaysian leaders. On the one hand, the study addresses the gap in existing research dealing with organizational innovation at the level of SMEs (Camisón and Villar-López, 2014), especially in comparison to studies with a focus on technological innovation (Hervas-Oliver and Peris-Ortiz, 2014). On the other, it contributes to the as yet still limited empirical studies which evaluate the relationship between transformational leadership and organizational innovation in the research field Malaysia, whereby most of them are sampling larger firms or have a broader regional context (e.g. Radzi et al., 2013).

Third, the study improves the understanding of the functioning of the *leadership-innovation relationship* within its specific environment, which is limited at the level of SMEs and offers different research results depending on the specific contextual factor. The study thereby shows under which conditions the behaviours of Malaysian leaders are effective or ineffective in achieving enhanced organizational innovation. The selection of these potential moderation and mediation variables is based on existing research as well as their topicality. The relevance of some of these variables is confirmed by the qualitative analysis in this study. However, existing research dealing with potential moderators and mediators – specifically *subordinates' professionalism*, *empowerment climate*, *CSR engagement*, *environmental dynamism* and *external communication* – is very limited and rarely found at the level of Malaysian SMEs.

Beyond their relevance for academia, the study's research results are highly relevant for the objectives of owners, management members and department heads of Malaysian SMEs operating in the ICT sector. In fact, the study provides guidance in the quest of companies for improved productivity through higher innovation which is unleashed and accelerated by ongoing globalisation, cross-border cooperation and business activities, and enhanced worldwide inter-connectivity. Practical implications of the study should contribute to an improved decision making process on the part of leaders and thereby support the competitiveness as well as the development of Malaysian SMEs. Compared to their counterparts in many Western or more developed countries, SMEs in Kuala Lumpur have not reached their full potential so far (OECD, 2013). However, the role of SMEs as important source of innovation and a driving

force to endogenously generate growth, employment and income is recognized (SME Corporation Malaysia, 2011 and 2012). In fact, research results offer a management tool which supports leaders to better assess the impact of their leadership behaviours on organizational innovation and to adjust these behaviours – where possible – if necessary so as to act in a more efficient way and thereby increase organizational innovation – bearing in mind that organizational innovation triggers productivity and competitiveness (e.g. Camisón and Villar-López, 2014; Merono-Cerdan and López-Nicolas, 2013).

1.2 Research objectives

The main research objective of the present study is to analyse how contextual conditions moderate and/or mediate the effectiveness of transformational leadership in terms of enhanced organizational innovation (Q_3). In order to tackle this research interest appropriately, the author defines two *sub-questions* (Q_1 and Q_2), which deal with typical behaviours of Malaysian leaders as well as their influence on different forms of organizational innovation.

These research questions are consecutively analysed in three research steps as follows:

Q_1 What are the predominant leadership behaviours of Malaysian SME leaders?

Q_2 How does transformational leadership influence organizational innovation?

Q_3 How do contextual conditions moderate and/or mediate the effectiveness of leadership on organizational innovation?

Thereby, the author first seeks to improve the understanding of predominant leadership behaviours at the level of SMEs in the multi-ethnic setting of Kuala Lumpur, Malaysia. Second, the study aims to enhance the understanding of organizational innovation as well as the impact of leadership on this special form of innovation. Finally, the author seeks to fill the gap in existing research as to *how* the effectiveness of leadership is influenced by contextual factors that act from within as well as from outside the company.

1.3 Research design

In order to appropriately tackle the research interest, to maximise the validity and reliability of the study and to strengthen the quality of its results, the author used a multiple triangulated research design (Creswell and Miller, 2000; Polit and Hungler, 1995). By methodological and data triangulation, multiple perspectives were

considered and qualitative and quantitative research methods were employed with the aim to offset the weaknesses of their single usage (Harrison, 2013) and to gain a deeper understanding of the model variables (Olsen, 2004).

The study sampled Malaysian SMEs which are operating in different fields of the ICT sector of Kuala Lumpur – a sector of the Malaysian economy which is likely to be more innovative than others. This selection of Malaysian ICT SMEs was based on clear rationales which stress the relevance of the sampling frame for deriving practical implications for a better understanding of leadership behaviours and their effectiveness in terms of enhanced organizational innovation under the consideration of different contextual conditions. Overall, 42 SME leaders, 52 subordinates and 3 representatives of local institutions, which are operating in an SME or/and ICT related area of Kuala Lumpur, took part in the study.

The author collected data through personal meetings with local SMEs and institutions in Kuala Lumpur between March and May 2014. First, the study used structured questionnaires for collecting mainly quantitative data from SME leaders and subordinates, covering leadership behaviours, organizational innovation and internal as well as external contextual conditions. Second, interviews were conducted with SME leaders as well as representatives of local institutions in order to add a more flexible research method and obtain more detailed information about model variables. Qualitative data thereby served as a control tool which broadens and deepens quantitative findings derived from questionnaires as well as offers specific information about the relevance of the research interest.

Based on the diversity of primary data, the author conducted different quantitative as well as qualitative analyses. First, in order to improve the understanding of the impact of leadership behaviours on procedural, structural and inter-organizational innovation in their very simplest forms, logistic regression models were used. In addition, the influence of leadership behaviours on aggregated forms of organizational innovation was analysed using simple as well as multiple hierarchical linear regression analysis. Second, the author evaluated qualitative data and transcriptions of interviews within several coding procedures, based on the existing leadership concept of Avolio and Bass (2004) as well as derived from the inputs themselves.

1.4 The research field through the lens of Malaysian leaders

'Asian leadership styles and ways are certainly quite different from Western leadership styles' (Low, 2013: xxxiii). Indeed, the importance of leadership and the behaviours of leaders vary considerably across cultures (House et al., 2004). Studying leadership in Malaysia hence requires an awareness of the unique characteristics of the society. Based on statements from Malaysian leaders, the subsequent section offers insights into the research field.

1.4.1 Multiethnic Malaysia

'I would say that I'm able to juggle different styles of dealing with people [...] I need to handle different sorts of people when working with people from different countries [...] here in Malaysia this ability is all the more important, as we have so many different cultures [...] we have a long history of various cultural influences.'

Owner of C38, interview on 17 April 2014

Malaysia's population of nearly 30 million people (World Bank, 2014) is multiethnic, represented by all major religions as well as three main races: Malays and other indigenous groups (67.4 percent), Chinese (24.6 percent), Indians (7.3 percent) and Others (.7 percent) (Department of Statistics Malaysia, 2010). The country gained independence from British colonial rule in 1957 and was first officially constituted in 1963. Today's Malaysian territory consists of the two regions *North Borneo* and the *Malay Peninsula*. The dissertation was conducted in the latter, which is a land of immigrants from the Southeast Asia archipelago, India and China, and affected by European influence. Besides Portuguese and Dutch colonialism in Malacca, Malaysia's land was governed by the British common law system. While the British colonial officers acted as economic advisors, the Malay sultanates were responsible for socio-cultural issues (Jomo and Wee, 2014; Wiryomartono, 2013).

1.4.2 The division of one society

'State policy benefits Malay people [...] Chinese have to work very hard and be more innovative [...] Malaysian politics weaken the strength of the economy and have a negative impact on the success of our leadership approach [...] we cannot transform our weaknesses to strengths [...] for non-Malay people there are too huge barriers to overcome.'

Owner of C1, interview on 31 March 2014

The Malaysian society is strictly divided into Bumiputera and Non-Bumiputera, a Malay term meaning *son of the soil* (Ishak et al., 2012). Originally introduced[1] to exclusively define the indigenous group of the Malaysian community (ibid) and to 'accommodate the Malays and the native Muslims and non-Muslims of Sarawak and

[1] The popular belief that Malay people have a privileged position has already been demonstrated in the founding documents of the Federation of Malaysia of the year 1957. Article 153 of the Constitution of Malaysia refers to the 'Malays and natives of any of the States of Sabah and Sarawak' with privileges, whereby the King of the constitutional monarchy is responsible for safeguarding the special position of the Malays in public service, scholarships and education (Government of Malaysia, 1957).

Sabah in a single category' (Shamsul, 2001: 364), Bumiputera were officially declared as an ethnic group in the *New Economic Policy* (NEP) in 1971 (ibid). After race riots in 1969 a core aim of the NEP was to boost the economic position of the Malay community and raise their share of capital ownership (IHS Global Insight, 2014).

Within the last decades, not only the British colonial system, but also the Malaysian political principals have played a major role in reinforcing this persistent differentiation[2]. However, positive discriminating political programs seem to have been less successful in lifting the economic power of the Malay people than widely assumed (IHS Global Insight, 2014). Moreover, unexpected consequences were caused by these redistributive measures, ranging from an attitude of dependency and ethnic superiority to emigration[3] tendencies (ibid; UNDP, 2014), which might be identified as possible obstacles to sustainable growth (Jomo and Wee, 2014).

1.4.3 The role of the state

'As a leader my vision is transparency, accountability and auditability [...] characteristics for which Malaysia is not very well known for [...] there are no open tender procedures [...] in Malaysia we are not allowed to sell to government. So, we only provide our solutions and services to non-government companies.'

Owner of C8, interview on 3 April 2014

The pace and direction of Malaysia's development has been mainly determinated by government intervention and hence has been largely state-led and state-facilitated (Zainal, 2013). This crucial role of the state was first legitimized by the NEP in 1970 with the aim to restructure society by reducing inter-ethnic economic disparities (Shayuti, 2012) 'ostensibly through growth rather than redistribution of existing wealth' (Jomo and Wee, 2014: 15). Thereby, the number of *government-linked companies* and *state-owned enterprises* tremendously increased, especially in the 1970s. This widespread state intervention led to preferential access to education, employment and business licenses, increased Bumiputera ownership and business opportunities, and hindered competition (ibid; Menon, 2014) as well as a crowding-out of private investments (Menon and Ng, 2013).

The inauguration of Prime Minister Mahathir Mohamad in 1981 marked the end of the proliferation of public enterprises in Malaysia. The overall goals of a reduced presence of the public sector were improved competition, efficiency and growth, which all should lead to a transformation of Malaysia into a 'newly industrializing country under

[2] British rulers segregated Malaysians according to their racial status (Ishak et al., 2012) by supporting Malay interests in all areas of business and society (Zubedy, 2012). Their main aim was to protect the traditional Malaysian culture from different ethnic values of immigrants. Also, development policies and major political organizations justified the preferential treatment of the Malay people by pointing to social imbalances (Ishak et al., 2012; Haque, 2003).

[3] In 2011, one million highly educated Malaysians left the country (UNDP, 2014).

indigenous Bumiputera entrepreneurial leadership' (Jomo and Wee, 2014: 19). However, privatization projects seem to have benefitted only a small group of people with strong political connections and hence have been said to focus on profit maximization at the expense of social welfare (ibid).

1.4.4 Growth and the role of SMEs

'Malaysia's development is a success story [...] on the one side we have to struggle to survive as part of this fast growing environment [...] on the other side we can grow with our country and participate [...] we can have a say.'
Member of the management of C9, interview on 9 April 2014

Based on its historical role as a regional hub for commercial interactions with the West (World Bank, 2013), the economic development of Malaysia counts as one of the best Asian success stories (International Monetary Fund, 2014). This impressive economic development[4] was mainly triggered by state interventions and reforms (Jomo and Wee, 2014) and the support of aggressive export-oriented growth strategies (IHS Global Insight, 2014). However, within just a few decades Malaysia transformed itself from a primary commodity[5] producer to a multi-sector economy (CIA, 2014). Even though Malaysia seems to have never fully recovered from the East Asian Financial Crisis (Jomo and Wee, 2014), the Malaysian Government implemented various strategic reform initiatives to accelerate growth and achieve developed-nation status by 2020 (Performance Management and Delivery Unit, 2014).

An example of such a reform program is the SME Masterplan 2012-2020, which recognizes the importance of SMEs for the Malaysian economy[6] as an endogenous source of innovation, growth, employment and income (SME Corporation Malaysia, 2012). However, Malaysian SMEs have not reached their full potential so far compared to their counterparts in advanced economies (OECD, 2013; World Bank, 2013), where SMEs already act as a driving force for, and endogenous enablers of, growth (OECD, 2013). Anyway, SME development is often difficult, as SMEs are extensively impacted – more than are larger companies – by external influences and are mostly characterized by a lack of financial literacy (EUMCCI, 2014).

[4] In 2013, the economy achieved a GDP of MYR 986.7b (+4.7 percent) and holds rank 35 in the worldwide GDP ranking (Department of Statistics Malaysia, 2014; World Bank, 2014). Worldwide, it is one of the largest exporters of ICT products (Malaysian Chamber of Mines, 2014) and one of the most trade-dependent economies (IHS Global Insight, 2014).
[5] Malaysia is endowed with over 33 different mineral types; e.g. its tin reserves rank as third largest in the world (Malaysian Chamber of Mines, 2014). The country has enormous oil and gas resources, which account for 32 percent of government revenues (Anas, 2014; CIA, 2014). Palm oil is the most important commodity crop in Malaysia; the country contributes 46 percent of worldwide palm oil exports in 2011 (Malaysian Palm Oil Board, 2014).
[6] Over 548'000 (99.2 percent) of all business establishments are SMEs, which corresponds to 59 percent of employment and 19 percent of exports. The growth rate of SMEs (which contributes 32 percent to national GDP) has exceeded the growth of the overall economy for years (National SME Development Council, 2013). The largest contributor is the service sector, with 87 percent of Malaysian SMEs engaged in it (SME Corporation Malaysia, 2012).

1.4.5 Disparities and challenges

> 'Malaysia is in an interesting situation, because it wants to be a developed nation, it wants to grow and it wants to be successful. But whether the society is moving towards that direction hand in hand remains unclear [...] it has to be changed a lot [...] we all know that a society that is intellectual and creative is the backbone of any successful country.'
>
> *Owner of C23, interview on 10 April 2014*

Even though Malaysia has gone through severe structural changes and transformations[7] within the last decades, inequalities – such as income[8] and regional[9] disparities – remain or have even become larger in the last decades (Asian Development Bank, 2013). Besides, the Malaysian economy is under pressure to take the next step from a low-cost to a high-value economy[10] and is steadily trying new ways to enable the country to climb up the value-added chain (IHS Global Insight, 2014). This upgrading to human capital- and technology-intensive manufacturing activities with a complex export-oriented service sector might – among others – be hampered by the low skill levels of domestic labour (Menon, 2014).

This discussion leads to Malaysia's risk of being caught in a middle-income trap[11] (World Bank, 2013), as it has been a middle income economy continuously since 1969 (Zhunang et al., 2012). Even though Malaysia's economic growth rates remain promising, 'the sources of this growth are being questioned' (Lopez, 2014). In order to develop a dynamic private sector and overcome the country's relatively rigid labour-market (IHS Global Insight, 2014), Malaysia has to achieve lasting and sustainable growth through improved accountability of governance, social integration, increased productivity, higher investment in human resources, equal access to good education and health services as well as strengthened regional cooperation (Asian Development Bank, 2013; Park, 2013; Tho, 2013).

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[7] The overall poverty incidence of Malaysia has reduced greatly from 49.3 percent in 1970 to 1.7 percent in 2012 (Economic Planning Unit, 2013).

[8] Malaysia has one of the highest *Gini coefficients* – a higher index marks a more unequal income distribution – and is ranked at place 33 within the worldwide ranking (CIA, 2014a). The *Gini coefficient* slightly declined between 1970 and 2012 (Economic Planning Unit, 2013a). In addition, the *Malaysian Quality of Life index* – which evaluates the general well-being of individuals, families and communities – has improved within the reporting period 2000 to 2010 (Economic Planning Unit, 2013). Moreover, the income shares of Malaysian households seem to become slightly more equal since 1970 (Economic Planning Unit, 2013b). This development can also be observed by looking at the mean gross monthly household income over the same time period (Economic Planning Unit, 2013c).

[9] There are still huge regional differences in capital- and labor-intensive industries and economic growth. The investment climate is better in the central and southern region of Malaysia (Ali et al., 2013). Even if overall infrastructure development is better in Malaysia than in many of its ASEAN peers, regional disparities between urban areas and the rest of the country remain (International Monetary Fund, 2013).

[10] While Malaysia is one of the most sophisticated exporters of manufacturing goods worldwide, its service sector has only limited potential for high productivity growth. Prior to 2003, the sophistication level of export services was above that of China. But then Malaysia's innovative development slowed down, while China's potential to deliver complex services steadily increased (World Bank, 2013).

[11] The *middle income trap* means that the country is able to compete neither with low-income countries at low wages nor with high-income countries on innovation and higher-value production. Becoming a high-income country is a long-term process that requires a structural development of the whole economy (Zhunang et al., 2012).

1.4.6 Human capital

'In Malaysia education is not available for all on an equal basis [...]
access is restricted and costs for higher education are still far too high for most of the families.'
Member of the management of C13, interview on 29 April 2014

Several indicators[12] point to the positive development of the Malaysian human capital, above the average of countries in East Asia and the Pacific. In addition, Malaysia aims at becoming a hub of higher education in the region and an increasingly active player in international education, currently ranking as the 11th largest exporter of education worldwide (Cheng et al., 2013; Performance Management and Delivery Unit, 2010). However, Malaysia's education system[13] was at times heavily criticized by the participants of the study. In fact, they pointed to deficiencies in the education system and difficulties in finding adequately trained employees, which has direct cost- and time-intensive impacts on their role as leaders and entrepreneurs. The institutional side confirm these statements by saying that the 'lack of qualified workforce is one of the biggest impediments that investors identify when doing business in Malaysia' (EUMCCI, 2014: 28). Unreliability, low levels of competence, and a lack of critical thinking and analytical skills of employees seem to be general observations (ibid).

First, the quality of education which should be in line with labour market requirements is declining[14], partly due to the rapid growth in public and private universities as well as foreign educational institutions (Menon, 2014). Second, as income and occupation significantly depend on educational attainment, the 'education system itself has tended to perpetuate socio-economic inequalities inherited from the past' (Jomo and Wee, 2014: 81) and 'tends to reproduce inequality over generations'[15] (ibid: 85). Third, access is restricted based on racial and financial issues[16] – 'costs of schooling are still

[12] The Human Development Index positions Malaysia at rank 62 (UNDP, 2014). The 'coverage of Malaysia's basic education system is comprehensive' (World Bank, 2013a), with nearly universal basic education and a mean years of schooling of 9.5 years in 2013 (ibid; UNDP, 2013). In recent years, secondary enrolment has expanded swiftly with a school participation rate rising from 68.4 percent in 1990 to 84.9 percent in 2010 (Economic Planning Unit, 2013). Also the share of the labor force with secondary education increased from 37 percent in 1982 to 58 percent in 2012 (World Bank, 2013a). In comparison to 2000, there are over five percent more Malaysians aged 20 and over with higher education in 2010 (Department of Statistics Malaysia, 2013).

[13] The *National Philosophy of Education* was laid down by royal proclamation in 1970 and introduced by the Ministry of Education in 1988 (Al-Hudawi et al., 2014). The philosophy, which includes Malaysia's educational goals, the ideology, principles and guidelines of the national education system, is then translated into the school curriculum (APEC, 2014). Malaysia ensures a uniform system of education in primary and secondary schools, by using an integrated, centralized approach – the *National Curriculum* (UNESCO, 2011). Besides this centralist approach, Malaysia fosters the cultural diversity of its different ethnic groups through *National Type Schools* (Rahman and Ahmad, 1998). Whereas six years of primary education is free and compulsory, secondary education is free only in public schools (APEC, 2014).

[14] The structure of Malaysian unemployed shows that graduates might not perfectly meet the demands of the labor market. Unemployment is disproportionally concentrated among the young, with a very high rate among university degree holders of 19.8 percent (World Bank, 2013a).

[15] Inequalities in post-secondary enrolment are determined by socio-economic status, meaning that 'children of families in the richest 20 percent of the wealth distribution are nearly twice as likely to be enrolled in post-secondary education compared to those in the bottom 20 percent (World Bank, 2013a).

[16] Malaysia's tertiary enrolment rate is significantly lower than the high-income OECD average of 72 percent (World Bank, 2013a). The entry to post-secondary education is not merit-based on qualification criteria (Menon, 2014).

high, especially for the poor' (ibid: 81) – which affect employment and career opportunities and almost every aspect of economic and social life (Menon, 2014).

In the meantime, Malaysia has responded to these negative developments. It seems as it has recognized the crucial role of human capital in encouraging excellence and achieving inclusive and sustainable economic growth (Rahman and Ahmad, 1998; World Bank, 2013a). The education system is undergoing a continuous transformational progress with thoughtful and wide-ranging solutions[17], in order to promote high quality human capital and transform Malaysia into a centre of education excellence and an education hub, especially within the context of South East Asia (Grapragasem et al., 2014; Othman and Mohamad, 2014).

1.5 Structuring logic

The first part of the dissertation includes two chapters. *The first chapter* introduces the research topic, discusses its relevance to Malaysia, outlines the research design and represents the research field Malaysia through the lens of its leaders. *Chapter two* contains a review of existing literature on the topic and the research framework. The second chapter also clarifies definitions of the key concepts of leadership, organizational innovation and contextual conditions. This chapter additionally contains a review of existing literature on the research subject and discusses the research gaps in this literature. Thus, the dissertation is placed within the context of existing research. A research model, which involves the relevant research questions, hypotheses and a guide to further research, is established in chapter two.

Chapter three deals with the research methodology. First, the rationales for choosing Malaysian SMEs as well as the sampling procedure are discussed. Second, the author explains the multiple triangulated research approach, which combines data and methodological triangulation. The author describes which qualitative and quantitative research methods are used and how data are analysed in order to gain insights into predominant leadership behaviours, the influence of leadership on organizational innovation as well as the moderation and mediation effects on the leadership-innovation relationship of the contextual factors in the research model.

Chapter four contains extensive data analyses and outlines the research findings. These research findings are structured according to the threefold purpose of the

[17] An example is the Education Blueprint 2013-2025 (Ministry of Education, 2013), which was launched 'to transform the education system into one that produces thinking and innovative students to meet the needs of the new economy' (OECD, 2013: 3).

research model and are divided into three sections. First, predominant leadership behaviours are identified through a quantitative analysis of questionnaires as well as a more extensive qualitative analysis of the interview responses, including an evaluation of the relevance of the research model. Second, the impact of leadership behaviours on various forms of organizational innovation is evaluated through logistic and linear regression analysis. In addition, the author completes the qualitative analysis regarding the suitability of the research model. Third, the effectiveness of leadership behaviours in terms of enhanced organizational innovation is analysed in different contexts, considering the moderating and mediating contextual variables of the research model.

The last part of the dissertation includes two chapters. *Chapter five* provides a discussion of the main research results, refers to their significance in the light of existing literature and derives conclusions for theory and practice. The author discusses the research limitations of the dissertation and indicates possible directions for future research based on the research results and their limitations. *Chapter six* presents closing remarks regarding the research on leadership in Malaysia at the level of SMEs operating in the ICT sector of Kuala Lumpur.

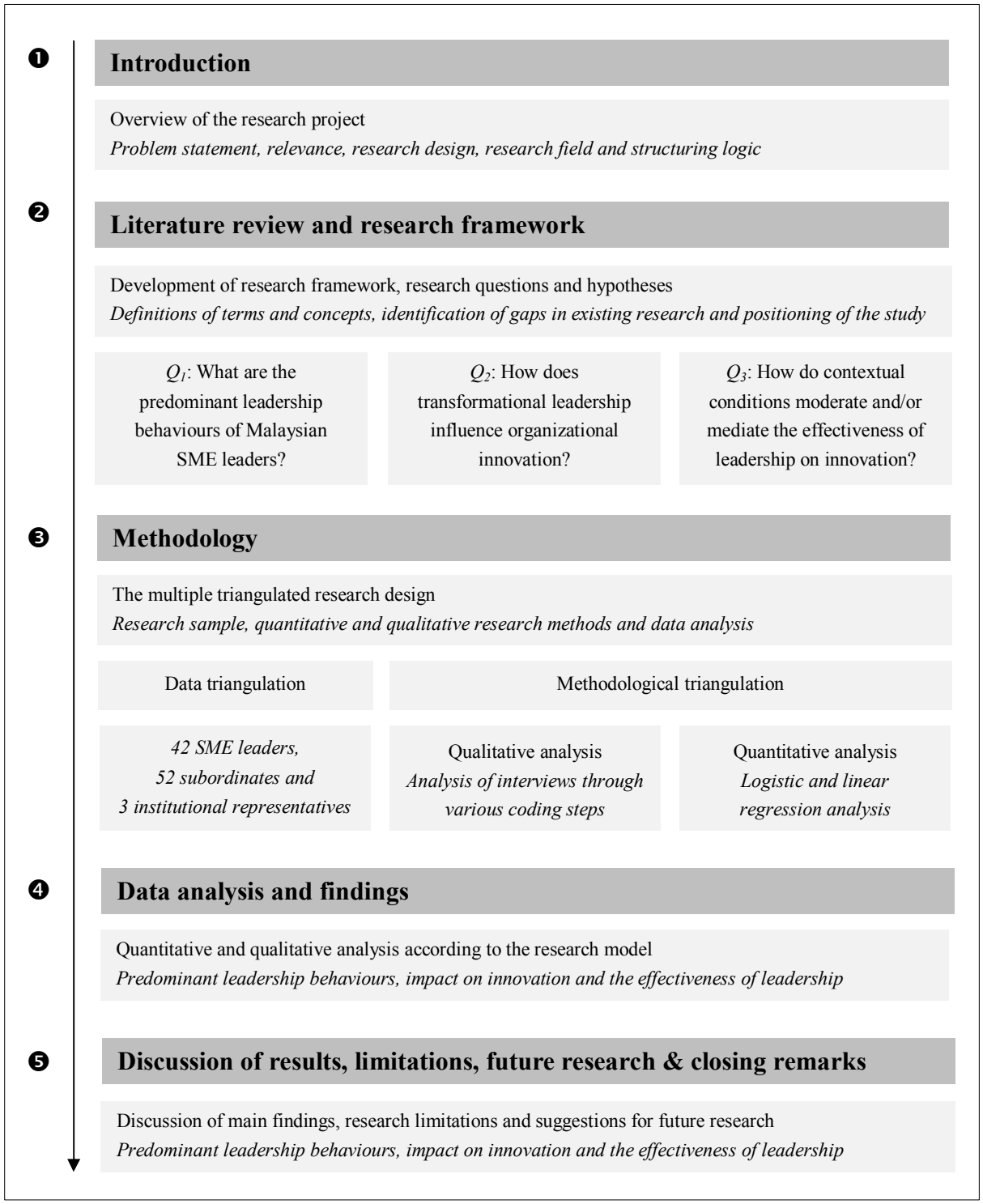


Exhibit 1: Structure of research and dissertation
Source: Author's depiction, 2015

2 Literature review and research framework

2.1 Leadership and organizational innovation

2.1.1 Definitions of key concepts

2.1.1.1 The leadership concept of Bass and Avolio

The term transformational leadership was first discussed and coined by Downton (1973) in his book *Rebel leadership*. However, the concept attracted little notice and was not widely accepted until Burns (1978) published *Leadership* with a focus on political leaders. Burns was the first scholar who introduced the concept of *transforming* leadership in more detail and distinguished it from ordinary leadership. According to Burns, transformational leaders positively influence the values of subordinates and create an environment in which self-interest is abandoned in favour of a common vision and collective goals, and in which higher motivation and trust are encouraged. Transformational leaders are described as being devoted to continuous development, knowledge and so-called end-values, such as equality (ibid). Crainer (2003) summarizes Burns' concept as follows: 'Transformational leadership is concerned with engaging the hearts and minds of others. It works to help all parties achieve greater motivation, satisfaction and a greater sense of achievement. It is driven by trust and concern and facilitation rather than direct control. The skills required are concerned with establishing a long-term vision, empowering people to control themselves, coaching and developing others and challenging the culture to change' (ibid: 39).

Since its publication, Burns' book *Leadership* has influenced much of the research on leadership[18]. In subsequent decades, the great importance of transformational leadership for promoting progress, change and innovation through the appreciation and support of subordinates has been recognized and specific leadership behaviours have been identified (e.g. Bennis and Nanus, 2007; Kotter and Heskett, 1992; Kouzes and Posner, 2012; Tichy and Devanna, 1986). Among this aspiring group of leadership researchers was Bass, who further developed and systematically conceptualized the concept of transformational leadership.

2.1.1.1.1 Transformational leadership

The concept of Bass, which he further developed with his colleague Avolio, represents a clear advance in leadership literature, as it established detailed individual behaviours

[18] Bass' (1995) comment to *Leadership* was the following: 'I purchased a copy, read it, and was never the same again' (ibid: 466). He devoted his book *Leadership and performance beyond expectations* to Burns.

of transformational leaders for the first time. Thereby, transformational leaders are described as being capable of responding to change positively, actively creating change and arousing an improved awareness of subordinates in relation to the company and its central concerns, such as growth and development (Bass and Avolio, 1990). Transformational leaders motivate subordinates to develop their full potential and inspire them in a way, which causes fundamental shifts in orientation, outlook and perspective (Avolio and Bass, 2004). Transformational leadership is based on four interrelated categories[19], including *Idealized Influence*[20], *Inspirational Motivation*[21], *Intellectual Stimulation* and *Individualized Consideration* (Bass, 1985 and 1985a; Bass and Avolio, 1990; Avolio and Bass, 2004[22]).

The first category *Idealized Influence* points to the strong personal identification of subordinates with the unique and charismatic personalities of transformational leaders, characterized by specific *behaviours* (IIB) as well as specific *attributes* (IIA). First, transformational leaders act as charismatic role models who talk about their most important convictions, values and beliefs, who specify the importance of having a strong sense of purpose as well as a collective sense of mission and who consider the moral and ethical consequences of their decisions. Second, leaders having transformational behaviours display high levels of self-confidence, self-esteem and power, have the skills necessary for persuasively communicating ideological and transcendental goals, and go beyond self-interest for the good of the group. Thereby, they instil pride in their subordinates for being associated with them and encourage

[19] Some scholars are referring to the four *I's* of transformational leadership (e.g. Judge et al., 2006).

[20] Avolio and Bass replaced the originally introduced term of charisma with idealized leadership, as they assume that charisma is too much associated with political dictators (Bass, 1995). Charismatic leadership is repeatedly used as a synonym for transformational leadership in current literature, even though conceptual ambiguities exist (Yukl, 1999). While some scholars regard the real differences as being negligible (House and Podsakoff, 1994), others make a clear distinction between transformational and charismatic leadership (Bass and Avolio, 1994). The term charisma is described ambitiously, including 'leaders' magical qualities; an emotional bond between leader and led; dependence on a father figure by the masses; popular assumptions that a leader is powerful, omniscient, and virtuous; imputation of enormous supernatural power to leaders' (Burns, 1978: 243-244). Charismatic leadership refers to those leaders who place an idealized vision that differs strongly from the status quo, take high personal risks to achieve the shared vision, use unconventional means to transcend the existing order, rate the status quo negatively in comparison to a more attractive future and communicate unique expertise, enthusiasm and concern for subordinates' needs. However, charismatic leaders' exaggerating tendencies might lead to a lack of self-reflection and to expensive miscalculations (Bass, 1985; Conger, 1989; Conger and Kanungo, 1987; House, 1977). However, Bass (1985) describes charisma as the ability of leaders to provide vision, value, inspiration and intellectual stimulation to their subordinates. He further argues that 'attaining charisma in the eyes of one's employees is central to succeeding as a transformational leader' (Bass, 1990: 21), as subordinates are more likely to identify with powerful leaders who inspire them. Hence, charisma is seen as component of transformational leadership and the basis of subordinates' trust and confidence (ibid). Thus, 'charisma is a necessary ingredient of transformational leadership, but by itself is not sufficient to account for the transformational process' (Bass, 1985: 31). However, the concepts differ in their core approach as 'transformational leadership focuses on empowering and motivating employees, whereas charismatic leadership treats employees as subordinate roles' (Wu and Wang, 2012: 4070). Subordinates usually do not consider transformational leaders as being charismatic, whereas only few leaders can be found who seem to be both (Yukl, 1999).

[21] Inspirational leadership was originally introduced as a sub-factor of charismatic leadership (Bass, 1985). The behaviour category *Inspirational Motivation* was added within a revision of the concept (Bass and Avolio, 1990).

[22] The explanations in the following paragraphs of part *2.1.1.1.1 Transformational leadership* are based on these sources.

higher levels of trust, respect, confidence and admiration. This is the foundation for the principle ‘one for all, and all for one’ (Bass, 1985: 35).

The second category *Inspirational Motivation* (IM) is closely related to *Idealized Influence*, as charismatic leadership is emotionally arousing and inspirational for subordinates. Anyway, leaders ‘do not need to be charismatic to be inspirational’ (Bass, 1985: 62). Inspirational leadership triggers higher motivation among subordinates to perform beyond expectations and with confidence in their own capabilities. Transformational leaders achieve this performance-stimulating effect as they talk enthusiastically about what needs to be accomplished, articulate high expectations to their subordinates, have a compelling vision about the future and express confidence that goals will be achieved. Thereby, leaders provide meaning to their subordinates’ work and act as an inspiration for them.

The third category *Intellectual Stimulation* (IS) describes transformational leaders’ ability to encourage subordinates to improve their strategic, intellectual and subtle thinking as well as their innovative problem-solving behaviour. Thereby, transformational leaders critically examine existing assumptions, adopt different perspectives to tackle problems and suggest new ways to handle challenges and complete assignments. Leaders visualize and articulate *Intellectual Stimulation* by using their unique abilities in an impressive way. In fact, they positively influence subordinates’ attitude and become effective once ‘a new and enduring stable system of values, beliefs and associations’ (Bass, 1985: 109) is implemented.

The fourth category *Individualized Consideration* (IC) describes the quality of transformational leaders to treat subordinates differently according to their individual needs, concerns and capabilities. First, coaching and growth opportunities are offered whereby subordinates are guided by the knowledge and experience of their leaders. Second, transformational leaders develop their subordinates’ abilities by carefully observing their progress, encouraging them to attend educational courses and increasing their responsibilities through the delegation of new challenges. Indeed, subordinates are developed into leaders, not only through empowering them, but also through motivating and supporting them. Third, leaders invest an extraordinary amount of time as they promote familiarity through having extensive face-to-face contacts with subordinates and offering comprehensive information about what is happening and why. Thereby, leaders make subordinates feel being part of the bigger picture.

2.1.1.1.2 Transactional leadership

The purpose of transactional leadership can be described as a simple exchange relationship between leaders and subordinates with the aim to achieve goals which are clearly defined by leaders, rather than being common objectives and collective interests. In this sense, transactional leadership can be thought of as a pragmatic leadership style that 'requires a shrewd eye for opportunity, a good hand at bargaining, persuading, reciprocating' (Burns, 1978: 169). Transactional leaders implement clear structures, clarify roles, objectives as well as responsibilities, and adopt a system of rewards and punishments. Thereby, subordinates are motivated to achieve the agreed-upon performance, as they are personally at fault and punished in case of failure (Bass, 1985; Burns, 1978).

In comparison with transformational leadership – which is characterized by minimizing mistakes proactively and, in cases where they occur, by not punishing subordinates, but turning their mistakes into learning experiences – transactional leaders punish mistakes and criticize subordinates for making them (Bass and Avolio, 1990). In fact, transformational leaders 'are more likely to be seen by their colleagues and employees as satisfying and effective leaders than those who behave like transactional leaders' (Bass, 1990: 21). Transformational leaders tend to proactively seek new ways to further optimize development and to take maximum advantage of opportunities to convince their subordinates to steadily strive for personal development and higher creativity (Bass 1985; Avolio and Bass, 2004). By contrast, transactional leadership tends to correspond to lower levels of performance and insignificant change processes (Bass and Avolio, 1993), as it focuses more on in-role performance, rather than stimulating the generation of new solutions and innovation (Pieterse et al., 2010).

Hence, transactional leadership has its limitations. Regarding its overall quality-ensuring aim, the shortcomings become all the more obvious as the working relationship is treated as simple transaction whereby subordinates 'do exactly what they are told to do, no more, no less' (Avolio and Bass, 2004: 26). Even if transactional leaders provide a sense of direction and support to motivate subordinates, their endeavour is limited to just those needs which are required to reach their objectives. In contrast to transformational leaders, they neither develop subordinates' needs to higher levels of maturity, nor develop subordinates into leaders. Even though transactional leadership does not demonstrate a complete leadership style on its own

(ibid), transformational leadership cannot replace transactional leadership completely[23] (Waldman et al., 2001). In fact, a combination of both represents an optimal leadership style[24] (Bass and Avolio, 1990; Judge and Piccolo, 2004).

Transactional leadership is implemented by two forms of behaviour categories, including *Contingent Reward* (CR) and *Active Management-by-Exception* (MbeA). The first category demonstrates the 'degree to which the leader sets up constructive transactions or exchanges with followers: The leader clarifies expectations and establishes the rewards for meeting these expectations' (ibid: 755). Thereby, transactional leaders contract the exchange of rewards for effort, promise rewards for good performance and recognize accomplishments (Bass, 1990). Positive mental and material rewards include praise, promotion, increased payments as well as honours for outstanding services. This in turn leads to enhanced self-esteem and increased satisfaction. If subordinates fail to achieve the defined goals, transactional leaders react with *aversive* contingent reinforcement, which may take different forms – e.g. the loss of leaders' support, fines or discharge (Bass, 1985).

Transactional leaders practise *Management-by-Exception* by neither continuously giving feedback, nor rewarding subordinates' positive performance. In fact, they only react if something goes wrong and failures occur. In this sense, *Management-by-Exception* refers to the timing of leaders' corrective intervention as a response to the poor performance of subordinates (Howell and Avolio, 1993). In the case of failure, leaders' threats can directly lead to a lack of motivation and self-esteem as well as hostility and apathy. Empirical evidence shows that this behaviour category contributes considerably less to subordinates' effort and productivity than a transformational leadership style (Bass, 1985). Overall, two types of *Management-by-Exception* can be distinguished. While *Active Management-by-Exception* is a transactional leadership category, *Passive Management-by-Exception* (MbeP) is a passive leadership category. *Active Management-by-Exception* means that leaders *actively* monitor subordinates' performance and keep track of all irregularities, mistakes, failures and complaints. Corrective action is taken when required standards are not met and it is necessary as to avoid serious difficulties (Bass, 1990).

[23] The leadership concepts of Bass and Burns differ in several respects, especially when it comes to the differentiation of transformational from transactional leadership. While Burns defines transformational and transactional leadership as fundamentally different concepts which represent opposite ends of a continuum (Burns, 1978), Bass assumes that 'most leaders do both but in different amounts' (Bass, 1985: 22).

[24] A combination of transformational and transactional leadership behaviours can improve the latter, as transformational leadership encourages subordinates to make higher extra efforts and be more committed, and outweighs – in cases when this occurs – the negative effects of transactional leadership on different performance indicators (Avolio and Bass, 2004; Bass, 1985 and 1990; Howell and Avolio, 1993; Seltzer and Bass, 1990; Waldman and Bass, 1986).

2.1.1.1.3 Passive or avoidance leadership

Avolio and Bass (2004) describe passive leadership behaviours as the most ineffective way of leadership, which can be summarized by two categories. First, *Laissez Faire* (LF) can be thought of as the absence of any form of responsibility or action (ibid). Hence, it is a form of non-leadership, whereby leaders do not immediately respond to urgent questions, are absent when needed and hesitate or avoid making decisions, getting involved and taking actions (ibid; Judge and Piccolo, 2004). Second, *Passive Management-by-Exception* implies that leaders are *passively* watching, searching and waiting, but not actively taking corrective action, until problems have already become chronic and subordinates' behaviours have created serious difficulties (ibid).

2.1.1.2 Organizational innovation

Innovation is a mean 'of introducing change into the outputs, structure, or processes of an organization' (Damanpour, 1987: 676) in order to facilitate its adaption to changing environments and new conditions. Existing literature includes a huge variety of definitions and typologies of innovation. An appreciation of the different types of innovation and a focus on clearly defined forms of innovation are necessary for understanding the innovation process in organizations and deriving implications for academia and practice (ibid).

Innovation processes can be divided into two stages: (1) the initial innovation process whereby ideas are generated, which might be facilitated by certain organizational structures, such as a low degree of formalization and centralisation, and (2) the final results of the implementation stage, regarding the outcomes for products, services or processes (Crossan and Apaydin, 2010; Zaltman et al., 1973). The dissertation is an analysis of the latter stage, whereby innovation has already been implemented with the aim of improving competitiveness and organizational efficiency.

Due to the complexity of the phenomenon innovation (Armbruster et al., 2008), various differentiations between its individual categories exist. To give an example of such a typology of innovation, one can distinguish between incremental versus radical, technological versus administrative and product versus process innovation (Bon and Mustafa, 2013; Zhao, 2005). While radical innovation 'aims to create a new product, service or technology which solves a need that the market had not previously expressed, or which had not yet been seen as solvable' (asiaNBC, 2014), incremental innovation 'is a process of adjustments and gradual, ongoing improvement [...] which builds on known technologies and develops new solutions by creating new

combinations of existing products' (ibid). According to Damanpour (1987) the 'distinction between technological and administrative innovations is the most fundamental for studies of organizational innovations' (ibid: 677) and hence crucial for the present study. On the one hand, administrative innovation refers 'to those innovations that change an organization's structure or its [...] processes' (Narayanan and Colarelli O'Connor, 2010: 92). On the other, technological innovation is 'reflecting the application of science and/or engineering to develop technical applications or to accomplish a specific technical task' (ibid), occurs 'as a result of the use of a new tool, technique, device, or system' (Damanpour, 1987: 677) and produces 'changes in products or services, or in the way those products are produced or services are rendered' (ibid). Therefore, 'innovation is not just about developing new technologies, but also about adopting and re-organizing business routines, and internal organization or external relations' (Hervas-Oliver et al., 2014: 874). This distinction has already been described by Schumpeter (1934), who also distinguished product and production innovation from *organization innovation*. Finally, product and process innovation can be summarized under technological innovation (Bon and Mustafa, 2013). While 'technological process innovation is the adoption of [...] new or significantly improved production methods, [...] which may be intended to produce or deliver [...] new or improved products, which cannot be produced or delivered using conventional production methods' (OECD 2005: 32), technological product innovation covers new products whose technological characteristics differ significantly from those of previously produced products as well as improved products whose performance has been significantly enhanced or upgraded (ibid).

No globally accepted definition of organizational innovation[25] has been established up to now. Most academic papers do not provide a precise definition, nor do they distinguish between different types of innovation. In fact, many studies describe organizational innovation as 'the tendency of the organization to develop new or improved products/services and its success in bringing those products/services to the market' (Gumusluoglu and Ilsev, 2009: 266). Other definitions seem to use an even broader and more general approach, stating that organizational innovation encompasses 'the generation, development, and implementation of new ideas or behaviors' (Damanpour, 1991: 556) and refers to the 'creation of a valuable, useful new product, service idea, procedure, or process by individuals working together in a complex system' (Woodman et al., 1993: 293). In existing literature, organizational innovation can also be found as *management innovation* (e.g. Hecker and Ganter,

[25] For further definitions of organizational innovation the author refers to Hervas-Oliver and Peris-Ortiz (2014), who provide a detailed review of different typologies.

2013), which is described as particular form of organizational change which 'involves the introduction of novelty in an established organization' (Birkinshaw et al., 2008: 826).

Instead of using a broad definition, that would include among other concepts product and process innovation, the study aims at capturing an adulterated form of organizational innovation. Great importance is attached to a clear distinction between product innovation and organizational innovation that primarily deals 'with people and the organization of work' (Merono-Cerdan and López-Nicolas, 2013). Anyway, focusing on this phenomenon proves to be a complex issue as organizational innovation covers a huge variety of different concepts, all aiming at changing traditional organizational structures. Some authors have structured this complexity and classified different types of organizational innovation (Armbruster et al., 2008; Coriat, 2001; Battisti and Stoneman, 2010) as follows:

- First, *structural organizational innovation*, which refers to organizational structures, including command lines, hierarchical levels, responsibilities, information flows, and the divisional structure of business functions, is distinguished from *procedural organizational innovation*, which might influence the flexibility and quality of routines, procedures, and operations of a company.

- Second, a distinction is made between *intra-organizational innovation* concerning the company itself, such as changing hierarchical levels, and *inter-organizational innovation*, which occurs outside the company boundaries and affects relationships with other firms, including new networks or alliances.

Besides considering these different types of organizational innovation, the study focuses on the definition used by the Community Innovation Survey (CIS) of the European Union, which is the main statistical instrument for collecting and measuring data of innovation activities at the level of companies (European Commission, 2010 and 2013). Its terminology is based on the definition proposed by the Oslo Manual (OECD, 2005) that clearly distinguishes organizational innovation from other types of innovation. Organizational innovation was added to the CIS for the first time in the year 2001 (Armbruster et al., 2008). Today, it is described as 'the implementation of a new[26] organisational method in the firm's business practices, workplace organisation or external relations' (OECD, 2005: 51). In more detail, this innovation involves the

[26] *New* means that the innovation has not been previously used by the organization.

implementation of new ways and methods of organizing routines and procedures of workflows, distributing responsibilities among subordinates, structuring activities, organizing relations with external partners, integrating suppliers and outsourcing business activities (European Commission, 2010).

2.1.2 Research gaps, research questions and relevance

2.1.2.1 Predominant behaviours of Malaysian leaders

One might raise the question why the author focuses on transformational leadership instead of analysing leadership at a more general level. First, the study aims to address gaps in existing research. Even though leadership literature confirms the significant relevance of transformational leadership within the Malaysian context, most of these studies do not sample SMEs (e.g. Arshad et al., 2013; Marmaya et al., 2011; Sadeghi and Pihie, 2012). Moreover, some authors provide different results, with their findings tending to point to transactional as opposed to transformational leadership behaviours within the Malaysian setting (e.g. Amirul and Daud, 2012). Second, the study assumes that the research sample – Malaysian SMEs which are operating in the ICT sector – provides an optimal setting for studying transformational leadership and its influence on orgnizational innovation. In fact, the author suggests that both organizational innovation and transformational leadership are more likely to occur within this research sector. This fundamental assumption is derived from two characteristics: the multi-ethnic setting of Malaysia as well as the specific size of SMEs.

First, it should be noted that the emergence and effectiveness of transformational leadership is significantly influenced by the contextual conditions of the unique environments studied (Pawar and Eastman, 1997). Indeed, leadership differs as a function of cultural factors, which play an important role in determining leadership styles (Jogulu and Ferkins, 2012; Lo et al., 2010). The relevance of the concept of transformational leadership within the Malaysian setting has been confirmed by several scholars. According to Jogulu and Ferkins (2012), Malaysian leaders have a clear preference for leading transformationally. Looking at the level of Malaysian SMEs, Arham (2014) and Arham and Muenjohn (2012) found current empirical evidence that leaders tend to be more transformational, than transactional. In addition, Kennedy (2002) showed that transformational leadership behaviours are likely to emerge within the Malaysian context which is characterized by a distinctive mix of Asian cultural values, a multi-ethnic society, Islamic principles and the philosophies of

Malaysia's British colonial heritage[27]. Thereby, transformational leadership might result from traditional Malaysian values and societal cultural practices, which include high levels of group and family collectivism (loyalty, cohesiveness and altruism), human orientation (tolerance and generosity towards others) as well as future orientation and uncertainty avoidance (commitment and willingness to plan)[28] (ibid).

Second, as many SMEs do not have a significant market share and market power, they often have to make use of the various cooperation arrangements they have with external partners to seize market opportunities and they tend to be more impacted by their external environment – rapid changes, new challenges and growing competition – than are their larger counterparts (Jansen et al., 2009; Matzler et al., 2008; Revilla and Fernández, 2013). The specific size of SMEs might reveal further limitations which involve – among other things – limited financial resources, limited access to financing as well as demanding business projects (EUMCCI, 2014). Given this, the assumptions of the author are twofold. First, she assumes that SMEs have to be more innovative – also at an organizational level – in order to increase their competitiveness and successfully grow their business within this demanding environment. In fact, organizational innovation is more likely to occor in all its facets at the level of SMEs (Laforet, 2013). Second, the author suggests that the specific situation of SMEs forces leaders to become more transformational, rather than adopting transactional behaviours. This is because enhanced organizational innovation needs leaders who can actively respond to changes, can arouse the awareness of their subordinates to growth issues and can encourage their subordinates to perform at the highest levels and to continuously improve their strengths (e.g. Noruzy et al., 2013).

Based on the literature review as well as the specific characteristics of the Malaysian research field, the author formulates the first research question as well as the main assumption as follows:

Q_1 **Research question about leadership in Malaysia**

What are the predominant leadership behaviours of Malaysian SME leaders?

A **Transformational leadership in Malaysia**

Leadership behaviours of Malaysian leaders are more transformational than transactional.

[27] Marmaya and colleagues (2011), Arshad and colleagues (2013) as well as Sadeghi and Pihie (2012) confirmed these research findings by sampling technology-based firms, Malaysian Airlines as well as academic departments.

[28] Kennedy (2002) refers to GLOBE, which 'is a worldwide organization of scholars who conceptualized, operationalized, and validated a cross-level theory of the relationship between culture and societal, organizational and leadership effectiveness' (House et al., 2004: 723). GLOBE offers the ranking of 62 societies. Within the Malaysian context transformational behaviours are perceived as visionary, inspirational, integer, decisive and performance oriented (ibid).

With this first research question the author seeks to analyse leadership at the level of SMEs and identify predominant behaviours of Malaysian leaders. The study thereby complements existing leadership literature, which shows often different research findings and is still quite limited at the level of Malaysian SMEs.

2.1.2.2 Transformational leadership as enabler of innovation

In today's information and knowledge-driven world, the quest of organizations for improved productivity through higher innovation is becoming ever more intense. This development is unleashed and accelerated by ongoing globalisation, continuously growing cross-border cooperation, increased competition and shrinking innovation cycles. Thereby, innovation reflects 'a critical way in which organizations respond to either technological or market challenges' (Hage, 1999). Thus, an improved understanding of (1) organizational innovation itself and (2) *how* the specific behaviours of Malaysian leaders can influence it is of practical relevance for Malaysian SMEs. Besides, the study is academically relevant for several reasons.

Organizational innovation. Even though innovation is often thought to be generated in designated research and development departments as well as innovation communities (Bensemir, 2013; Rothwell, 1994), they are an integrated part of today's organizational life. Several studies confirm that organizational innovation plays a crucial role as a trigger of several performance indicators, such as productivity, competitiveness, market leadership and product innovation (e.g. Armbruster et al., 2008; Damanpour et al., 1989; Laforet, 2013; Lam, 2004; Merono-Cerdan and López-Nicolas, 2013; Sapprasert and Clausen, 2012; Simpson et al., 2006; Wischnevsky et al., 2011).

However, empirical research dealing with organizational innovation is still limited (Camisón and Villar-López, 2014). Especially in comparison to technological innovation, organizational innovation is an under-researched topic[29] (Hervas-Oliver and Peris-Ortiz, 2014). At the level of SMEs, innovation literature tends to focus on the development and introduction of new products (e.g. Stam and Wennberg, 2009) or 'on factors hindering or contributing to innovation and characteristics of successful innovation' (Laforet, 2013: 490), rather than on organizational innovation. Most scholars sample larger organizations when analysing organizational innovation (Abu et al., 2012), with only a relatively few studies dealing with SMEs (e.g. Carrizo-Moreira, 2014; Laforet, 2013; Sawang and Unsworth, 2011).

[29] 'Crossan and Apaydin (2010) found that out of 524 articles published about innovation in organizations in leading management journals over the period 1981-2008, only three were about management innovation, the majority of papers being classified as addressing technological innovation' (Hervas-Oliver and Peris-Ortiz, 2014).

The author found that organizational innovation has already been empirically studied in the context of Malaysia, but relevant studies are few. These studies analyse the relationship between organizational innovation and – for example – product and process innovation (e.g. Govindaraju et al., 2013), human resource management practices (e.g. Tan and Nasurdin, 2011), knowledge management effectiveness (e.g. Tan and Nasurdin, 2010) or organizational structures (e.g. Nasurdin et al., 2004). In addition, determinants of organizational innovation have been evaluated (e.g. Teh, 2007). Anyway, there is a lack of empirical research dealing with organizational innovation at the level of Malaysian SMEs operating in the ICT sector (e.g. Alshammari et al., 2014; Kohar et al., 2012).

Organizational innovation and transformational leadership. Even though organizational innovation can be influenced by various factors (Damanpour, 1991; Teh, 2007), the author focuses on leadership as the key influence. Although some scholars have produced different results[30], the majority of existing research confirms the positive strength of transformational leadership behaviours as a driving force for improved organizational innovation (e.g. Gumusluoglu and Ilsev, 2009; Jung et al., 2003; Khan et al., 2009; Noruzy et al., 2013).

By focusing on transformational leadership, the author considers the rapidly changing environment within which Malaysia is situated. Within this context, transformational leadership is assumed to create the foundation for successfully fulfilling complex requirements by enabling and supporting organizational as well as individual transformation and innovation (Pawar and Eastman, 1997). Looking at Malaysia, existing empirical studies which evaluate the relationship between transformational leadership and organizational innovation either focus on larger firms (e.g. Ooi, 2009) and greater regional areas (e.g. Radzi et al., 2013)[31] or, when they sample SMEs, use broader concepts of innovation (e.g. Shamsuri and Mazzarol, 2010).

Based on existing literature, the author formulates the second research question and first hypothesis. Thereby, the overall hypothesis is broken down into two parts. While the study evaluates the influence of transformational leadership on the most disaggregated sub-types of procedural, structural and inter-organizational innovation by H_{1a}, it focuses on aggregated forms of organizational innovation within H_{1b}.

[30] Eisenbeiss and Boerner (2013) find a negative and Eisenbeiss and Boerner (2010) a non-linear relationship.
[31] Radzi and colleagues (2013) analysed the food industry of three East Asian countries Malaysia, Taiwan, and China.

Q_2 **Research question about the impact of leadership**

How does transformational leadership influence organizational innovation?

H_1 **Transformational leadership as enabler of organizational innovation**

Transformational leadership has a positive influence on organizational innovation.

H_{1a} Transformational leadership has a positive influence on the most disaggregated sub-types of procedural, structural and inter-organizational innovation.

H_{1a} Transformational leadership has a positive influence on aggregated forms of organizational innovation.

By answering the second research question the author strives to improve the understanding of organizational innovation and *how* transformational leadership behaviours influence it. To the best of the author's knowledge, the present study is the first dealing with the impact of transformational leadership behaviours on organizational innovation, measured in an unaltered form at the level of SMEs operating in the ICT sector in Malaysia. Moreover, it is the first study which analyses *how* leadership behaviours influence the most disaggregated sub-types of procedural, structural and inter-organizational innovation.

Thus, the dissertation is of high practical relevance. Research results provide valuable information for Malaysian leaders of ICT SMEs on *how* they can control the level of organizational innovation in their company by adjusting or strengthening their own behaviours[32]. Even if some leaders are neither able to change specific attitudes nor to learn specific behaviours, they might at least learn which behaviours *could* positively influence different forms of organizational innovation. As organizational innovation has the power to positively influence different performance indicators, research findings might also have a positive impact on the competitiveness of the respective company which in turn supports the development of the overall economy[33].

The study is related to the *resource-based view* of a company (Barney, 1991; Hervas-Oliver et al., 2014) which states that 'sustained competitive advantage derives from the resources and capabilities a firm controls [...], including a firm's management skills, its organizational processes and routines, and the information and knowledge it

[32] Leadership behaviours have been categorized as being under the control of the leaders themselves (Crossan and Apaydin, 2010).

[33] Malaysian SMEs and the national ICT sector are recognized as key drivers for employment and growth of the overall economy (Multimedia Development Corporation, 2014).

controls' (Barney et al., 2001). According to Birkinshaw and colleagues (2008) who identified four dominant perspectives[34] around which existing research on organizational innovation has been clustered in the past, the present study can be positioned between the *cultural perspective*, which describes *how* organizational innovation shapes, and get shaped by, cultural conditions inside an organization (e.g. McCabe, 2002), and the *rational perspective*, which focuses on the role of individuals in inventing and implementing new practices that make their organizations more effective (e.g. Kaplan, 1998; Vaccaro et al., 2012). While the second research question refers to the *rational perspective*, the third research question might be assigned to the *cultural perspective*, which is described in subsequent parts of the study.

2.2 Contextual factors

2.2.1 Definitions of internal contextual factors

2.2.1.1 Subordinates' professionalism

The author describes the term *professionalism* as the level of subordinates' knowledge, experience, ongoing training as well as their active contacts with individuals and groups outside the company's boundaries. These characteristics of subordinates are similar to the definition of so-called *professional knowledge* (Damanpour, 1987), which refers to a continuous development of own skills and techniques through the ability to think critically and reframe habits, the exposure to different knowledge and the adoption of multiple and different perspectives (ibid; Lotter, 2009; Sternberg, 1990). In fact, subordinates' professionalism is assumed to bring 'to the organization greater boundary-spanning activities, a sense of self-confidence, and commitment to moving beyond the status quo' (Damanpour, 1987: 558).

Thus, the extent of their personal knowledge and experience are central factors to specify the level of subordinates' professionalism. First, professional subordinates possess a broad general as well as domain-specific experience- and knowledge-base, which can be thought of as 'organized and systematized information and beliefs that are maintained in memory in a manner similar to a cognitive library' (Runco and Pritzker, 1999: 120). Second, profound professionalism corresponds to highly experienced subordinates who are characterised by higher levels of familiarity with their tasks. This enables them to improve their performance and innovative behaviours

[34] The other two perspectives cover (1) the *fashion perspective* (e.g. Abrahamson and Fairchild, 1999), which describes organizational innovation as a result of the relationship between managers and so-called fashion setters, who promote and put forward new management ideas and (2) the *institutional perspective* (e.g. Strang and Kim, 2005), which focuses on factors that enable industries to adopt progressive changes in management ideology and/or practice (Birkinshaw et al., 2008).

(Perkins, 1986)[35]. Finally, subordinates' professionalism is linked to contacts and networks of subordinates with external individuals or groups, such as their involvement in external educational programs or extra-organisational professional activities (Jong and Hartog, 2007).

2.2.1.2 Empowerment climate

Empowerment can be defined as a unique concept which integrates relational (Boren, 1994) and motivational (Conger and Kanungo, 1988) aspects. However, it clearly has to be distinguished from similar constructs, such as *motivation* (Lee and Koh, 2001).

In order to accurately define the term *empowerment climate*, or *psychological empowerment*, either a macro or a micro perspective might be used. Seibert and colleagues (2004) conceptualize the macro perspective as a climate[36] construct. They define *empowerment climate* as 'shared perception regarding the extent to which an organization makes use of structures, policies, and practices supporting employee empowerment' (ibid: 334). Thus, certain behaviours of leaders, such as the implementation of an open and transparent dialogue within the organization, might positively influence subordinates' empowerment. Structural and contextual conditions, such as managerial policies and practices, might have an additional influence on the level of empowerment (ibid).

However, only the micro perspective is able to appropriately capture the multifaceted dimensions of empowerment (Thomas and Velthouse, 1990). Hence, the study is based on the concept of Thomas and Velthouse (1990), who define *psychological empowerment* as changes in subordinates' intrinsic task motivation, which includes all positively valued experiences directly derived from the task itself, leading to additive motivational effects. Thus, this specific perspective focuses on subordinates' individual experience of the nature of empowerment (Bailey, 2009; Lee and Koh, 2001; Seibert et al., 2004). The model[37] describes psychological empowerment as consisting of four cognitive components (Thomas and Velthouse, 1990):

[35] The innovative work of many great thinkers, such as Albert Einstein who developed the theory of relativity after continuously working on this issue and studying different views for years, was built upon their sound knowledge and experience which had been accumulated over several years (Lotter, 2009).

[36] *Organizational climate* emerges through 'a social information process that concerns the meaning employees attach to the policies, practices, and procedures they experience and the behaviours they observe being rewarded, supported, and expected' (Schneider et al., 2013: 381). It has to be distinguished from *organizational culture* that refers to normative behaviour expectations as well as the shared basic values that characterize a setting (ibid; Denti and Hemlin, 2012).

[37] Besides the categorization of Thomas and Velthouse (1990), other models exist. Bennis and Nanus (2007) define four elements of empowerment, including *significance* (a feeling of making a difference), *competence* (development and learning on the job), *community* (a sense of involvement in a common cause), as well as *enjoyment* (capacity to have fun at work).

– The first dimension *impact* refers to the influence of subordinates on specific tasks, meant as their ability to accomplish the purpose and outcome of a task (Thomas and Velthouse, 1990; Spreitzer, 1995). Indeed, subordinates who believe in their power to influence their work environment are likely to perform better and contribute more positively to outcomes (Choong et al., 2011).

– The second dimension *competence* reflects the ability of subordinates to perform with necessary skills and capabilities (Thomas and Velthouse, 1990), where Spreitzer (1995) limits the term to the specific work role of an individual subordinate. Subordinates often do not improve their competencies or exert more effort when their self-efficacy is low (Choong et al., 2011).

– The third dimension *meaningfulness*[38] describes how far the personal beliefs, values and standards of subordinates are similar and compatible with the objectives and contents of their work or tasks. In other words, it refers to the 'individual's intrinsic caring about a given task' (Thomas and Velthouse, 1990: 672).

– The fourth dimension *choice* expresses the causal responsibility of subordinates for their personal actions. Hence, it refers to the autonomy and freedom given to subordinates to make decisions independently as well as to initiate actions on their own (Thomas and Velthouse, 1990; Spreitzer, 1995).

2.2.1.3 CSR engagement

Instead of a globally accepted concept of CSR, a kaleidoscope of definitions can be found in existing literature (Hsu and Cheng, 2012). Even if it is a broad, complex and continually evolving concept (Munasinghe and Malkumari, 2012), existing definitions coincide to a great extent (Jeppesen et al., 2012), all pointing to the internal and external responsibilities of an organization. As an engine for social progress, CSR engagement is a 'continuing commitment by business to contribute to economic development while improving the quality of life of the workforce and their families as well as of the community and society at large' (WBCSD, 1999: 3). CSR Asia (2013) defines the concept as 'a company's commitment to operating in an economically, socially and environmentally sustainable manner whilst balancing the interests of diverse stakeholders'.

[38] Spreitzer (1995) renames *meaningfulness* as *meaning* and *choice* as *self-determination*. By contrast, Thomas and Velthouse (1990) describe the term *self-determination* as being too abstract and philosophical.

CSR engagement is increasingly viewed as a value-creating source of innovation as well as an opportunity for all stakeholders (European Commission, 2007; Hsu and Cheng, 2012; Husted and Allen, 2007; Porter and Kramer, 2006). However, in many developing and emerging economies, the concept of CSR is not well understood (Raman et al., 2012). First, the term *corporate* is often misleading, as it is associated with multinational companies, rather than SMEs (Nejati and Amran, 2009). Second, even if they are actively engaging in CSR initiatives, Malaysian SMEs often do not recognize this as such or use different definitions. Indeed, Nejati and Amran (2013) analysed the CSR terminologies of 100 Malaysian SMEs and found that the majority define it as *responsible business practice*[39].

Despite this huge variety of definitions, the study is based on the CSR concept of Carroll (1979), which is 'a widely accepted approach; particularly with reference to empirical study' (Hsu and Cheng, 2012: 290). The concept divides the entire range of business responsibilities into four parts, which are hierarchically arranged according to their relative importance (Carroll, 1991). This so-called *Carroll's pyramid* is structured as follows:

- *Economic responsibilities* are the most fundamental obligations upon which all others rest. They cover a company's commitment to maximize profits, be as profitable and competitive as possible, produce in accordance to consumer needs and keep high levels of operating efficiency.
- Second, Carroll ranks *legal responsibilities*. Legally responsible companies thereby perform in line with laws and regulations, fulfil their legal obligations and produce goods as well as services that meet legal requirements.
- Third, *ethical responsibilities* are not codified into law, but expected or prohibited by societal morals and ethical standards of the wider community. Hence, these issues go beyond mere compliance with laws and regulations.
- Fourth, companies which are aware of their *philanthropic responsibilities* perform in line with philanthropic and charitable expectations of the society, participate actively in voluntary activities within their local communities and provide assistance to educational institutions and projects that enhance a community's quality of life (Carroll, 1991).

Findings of Rahim and colleagues (2011) show that Malaysian consumers rank CSR responsibilities differently to Carroll. Economic responsibilities are also seen as the most fundamental, whereas philanthropic responsibilities come next, followed by

[39] 43 percent of Malaysian SMEs use the term *responsible business practice*, 40 percent *corporate social responsibility*, 23 percent *social/societal engagement* and 22 percent *environmental involvement* (Nejati and Amran, 2013).

ethical and legal obligations (ibid). The author will analyse the relative importance Malaysian leaders attach to their various responsibilities and if these findings confirm either the ranking of Carroll's pyramid or results from Rahim and colleagues.

2.2.2 Definitions of external contextual factors

2.2.2.1 Environmental dynamism

The term *environmental dynamism* covers low, moderate and high dynamic external environments. While low dynamism is determined by infrequent changes that are anticipated by market participants (Schilke, 2014), high dynamic environments are characterized by instability and turbulence, discontinuous and rapid change, missing patterns, limited information and the unpredictability of future actions and change (Dess and Beard, 1984; Miller and Friesen, 1983). Moderate dynamics characterize 'environments with regular changes that occur along roughly predictable and linear paths' (Schilke, 2014: 181).

Hence, external environments which are characterized by high dynamism are more likely to result either in increased market uncertainty or in the emergence of new markets and knowledge (Revilla and Fernández, 2013). Moreover, company members tend to perceive high dynamic environments as more risky. This might lead to higher levels of stress and anxiety (Dess and Beard, 1984; Waldman et al., 2001).

2.2.2.2 External communication

The author defines external communication as a multi-faceted construct which includes the external relationships of both the company and its leaders. In contrast, the external contacts of subordinates are not considered by this external variable.

Leaders can act as linking agents at the boundary of their company to its environment and collaborate with external agencies and stakeholders (Williams, 2013). These contacts might include the involvement and participation in extra-organizational professional activities, spin-out projects, diverse cooperation arrangements with universities or education programmes as well as learning initiatives (Jong and Hartog, 2007). Thereby, external communications offer SME leaders several platforms for exchanging information and encouraging mutual learning processes, creativity as well as innovation (Hemlin et al., 2008).

That said, external relationships enable companies to compare their own processes and learn from best practice, which widens their perspectives (Idris and Ali, 2008).

Knowledge transfer, spin-out projects, learning initiatives and different types of cooperation arrangements with universities support the development of an organization (Laforet, 2013).

2.2.3 Research gaps, research questions and relevance

With the analysis of contextual variables the author aims at identifying certain situations and environments in which transformational leadership might be effective, or even ineffective in obtaining enhanced organizational innovation (Wyld, 2013). Pettigrew (2012) states that the contexts of organisations have to be analysed from, and categorized according to, an outer and inner perspective, whereby both are assumed to involve factors that might influence organizational change and development. According to Pawar and Eastman (1997) as well as Li and colleagues (2013), research literature does not provide a commonly accepted set of contextual factors which have to be considered when studying the influence of transformational leadership.

Based on the literature review the author formulates the third research question, which demonstrates the main research interest of the dissertation, as follows:

Q_3 **Research question about the effectiveness of leadership**

How do contextual conditions moderate and/or mediate the effectiveness of leadership on organizational innovation?

With the third research question the author intends to improve the understanding as to *when* specific contextual variables strengthen or reduce the effectiveness of leadership to enhance organizational innovation (moderation models), and *how* leadership has an impact on organizational innovation (mediation models) (Baron and Kenny, 1986).

As the author thereby fills various gaps in existing literature – described with respect to potential moderating as well as mediating variables in the text that follows – the dissertation is of high academic relevance. To the best of the author's knowledge, the study is the first that empirically evaluates *subordinates' professionalism* as a potential moderator and *CSR engagement* as a potential mediator of the relationship between transformational leadership and organizational innovation at the level of Malaysian SMEs. Regarding the potential moderators – *empowerment climate*, *environmental dynamism* and *external communication* – the study complements existing literature which is, as yet, limited and shows, at times, different results.

Besides, the dissertation has high relevance for the practice of Malaysian SME leaders. In fact, research results show under which contextual conditions their transformational leadership behaviours are an effective choice in terms of enhancing organizational innovation. Hence, Malaysian SME leaders are enabled to better interpret the direction and strength of their leadership behaviours within the individual environment in which their company is operating. While there might be some situations in which leaders should enhance their transformational behaviours, other situations suggest that transformational behaviours could have a negative impact on organizational innovation.

2.2.3.1 Potential moderators of leadership effectiveness

2.2.3.1.1 Subordinates' professionalism

Regarding subordinates' professionalism, the study is based on the literature of *substitute for leadership studies*, where existing empirical research is rare (Xu and Zhong, 2013). Existing literature refers to different situational variables which include the characteristics of subordinates, tasks and organisations which have the power to offset, neutralise, or enhance the strengths of leadership behaviours and hence influence the effectiveness of leadership (Howell and Dorfman, 1981; Kerr and Jermier, 1978; Podsakoff et al., 1996).

To the best of the author's knowledge, subordinates' professionalism has not previously been empirically analysed as a moderating contextual factor influencing the effectiveness of transformational leadership in terms of enhanced organizational innovation. However, existing literature does include descriptive as well as a few empirical studies. These analyse either the influence of some selected characteristics of subordinates – such as their capability for self-management (Ismail et al., 2011) – on the strength of leadership, or the moderating effect[40] of subordinates' characteristics on the relationship between leadership and organizational performance outcomes (e.g. Xu and Zhong, 2013).

The author focuses on two studies, which show that subordinates have the power to moderate the importance and effectiveness of transformational leadership. First, Nübold and colleagues (2013) empirically confirmed that the personalities of subordinates – described as the evaluation of their own self-esteem, self-efficacy, feelings of being confident, calm and relaxed as well as their ability to control a given

[40] Existing research also points to mediation rather than moderation effects of substitutes for leadership variables. Muchiri and Cooksey (2011), for example, found that the group and work design capacities of subordinates significantly mediate the relationship between transformational leadership and performance outcomes.

event – significantly moderate the relationship between transformational leadership and subordinates' motivation and performance, such that transformational behaviours of leaders are only effective in case subordinates' personalities display low levels of above described characteristics. Second, Rank and colleagues (2009) empirically showed that subordinates' organization-based self-esteem – representing their self-perceived value as an organizational member – significantly moderates the impact of transformational leadership on subordinates' innovative behaviour and task performance, such that transformational behaviours of leaders have a stronger positive influence in case subordinates are low in organization-based self-esteem.

Based on these research findings, the author formulates the second hypothesis as follows:

H_2 **Internal moderation effect of subordinates' professionalism**

The impact of transformational leadership on organizational innovation is moderated by subordinates' professionalism, such that subordinates' professionalism substitutes for transformational leadership which itself is less effective at higher levels of subordinates' professionalism.

2.2.3.1.2 Empowerment climate

There is substantial research which deals with the relationship between empowerment, transformational leadership and different outcome variables. Many existing research findings point to a mediating (e.g. Asif et al., 2014; Bennis and Nanus, 2007; Brian Joo and Lim, 2013; Dust et al., 2014; Krishnan, 2012; Sahin et al., 2014) rather than moderating role of empowerment regarding the impact of leadership, as transformational leaders seem to generate empowerment of subordinates by their own behaviours. So, 'there is theoretical support for expecting that leaders play a major role in establishing an innovative organizational culture and facilitating creativity in organizations' (Jung et al., 2003: 351). Anyway, 'transformational leadership can make them *willing* to be innovative, but they also need to feel *able* to be innovative (via psychological empowerment) in order to move into action and behave innovatively' (Pieterse et al., 2010: 613). Hence there is evidence that empowerment climate can act on the leadership-innovation relationship without being directly controlled by leadership. There are other factors which determine psychological empowerment besides the behaviours of leaders. The author follows this discourse and assumes that empowerment climate has a moderation effect.

In fact, few empirical studies examine the moderating role of empowerment climate regarding the impact of transformational leadership on organizational innovation. These studies are based on either a macro (empowerment climate) or micro (psychological empowerment) perspective. As empowerment climate can be derived from psychological empowerment due to a significant correlation between the two variables (Bailey, 2009; Seibert et al., 2004), results of studies with a focus on the micro perspective are also relevant for the specification of the respective hypothesis. Thus, the study is based on research results of Jung and colleagues (2008) as well as of Si and Wei (2012). While Jung and colleagues (2008) analysed the moderating impact of subordinates' *psychological empowerment* on the relationship between transformational leadership and organizational innovation, Si and Wei (2012) evaluated the moderating impact of the *empowerment climate* on the influence of transformational leadership on subordinates' creative performance[41]. Both studies show that either subordinates' psychological empowerment or the empowerment climate negatively moderates the impact of transformational leadership on organizational innovation or rather subordinates' creative performance. In other words, a low level of empowerment climate implies a more positive impact of transformational leadership on organizational innovation and individual creativity. Indeed, an insufficient level of empowerment climate leads to a situation in which subordinates' creativity depends more intensively on the transformational behaviours of their leaders. By contrast, a high level of empowerment climate results in enhanced levels of trust and respect, less supervisory control, and greater self-determination and subordinates' sense of purpose. In such a climate, transformational leadership has only a little impact on individual creativity.

Based on the literature review, the author again takes a substitute for leadership perspective and formulates the third hypothesis as follows:

H_3 **Internal moderation effect of the empowerment climate**

The impact of transformational leadership on organizational innovation is moderated by empowerment climate, so that higher levels of empowerment climate substitute for transformational leadership and make it less effective.

[41] *Individual creativity* is described as a subset of the broader concept of organizational innovation (Woodman et al., 1993). While creativity is located at an individual level and can be viewed as idea generation, organizational innovation can be found at the level of the organization where ideas are implemented (Denti and Hemlin, 2012; Eisenbeiss et al., 2008; Gumusluoglu and Ilsev, 2009). Therefore, research findings of Si and Wei (2012) are relevant for the present study.

2.2.3.1.3 Environmental dynamism

Looking from an external perspective, there are only very few empirical studies that analyse the moderating impact of environmental dynamism on the effectiveness of transformational leadership in terms of different outcome variables. To the best of the author's knowledge, no existing empirical paper refers to the relationship between transformational leadership and organizational innovation in its unaltered form. However, there are a few studies which can be compared to this research interest and hence build the basis for the specification of the following hypothesis.

The author finds empirical evidence that the impact of transformational leadership on an outcome variable is stronger within higher levels of dynamic environments[42]. For example, Purvee and Enkhtuvshin (2014) showed that transformational leadership has a greater influence on managers' ambidexterity[43] within high dynamic environments. This positive moderating impact has already been found in earlier years, for example by Hoogh and colleagues (2004). In fact, they confirmed that the relationship between charismatic leadership and perceptual performance is stronger within uncertain environments. In addition, research results of Ensley and colleagues (2006) reveal that environmental dynamism positively moderates the relationship between transformational leadership and new venture performance.

Mainly based on current research results of Purvee and Enkhtuvshin (2014), the study analyses the fifth hypothesis, formulated as follows:

H_5 **External moderation effect of environmental dynamism**

The impact of transformational leadership on organizational innovation is moderated by environmental dynamism, such that the effectiveness of transformational leadership is strengthened when there is a high level of environmental dynamism.

2.2.3.1.4 External communication

With the second external contextual factor the author takes account of the importance of external relationships as platforms of shared knowledge and problem solving which

[42] By contrast, few studies found a negative or insignificant moderation effect of *environmental dynamism* on the impact of leadership. Jansen and colleagues (2009) identified a significant, but negative moderation effect of *high environmental dynamics* on the relationship between transformational leadership and exploitative innovation. Ussahawanitchakit (2011) – who studied *competitive environments* and strategic leadership – could not confirm a significant moderating impact of *environmental dynamism*.

[43] *Ambidexterity* refers to explorative as well as exploitative forms of innovation (Purvee and Enkhtuvshin, 2014).

might have a potential power to moderate[44] the relationship between transformational leadership and organizational innovation.

The study conducted by Gumusluoglu and Ilsev (2009a) was the first to empirically analyse and confirm the significant importance of knowledge acquired from the external environment of a company and its moderation effect on the relationship between transformational leadership and organizational innovation. They explained that different authors have already theoretically as well as empirically stressed the importance of information exchange, external knowledge, resource availability and external communication for encouraging individual creativity and organizational innovation (e.g. Cohen and Levinthal, 1990; Damanpour, 1991; Miller and Friesen, 1983; Woodman et al., 1993). Gumusluoglu and Ilsev (2009a) showed that high so-called *external support* strengthens the impact of transformational leadership on organizational innovation.

Existing research indicates the importance of widespread contacts and cooperation arrangements as between leaders and companies and their external partners. This is essential to remain competitive within today's demanding environment. Therefore, the author formulates the sixth hypothesis as follows:

H_6 **External moderation effect of external communication**

The impact of transformational leadership on organizational innovation is moderated by external communication, such that the effectiveness of transformational leadership is strengthened by more comprehensive external communication.

2.2.3.2 Potential mediator of leadership effectiveness

To the best of the author's knowledge CSR engagement has not so far been analysed as a contextual variable that mediates the relationship between transformational leadership and organizational innovation. By contrast, there are only few empirical contributions which analyse the mediating role of CSR practices regarding the influence of transformational leadership on other outcome variables[45] (e.g. Nazir et al., 2014). However, existing studies evaluate either the impact of transformational leadership on CSR or the influence of CSR activities on (organizational) innovation.

[44] By contrast, some scholars analysed the direct impact of external relationships of leaders and companies on organizational innovation (Laforet, 2013). Tomlinson and Fai (2013) found that close cooperation and networks between partner firms considerably improve the innovative processes of SMEs along their value chain. Through establishing networks and drawing upon external resources, internal resource constraints of SMEs are overcome and knowledge transfers as well as organisational learning are facilitated (ibid).

[45] *Other* outcome variables do not cover organizational innovation, but – for example – job satisfaction (Nazir et al., 2014).

Existing research has already identified transformational leadership as an organizational driver of CSR activities (e.g. Groves and LaRocca, 2011; Jha, 2013). Thereby, transformational leadership is described as responsible (Du et al., 2013) or human (Dimitrov, 2015) leadership. In other words, transformational leadership behaviours may demonstrate 'a kind of linchpin in the effort to successfully bed down the complex concept of CSR in organisations' (Angus-Leppan et al., 2010: 208).

However, the power of CSR activities to enhance innovation has already been recognized by several scholars (e.g. Gökcen et al., 2014; Lai et al., 2015; Navickas and Kontoutiene, 2013; Yunhee et al., 2014). Nevertheless, research is still limited (Preuss, 2011), especially regarding organizational innovation[46], at the level of SMEs and within Asian contexts[47]. Different schools of thought deal with the nexus between CSR and innovation, such as *corporate social innovation*, the *base of the pyramid theory*, *eco-innovation* and *social entrepreneurship*[48] (Vilke, 2014). As far as CSR involves a company's cooperation arrangements with other organisations[49] to address, discuss and solve social, health and/or environmental issues, innovative outcomes are positively influenced (London, 2012). CSR programs hence enable companies to build broader relationships with their stakeholders and facilitate the exchange of information and firm innovation (Luo and Du, 2014). Furthermore, the way companies understand and engage with their communities and stakeholders is essential to achieve competitive advantage through higher and more effective innovation (Bartlett, 2009). Thereby, innovation at the organizational level is inspired by a deeper understanding of stakeholders' needs as well as by a broader network of learning (ibid).

Besides, the study copes with the current evolving relevance of the CSR topic within the Malaysian setting. 'In Malaysia, CSR has become an important issue after the Prime Minister of Malaysia, during his 2007 budget speech on 1 September 2006, announced that it is mandatory for all public listed companies in Malaysia to report their CSR practices in their annual report' (Amran et al., 2013). Malaysia's increased sustainability awareness, performance and disclosure (Bursa Malaysia, 2013) is mainly based on the multifaceted CSR landscape, including different programs and

[46] In addition, the positive relationship between CSR and innovation as been found on a national level (e.g. Boulouta and Pitelis, 2014).
[47] The importance of CSR as a trigger of innovation at the level of SMEs has mainly been analysed in European countries (e.g. Perrine, 2013).
[48] While *social innovation* might be defined as a new response to pressing social demands, the *base of the pyramid theory* suggests that innovation is generated through goods and services for poor communities (Vilke, 2014). *Eco-innovation* is related to reduced environmental risks and pollution and *social entrepreneurship* means that societal and environmental problems or challenges are solved by the provision of sustainable public goods and services (ibid).
[49] Other organizations include communities, governments, non-governmental organizations and other for-profit companies (London, 2012).

frameworks[50]. The number of Malaysian SMEs engaging in CSR has reached an impressive level within recent years (Hashim, 2013). However, there are various obstacles for SMEs to engage in CSR activities. These include the complexity of the concept, the short-term implementation burdens as well as their specific characteristics (Hsu and Cheng, 2012; Nejati and Amran, 2011). Hence, CSR is likely to be seen as a luxury and in times of financial downturns challenging, if not undoable at the level of SMEs (Lee, 2012). Furthermore, motivations of Malaysian SMEs differ, ranging from leaders' own values and beliefs (Hsu and Cheng, 2012; Lee, 2012; Muller, 2013; Nejati and Amran, 2009), to an improved SME image and reputation, its deepened relationships, external pressures and positive economic effects in the medium-term (Ankur et al., 2013; Hossain et al., 2013). Some scholars point to the crucial role of consumers, as their loyalty and buying behaviour is significantly related to the CSR engagement of Malaysian SMEs (Rahim et al., 2011; Raman et al., 2012).

By addressing these gaps in existing research and taking into account the current evolving importance of the CSR topic within the research field, the author formulates the fourth hypothesis as follows:

H_4 **Internal mediation effect of CSR engagement**

The relationship between transformational leadership and organizational innovation is mediated by CSR engagement, such that the impact of transformational leadership is strengthened through CSR engagement.

2.3 Research framework

In this section the author summarizes the research questions as well as the hypotheses and presents them within a research framework. This framework is based on a comprehensive literature review and on the relevance of the questions for both practice and academia. According to the research questions and the individual steps of the research project, the purpose of the study might be described as being threefold.

The *main research question* (Q_3) refers to the effectiveness of transformational leadership in terms of enhanced organizational innovation. However, in order to tackle this research interest appropriately, the author defines two *sub-questions* (Q_1 and Q_2), which deal with typical behaviours of Malaysian leaders as well as their influence on

[50] Examples: Malaysian Code on Corporate Governance (1999), National Integrity Plan (2004), Green Book and Silver Book (2006), framework for the implementation and reporting of CSR initiatives of public listed companies (2006) and Malaysia's active international participation as a member of the UN Global Compact, which is the world's largest sustainability initiative (2012) (Bursa Malaysia, 2013; Lu and Castka, 2009; UN Global Compact, 2013).

different forms of organizational innovation. These research questions are consecutively analysed in three research steps as follows:

Q_1 What are the predominant leadership behaviours of Malaysian SME leaders?

Q_2 How does transformational leadership influence organizational innovation?

Q_3 How do contextual conditions moderate and/or mediate the effectiveness of leadership on organizational innovation?

Thereby, the author first seeks to improve the understanding of predominant leadership behaviours at the level of SMEs in the multi-ethnic setting of Kuala Lumpur, Malaysia. Second, the study aims to enhance the understanding of organizational innovation as well as the impact of leadership on this special form of innovation. Finally, the author seeks to fill the gap in existing research as to *how* the effectiveness of leadership is influenced by contextual factors that act from within as well as from outside the company.

Based on the above described literature review, the author further defines these research questions by one main assumption and six hypotheses, which are formulated as follows:

A Leadership behaviours of Malaysian leaders are more transformational than transactional.

H_1 Transformational leadership has a positive influence on organizational innovation.

- ***H_{1a}*** Transformational leadership has a positive influence on the most disaggregated sub-types of procedural, structural and inter-organizational innovation.
- ***H_{1b}*** Transformational leadership has a positive influence on aggregated forms of organizational innovation.

H_2 The impact of transformational leadership on organizational innovation is moderated by subordinates' professionalism, such that subordinates' professionalism substitutes for transformational leadership which itself is less effective at higher levels of subordinates' professionalism.

H_3 The impact of transformational leadership on organizational innovation is moderated by the empowerment climate, so that higher levels of empowerment climate substitute for transformational leadership and make it less effective.

H_4 The relationship between transformational leadership and organizational innovation is mediated by CSR engagement, such that the impact of transformational leadership is strengthened through CSR engagement.

H5 The impact of transformational leadership on organizational innovation is moderated by environmental dynamism, such that the effectiveness of transformational leadership is strengthened when there is a high level of environmental dynamism.

H6 The impact of transformational leadership on organizational innovation is moderated by external communication, such that the effectiveness of transformational leadership is strengthened by more comprehensive external communication.

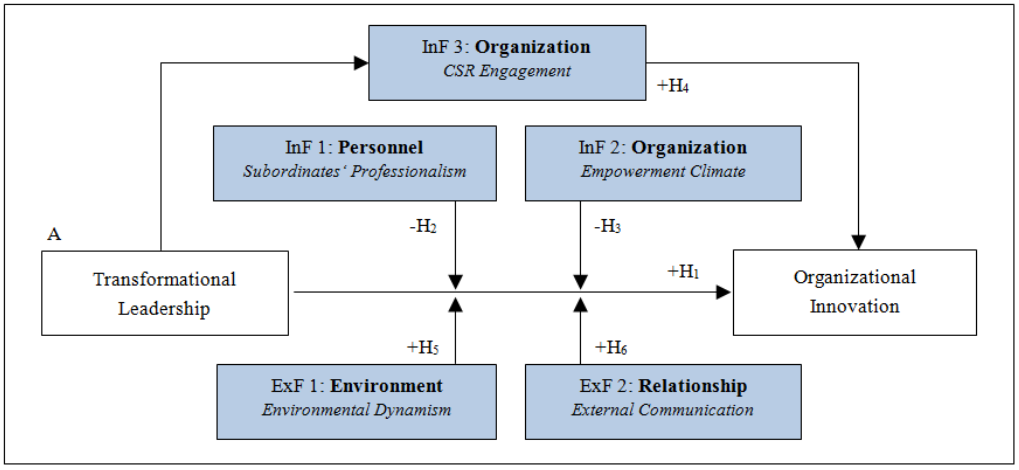


Exhibit 2: Proposed research model
Source: Author's depiction, 2015

As illustrated by Exhibit 2, the author assumes that internal contextual conditions – specifically *subordinates' professionalism* and *empowerment climate* – have a negative moderation effect. By contrast, external contextual factors – specifically *environmental dynamism* and *external communication* – are expected to have a positive moderation effect on the impact of transformational leadership on organizational innovation. In addition, the author suggests that CSR engagement mediates the leadership-innovation relationship.

3 Research methodology

3.1 Research sample

3.1.1 Rationales for the sampling frame

The study focuses on SMEs operating in the ICT sector of Malaysia for several reasons. First, in contrast to developed countries, where SMEs already act as driving force for growth and income[51], Malaysian SMEs have not reached their full potential so far. In fact, their productivity still significantly lags that of their counterparts in advanced economies (OECD, 2013). However, the role of SMEs as an important source of innovation and a driving force to endogenously generate growth, employment and income is recognized (SME Corporation Malaysia, 2011 and 2012). Hence, the study makes a contribution to the development of a research setting – Malaysian SMEs – which represents a crucial part of the overall economy, but is still at an earlier development stage.

Second, the study samples SMEs which are operating in the ICT sector as a core aim of the author was to choose a sector of the Malaysian economy which might be more innovative[52] than others. Indeed, the author suggests that it is more likely that organizational innovation will occur in all its facets in ICT SMEs than in the rest of the economy. One reason for this assumption is that the development of SMEs is quite challenging, as they are extensively impacted – more than larger companies – by external influences and mostly characterized by a lack of financial literacy (EUMCCI, 2014). Moreover, the Malaysian ICT sector is challenged as to play a key role in successfully prevailing in international competition, fostering an integrated development of the overall economy, encouraging productivity and enhancing the standard of living (Multimedia Development Corporation, 2014). Hence, the author assumes that ICT SMEs are continuously forced to develop and optimise their processes, products and services and hence to be innovative in every respect.

Third, the author assumes that these specific characteristics of Malaysian ICT SMEs – in particular their innovation- and development-driven approach – require unique behaviours from their leaders. In fact, leaders need to make the most efficient use of all resources. To get the most out of their subordinates, leaders have to establish environments in which they provide a deeper meaning to subordinates' work, create common values and objectives, encourage subordinates to work at the highest levels,

[51] In the European Union, SMEs deliver about 58 percent of overall GDP (European Commission, 2013).
[52] The selection of the ICT sector is based on a telephone interview that was conducted with a representative of the EU-Malaysia Chamber of Commerce and Industry on 13 November 2013.

and to think critically as well as support them in developing their strengths and talents. In addition, leaders are expected to react to changing environments, demanding challenges and new opportunities in a more positive and active manner than leaders of other sectors. Hence, the author assumes that leaders of Malaysian ICT SMEs are more likely to display transformational, rather than transactional or even passive leadership behaviours.

These rationales for choosing Malaysian ICT SMEs stress the relevance of the sampling frame for deriving practical implications for a better understanding of leadership behaviours and leadership effectiveness in terms of enhanced organizational innovation. It is timely and of high practical importance to improve the understanding of *how* own behaviours of Malaysian leaders help their organizations to become more innovative and hence competitive. In particular for the current development stage of Malaysian SMEs and their impact on the overall economy, research findings provide valuable insights into the influence of organizational innovation – having the power to trigger different performance indicators (e.g. Camisón and Villar-López, 2014) – by leadership behaviours under the consideration of different contextual conditions.

3.1.2 The selection procedure

The author collected the first data set of 352 ICT SMEs through the websites of SME Corporation Malaysia as well as PIKOM, which is the national ICT association of Malaysia. This selection procedure was chosen as the registration on the website of SME Corporation Malaysia was voluntarily done by the SMEs themselves, in order to be part of a business network and continuously get relevant information. Hence, the author assumes that these companies, or rather their leaders, might be more interested in participating in the research project. To further ensure the participation of as many companies as possible, incentives were offered. First, contributing SMEs will receive a copy of the dissertation with valuable research findings and managerial implications. Second, the author will write an *ICT-SME-Paper*, which will include portraits of all companies studied. This paper will be forwarded to selected partners and institutions in Malaysia, Austria as well as Switzerland, in order to facilitate future cooperation or future common projects.

After identifying this basic population of Malaysian ICT SMEs, the author started to contact the companies in November 2013, five months before travelling to Malaysia. In a first step, SMEs were contacted via mail in order to provide information about the research objectives, the background of the researcher and the benefits for them in case

of their participation. For this purpose, the overall sample was divided into groups of 20. On average two days after sending the mail, the author conducted phone calls in order to confirm the receipt of the initial mail. As there was just a general mail address available for the majority of ICT SMEs, the author asked for personal contact details of the owner or a management member of the company. Within this step, the first sample selection was reduced by more than 80 percent due to several reasons. Few contact persons refused participation because of limited time as a consequence of overwhelming work, a lack of interest in academic research, the participation of their subordinates or the sensitivity of data that the research projects covers. In some cases, language barriers hindered a clear communication, whereby it was not possible to reach the owners or any management members of respective companies. Furthermore, the quality of the first data set was often extremely poor. Either contact details were obsolete and incomplete or SMEs were simply not available.

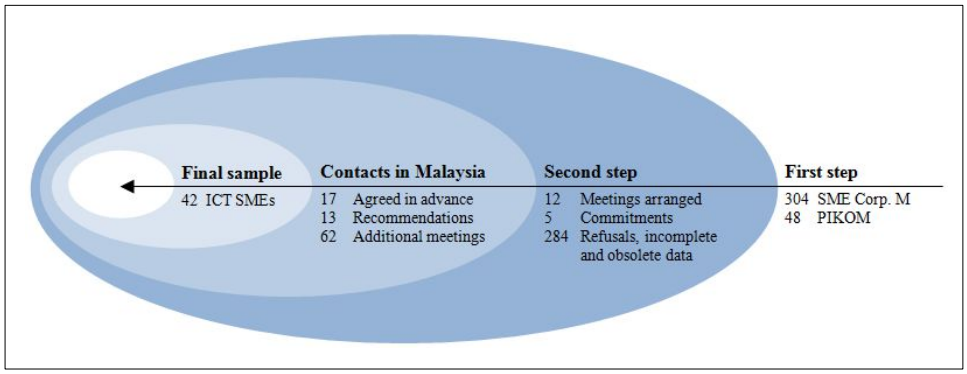


Exhibit 3: Overview sampling procedure
Source: Authors' depiction, 2015

In cases where the author received contact details of the targeted executives, the initial mail was re-sent and a second round of phone calls started. During telephone conversations, the author clarified whether the mail was received, pointed to the key issues of the study and highlighted the incentives for participation. As these contacts were initiated in December 2013 and January 2014, which was about three months before the research stay in Malaysia, the scheduling of interviews was possible only in very few cases. In fact, the author could arrange 12 meetings with leaders of Malaysian ICT SMEs by phone. Another five companies agreed to participate, but wanted to be directly contacted in Kuala Lumpur. Besides these 17 ICT SMEs, the author visited another 75 companies which either were recommended by participants, listed within the initial dataset – those which were not reachable by phone – or located at the Technology Park Malaysia[53] in Kuala Lumpur.

[53] The Technology Park Malaysia is an advanced infrastructure where many ICT (SMEs) are located.

As Exhibit 3 shows, the final sample includes 42 SMEs which are operating in different businesses of the ICT sector of Kuala Lumpur. Another 11 leaders filled out the questionnaires, but were excluded from further research due to incomplete data. Hence, the participation rate amounts to approximately 75 percent (adjusted for the obsolete and incomplete data).

3.1.3 Sample characteristics[54]

The SME status of participating companies according to the updated definition of the SME Corporation Malaysia (2013) has been ensured by the selection process itself as well as the individual clarifications in cooperation with a representative of SME Corporation Malaysia.

Overall, the sample includes 17 small enterprises – each of which employs less than 30 people – and 22 companies that are medium sized[55]. It should be noted that three companies[56] of the sample technically count as larger companies. However, they have been included in further analysis for several reasons. First, the investigated subsidiary operates very independently. Second, there is one person in charge of leadership, whose responsibilities are comparable to those of participating SME leaders. Third, the number of employees of this subsidiary fulfils the criteria of the Malaysian SME definition. The legal structure of 40 companies is *Sendirian Berhad* – in short *Sdn Bhd* – meaning that they are incorporated or rather located in Malaysia. The other two companies are listed[57].

A total of 25 ICT SMEs provide IT solutions and infrastructure, including mobile and cloud, internet and networks, online games, e-book or quality living apps, development of human capital, website designing and development, youth community, marketing, banking and procurement services. While five SMEs are advisory and consulting companies, two are operating in the e-commerce and e-business area. Another six companies offer IT security solutions for reducing and preventing the misuse of digital equipment, networks and online activities. Only one participant is a content company that is developing, producing and commercializing high quality content to engage global audiences, especially through stories with Asian elements, settings and topics. Finally, three companies are classified as manufacturing SMEs, as

[54] To ensure their anonymity, local institutions as well as their representatives are not described in more detail. Any information would directly lead to the identification of these institutions, because only a limited number is operating with a special focus on SME or/and the ICT area in Malaysia.
[55] ICT SMEs in the services and other sectors category employ between 30 and 75 subordinates. By contrast companies which are categorized as manufacturing ICT SMEs employ between 75 and 200 subordinates.
[56] These companies are C9, C30 and C42.
[57] The initial public offering of C9 has taken place after the data collection in May 2014.

they are producing and distributing ICT hardware products, computer accessories, peripheral products and mobile gadget accessories. In addition, the author found that six firms were established within the last five years and are hence quite young market participants. By contrast, over 86 percent are older than five years, whereby exactly the half of these 36 companies has been established for over ten years.

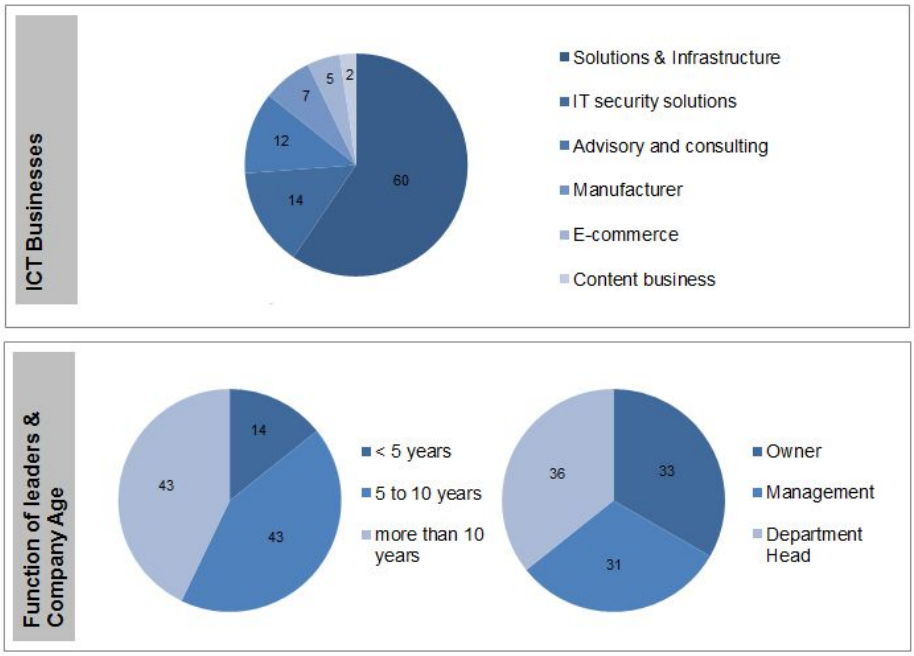


Exhibit 4: The research sample – Company perspective
Source: Authors' depiction, 2015

Looking at SME leaders, approximately two thirds are in charge of comprehensive leadership tasks, in that they are either the owners[58] of the company or active members of the management team. The remaining 15 leaders are department heads and responsible for fewer subordinates than the first group of leaders. While 12 leaders are older than 45, nearly half of all leaders are between 30 and 45 years old. Overall, eight leaders are younger than 30 years, whereby five of these are either owners or management members with the youngest owner being 23 years old. By contrast, most of the high executives are between 30 and 45 years old, with ten older than 45. Department heads are mostly around 30 years and are on average younger than owners and management members. With 32 SME leaders, far more leaders are male. Finally, a total of 17 leaders indicate that they are Chinese, which represents the majority of the sample. While 12 leaders are Malay, only six Indian leaders took part. The ethnic backgrounds of other leaders are summarized under the category *Other*, which include people from the Philippines and Korea.

[58] In the context of the sample, all owners were also founders of their companies.

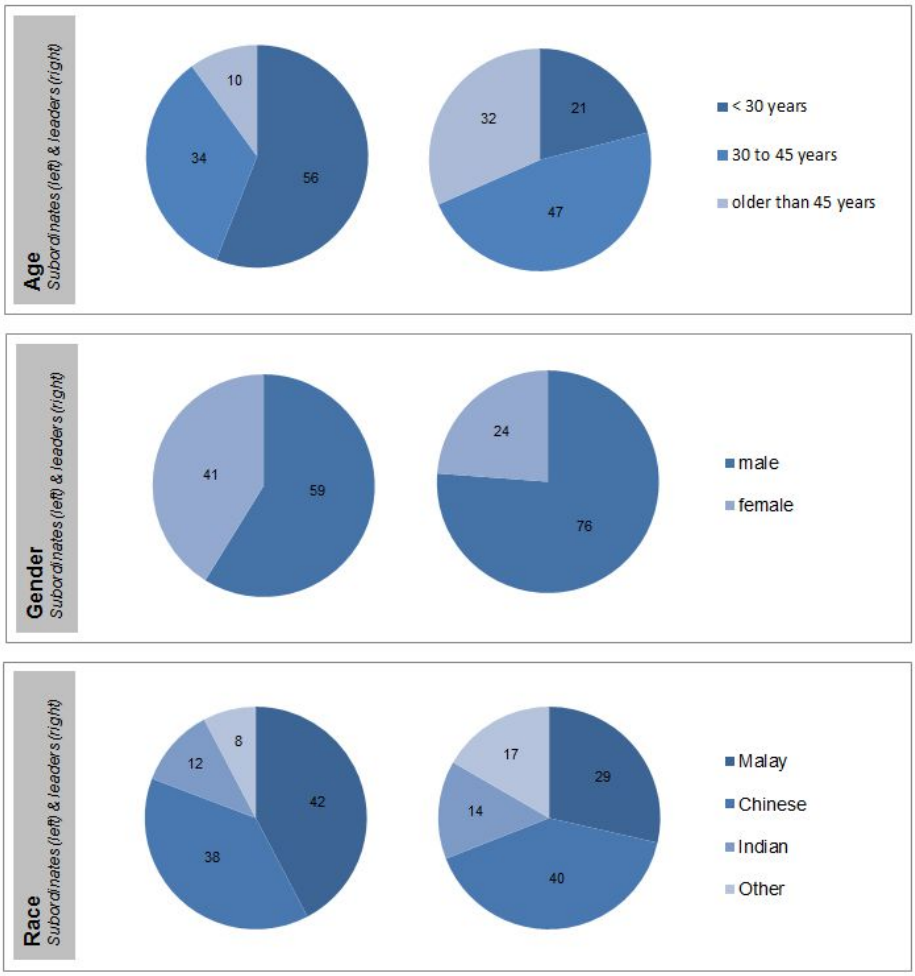


Exhibit 5: The research sample – Subordinates and leaders
Source: Authors' depiction, 2015

Overall, 52 subordinates participate in the research project. A total of 28, and hence most, subordinates are younger than 30 years old. While 17 subordinates are between 30 and 45, only five are older than 45. Compared to the sample of SME leaders the sample of subordinates includes twice as many women. Also the background differs slightly from their leaders. A total of 22 subordinates, and hence the majority, are Malay, with Chinese being the next largest ethnic group in the sample[59].

Overall, it should be noted that seven ICT SMEs have not set up a website yet. From the remaining 35 participating companies, 12 companies do not provide any information about their vision, their mission, their values or their leadership principles on their website. By contrast, a total of 12 companies – which amount to nearly 29 percent of all ICT SMEs of the sample – offer partly comprehensive details about their values and objectives as well as their approach to work and to lead.[60] The majority of the ICT SMEs strive for innovation, to be leading providers in the region

[59] Sample details are derived from the *basic information* part of questionnaires from both leaders and subordinates.
[60] The author gathered this information by an analysis of SME websites.

(best-in-class-approach) and to realize a sustainable contribution to the community. Only few company visions are focused on an international perspective. Looking at *how* leaders try to achieve their company visions, comprehensive skills and experience of SME leaders are perceived as being most important. In addition, leaders aim to achieve company visions through continuous innovation, through enhanced networking activities with various stakeholders, through positive emotions and passion and through benefitting from the ethnic and cultural diversity of their subordinates.[61]

3.2 Multiple triangulated research design

The research design is based on the research framework – as discussed in section *2.3* – through which the author strives to analyse the social phenomenon *leadership* from two perspectives. First, the study aims to identify typical behaviours of leaders who head Malaysian ICT SMEs as owners, management members or department heads. Even though predominant leadership behaviours can be determinated and categorized by the simple use of standardized questionnaires, this research method might not reveal a deep enough insight into the individual beliefs and values of the leaders. However, as the author strives to capture these characteristics of Malaysian leaders, a purely qualitative approach might not be appropriate. Second, given the crucial role of leadership for the various success indicators of a company, the author aims to provide an empirically confirmed answer to the question *how* and *when* leadership improves organizational innovation in its unaltered form. The analysis of this research interest – which focuses on the relationship between the key model variables and its moderation as well as mediation through different contextual conditions – needs a more quantitative research approach. Anyway, the author would not be able to capture the individual thoughts of leaders by gathering information solely through standardized questionnaires.

While an appropriate analysis from the first perspective (Q_1) requires a more qualitative than quantitative approach, an evaluation from the second perspective (Q_2 and Q_3) calls not only for a more quantitative approach but also a qualitative one.

[61] The first interview question referred to the vision of the company and *how* leaders try to achieve this vision. Examples of leaders' responses: 'We are the leading solution provider in the South East Asian region.' (C13, *best-in-class*), 'We have a broad footprint in Asia, but we are also expanding beyond Asia to Australia, to Europe and to the Southern part of Africa.' (C5, *internationality*), 'We are a creative services company committed to constant innovation.' (C19, *innovation*) and 'My vision is to bring transparency, accountability and auditability to Malaysia. I want to leave behind a legacy where there's no corruption.' (C8, *sustainability*). Examples of responses of leaders to the question *how* they achieve the company's vision: 'Based on my experience, I have a very good macro perspective, which helps me to achieve my vision by addressing a very strategic need for the country, the region as well as our unique positioning.' (C23, *leaders' skills and experience*), 'We are seeking strategic partnerships to grow our business in more mature markets.' (C9, *networking*), 'We achieve our vision by having a very open culture. To have fun is of crucial importance.' (C8, *positive emotions*) and 'We reach our goals by having this variety of different perspectives, thoughts and values.' (C38, *ethnic diversity*).

In order to fulfil these requirements, to strengthen the quality of the study and to maximise the credibility, validity as well as reliability of the research results (Creswell and Miller, 2000; Golafshani, 2003), the author establishes a *multiple triangulated research design*. This triangulated approach describes the consideration of mixed data, mixed research methods and mixed perspectives which should enable the author to appropriately analyse and answer the research questions (Polit and Hungler, 1995). The study thereby follows the methodological rule of Denzin (1978) who states 'that multiple methods should be used in every investigation' (ibid: 28). This approach captures 'a more complete, holistic, and contextual portrayal' (Jick, 1979: 603) of the model variables and ensures the 'breadth and depth of understanding and corroboration' (Johnson et al., 2007: 123). The study employs data as well as methodological triangulation for the following reasons.

First, *person triangulation* – a special type of *data sources triangulation* – ensures the validation of the research results through the involvement of various people and stakeholders in the data collection process (Hussein, 2009). Hence, the aim is to create multiple perspectives on the same issue and thereby gain a broader and deeper understanding (Olsen, 2004; Polit and Beck, 2009) of the key variable leadership and its effectiveness in terms of enhanced organizational innovation. Indeed, the study considers three perspectives including the leaders and subordinates of ICT SMEs as well as the representatives of local institutions which operate in an SME- or/and ICT-related area of the Malaysian economy. By employing *person triangulation* the author also addresses a phenomenon which is expected to occur when leaders talk about their own leadership behaviours. In fact, leaders tend to highlight their own strengths and seldom let others know about their weaknesses. In order to avoid biased results, the study covers at least as many subordinates as leaders (Avolio and Bass, 2004). Whether the author examines the perspectives of participants individually or on a combined basis depends on the specific model variable and is described in section *3.2.1.1.2 Measures of model variables* in more detail.

Second, the study uses qualitative and quantitative research methods as complementary analysis tools (Jick, 1979), which is called *methodological triangulation*. This approach constitutes 'a good way to reap the benefits of both qualitative and quantitative methods' (Hussein, 2009: 9) and has the power to offset the weaknesses of using just one approach to create new strengths (Harrison, 2013; Olsen, 2004). By using mixed methods, the author 'collects and analyses persuasively and rigorously both qualitative and quantitative data' (Creswell, 2011: 271). Whereas

questionnaires for SME leaders and subordinates enable the author to mainly collect quantitative information about various model variables, *interviews* with SME leaders and institutional representatives focus on the key variables leadership and organizational innovation. In fact, the author combines the qualitative and quantitative paradigms in a twofold way. Looking at research questions Q_2 and Q_3, the qualitative method serves mainly as a control and auxiliary method (Morse, 1991) for confirming the practical relevance of the research interest and appropriately adding broader information. By contrast, the author employs the qualitative approach in a more comprehensive manner when answering research question Q_1. As existing research results differ and theoretical underpinnings are limited, triangulation is used to validate – strengthen, neutralize or modify – the results from quantitative research analysis and to capture specific information which cannot be gathered by simply using standardized questionnaires (Hussein, 2009).

3.2.1 Research methods

3.2.1.1 Questionnaires

3.2.1.1.1 Objectives and structure

The author develops structured questionnaires in order to collect mainly quantitative data for the empirical analysis of the fundamental research interest.

The study benefits from the various advantages of this highly structured research tool, which – compared to other research methods – requires limited time and costs, provides quantified and hence comparable data and enables the author to collect a large amount of information from a higher number of respondents (Raab-Steiner and Benesch, 2012). However, questionnaires have shortcomings, as the author is not able to fully control the survey situation, to comprehensively capture complex issues or to clarify questions left open by the respondents (ibid; Beiske, 2002). As well as using an additional research method, the author mitigates these vulnerabilities through her presence during the answering process of the questionnaires. This ‘is experienced as more rewarding by respondents than the chore of filling in a form for some anonymous researcher’ (Phellas et al., 2012: 182). Furthermore, the author thereby ensures the strict anonymity of subordinates’ responses. This is all the more important in cases when questions address highly sensitive subjects. Indeed, subordinates are expected to rate their leaders more favourably when leaders have the possibility to have a closer look at their responses. Through her presence in the interview process the author has taken steps to assure the collection of genuine responses from subordinates and hence a higher reliability of research results.

Based on the individual concepts and measures of the model variables as well as fundamental thoughts – such as *who* is able and willing to provide the most realistic information – the author establishes different questionnaires for leaders and subordinates. While some questions – such as those concerning *subordinates' professionalism*, *empowerment climate* as well as *external communication* – are only posed to one group of respondents, others – such as those concerning *organizational innovation* and *environmental dynamism* – are part of both questionnaires. Finally, the two questionnaires include slightly different questions on *leadership behaviours* and *CSR engagement*.

3.2.1.1.2 Measures of model variables

First, leadership questions are based on the Multifactor Leadership Questionnaire (Avolio and Bass, 2004), in short MLQ[62]. This questionnaire is one of the most widely used, extensively researched and validated instruments in field as well as laboratory research and has been employed in a variety of organizational settings and at various organizational levels (ibid; Lowe et al., 1996)[63]. The 45 items – specifically 36 leadership behaviours and 9 outcome variables – measure a full range of leadership styles on the basis of the perceptions of leaders and subordinates. In addition, the MLQ entails three outcome variables – specifically *Extra efforts*, *Effectiveness* and *Satisfaction* – which are described by nine specific examples of these outcome variables. All items are rated by a frequency-scale from 0 for *not at all* to 4 for *frequently, if not always*.

While transformational leadership is found to be the most effective style of leadership, passive leadership is identified as the most ineffective style (Avolio and Bass, 2004). The MLQ of Avolio and Bass (2004) captures three leadership *styles*, nine leadership *categories* – five transformational, two transactional and two passive leadership categories – which are described by four specific *behaviours* each. These leadership styles, categories and behaviours are detailed in Exhibit 6. The third level of aggregation includes the most disaggregated and hence most specific leadership behaviours, which are grouped into categories at the second level of aggregation. Finally, these leadership categories are allocated to the transformational, transactional or passive leadership style at the first or highest level of aggregation.

[62] The author bought a copy from *Mind Garden* and received the manual on 14 October 2013 for her exclusive use.
[63] As the framework, reliability and validity of earlier versions of the MLQ were criticized by different researchers in many ways (e.g. Tepper and Percy, 1994), an extensive revision of the MLQ has occurred within the last 30 years. Through diverse refinements and modifications, the original 6-factor model proposed by Bass (1985) has been further developed by Avolio and Bass (2004) to, most recently, a 9-factor MLQ model.

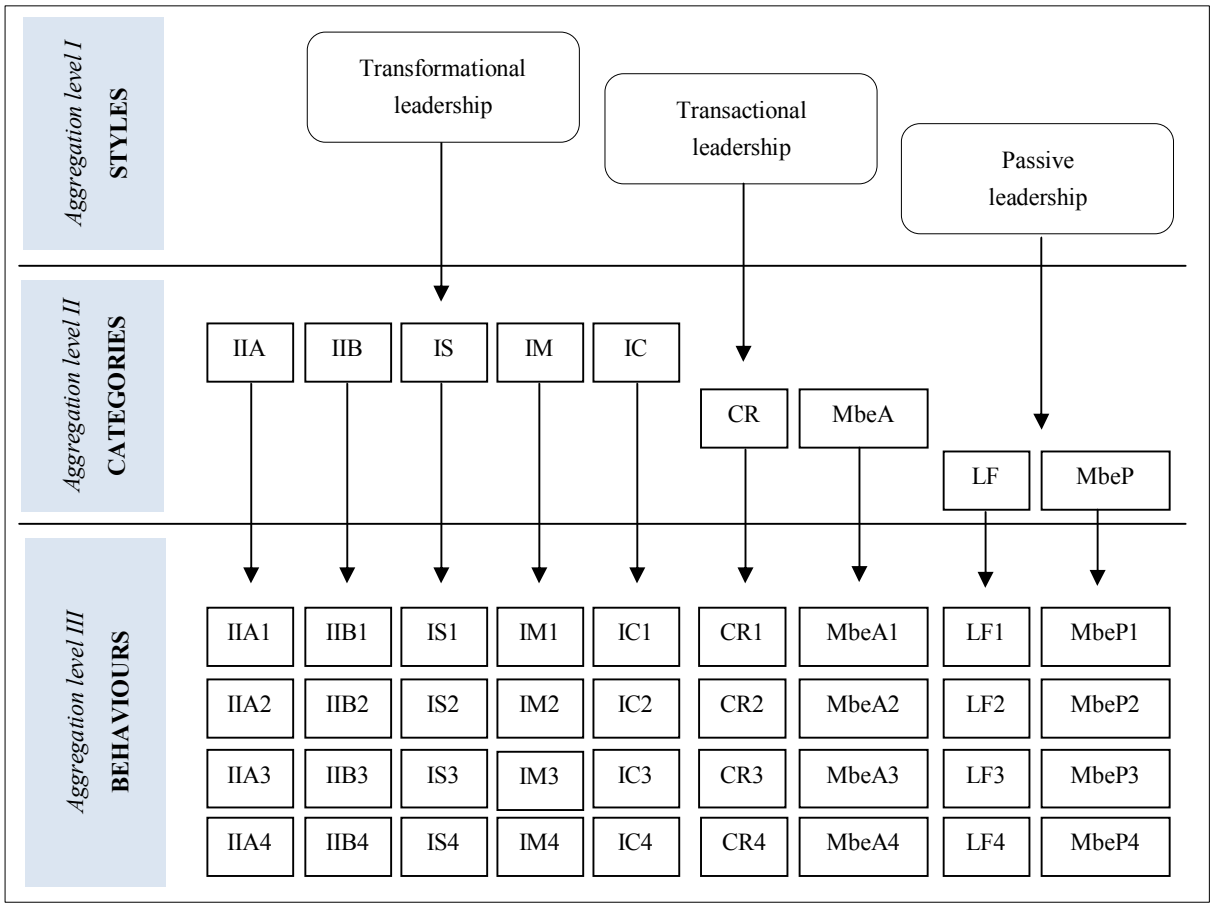


Exhibit 6: Full range of leadership behaviours – The MLQ
Source: Authors' depiction, 2015 based on the MLQ structure of Avolio and Bass (2004)

Second, organizational innovation is measured on the basis[64] of the eight-item scale of the CIS (European Commission, 2010), which is a widely used instrument in today's research work (Merono-Cerdan and López-Nicolas, 2013). The author includes 18 questions about organizational innovation, which are exactly the same in structure and content in leaders' as well as subordinates'[65] questionnaires. Information is collected about procedural, structural and inter-organizational innovation through three blocks of questions, covering four questions each. These 12 items are measured as binary variables (0=*no* and 1=*yes*).

[64] According to Armbruster and colleagues (2008), the author adjusts these standardized CIS questions for further research. First, the study does not limit organizational innovation only to those innovations which have been introduced within the last three years. Thereby, the author captures any innovation without a time limit. Second, in order to increase the explanatory significance, the highly generalized questions of the CIS tool are replaced by more specific questions about the various sub-types of organizational innovation. In addition, respondents have the possibility to add individual examples of innovation.
[65] Subordinates' perception is crucial for specifying an overall measure of organizational innovation, as innovation is mainly stimulated by them (Laforet, 2013).

Overview of organizational innovation model variables		
Sub-types of procedural, structural and inter-organizational innovation	OI1SCM, OI1KM, OI1QM, OI1add OI2DI, OI2ES, OI2HL, OI2add OI3OF, OI3NA, OI3OS, OI3add	dichotomous variables = 0 or 1 *S1* only
Procedural, structural and inter-organizational innovation	**OI1** $= (SCM + KM + QM + add) * R(tot)$ **OI2** $= (DI + ES + HL + add) * R(tot)$ **OI3** $= (OF + NA + OS + add) * R(tot)$	*S1* = between 0 and 16 *S2* = between 0 and 32
Overall organizational innovation	**OItot** $= (OI1 + OI2 + OI3) * R(tot)$	*S1* = between 0 and 48 *S2* = between 0 and 96

Exhibit 7: Measures of organizational innovation
Source: Authors' depiction, 2015

– *Procedural organizational innovation*. The first set of questions provides information about new business practices for organizing routines, procedures and business processes. These forms of innovation might influence the flexibility and quality of routines, procedures and operations of SMEs. The sub-types include new methods of organizing supply chain management (OI1SCM), knowledge management (OI1KM) and quality management (OI1QM) and individual examples of procedural organizational innovation submitted by the respondents (OI1add).

– *Structural organizational innovation*. The second block of questions provides information about new methods of organizing internal structures, such as work responsibilities, information flows and decision making. This category entails new methods of organizing the integration or separation of departments and the centralization or decentralisation of functions (OI2DI), education and training systems (OI2ES) and hierarchical levels or the divisional structure of business functions (OI2HL) as well as respondent's own examples of structural organizational innovation (OI2add).

– *Inter-organizational innovation*. The third block of questions captures new methods of organizing external relations, including external relations with other firms or public-institutions (OI3OF), networks or alliances (OI3NA) and external outsourcing relations (OI3OS) as well as individually mentioned external innovation (OI3add).

In addition, the author identifies *if* and *to what extent* the introduction of organizational innovation fulfils certain objectives[66]. These effectiveness goals are rated on a Likert-scale, ranging from 0 for *not relevant* to 4 for *highly relevant*.

[66] The author includes the following objectives: (1) to reduce time to respond to customer or supplier needs, (2) to improve the ability to develop new products or processes, (3) to improve the quality of goods or services, (4) to reduce costs per unit output, (5) to improve communication or information-sharing within the enterprise or with other enterprises or institutions and (6) additional objectives, which might be raised individually by respondents.

Based on the research model, the author creates two kinds of organizational innovation variables. At the higher level of aggregation, overall organizational innovation and its three main forms procedural, structural and inter-organizational innovation provide an overall picture and the basis for testing hypothesis H_{1b}. At the lower level of aggregation, the author includes the sub-types of procedural, structural and inter-organizational innovation. This enables the author to test hypothesis H_{1a} and allows her to draw conclusions on the impact of leadership on the most disaggregated sub-types of organizational innovation which are both specific and diverse.

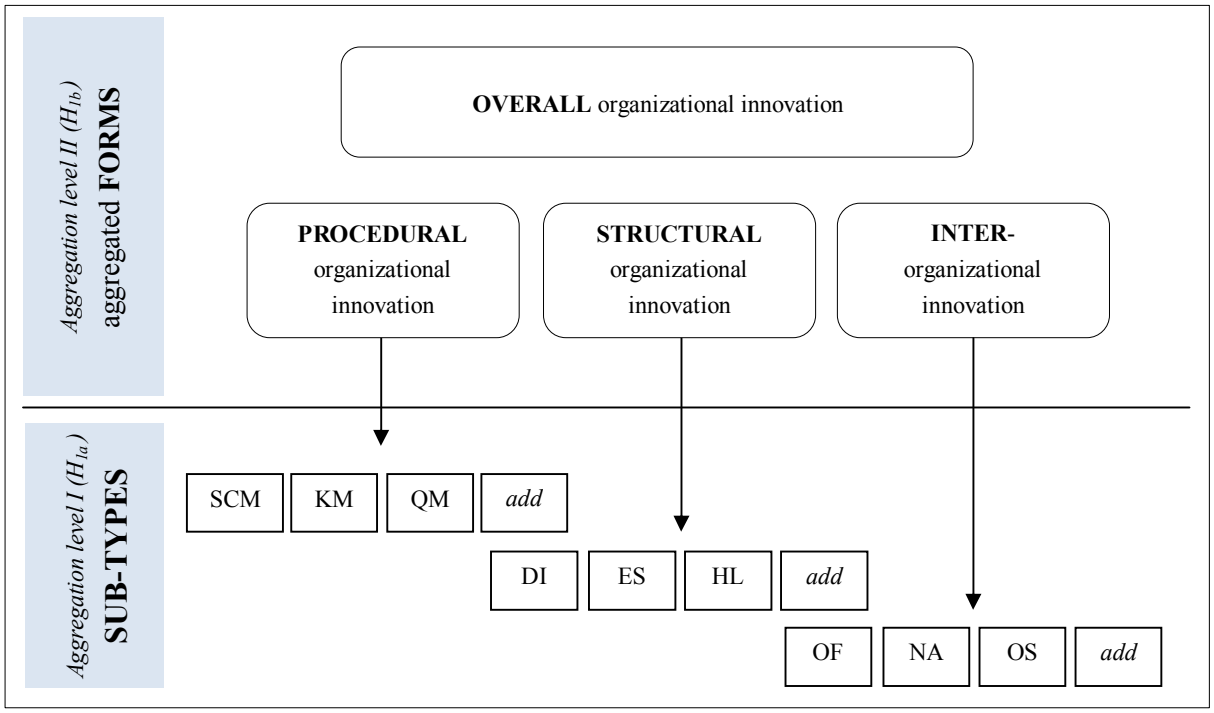


Exhibit 8: Different forms and sub-types of organizational innovation
Source: Authors' depiction, 2015

Third, the author measures *subordinates' professionalism* through a combined assessment of their level of education and work experience, the extent of their contacts with individuals or groups outside the company as well as their own perception of their abilities and skills. Most of the measures of these components are based on existing methods, but are further developed by the author as described below. Questions on subordinates' professionalism are part of subordinates' questionnaires only.

– First, the author measures the dimension *education* by a combination of the highest completed level of education and the frequency of ongoing training activities. The highest completed level of education is measured by a five-item scale, ranging from 0 for *primary education* to 4 for *tertiary education* (Ministry of Education, 2014). The variable *training* is evaluated by the frequency of courses subordinates

attend in order to update and upgrade their skills. These are measured by a frequency-scale, ranging from 0 for *never* to 4 for *always*.

– Second, the author measures subordinates' work *experience* on the basis of their working years – overall working years, working years with the current company as well as in the current job profile – and on the basis of their monthly income level in relation to the average wage in the Malaysian ICT sector (PIKOM, 2012).

– Third, partly based on Damanpour (1991) and Jong and Hartog (2010), subordinates' professionalism includes subordinates' *contacts* with individuals or groups outside of the company. Questions refer to extra-organizational professional activities, teaching cooperation arrangements with universities or other educational programs, social networks and project groups or workshops outside the company. Subordinates have the possibility to add relevant contacts, networks and cooperation arrangements which are not covered by these questions. All items are measured by a rating-scale, ranging from 0 for *not at all* to 4 for *strong*.

– Finally, the author quantifies subordinates' *perceptions* about their own competencies based on an eight-item measure introduced by Tomlinson (2002), which has been slightly adapted by the author. This indicator includes subordinates' general knowledge and their abilities for problem analysis and problem solving, knowledge dissemination and the adaption of unique skills in demanding situations. These items are measured on an efficiency-scale, ranging from 0 for *hardly ever effective* to 5 for *always effective*.

Fourth, the author derives the degree of *empowerment climate* from the psychological empowerment dimension, as empirical findings point to the significant correlation of the organizational and individual construct (Bailey, 2009; Seibert et al., 2004). Psychological empowerment is measured by using the twelve-item scale developed by Spreitzer (1995), which is a widely used and well researched instrument (Bailey, 2009; Sun et al., 2012). It determines the degree of subordinates' perception of empowerment based on four dimensions: meaning, competence, self-determination and impact. Each of these variables is composed of three items. As empowerment is a continuous variable – meaning that subordinates are more or less empowered, rather than empowered or not (Lee and Koh, 2001; Spreitzer, 1995) – the study applies a Likert-scale, ranging from 0 for *strongly disagree* to 4 for *strongly agree*. Questions on psychological empowerment are part of the subordinates' questionnaires only.

Fifth, *CSR engagement* is measured on the basis of Carroll's concept (Carroll, 1991). In order to strike a balance between the responses of leaders – who are expected to present their company's engagement in CSR activities in a more favourable light – and those of their subordinates, CSR questions are part of both questionnaires, albeit with some slight differences. CSR engagement is measured by 16 items. While leaders rank the relative importance of economic, legal, ethic and philanthropic CSR activities for their company, subordinates indicate how they evaluate their company's current CSR performance. Thereby, an importance and a rating-scale are used, which range from 0 for *not important* and *poor* to 4 for *extremely important* and *excellent*. Given that subordinates are aware of the CSR concept as well as the initiatives of their companies[67], their responses are used to relativize those of leaders.

In addition, the study creates a CSR indicator, which helps to better understand the CSR issue at the level of Malaysian SMEs. In fact, the author evaluates how leaders perceive the relative importance of CSR dimensions. Research results are compared with Carroll's pyramid (Carroll, 1991) as well as the findings of Rahim and colleagues (2011). The author also seeks to identify whether SME leaders' perceptions regarding the relative importance of economic, legal, ethic and philanthropic objectives correspond to those of Malaysian consumers. For this purpose, leaders rank the areas of social responsibilities by assigning numbers to them, ranging from 1 for *the most important* to 4 for *the least important*.

Sixth, the study measures *environmental dynamism* by using the four-item scale developed by Waldman and colleagues (2001), who adopted the tool from Khadwalla (1979). As the author considers both the perceptions of SME leaders and subordinates, questions on this topic are part of both questionnaires. When answering these questions, respondents are instructed to take account of various types of external environments. These include economic, social, political, and technological contexts. The overall indicator environmental dynamism includes four items, which might be described as the dynamics, the involved risks, the pace of expansion and the hostility of the environment. They are rated on a Likert-scale, ranging from 0 for *strongly disagree* to 4 for *strongly agree*.

[67] Subordinates' questionnaires include two questions about their *CSR awareness*. These are rated on the basis of a Likert-scale, ranging from 0 for *strongly disagree* to 4 for *strongly agree*. When subordinates indicate that they are not aware of the CSR concept, their responses are not considered within the overall indicator *CSR engagement*.

Indicator	Single Measures	Aggregated Measures
Subordinates' professionalism (SP)[68]	**edu** = (hl + ft) / 2 **exp** = [(owy + wycc + wyjp) / 3] + ril ril = [(iil – nil) * 100] / nil **cont** = sum of values / number of items **per** = (aps + ks + op + ds + gk) / 5 aps = (a + ps) / 2 ks = (com + writ + tea) / 3 op = (mp + con) / 2	**SP** = (edu + exp + cont + per) / 4 **SP_exex** = (edu + cont + per) / 3
Empowerment climate (EC)[69]	**mea** = sum of values / number of items **comp** = sum of values / number of items **se-de** = sum of values / number of items **imp** = sum of values / number of items	**EC** = (mea + comp + se-de + imp) / 4
CSR engagement[70]	**ec_sr** = sum of values / number of items **le_sr** = sum of values / number of items **et_sr** = sum of values / number of items **ph_sr** = sum of values / number of items Given subordinates' CSR awareness: e.g. **ec_sr(tot)** = [ec_sr(l) + ec_sr(s)] / 2	**CSR** = (ec_sr + le_sr + et_sr + ph_sr) / 4
Environmental dynamism (ED)		**ED** = (dyn + risk + pace + host) / 4
External communication (ExC)	**exc_l** = sum of values / number of items **exc_SME** = sum of values / number of items	**ExC** = (exc_l + exc_SME) / 2

Exhibit 9: Overview measures of contextual model variables
Source: Authors' depiction, 2015

Finally, the variable *external communication* is based on the relationships of both the companies and their leaders with external stakeholders. As the author assumes that leaders are best informed about these contacts and networks, questions are part of their questionnaires only. First, the level of external communications of SMEs is captured by eight items, which refer to strategic alliances, external cooperation and networks with other companies, the community, federal and state institutions, research institutes, universities or other knowledge-organizations. In addition, the author considers social business networks, e-commerce business platforms and memberships of various bodies, which actively involve the company in exchanges with its environment. Second, the level of leaders' external communication is based on concepts of Damanpour (1991) and Jong and Hartog (2010). These concepts refer to the involvement and participation of leaders in different networks and to their contacts with external partners. They include extra-organizational professional activities, teaching cooperation arrangements with universities or other educational programs,

[68] Education (edu), experience (exp), contacts (cont), perception (per), completed level of education (hl), frequency of ongoing training activities (ft), overall working years (owy), working years with the current company (wycc), working years in the current job profile (wyjp), relative income level (ril), individual income level (iil), average national income level (nil), subordinates' abilities for problem analysis and solving (aps), knowledge dissemination (ks), recognition of the overall picture (op), adaption of unique skills in demanding situations (ds), general knowledge (gk), analysing (a), problem solving (ps), communicating clearly and effectively (com), writing comprehensive documents and instructing (writ), teaching and training others (tea), adopting multiple perspectives (mp), understanding the context (con), subordinates' professionalism without the dimension experience (SP_exex).
[69] Meaning (mea), competence (comp), self-determination (se-de), impact (imp).
[70] Economic CSR (ec_sr), legal CSR (le_sr), ethic CSR (et_sr), philanthropic CSR (ph_sr), leader (l), subordinates (s).

learning initiatives as well as project groups or workshops across the borders of the company. In addition, leaders have the possibility to mention contacts, networks and cooperation arrangements involving themselves or their companies, which are not covered by the questions. Answers are measured by a rating-scale, ranging from 0 for *not at all* to 4 for *strong*.

3.2.1.2 Interviews

In order to conduct the research more flexibly, thereby partly offsetting the weaknesses of structured questionnaires and providing further benefits – such as access to extra information (e.g. voice, gestures and body language) and the possibility to react directly to what is being said (Opdenakker, 2006) – the author conducted interviews with SME leaders and institutional representatives.

The purpose of using interviews is twofold. First, the author collects data about the thoughts, beliefs and values of Malaysian SME leaders and institutional representatives about predominant leadership behaviours. Thereby, the study goes beyond a mere categorization of predominant leadership behaviours on the basis of standardized questionnaires. Instead it takes into account the individual manifestations of typical leadership behaviours at the level of Malaysian SMEs. The author strives to compare findings with quantitative data of questionnaires, to identify similarities with the leadership concept of Bass and his colleague Avolio and to discover additional behaviours which might be typical for the specific research field of Malaysian SMEs. Therefore, interview-questions do not directly refer to the concept of transformational leadership, but rather point to leadership in a very general manner. Respondents are not influenced towards representing their leadership behaviour in a transformational manner. Thus, the study is explanatory as well as partly exploratory. Second, the author aims to analyse the relevance of the research model by gathering individual thoughts of SME leaders and institutional representatives about the importance of leadership behaviours as a trigger of organizational innovation and about potential impacts of contextual conditions on this leadership-innovation relationship.

Based on these objectives, questions are broadly formulated in order to entirely leave it up to the respondents to decide about relevant issues and important contents (Mayer, 2013; Raab-Steiner and Benesch, 2012; Wengraf, 2001). The author prepared a number of questions in advance[71], which serve as an interview guide. This framework of questions enables the author to improve the comparability as well as the structure of

[71] Questions contained in the interview guide are enclosed in section *3.2.2.1 Qualitative data analysis*.

collected data, but does not prevent her from asking additional questions if needed (Mayer, 2013). The interview guide does not cover all model variables but focuses on questions about the leadership behaviours – personal experiences as leaders, strengths and the characteristics of good leadership. In addition, the author refers to potential triggers for organizational innovation and the CSR engagement of Malaysian SMEs.

In order to be in a position to assess the whole procedure of the interviewing process – including the specific content of responses, non-verbal issues and paralinguistic phenomena such as expressions or switches in speech flow – the author's core aim was to make audio recordings of all interviews (Flick, 2012; Wengraf, 2001). However, although the author assured respondents as to the strict anonymity of responses, more than the half of all respondents refused to record their interviews. During the interviews these initial concerns of SME leaders became clearer and took shape, as they indeed referred to quite sensitive leadership-related topics. Some interview partners sent additional information via mail some days after the personal meetings.

3.2.2 Data analysis

3.2.2.1 Qualitative data analysis

Qualitative data analysis enables the author to answer research question Q_1, to find evidence for the relevance of the research model and to gather additional information about the importance of CSR activities at the level of Malaysian SMEs[72].

Before analysing the responses of SME leaders and institutional representatives, transcripts were made immediately following each interview, in order to prevent data losses[73] (Flick, 2012; Lofland and Lofland, 1984). In the case of recorded interviews, this transcription process ensures the transformation of sound into visual data. First, pure verbatim transcripts of responses were made on the basis of the audio recordings and on the basis of the at times quite comprehensive field notes taken by the author during and after interview sessions. Even though Strauss (1991) recommends to transcribe only those amounts which are required to adequately answer the research questions, the author made the transcripts as detailed as possible. Second, the author enriched this verbatim text with expressions and observations, which she wrote down during and after the interviews (Wengraf, 2001). Thereby, a pre-defined system of

[72] The author includes the following question about the relative importance of CSR engagement at the level of Malaysian SMEs: *Would you say that the majority of SMEs are acting in a responsible and sustainable manner – in accordance with their economic, legal, ethic and philanthropic responsibilities? Or is this behaviour just a front?*

[73] Additional information given by mails was included in these transcriptions.

formats and signs was used (see Flick, 2012: 381). Some specific information – for example *names* – was anonymized.

First, the author strives to answer research question Q_1 by analysing the statements and remarks of SME leaders and institutional representatives about the specific leadership questions[74]. The research interest was thereby threefold as described in the following.

– *Do interviewees refer to transformational leadership behaviours?*
  The author evaluated whether respondents referred to typical behaviours of transformational leaders without this style of leadership being alluded to. This analysis was conducted along the MLQ (Avolio and Bass, 2004). This means that the author used the MLQ concept of transformational, transactional and passive leadership behaviours as the first coding[75] framework. By attaching the responses of SME leaders and institutional representatives to respective MLQ leadership behaviours, the author was able to identify those behaviours which had been mentioned the most and hence to determine the predominant leadership behaviours.

– *Do respondents confirm or neutralize the research results gained by the MLQ?*
  Then, the author compared these findings – on the relative importance of transformational, transactional and passive behaviours – with the research results of questionnaires. Thereby, the author aims either to find additional support for the observation of predominant leadership behaviours or to find evidence that leadership behaviours differ from quantitative findings. Hence, quantitative findings of the evaluation of the MLQ might be confirmed, neutralized or even revised by qualitative inputs.

– *Do respondents point to additional behaviours? Can patterns be identified?*
  Even if quantitative and qualitative research findings coincide, the study strives to be flexible enough to discover additional[76] leadership behaviours. Therefore, the author interpreted statements and remarks of respondents without using a pattern from existing literature, such as has been done in the first research step. Specific behaviours of Malaysian SME leaders were derived from the responses of leaders and institutional representatives through summarizing and grouping their inputs.

[74] Questions for SME leaders are the following: Looking at your individual leadership style, what are your greatest strengths and weaknesses? Can you think of any past events or experiences which influenced your leadership approach and philosophy? Which characteristics should a good leader have?
[75] *Coding* means that information is summarized and grouped within the interpretation procedure, in order to condense data and derive results (Flick, 2012; Wengraf, 2001).
[76] *Additional* behaviours refer to behaviours which are not covered by the leadership concept and MLQ measure of Avolio and his colleague Bass (2004).

These findings are expected to complement or even strengthen the transformational leadership concept of Avolio and Bass (2004).

Second, the study aims at finding evidence for the relevance of the research model. Thereby, the author refrains from using an existing coding pattern, but rather creates an individual pattern from the responses themselves.

– *Relevance of leadership as the main trigger of organizational innovation*
  The study includes a specific question about the main triggers of organizational innovation. The author strives to find out if respondents think that leadership or another influence has the most important impact on organizational innovation. Thereby, findings reveal the extent to which respondents confirm the relevance of the key relationship between transformational leadership and organizational innovation.

– *Relevance of contextual factors and potential moderation and mediation effects*
  In order to analyse the relevance of contextual factors, respondents were asked to explain situations in which their leadership behaviours are more effective. As the author did not focus on a specific outcome variable, the selection of contextual factors was entirely left to the respondents. When moderating or mediating variables of the research model were mentioned by SME leaders and institutional representatives, the author drew the conclusion that selected contextual variables are of practical relevance.

Besides two specific interview questions[77] which directly focused on the relevance of the research model, SME leaders and institutional representatives indirectly referred to this information by answering other questions.

3.2.2.2 Quantitative data analysis

Through quantitative data analysis the author strives to answer the research question Q_2 – the influence of transformational leadership on dis-/aggregated forms of procedural, structural and inter-organizational innovation – and the main research question Q_3 – the influence of contextual conditions on the effectiveness of transformational leadership.

[77] These relevance-questions are formulated as follows: What influences organizational innovation most? In which situations is your leadership approach more effective?

3.2.2.2.1 Linear regression analysis

The author employs linear regression analysis[78] to evaluate the impact of leadership behaviours on procedural, structural or inter-organizational innovation as well as on overall organisational innovation. This procedure is one of the most widely used predictive methods and appropriate analysis tools (von Auer, 2003). 'Linear regression is a method that summarizes how the average values of a numerical outcome vary over subpopulations defined by linear functions of predictors' (Gelman and Hill, 2007: 31). The equation of a linear regression model links one or more input variables, which are called predictors, independent or explanatory variables, to an output variable, which is called the criterion, outcome or dependent variable (Hayes, 2013). The main aim of linear regression analysis is to predict the value of the dependent variable *organizational innovation* as a consequence of the value of the independent variable *leadership*. In other words, the study employs linear regression analysis to understand the modification of procedural, structural and inter-organizational innovation as well as of overall organisational innovation by changes in leadership behaviours. The goal is to analyse research question Q_2 and test hypothesis H_{1b}[79]. Thereby, various parameters of the regression model are estimated, which indicate how much aggregated forms of organizational innovation changes when respective leadership behaviours change (ibid; Bühl, 2012).

Simple linear regression. When looking at the linear association between organizational innovation and one independent leadership variable, the author uses simple linear regression models, which can be expressed as follows:

$$y_j = i_j + bx_j + e_j \qquad (e1)$$

Thereby, y_j refers to organizational innovation, x_j to the independent variable leadership, b to the regression coefficient for leadership, $i_j$to the regression intercept[80]

[78] Linear regression is also known as ordinary least squares (OLS) regression, because it determines intercepts and regression coefficients as those values that minimize the sum of the squared residual values for all observations. Thereby, it produces the best fitting OLS regression model or rather the best least squares regression fit (Hayes, 2013).

[79] Statistical hypothesis testing is a method which indicates the probability that a specified hypothesis is true. H_1 assumes that transformational leadership has a significant and positive influence on organizational innovation, which can also be thought of as the so-called alternative hypothesis H_a: $b \neq 0$. By contrast, the null hypothesis H_0: $b = 0$ states that organizational innovation and leadership are linearly uncorrelated in the sample, meaning that leaders' behaviours are given no weight in the derivation of the estimate of organizational innovation and observations are the result of pure chance (Hayes, 2013; Weisstein, 2015). To analyse these competing hypotheses, the author compares *p*-values with significance levels, which indicate plausibility for the hypothesis and evidence for or against the null hypothesis. When $p<.05$ the observed effect is statistically significant (ibid).

[80] The intercept mathematically has a clear meaning, as it quantifies the estimated value of *y* when $x=0$. In the present study, i_j is the expected value of organizational innovation when the independent leadership variable amounts to zero. However, it often has no substantive interpretation (Hayes, 2013). Looking at the research interest of the study, intercepts are interpreted carefully, but do have a meaning as leaders might not display any form of transformational, transactional or passive leadership behaviours. Cases of an insignificant intercept have not been excluded from the study by the author as their inclusion ensures that estimates are unbiased. Furthermore, their exclusion would have resulted in a regression model which says that organizational innovation is zero when leadership is zero (Gelman and Hill, 2007).

and e_j to the error term, which is also known as the residual. The association between the two variables is expressed in the form of an equation for a line, with b corresponding to the slope of the line (Hayes, 2013). This coefficient indicates how much organizational innovation will change as a result of a one unit change in leadership. The sign of the coefficient indicates whether higher levels of the respective leadership behaviour are associated with higher (positive b) or lower (negative b) levels of organizational innovation (ibid).

The explanatory power of the regression line can be estimated by the *coefficient of determination* R^2. This measure of model fit is not a scale-bound metric and is independent of sample size[81] (Hayes, 2013). R^2 indicates how closely the data fit the regression line and 'indexes the proportion of the variance in one variable explained by or shared with the other' (ibid: 27). In other words, the coefficient of determination demonstrates the extent to which the variation in organizational innovation can be explained by the respective leadership behaviour and thereby describes the strength of the leadership-innovation association. The larger R^2, the higher the explanatory power of the regression model, the better the goodness of fit for the observations and the stronger the linear relationship between organizational innovation and leadership. When R^2 equals 1 there is a perfect linear relationship between organizational innovation and leadership; when it equals 0 no linear relationship is identified (von Auer, 2003).

Multiple linear regression. In contrast to simple linear regression models, multiple linear regressions estimate organizational innovation by using more than one predictor variables (Hayes, 2013). The point is to derive regression coefficients b_i of a multiple regression model with k independent variables, which can be written as

$$y_j = i_1 + b_1 x_{1j} + b_2 x_{2j} + \cdots + b_k x_{kj} + e_j \quad (e2)$$

$$y_j = i_1 + \sum_{i=1}^{k} b_i x_{ij} + e_j \quad (e3)$$

In multiple linear regression analysis, the interpretative focus is clearly on regression coefficients, rather than the intercept (Gelman and Hill, 2007). 'Regression coefficients are more complicated to interpret with multiple predictors because the interpretation for any given coefficient is, in part, contingent on the other variables in the model' (ibid: 32). Thus, coefficients indicate the expected change in organizational innovation caused by an increase in the respective leadership behaviours by one unit if all other predictors of the model remain constant (ibid; Hayes, 2013). Following

[81] The fit of two models with different dependent variables as well as different sample sizes can directly be compared as long as one sample size is not very small (Hayes, 2013).

Gelman and Hill (2007), the author refrains from excluding insignificant coefficients from the regression model, as long as their consideration makes sense.

Instead of R^2, the so-called *adjusted* R^2 is used in multiple linear regression analysis, as it has been adjusted for the number of predictors in the model[82]. However, as the author conducts hierarchical regressions[83], the coefficient R^2 of different models is interpreted. Changes indicate the extent to which the predictability of the model improves when blocks of respective variables are sequentially added to the regression model. In addition, the statistical significance of these models is displayed by the *f*-statistic[84], which indicates whether the regression model is capable of predicting organizational innovation or rather whether – at least – one of the leadership variables makes a significant contribution in explaining organizational innovation[85] (Gelman and Hill, 2007; von Auer, 2003).

The *t*-statistic is used for testing statistical significance of each regression coefficient, given other terms in the regression model. Thereby, *t*-values indicate if there is a statistically relevant effect of the respective predictor variable leadership on the dependent variable organizational innovation. When $p<.05$, the null hypothesis H_0 is rejected, which means that changes in leadership behaviours are related to changes in organizational innovation (ibid).

Requirements for generating valid results in linear regression analysis	
Assumption 1	*Validity – Reflection of research interest*
Assumption 2	*Types of model variables – Interval or ratio variables*
Assumption 3	*Distribution of variables – Normality*
Assumption 4	*Relationship between variables – Linearity*
Assumption 5	*Outliers – No significant outliers*
Assumption 6	*Independence – No multicollinearity of independent variables*
Assumption 7	*Residuals – Distribution, relation and homoscedasticity*
Assumption 8	*Reliability – Reliable variables*

Exhibit 10: Assumptions for linear regression analysis
Source: Authors' depiction, 2015

[82] The adjusted R^2 is lower than the R^2, whereas the value of the adjusted R^2 increases when an additional predictor improves the overall model, which means that the model then accounts for a higher percentage of the total variability of the dependent variable (von Auer, 2003).
[83] Hierarchical regression means that the author divides the model variables into different blocks (e.g. the first block entails control variables, while the second block covers leadership variables, which are subsequently entered into the regression model (Gelman and Hill, 2007).
[84] The author uses the *f*-test in the analysis of variance (ANOVA).
[85] In contrast to simple linear regression, the null and alternative hypotheses can be written as $H_0: b_1 = b_2 = ... b_k = 0$ and H_a: at least on $b \neq 0$. As described above, H_0 states that there no significant correlation between organizational innovation and leadership variables. In contrast, H_a states that there is a linear relationship with at least one predictor variable. If $p<.05$, the model is significant (Gelman and Hill, 2007).

Before using linear regression models to analyse the direction and strength of the relationship between organizational innovation and specific leadership behaviours, the author makes several tests to ensure that primary data are suitable for this type of parametric analysis. In fact, data have to fulfil different assumptions in order to draw accurate and reliable conclusions based on results of regression analysis (Lund and Lund, 2013). The following discussion of several steps of this initial data screening process of the dependent variable and the independent variables is based on Gelman and Hill (2007), on Hayes (2013) as well as on Lund and Lund (2013)[86].

- *Assumption of validity – Reflection of research interest*
  The first assumption states that data should be appropriate to analyse the research questions which in turn should reflect the phenomenon of interest. Accurate methods for measuring the model variables and an accurate sampling method are of crucial importance for the strength and validity of empirical research results.

- *Assumption of types of model variables – Interval or ratio variables*
  The second assumption refers to the scale[87] of the model variables. In fact, linear regression analysis requires that all variables are measured at a continuous level and are hence either interval or ratio variables. These data are quantitative and measurable.

- *Assumption of distribution of variables – Normality*
  The third requirement for regression analysis states that the model variables are normally distributed. The author uses the Shapiro-Wilk test[88], which is recommended by various scholars as being the best choice for testing normality (e.g. Ghasemi and Zahediasl, 2012). The Shapiro-Wilk test compares observations of the sample to a normal distributed sample, whereby the level of significance indicates if the distribution of the variable significantly differs from the normal distribution. In case of non-normality, the author uses *skewness* and *kurtosis* to identify how the shape of individual distributions deviates from normality. While

[86] Different sources and verbatim citations are additionally mentioned in the following texts.
[87] (1) *Nominal/dichotomous*. Nominal variables are *named* variables that can be classified into qualitative categories. They do not have an intrinsic order, nor can differences in their values be measured. Examples are the control variables *race* as well as the *function* of leaders. Dichotomous variables are sub-types of nominal variables, which entail only two categories. The control variable *gender* and the sub-types of procedural, structural and inter-organizational innovation are dichotomous variables. (2) *Ordinal*. Categories of ordinal variables have an inherent order and can be ranked, for example from most positive to least positive or from smallest to largest. Even if ordinal measurement describes a meaningful order, one cannot place values to these rankings as there is no measurable distance between them. (3) *Interval/ratio*. Interval variables have numerical values, whereby the distance between any two values is equal and meaningful. The zero point is arbitrary. Sub-types are ratio variables, whose zero points are not arbitrary, but indicate that there is none of that variable. Examples are height or weight.
[88] SPSS offers different statistical methods to test for normality. An example is the Kolmogorov-Smirov test which is highly sensitive to outlying values and has been said to be of less power (Ghasemi and Zahediasl, 2012).

skewness reflects the degree of symmetry, kurtosis is a measure of flatness or peakedness in the variable distribution. The author computes respective ratios as follows (Kline, 2005):

$$skewness_{new} = \frac{skewness\_statistic}{SE_{skewness}} \quad (e4)$$

$$kurtosis_{new} = \frac{kurtosis\_statistic}{SE_{kurtosis}} \quad (e5)$$

When the values of $skewness_{new}$ or $kurtosis_{new}$ equal zero, the respective variables are normally distributed. Hence, the more positive or negative these values are, the more non-normal the distribution is. While positive skewness means that the distribution has an asymmetric tail extending towards more positive values, positive kurtosis expresses a so-called *leptokurtic distribution*. The latter refers to a distribution which is more peaked with a much higher centre peak than a normal distribution. By contrast, negative kurtosis points to a so-called *platykurtic distribution* which has a flatter shape. The study uses 1.96 as the threshold (e.g. Cramer and Howitt, 2004; Hair et al., 1998). This means that indicators need to be located between -1.96 and 1.96 in order to ensure that data are normally distributed.

– *Assumption of relationship between variables – Linearity*

In the case of non-linear relationships between dependent and independent variables, linear regression analysis might fail to identify or underestimate the presence and strength of relationships between model variables (Keith, 2006). Hence, 'the most important mathematical assumption of the regression model is that its deterministic component is a linear function of the separate predictors: $y = \beta_1 x_1 + \beta_2 x_2 + \ldots$' (Gelman and Hill, 2007: 46). The study employs *Pearson's product moment correlation*[89], which is a commonly used statistical method for numerically quantifying associations between two variables. Pearson's *r* is hence a measure of linear association and is used to evaluate the strength and direction of relationships between different forms of organizational innovation and leadership behaviours. Its sign[90] corresponds to the direction of the linear association between two variables. The statistical significance of the *r*-coefficient is shown by the respective *p*-values.

[89] 'It can be used to quantify linear associations between two quantitative variables, a quantitative and a dichotomous variable, as well as between two dichotomous variables' (Hayes, 2013: 26).

[90] Even though values of this coefficient can range from -1 (perfect negative association) to 1 (perfect positive association), it is not likely that these extreme values are observed in real data (Hayes, 2013).

– *Assumption of outliers – No significant outliers*

The fifth assumption is an essential requirement for linear regression analysis, as so-called *outliers* might have a negative impact on the output and fit of the regression equation. Outliers represent large deviations from the other observations and hence do not follow the usual pattern. They can be thought of as extreme values compared to the rest of the data, which have the power to distort regression coefficients through their extra-large effects on estimations. In order to detect potential outliers among the data points of the model variables[91], the author employs the so-called *outlier labelling rule* (Hoaglin et al., 1986; Hoaglin and Iglewicz, 1987). Thereby, upper (Q3) and lower quartiles (Q1) build the basis for identifying upper as well as lower cut-off values for any observations. This technique calculates thresholds as follows:

$$upper\ limit = Q3 + 2.2(Q3 - Q1) \quad (e6)$$

$$lower\ limit = Q1 - 2.2(Q3 - Q1) \quad (e7)$$

Any observation that does not fall between this interval – which is limited by the upper and lower limits – is identified as an outlier. In this context, it is crucial that data are approximately normally distributed, because otherwise outliers might simply reflect the non-normality of the data rather than being real outlying observations (Hoaglin et al., 1986).

– *Assumption of independence – No multicollinearity of independent variables*

Regression analysis further requires that independent variables are independent from each other. In fact, the author needs to test for multicollinearity (high correlation with r>.90) and singularity (perfect correlation), as both weaken the overall analysis. The study employs Pearson's r and establishes a correlation matrix that includes all independent model variables. In addition, the author uses SPSS multicollinearity statistics. When the so-called *Variance Inflation Factors* (VIF) are above three, it is likely that the regression model experiences multicollinearity.

– *Assumption of residuals – Independence, normality and homoscedasticity*

The seventh assumption refers to the respective residuals. Linear regression assumes that the error terms of any two observations are statistically independent from each other. This means that residuals are not auto-correlated[92]. In addition, the

[91] It should be noted that additional procedures exist. An example is: 'If the maximum score is more than 3 standard deviations above the mean, it may be an outlier' (Molloy and Newfields, 2005: 5).

[92] In the case of time series, the Durbin Watson test could be used to identify the auto-correlation of residuals, as it is a widely used statistical method. However, this test cannot be implemented in the study, as data are collected through

residuals need to be normally distributed. Also, the author tests if the error terms are homoscedastic – meaning they are approximately equal – across all predicted scores of the dependent variable organizational innovation. When data fail this assumption, the error terms show heteroscedasticity, meaning that they have a statistically significant pattern of distortion and unequal variances. There are several consequences of heteroscedasticity, which are similar to those of auto-correlation, such as incorrect conclusions about the significance of coefficients and hence misleading *p*-values. 'As does heteroscedasticity, non-independence affects the accuracy of the estimation of the standard error of regression coefficients' (Hayes, 2013: 57). It should be noted that 'this is a byproduct of how the model is estimated; it is not a regression assumption' (Gelman and Hill, 2007: 41). Hence, the author evaluates this requirement by interpreting graphical findings of regression analysis. Besides looking for normality through histograms, the author visually analyses residuals by generating a scatterplot of standardized residuals (**zresid*) and standardized predicted values (**zpred*). 'If the absolute magnitude of the residuals appears on average to be the same regardless of the value of the independent variable, then there probably is no heteroscedasticity' (Miller and Yang, 2008: 481).

– *Assumption of reliability – Reliable variables*

  The eighth assumption refers to the reliability of model variables, which is gauged by *Cronbach's alpha*. As one of the most widely used reliability measures, this coefficient determines the internal consistency, or average correlation, of the model variables (Santos, 1999). Cronbach's alpha can better be described as a numerical coefficient of reliability than a specific statistical test. As such, it is expressed as a number between 0 and 1 (ibid; Bühl, 2012). In fact, the alpha coefficient explains the relatedness of all items, their uni-dimensional character and their power to measure the same concept. Thereby, the author ensures that the components of the model variables reliably measure the same latent variable. The alpha coefficient is calculated for each concept separately, rather than for the entire model. In accordance with Nunnally (1978), reliability coefficients of .70 or higher are considered as acceptable.

questionnaires. The use of questionnaires implies that the order of observations is random, which means that there is no order (Gelman and Hill, 2007; von Auer, 2003).

In addition, the author employs *Confirmatory Factor Analysis* (CFA)[93] to test the pre-specified factor structure, the dimensionality and the construct validity of the leadership measure MLQ – the *a priori* developed tool from Avolio and Bass (2004). Concretely, the author analyses whether the underlying factor structure of the MLQ model is consistent with leadership data collected by the author[94]. As various authors recommend that *several* goodness of fit indices are analysed – in order to strengthen evidence that a model has a good fitting (e.g. Bühl, 2012; Tabachnick and Fidell, 2001) – the author considers the fit indices x^2/df, *CFI*, *NNFI*, *IFI* and *RMSEA*[95].

- *Normed chi-square*. First, chi-square x^2 is one of the most popular absolute fit indices, which is substantially influenced by the respective sample size (Tabachnick and Fidell, 2001). Hence, the author decides to use the normed chi-square x^2/df, which divides x^2 by the degrees of freedom and thereby makes the model less dependent on the sample size. An acceptable fit for the model is assumed when values are smaller than 2 (Byrne, 1989). Other authors recommend higher limits up to 5 (e.g. Marsh and Hocevar, 1985).

- *Comparative fit indices*. Second, the author includes three relative fit indices in the analysis. The comparative fit index *CFI* compares the performance of the leadership model to the performance of a baseline model. Compared to other indices, the *CFI* is better suited for small samples. In addition, the non-normed fit index *NNFI* – also known as Tucker-Lewis Index *TLI* – and the incremental fit index *IFI* are considered. Both are less affected by individual sample size. While indices near to 0 show a poor fit, values close to 1 indicate a very good fit (Hu and Bentler, 1999).

- *Root mean square error of approximations*. Third, the study takes into account the residual matrix index *RMSEA*, which indicates discrepancies between observed and predicted co-variances. According to Hu and Bentler (1999), the author places the limit value for a good model fit at .06[96].

[93] Before conducting CFA, the author executed two tests to ensure that data are suitable for further factor analysis. First, the *Kaiser-Meyer-Oklin measure* indicates the proportion of variation in all leadership variables, which may be caused by underlying factors. Second, *Bartlett's sphericity test* shows if leadership variables are unrelated and hence unsuitable for structure detection (Bühl, 2012).

[94] The CFA is theory-driven. Its results will show how well primary collected leadership data conform to the hypothesised model of the MLQ (Avolio and Bass, 2004).

[95] These indices are calculated by the statistical program *Amos Graphic IBM*. Because means and intercepts are estimated, some measures – such as *PGFI*, *RMR* (root mean square residual) as well as the absolute indices *GFI* and *AGFI* – are not evaluated by the author (Amos Development Corporation, 2010).

[96] While an index of below .05 indicates a *close approximate fit*, values between .05 and .08 are considered as a reasonable *approximate fit*. Values exceeding .10 demonstrate a *poor fit* (Kline, 2005).

- *Factor loadings*. Factor loadings indicate the relationship between the factor and its indicators and thereby refer to individual correlations. Factor loadings which exceed .50 are significant[97], whereas values greater than .30 can already be considered as meeting the minimal level (Hair et al., 1998). As the Malaysian sample includes 42 leaders and 52 subordinates, the author sets the significance level for factor loadings at .55 (ibid).

3.2.2.2.2 Logistic regression analysis

In order to further analyse research question Q_2 and to test hypothesis H_{1a}, the author employs logistic regression analysis. Thereby, the impact of leadership behaviours on the most disaggregated sub-types of procedural, structural and inter-organizational innovation is evaluated. As the author is interested in the influence of leadership on the specific sub-types of organizational innovation, binomial logistic regression – often referred to simple logistic regression – is used, which 'predicts the probability that an observation falls into one of two categories of a dichotomous dependent variable based on one or more independent variables that can be either continuous or categorical' (Lund and Lund, 2013a). As the dependent variable *organizational innovation* can be seen as an event that may occur or not, logistic regression aims at calculating the probability (p) of this occurrence, which is subject to values of the independent variables (x_i) as follows (Bühl, 2012):

$$p = \frac{1}{1+e^{-z}} \quad (e8)$$

$$z = b_1 x_1 + b_2 x_2 + \cdots b_n x_n + a \quad (e9)$$

$$p(y_i = 1) = logit^{-1}(X_i b) \quad (e10)$$

Logistic regression delivers the coefficients b_i and the probability p. An event will not occur when $p<.05$. Another way to formulate the model is demonstrated by equation (*e10*) with $X_i b$ demonstrating the linear predictor (Gelman and Hill, 2007). Hence, logistic regression predicts the probability $p(y_i=1)$ that SMEs introduce a sub-type of procedural, structural or inter-organizational innovation from the linear predictor leadership with an inverse-logit transformation (ibid)[98].

In classic logistic regressions, coefficients are challenging to interpret[99], as they are based on more complicated algebra than in linear regression analysis. In fact,

[97] The significance of the factor loadings largely depends on the respective sample size (Hair et al., 1998). Factor loadings exceeding 1.00 or falling below .00 do not necessarily imply that something is wrong (Jöreskog, 1999).
[98] Intercepts are usually not interpreted in logistic regression analysis (Gelman and Hill, 2007).
[99] In fact, coefficients are estimated by using the maximum likelihood (ML) method, which generates the best fit or rather smallest deviance between observed and predicted values (Gelman and Hill, 2007). The purpose of ML is to 'find the parameters of the model that best explain the data in the sense of yielding the largest probability or likelihood of explaining the data' (Carey, 1998).

coefficients are demonstrated by *logits* (*log odds*) – ranging from zero to infinity – which state 'how much more likely it is that an observation is a member of the target group rather than a member of the other group' (Burns and Burns, 2008: 573). In order to draw conclusions, SPSS translates coefficients into *odds ratios* by using the exponent function *exp(b)*. An odds ratio[100] thereby 'estimates the change in the odds of membership in the target group for a one unit increase in the predictor' (ibid: 574).

The author uses the following measures to judge the overall fit of the logistic regression models (Bühl, 2012; von Auer, 2003; University of Strathclyde, 2015):

– First, the so-called *Omnibus test of model coefficients* is interpreted. Through chi-square tests[101], these coefficients show the Log-likelihoods before (intercept-only model) and after entering explanatory predictors to the model. While $p<.05$ indicates that the logistic model significantly improves the predictability of the variation in organizational innovation – compared to the intercept-only model – $p>.05$ does not demonstrate an improvement to the baseline model.

– Second, the Hosmer and Lemeshow (*H-L*) test statistic, which is dependent on the individual sample size, is used. An acceptable fit of the model is indicated by a test statistic of greater than .05[102].

– Third, as the measure R^2 cannot be used in logistic regressions models, the so-called pseudo R^2 has been developed[103]. The author employs the *Nagelkerke's* R^2 (Nagelkerke, 1991), which ranges from zero to one.

In contrast to the quite comprehensive requirements of linear regression models – that are based on OLS algorithms – logistic regression has less stringent assumptions. Based on Lani (2014) and Lund and Lund (2013a), the author summarizes these requirements as follows:

[100] While an *odds ratio* of less than 1 means that an increase in the predictor results in a decrease in the odds of an outcome occurring (e.g. an *odds ratio* of .5 indicates that the probability that organizational innovation equals 1 is half as likely with an increase of the respective leadership behaviour by one unit – negative relationship), an *odds ratio* of greater than 1 leads to an increase in the odds of an outcome occurring (e.g. an *odds ratio* of 4 would mean that when the respective leadership behaviours is raised by one unit the odd ratio is 4 times as large and hence SMEs are 4 times more likely to introduce an organizational innovation – positive relationship). Finally, an *odds ratio* of 1 indicates that there is no relationship between organizational innovation and the respective leadership behaviours (Burns and Burns, 2008).

[101] The fit of the model improves when the deviance is decreasing. When $p<.05$, the logistic model significantly improves the predictability of the variation in the dependent variable organizational innovation, compared to the intercept-only model. When $p>.05$, the logistic model does not demonstrate an improvement to the baseline model.

[102] Well-fitting models have a non-significant H-L test.

[103] SPSS offers *Cox and Snell's* and *Nagelkerke's* R^2. As the maximum of the first indicator is always less than 1.0, interpretations are quite difficult. *Nagelkerke's* R^2 is hence typically higher than *Cox and Snell's* R^2.

– *Type of variables – Dichotomous dependent variable*
  While the dependent variable of the regression model needs to be measured on a dichotomous scale, independent variables can either be continuous or categorical. The dependent variables of the research model – various sub-types of procedural, structural and inter-organizational innovation – are measured as dichotomous variables.

– *Coding of dependent variables – The desired outcome*
  Based on the probability of the event *organizational innovation* occurring $p(y_i=1)$, the factor level 1 of the dependent variable should represent the desired outcome. Hence, the factor level 1 of organizational innovation variables states that the company has introduced the respective sub-type of organizational innovation.

– *Linearity – Interaction term and dependent variable*
  In contrast to the linearity assumption of linear regression analysis – which refers to the linear relationship between the dependent and the independent variables – logistic regression models require that the interaction terms of the independent variables and their logarithmized values are linearly related to the dependent variable. In other words, the independent variables are linearly related to the *log odds*. Thereby, it is ensured that an existing relationship is not underestimated or rejected. The author uses the so-called *Box-Tidwell* procedure[104] to test for linearity (Box and Tidwell, 1962).

– *Sample size – At least 10 cases per independent variable*
  It should be noted, that maximum likelihood (ML) estimates are less powerful than OLS. Hence, more cases per independent variable are needed. 'Whilst OLS needs 5 cases per independent variable in the analysis, ML needs at least 10 cases per independent variable' (Lani, 2014).

3.2.2.2.3 Mediation analysis

The study employs mediation analysis as to answer research question Q_3 and to test hypothesis H_4. In fact, the author assumes that the internal contextual variable *CSR engagement* mediates rather than moderates the impact of transformational leadership on organizational innovation. In other words, CSR engagement is expected to link cause and effect by intermediating in the leadership-innovation relationship.

[104] Thereby, the regression equation is modified by one term – the product of the independent predictor variable and its natural logarithm. When these additional interaction terms are insignificant, the linearity requirement is met.

'Whereas moderator variables specify *when* certain effects will hold, mediators speak to *how* or *why* such effects occur' (Baron and Kenny, 1986: 1176). Hence, mediation might be described as causal explanation model, which includes two consequent variables (the mediator CSR engagement *Me* and the dependent variable organizational innovation *Y*) and two antecedent variables (the independent variable leadership *X* and *Me*), whereby *X* is causally influencing both consequent variables and *Me* is causally influencing *Y* (Fairchild and MacKinnon, 2009; Hayes, 2013). While leadership acts as independent variable that is presumed to cause the mediator *CSR engagement*, the mediator is assumed to play a dual role in the leadership-innovation relationship – being the dependent variable for leadership and the independent variable for organizational innovation (Wu and Zumbo, 2008).

Exhibit 11 illustrates the mediator model with its various pathways, which entail direct as well as indirect effects. While leadership has a direct impact on organizational innovation irrespective of the mediator variable (H_1), the author assumes another indirect effect of leadership through CSR engagement (H_4). Hence, the author's assumption is twofold: variations in leadership account for variations in CSR engagement (a) and variations in CSR engagement account for variations in organizational innovation (b) (ibid).

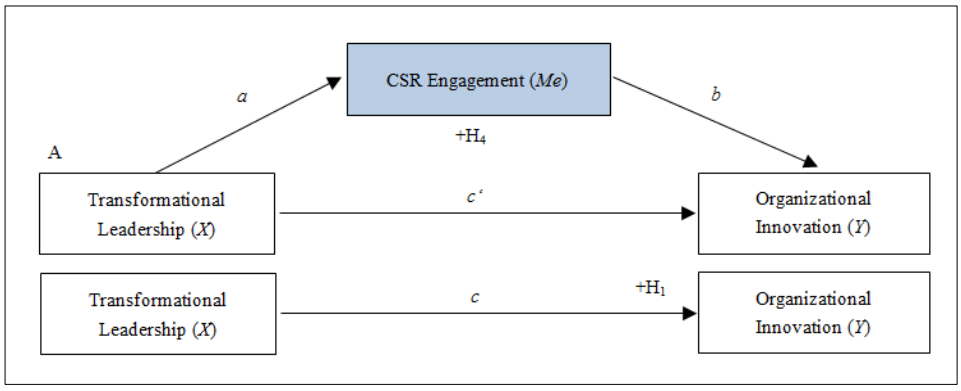


Exhibit 11: Path diagram – A simple mediation model
Source: Authors' depiction, 2015 based on Wu and Zumbo (2008)

To describe this visualized mediator model from a statistical perspective, the author refers to the approach of Kenny and Judd (1984) as well as Baron and Kenny (1986). Thereby, mediation effects are identified through a *four-step data analytic method*[105] which is based on three linear models, as the specific research model includes two antecedent variables (Fairchild and MacKinnon, 2009):

[105] 'This four-step procedure is not a direct statistical test of mediation effect; rather is uses analysis as a tool to examine whether a mediation is in place' (Wu and Zumbo, 2008: 374).

$$Y = i_1 + cX + e_{Y1} \quad (e11)$$

$$M = i_2 + aX + e_M \quad (e12)$$

$$Y = i_3 + c'X + bMe + e_{Y2} \quad (e13)$$

i_1, i_2 and i_3 are regression intercepts, e_{Y1}, e_{Y2} and e_M are residuals, *c* is the direct effect of leadership on organizational innovation, *c'* is the effect of leadership on innovation controlling for CSR engagement, *b* is the impact of CSR engagement on organizational innovation and *a* is the effect of leadership on CSR engagement (ibid). The author refers to Wu and Zumbo (2008), Hayes (2013) and Warner (2013)[106] to describe the four-step data analytic method as follows:

– *Step 1 – Total effect of leadership on organizational innovation*. Equation (*e11*) includes the regression of the dependent variable *organizational innovation* on the independent variable *leadership*. This equation estimates the path coefficient *c*, which demonstrates the overall total effect of leadership on innovation. The *t*-test for statistical significance is not decisive for further mediation analysis[107]. In other words, a statistically significant coefficient *c* is not an essential requirement to establish mediation, as it 'does not necessarily indicate mediation, while a non-significant *c* does not necessarily indicate a lack of mediation' (Zhao et al., 2011: 11). Indeed, it is a wrong intuition that without an effect of leadership on organizational innovation there is no need to further investigate whether this total effect is mediated by *CSR engagement* (Zhao et al., 2010). Exhibit 11 shows that mediation analysis divides this total leadership-innovation effect into a direct effect *c'* and a mediated effect *ab*. When OLS regression is used, this relation can be written as $c = c' + ab$.

– *Step 2 – Effect of leadership on CSR engagement*. Regression (*e12*) predicts *CSR engagement* from the independent variable *leadership*. The unstandardized regression coefficient from this equation corresponds to path coefficient *a*, whereby its standard error s_a and its statistical significance t_a are required for further analysis. The coefficient *a* describes the impact of behaviours of Malaysian leaders on the CSR engagement of their companies.

– *Step 3 – Direct effect of leadership on organizational innovation*. Equation (*e13*) is estimated in order to predict *organizational innovation* that results from both independent variables *leadership* and *CSR engagement*. This model provides unstandardized estimates of path coefficients *b* and *c'*, the standard error s_b and the

[106] Different sources and verbatim citations are additionally mentioned in the following texts.
[107] For further information see Kenny and colleagues (1998).

statistical significance t_b. Moreover, this regression – or rather its coefficient of determination R^2 – provides information about how well leadership and CSR engagement predict organizational innovation. While the coefficient *b* indicates the slope of organizational innovation regressed on the mediator CSR engagement controlling for leadership, the coefficient *c'* demonstrates how organizational innovation is predicted by leadership controlling for the mediator CSR engagement. Thereby, the coefficient *c'* shows the direct path. In other words, it demonstrates how organizational innovation is influenced due to the direct effects of leadership when the mediator CSR engagement is statistically taken into account.

According to Warner (2013), the level of significance[108] of *c'* indicates if the effect of leadership on organizational innovation is completely mediated by CSR engagement. If *c'* is statistically significant, innovation is only partially mediated by CSR engagement and leadership has a non-mediated direct effect on organizational innovation. Hence, the mediator is 'indeed potent, albeit not both a necessary and sufficient condition for an effect to occur' (Baron and Kenny, 1986: 1177). If *c'* is not statistically significant, the effect of leadership on innovation seems to be completely mediated by CSR engagement (Warner, 2013). While Kenny and Baron (1986) call this a *full mediation*, Zhao and colleagues (2010) refer to a so-called *indirect-only mediation*. In fact, it clearly indicates evidence for the hypothesized mediator. However, it is unlikely that additional mediators have been omitted (ibid). An *indirect-only mediation* hence means that the influence of leadership is only effective through its effect on the mediator CSR engagement once the model includes the mediator.

– *Step 4 – Indirect effect of leadership on organizational innovation*. In this last step the overall strength of the indirect and mediated effect is estimated through multiplying the path coefficients *a* and *b*[109] (Sobel, 1988).

As this four-step approach 'is not intended to test the statistical significance of the mediation effect' (Wu and Zumbo, 2008: 375), the author evaluates the significance of the mediator effect separately. Existing literature recommends various methods to

[108] The coefficients *c* and *c'* do not need to be statistically significant to identify a significant mediation effect (Zhao et al., 2011).
[109] Another possibility to calculate the mediation effect is to compare the coefficients *c* and *c'*, so as to obtain the difference between the overall direct effect *c* and the partial direct effect *c'* (Kenny and Judd, 1984). Kenny and colleagues (1998) indicate that this step is not required for detecting a mediation effect for several reasons. However, the author includes this step within the overall analysis.

identify statistical significance (Fritz and MacKinnon, 2007; Warner, 2013). In order to deal with the various shortfalls of these specific methods, and to deal with the relatively small sample size of Malaysian SMEs[110], the author decides to establish a combined approach. In fact, the following requirements have to be satisfied for a statistically significant mediator effect:

– 1st requirement: Statistically significant coefficients *a* and *b* based on the *t*-tests (e.g. Baron and Kenny, 1986; Fritz and McKinnon, 2007; McKinnon et al., 2002)
– 2nd requirement: Normal theory approach (e.g. Hayes, 2013; Sobel, 1982)
– 3rd requirement: Bootstrap confidence intervals (e.g. Warner, 2013)

The *normal theory approach* assumes the statistical significance of the mediator effect *ab*. The null hypothesis $H_0 : ab = 0$ is tested against the alternative hypothesis $H_A : ab \neq 0$ through dividing the indirect effect *ab* by the *first-order delta estimator* of the standard error of the indirect effect as follows (Fritz and McKinnon, 2007; Hayes, 2013):

$$se_{ab} = \sqrt{b^2 s_a^2 + a^2 s_b^2} \qquad (e14)$$

$$Z = \frac{ab}{se_{ab}} \qquad (e15)$$

While *a* and *b* are unstandardized regression coefficients as described above, s_a^2 and s_b^2 are their squared standard errors. The statistical significance of the mediator effect might be tested either by comparing the *Z* value to a standard normal distribution (Fritz and McKinnon, 2007) or to the threshold of 1.96, whereby mediation is significant when *Z* is greater than +1.96 or less than -1.96 (Warner, 2013). The author uses the SPSS macro PROCESS from Preacher and Hayes (2008) to run the mediation analysis and to employ these significance tests[111] (Hayes, 2015).

Even though the normal theory approach, or Sobel test, is the most commonly applied significance test in mediation analysis (Wu and Zumbo, 2008), it assumes that values of *ab* are normally distributed. As this might not always be the case, the author follows the recommendation of Warner (2013) to additionally use the *bootstrapping* method for setting up estimates of confidence intervals for the term *ab*, which do not require a normal sampling distribution of the *ab* statistic. The study employs this method to confirm the results of the first two significance tests. In fact, bootstrapping is said to have a greater statistical power than the normal theory approach (MacKinnon et al., 2002). It treats the sample size of Malaysian SMEs as a miniature representation of the

[110] Fritz and McKinnon (2007) analysed 166 articles concerning mediation studies. From these a total of 5.82 percent used sample sizes between 20 and 50. The median sample size covered 187 observations (ibid).
[111] PROCESS computes *p*-values for the *Z*-statistics, which indicate whether mediation is statistically significant.

whole population (Hayes, 2013). Thereby, confidence intervals are established, which 'provide a basis for evaluation of the single estimate of *ab* obtained from analysis of the entire data set' (Warner, 2013: 658). Statistical significance of the indirect effect is supported when this 'confidence interval [...] is entirely above zero' (Hayes, 2013: 109).

In addition, the author analyses the *effect size* for mediation effects which is essential for testing the practical significance of the research results (Fairchild et al., 2009). Effect size might be thought of as 'any measure that reflects a quantity of interest, either in an absolute sense or as compared with some specified value' which might be 'used as an index of practical importance' (Preacher and Kelley, 2011: 95). The quantification of the effect size in the mediation analysis is an evolving area of research (Hayes, 2013). The author focuses on the method from Preacher and Kelley (2011), which is 'the newest entrant to this growing list of effect size measures in simple mediation analysis' (Hayes 2013: 191). Thereby, the aim is to detect the size effect and hence the practical importance of those mediation effects. Preacher and Kelley (2011) establish the so-called *kappa-squared index* κ^2 which can be interpreted as 'the proportion of the maximum possible indirect effect that could have occurred, had the constituent effects been as large as the design and data permitted. $\kappa^2 = 0$ implies that there is no linear indirect effect, and $\kappa^2 = 1$ implies that the indirect effect is as large as it potentially could have been' (ibid: 106).

$$\kappa^2 = \frac{ab}{MAX(ab)} \qquad (e16)$$

This index has several benefits, such as its insensitivity to the individual sample size, its interpretable metric which ranges from 0 to 1, its standardization and its ability to further create confidence intervals (Preacher and Kelly, 2011). The author uses PROCESS to estimate the effect size of the indirect effects in simple mediation models and to generate bootstrapped confidence intervals for these effects. These confidence intervals should not contain zero (Hayes, 2013), but should entail the relevant benchmark. As recommended by Preacher and Kelly (2011), the author interprets κ^2 analogously to squared correlation coefficients based on the guidelines of Cohen (1988). Hence, a small effect size is defined as .01, a medium size as .09 and a large effect size as .25 (ibid).

Finally, mediation analysis requires several assumptions. First, data have to satisfy the requirements of linear regression analysis, as listed in section *3.2.2.2.1 Linear regression analysis*. Second, the author has to ensure the correct causal ordering of the

model variables (Fairchild and MacKinnon, 2009; Warner, 2013; Wu and Zumbo, 2008). This is derived from the review of existing studies as discussed in *section 2.2.3.2 Potential mediator of leadership effectiveness* of this study.

3.2.2.2.4 Moderation analysis

Besides mediation analysis, the author uses moderation models to fully answer research question Q_3 of the research model. In fact, the author assumes that contextual conditions, which are acting from within and from outside the boundaries of Malaysian SMEs, affect the relationship between transformational leadership and organizational innovation. These so-called *moderator variables* are suggested to change the strength and/or direction of the impact of leadership on organizational innovation (Wu and Zumbo, 2008). Hence, moderation models 'postulate *when* and *whom* an independent variable most strongly (or weakly) causes a dependent variable' (ibid: 370). Specified hypotheses reflect the expected effects of internal ($-H_2$ and $-H_3$) and external moderators ($+H_5$ and $+H_6$), as depicted by Exhibit 2. While internal moderators are expected to reduce and offset the impact of transformational leadership on organizational innovation, external moderators are assumed to enhance the influence of transformational leadership on organizational innovation.

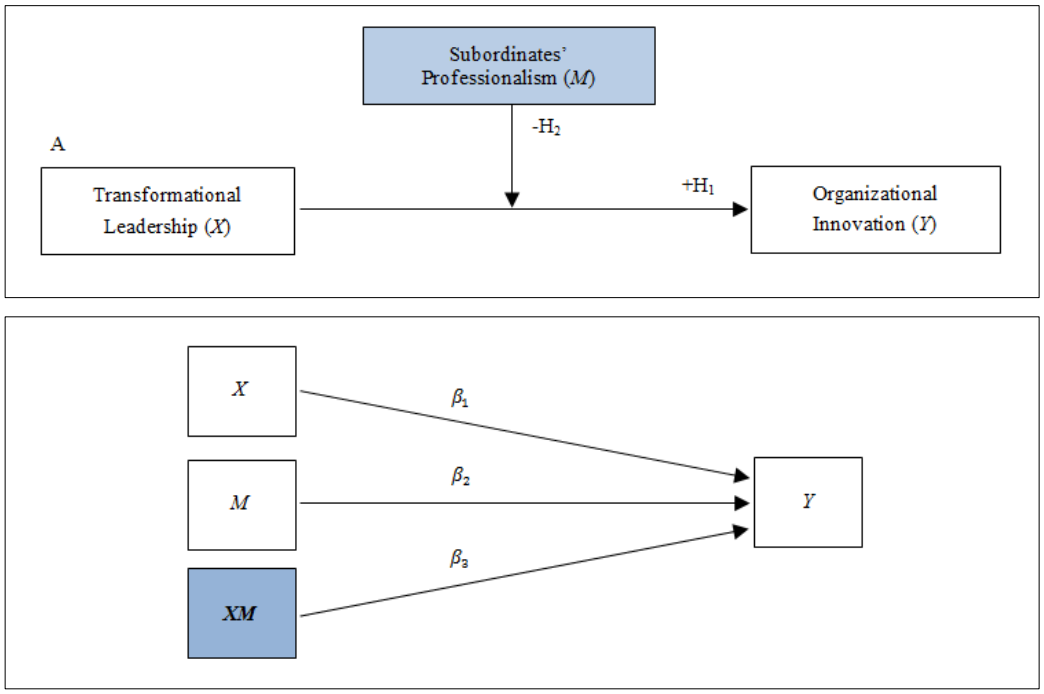


Exhibit 12: Simple moderation model – Subordinates' professionalism
Source: Authors' depiction, 2015 based on Wu and Zumbo (2008)

In order to explain the moderation analysis in a statistical way, the author focuses on a simple moderation model. Exhibit 12 shows a simple moderation model of the

potential internal moderator *subordinates' professionalism*. In contrast to a mediator, a moderator acts not only as an independent, but also as an auxiliary, variable that helps to better explain the causal effect of the key independent variable leadership and further refine the leadership-innovation relationship (Wu and Zumbo, 2008). The moderator effect is basically an interaction effect, which is analysed by multiple regression analysis when the potential moderator is measured on a quantitative scale (ibid). The interaction effect is calculated as a product term of the moderator *M* and the independent leadership variable *X*. It is entered into the moderation model as follows:

$$Y = i_4 + \beta_1 X + \beta_2 M + \beta_3 XM + e_4 \quad (e17)$$

$$Y = i_4 + \beta_1 (X - \bar{X}) + \beta_2 (M - \bar{M}) + \beta_3 (X - \bar{X})(M - \bar{M}) + e_4 \quad (e18)$$

Hence, organizational innovation is predicted by leadership *X*, the specific moderator *M* and their interaction term *XM*. Equation (*e17*) shows that a one-unit change in leadership leads to a change in organizational innovation that depends on the moderator (Hayes, 2013). Prior to calculating the interaction terms and conducting the regression analysis, the author centres moderators and the key independent variable leadership[112]. As illustrated by equation (*e18*), this means that the sample mean is subtracted from the respective scores of the variable. Through this *reparameterization* (Hayes, 2013: 229), multicollinearity between the moderator and the independent variable leadership is prevented and coefficients β_1 and β_2 are made interpretable (Cohen et al., 2003; Wu and Zumbo, 2008).

Regarding the interpretation of the regression coefficients it should be said that β_3 estimates the moderation effect of subordinates' professionalism. It 'estimates how much the difference in Y between two cases that differ by a unit on *X* changes as *M* changes by one unit' (Hayes, 2013: 217). In short, β_3 quantifies how the effect of leadership on organizational innovation changes as the moderator subordinates' professionalism changes by one unit. As the interaction term *XM* is included in the equation model, β_1 and β_2 are interpreted as *conditional*, rather than partial effects. Hence, interpretation of these coefficients and their underlying meaning differs substantially from the described procedure in linear regression analysis. In fact, the coefficient β_1 demonstrates the *conditional simple effect* of the independent variable leadership on the dependent variable organizational innovation when *M*=0. In other words, it represents the association between leadership and organizational innovation conditioned on *M*=0. In addition, the coefficient β_2 represents the conditional effect of the moderator on organizational innovation when the main independent variable

[112] By contrast, the dependent variable is not centred (Wu and Zumbo, 2008).

leadership is zero. The author decides to include also the statistically insignificant coefficients β_1 and β_2 in the moderation model (ibid).

In order to establish a detailed picture of the moderation model and to identify how the moderator impacts the leadership-innovation relationship, the author creates scatterplots. Thereby, the simple main effects – the regression of organizational innovation and leadership – are plotted at meaningful cut-off points of the continuous moderators (Wu and Zumbo, 2008). Even though these values might be arbitrary, the author decides to use the mean of the moderator variable and its standard deviation to compute the different levels of the moderators – for example relatively low levels ($\overline{MSP} - SD_{MSP}$), medium levels ($\overline{MSP}$) and relatively high levels ($\overline{MSP} + SD_{MSP}$) of *subordinates' professionalism* (Hayes, 2013). Finally, moderation analysis requires that assumptions of linear regression analysis are satisfied. In addition, moderators *should* not correlate with independent variables (Kraemer et al., 2002).

4 Findings

Based on the research model, the following section is divided into three sections. Each section involves research results of the quantitative and qualitative analysis, answering respective research questions and verifying or rejecting specific hypotheses. An overview is given by Exhibit 13.

Structure	Research Questions		Assumption // Hypotheses	
Section 4.1	Q_1	What are the predominant leadership behaviours of Malaysian leaders?	A	Leadership behaviours of Malaysian leaders are more transformational than transactional.
Section 4.2	Q_2	How does transformational leadership influence organizational innovation?	H_1	Transformational leadership has a positive influence on organizational innovation.
			H_{1a}	Transformational leadership has a positive influence on the most disaggregated sub-types of procedural, structural and inter-organizational innovation.
			H_{1b}	Transformational leadership has a positive influence on aggregated forms of organizational innovation.
Section 4.3	Q_3	How do contextual conditions moderate and/or mediate the effectiveness of leadership on organizational innovation?	H_2	The impact of transformational leadership on organizational innovation is moderated by *subordinates' professionalism*, such that subordinates' professionalism substitutes for transformational leadership which itself is less effective at higher levels of subordinates' professionalism.
			H_3	The impact of transformational leadership on organizational innovation is moderated by *empowerment climate*, so that higher levels of empowerment climate substitute for transformational leadership and make it less effective.
			H_4	The relationship between transformational leadership and organizational innovation is mediated by *CSR engagement*, such that the impact of transformational leadership is strengthened through CSR engagement.
			H_5	The impact of transformational leadership on organizational innovation is moderated by *environmental dynamism*, such that the effectiveness of transformational leadership is strengthened when there is a high level of environmental dynamism.
			H_6	The impact of transformational leadership on organizational innovation is moderated by *external communication*, such that the effectiveness of transformational leadership is strengthened by more comprehensive external communication.

Exhibit 13: Structuring logic of results
Source: Author's depiction, 2015

4.1 Leadership in Malaysia

Within the first section, the author answered research question Q_1 and verified the main assumption A which states that Malaysian leaders are more transformational than transactional. While initial conclusions were derived from responses to questionnaires,

the author conducted a broadly devised qualitative analysis which further strengthens and complements quantitative research results and confirms the relevance of the research model.

4.1.1 Quantitative results

Descriptive statistics give initial insights into the predominant behaviours of Malaysian leaders. In addition, the author confirmed the reliability, dimensionality and construct validity of the leadership measure MLQ and that its pre-specified factor structure is consistent with collected primary data on Malaysian SME leaders.

4.1.1.1 Descriptive statistics – Behaviours of Malaysian leaders

According to the responses of SME leaders and their subordinates, Malaysian leaders most frequently display transformational behaviours, with transactional behaviours being the next frequent. Only a few leaders show passive leadership behaviours. This conclusion was derived from data collected by questionnaires according to the MLQ framework of leadership behaviours, which are grouped at three different aggregation levels – as explained in section *3.2.1.1.2 Measures of model variables* – throughout the following analysis.

– First, Malaysian leaders are most likely to consider the moral and ethical consequences of decisions (*Idealized Influence Behaviour*), to get others to look at problems from many different angles (*Intellectual Stimulation*) and to express confidence that goals will be achieved (*Inspirational Motivation*). Overall, the specific transformational leadership behaviours – to which these top three behaviours belong – are experienced most intensely by respondents, with only relatively low variations in their perceptions. By contrast, respondents stated that only very few leaders display specific passive leadership behaviours, such as being absent when needed (*Laissez Faire*), waiting for things to go wrong before taking action (*Passive Management-by-Exception*) or getting involved when important issues arise (*Laissez Faire*). In fact, these behaviours are hardly noticed by subordinates and are also only marginally indicated by leaders. Transformational and passive leadership behaviours hence build the upper and lower ends of this intensity scale of different leadership behaviours. In addition, transactional leadership behaviours are perceived to a lesser extent than transformational leadership behaviours but clearly to a greater extent than passive behaviours. Compared to other specific transactional leadership behaviours, respondents indicated that Malaysian leaders most frequently provide subordinates with

assistance in exchange for their efforts and express satisfaction when expectations are met (*Contingent Reward*)[113].

– Second, descriptive statistics of aggregated forms of transformational, transactional and passive leadership behaviours confirm these results focusing on the most disaggregated and specific behaviours of Malaysian leaders. Indeed, transformational leadership is indicated as being the most intensively demonstrated leadership style of Malaysian leaders, followed by transactional and passive leadership. By combining the responses of SME leaders and their subordinates within sample *S2*, this dominant pattern of transformational leadership is even strengthened, whereas transactional and passive leadership tend to be less pronounced[114].

In addition, the author analysed correlations between behaviours of Malaysian leaders – covered by the first and second level of aggregation (see Exhibit 6) – and the effectiveness variables of the MLQ. These variables include the *effectiveness* (*Eff*) of the specific approach of Malaysian leaders (e.g. in meeting subordinates job-related needs), their power to influence *extra efforts* (*ExEf*) of their subordinates and subordinates' *satisfaction* (*Sat*) with the specific leadership style.

– Looking at the leadership categories (aggregation level II), the author found that all five transformational leadership categories are positively and significantly correlated with outcome variables, ranging from r=.630** (*Individualized Consideration* with *Eff*) to r=.397** (*Idealized Influence Behaviour* with *ExEf*). Compared to other leadership categories, transformational categories continue to head the rankings and show the highest linear relationships with every effectiveness indicator. Looking at transactional leadership categories, the category *Contingent Reward* also positively relates to all outcome variables with the correlation with *satisfaction* being the highest (r=.614**). By contrast, the second category of transactional leaders *Active Management-by-Exception* is positively correlated only with *effectiveness* (r=.208*) and *satisfaction* (r=.244*). Finally, just one passive leadership category – *Laissez Faire* – significantly and negatively

[113] In sample *S1,* means of these specific transformational behaviours are: *IIB3*_mean=3.13 (SD=.820), *IS3*_mean=3.11 (SD= .710) and *IM4*_mean=3.08 (SD=.663). The lowest mean has *IIB1*_mean=2.65 (SD=1.065). Standard deviations of transformational leadership behaviours are quite similar. Lowest means: *LF2*_mean=.59 (SD=.924), *MbeP2*_mean=.73 (SD=.975) and *LF1*_mean=.88 (SD=1.125). Means of transactional leadership behaviours: *CR1/CR4*_mean=3.04 (SD1=.949 and SD4=.876).

[114] The mean values of leadership styles: *TF*_mean=2.91 (SD=.473), *TA*_mean=2.57 (SD=.589) and *PL*_mean=1.07 (SD=.707). Sample *S2* shows similar results with the same ranking of these leadership styles.

correlates with *extra efforts* (r=-.252*), *effectiveness* (r=-.246*) and *satisfaction* (r=-.296**)[115].

– This strong pattern of transformational leadership proved itself when looking at the behaviours of Malaysian leaders at their most aggregated level (aggregation level I). Indeed, transformational leadership shows the most significant and positive correlations with effectiveness variables, ranging from r=638** (*Eff*) to r=632** (*ExEf*). Transactional leadership also displays positive, but lower linear relationships, ranging from r=449** (*Sat*) to r=339** (*Eff*). While on an aggregated basis transformational and transactional leadership behaviours indicate significant and positive relations to all three outcome variables, passive leadership merely correlates with *effectiveness* (r=-227*)[116] in a negative manner.

4.1.1.2 Reliability and construct validity of the MLQ

Through various tests the author confirmed the reliability, dimensionality and construct validity of the leadership measure and the consistency of its pre-specified factor structure with collected primary data on Malaysian SME leaders.

The author gauged the reliability of the MLQ through Cronbach's alpha, which determines the internal consistency (Santos, 1999) of leadership items covered by main categories. First, *transformational leadership* items have an alpha coefficient of .872, which indicates a relatively strong level of internal consistency. This indicator could only be slightly improved by removing one subtype of *Inspirational Motivation*. Even though this item correlates only marginally with the composite score of all *Inspirational Motivation* items, the author decided not to remove this item as this statistical reason is considered as being too unimportant (Bühl, 2012). Second, Cronbach's alpha of *transactional leadership* variables amounts to .686 which indicates a lower internal consistency. As the removal of two specific behaviours of *Contingent Reward* would only lead to a small improvement of the overall coefficient, the author decided not to exclude these items from the overall measure. Third, the alpha coefficient of *passive leadership* items indicates a high internal consistency of .810. Again, the removal of a specific item of *Passive Management-by-Exception*

[115] In sample *S2*, most transformational leadership categories positively and significantly correlate with the outcome variables, ranging from r=.684** (*IC* with *ExEf*) to r=.357** (*IM* with *Sat*).Transformational leadership categories show again the highest correlations. By contrast, only one category of transactional leadership significantly and positively correlates with the outcome variables (*CR* with *ExEf*, r=.390**). Finally, only one category of passive leadership – *LF* – shows significant correlations with *extra effort* (r=-.304*) and *effectiveness* (r=-.150).

[116] In sample *S2*, transformational leadership significantly correlates with all outcome variables, ranging from r=717** (*TF* with *ExEf*) to r=450** (*TF* with *Sat*). In contrast to sample *S1*, transactional leadership significantly correlates only with the outcome variables *extra effort* (r=343*) and *effectiveness* (r=346*). Finally, passive leadership again only displays one correlation which is negative – it significantly and linearly relate to *satisfaction* (r=-372*).

would not lead to a significant increase in the coefficient. Therefore, the author did not change the composition of the passive leadership measure. Hence, all transformational, transactional as well as passive leadership items of the MLQ are considered within the following factor analysis[117].

Then, the author conducted factor analysis in order to evaluate the dimensionality and the construct validity of the leadership measure MLQ[118]. As illustrated by Exhibit 14, the author developed four CFA models[119], grouped into two categories. While the first model of each category includes respective leadership items without any classification, the second model respectively represents the structure of the MLQ construct.

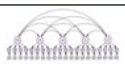
			x^2	df	x^2/df	CFI	TLI	IFI	RMSEA
					< 2.00	*> .90*	*close to 1*	*close to 1*	*< .06*
First CFA category	1-factor model		1108.08	594	1.865	.483	.420	.518	.090
	3-factor model		47.74	24	1.989	.926	.861	.930	.096
Second CFA category	1-factor model		231.38	170	1.361	.859	.826	.871	.058
	5-factor model		216.06	160	1.350	.871	.831	.884	.057

Exhibit 14: Results of confirmatory factor analysis
Source: Author's depiction, 2015

As described in the following, both models of the first category cover specific and aggregated transformational, transactional and passive leadership behaviours.

– The *1-factor model* includes one latent variable leadership that is manifested by 45 observed specific leadership behaviours. Hence, this model reflects all leadership behaviours of the MLQ without any categorization. CFA results show that the chi-square is statistically significant (x^2=1180.09; *df*=594; *p*=.00), suggesting that the model is not consistent with observed data. Even though the relative chi-square indicates an adequate fit (x^2/df=1.865), *CFI* (.483), *TLI* (.420), *IFI* (.518) and *RMSEA* (.090) point to a poor model fit. In addition, factor loadings show

[117] Looking at sample *S2*, the internal consistency of transformational leadership items is slightly higher (.885). This value could only be marginally improved by removing *IIA3* and *IIB1*. In addition, Cronbach's alpha of transactional leadership (.701) is also higher than in sample *S1*. Limited enhancement could be achieved by removing the items *CR1* or *CR4*. Finally, passive leadership variables also show a greater internal consistency with an alpha coefficient of .850, which may marginally be improved with the removal of *MbeP3*. As results of both samples only vary slightly, the author uses *S1* for further CFA analysis.

[118] Before conducting CFA, the author ensured that leadership data are suitable for further factor analysis. The *Kaiser-Meyer-Oklin* measure shows high values for leadership data at different aggregation levels. While one sample includes 45 specific leadership behaviours (.711), the other sample entails nine leadership categories (.808). These values indicate that correlation patterns are relatively compact and factor analysis of the collected data set is useful. *Bartlett's sphericity test* confirms this result.

[119] The author developed various CFA models, in order to find the best fitting model.

relatively small and partly negative values. Hence, the author modified this CFA model.

– The *3-factor model* consists of three latent factors represented by between two and four observed variables each. This model hence reproduces the structure of the MLQ and its distinction between the three leadership styles and their respective categories. The model shows significantly improved values of model fit. While the chi-square is again statistically significant (x^2=47.742; *df*=24; *p*=.03), x^2/df is 1.989, which marginally indicates an adequate fit. Good model fit is further shown by all three comparative indices *CFI* (.926), *TLI* (.861) and *IFI* (.930). Reasonable error is only implied by *RMSEA* of .096. In addition, factor loadings of transformational items are considered to be significant as they range from .710 (*Individualized Consideration*) to .761 (*Intellectual Stimulation*). Also transactional as well as passive leadership items are significant with values between .343 and 1.186. Thus, the model fit considerably improved.

However, the research model focuses on the analysis of *transformational* leadership. Therefore, the author additionally developed a second category of CFA models, which include transformational leadership behaviours only. Overall, this second category of models shows better statistics for goodness of fit than those of the first category.

– The *1-factor model* has one latent variable, transformational leadership, that is manifested by 20 transformational leadership behaviours in their simplest form. The chi-square is again statistically significant (x^2=231.38; *df*=170; *p*=.01). The normative chi-square x^2/df is 1.361, indicating an appropriate fit. The goodness of fit of the model is further strengthened by *CFI* (.859), *TLI* (.826), *IFI* (.871) and *RMSEA* (.058). Factor loadings are higher compared to former models, whereby ten items exceed .50 and hence are significant. Overall, the 1-factor model shows a good fit.

– The *5-factor model* comprises five latent variables – transformational leadership categories – with four observed variables each, covering the specific leadership behaviours. Hence, this model indicates *how* the MLQ measure categorises transformational leadership behaviours. With a statistically significant chi-square (x^2=216.06; *df*=160; *p*=.02), a normative x^2/df of 1.350 and improved comparative indices *CFI* (.871), *TLI* (.831), *IFI* (.884) and *RMSEA* (.057), the model shows a

better fit. Compared to other CFA models, the *5-factor model* appears to be the best reflection of transformational leadership behaviours.

To sum up, the primary data on leadership behaviours demonstrate high levels of internal consistency. Moreover, the underlying pre-specified factor structure of the MLQ model is consistent with these data, which means that data is suitable for analysing the hypothesised model. In fact, it can be said that the *3-factor model* which includes all leadership variables and both transformational CFA models indicate a good fit of the data. Therefore, the MLQ measure from Bass and Avolio (2004) is successfully capturing transformational, transactional as well as passive leadership behaviours within the collected data set on Malaysian leaders.

4.1.2 Qualitative results

Through the analysis of qualitative data – collected by interviews – the author conclusively answered research question Q_1 and verified the main assumption *A*. According to pre-defined research interests, qualitative analysis was conducted in four subsequent steps.

4.1.2.1 Research interest 1 – Transformational leadership (MLQ)

First, the author evaluated *if* and *to what extent* SME leaders and institutional representatives referred to transformational leadership behaviours without being confronted with this special leadership approach within the interviews[120]. Thereby, the MLQ categories of transformational, transactional and passive leadership behaviours were used as the main coding[121] framework. By attaching the responses of SME leaders to respective MLQ leadership categories, the author was able to identify those behaviours which had been mentioned the most and which hence demonstrate the predominant behaviours of Malaysian leaders.

Overall, it can be said that every SME leader show at least two specific transformational behaviours. In fact – with the exception of five leaders[122] – the leadership behaviours of 15 respondents can be described as significantly transformational, as they point to various behaviours which are covered by at least three transformational leadership categories. A total of five leaders referred to all five transformational leadership categories, whereby the specific behaviours of the

[120] Interview questions are detailed in chapter *3.2.2.1 Qualitative data analysis*.
[121] *Coding* means that information is summarized and grouped within the interpretation procedure, in order to condense data and derive results (Flick, 2012; Wengraf, 2001).
[122] Leaders of companies C15, C20, C21, C29 and C40 showed to some extent specific behaviours of the transformational leadership category *IC*, but only one transformational behaviour in addition to *IC*.

category *Individualized Consideration* were indicated by every respondent. This is the highest response rate for all transformational leadership categories. By contrast, specific behaviours of the transformational category *Idealized Influence Attribute* were mentioned by only seven leaders. The owner of company C8 referred to 15 specific transformational leadership behaviours of the MLQ, whereas some behaviours were repeatedly mentioned up to six times. Therefore, he was recognized as the highest-rated transformational leader in the sample. Within the interviews, no respondent indicated transactional or passive leadership behaviours.

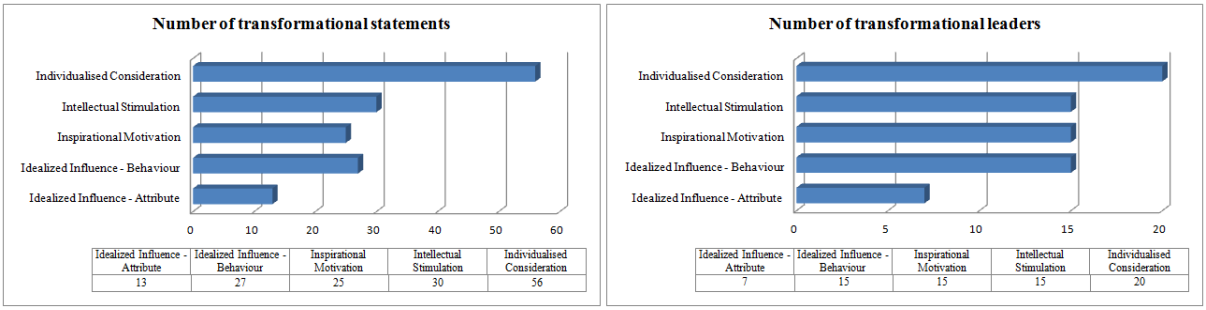


Exhibit 15: Overview qualitative results – MLQ coding structure
Source: Author's depiction, 2015

– With a total of 40 statements, 16 leaders reflected specific behaviours of the transformational leadership category *Idealized Influence*. These leaders share risks with subordinates, act in accordance with underlying ethics, principles and values and are admired, respected and trusted by their subordinates (Avolio and Bass, 2004). Whereas the transformational category *Idealized Influence Attribute* was indicated by 7 leaders and 13 statements, *Idealized Influence Behaviour* was indicated by 15 leaders and 27 remarks. Most leaders referred to the following specific transformational behaviours: 'to talk about my most important values and beliefs' and 'to emphasize the importance of having a collective sense of mission'. By contrast, only one leader directly stated that he considers the moral and ethical consequences of his decisions. In addition, merely two leaders indicated that they instil pride in others for being associated with them and that they go beyond self-interest for the good of the group.

– Through 25 remarks, a total of 15 leaders referred to the transformational leadership category *Inspirational Motivation*. These leaders can be said to motivate subordinates by providing meaning and challenge to their work. Furthermore, they express enthusiasm and optimism about the future, which leads to individual and team spirit (Avolio and Bass, 2004). Looking at this specific category, the author found that half of all leaders directly mentioned that they talk optimistically about

the future and express confidence that goals will be achieved. Besides these frequently listed behaviours, only four leaders said that they articulate a compelling vision of the future. In addition, institutional representatives stressed that it is of crucial importance that Malaysian SME leaders have a strong vision, by which subordinates are guided and inspired.

– With overall 30 statements, 15 leaders pointed to the transformational leadership category *Intellectual Stimulation* and its specific behaviours. These behaviours are indicated by leaders who stimulate their subordinates' effort to be innovative and to develop new ideas and creative solutions. These leaders support subordinates to question assumptions, reframe problems, and approach old situations in new ways (Avolio and Bass, 2004). Overall, 12 respondents directly mentioned that they get others to look at problems from many different angles and that they continuously suggest new ways to complete assignments. By contrast, only four leaders indicated that they encourage subordinates to re-examine critical assumptions to question whether they are appropriate. In addition, regional institutions pointed to the key role of leaders to motivate their subordinates and encourage their creativity and 'out-of-the-box' thinking.

– With overall 56 individual statements, by far the most responses can be assigned to the transformational leadership category *Individual Consideration*. In fact, every leader displayed at least one specific behaviour of this category. Hence, it should be noted that all leaders recognize individual needs, abilities and desires of subordinates, pay attention to their need for achievement and growth and ensure the development of their strengths (Avolio and Bass, 2004). Most frequently, respondents indicated that they spend time for teaching and coaching. In addition, an institutional representative pointed to Stephen Covey's (2004) *Seven Habits of Highly Effective People* and thereby stressed the importance that leaders should first seek to understand their subordinates and then seek to be understood themselves.

Research results show that Malaysian leaders display specific behaviours of all transformational leadership categories described by Avolio and Bass (2004). Without being explicitly asked, respondents pointed to various specific behaviours which are covered by the categories *Idealized Influence*, *Inspirational Motivation* and *Intellectual Stimulation*, whereas specific behaviours of the transformational leadership category *Individualized Consideration* were mentioned the most.

4.1.2.2 Research interest 2 – A comparison with quantitative findings

When comparing these findings from the qualitative analysis (*research interest 1*) with the results from analysing the questionnaires (see *descriptive statistics*), the author found that the importance of the transformational leadership categories – *Idealized Influence*, *Inspirational Motivation*, *Intellectual Stimulation* and *Individualized Consideration* – differs. One reason might be that the data collection through questionnaires and interviews are based on different methods for different sample groups. While questionnaires were filled out by SME leaders and their subordinates, interviews were conducted with SME leaders and institutional representatives.

Exhibit 16 shows that – by filling out the questionnaires – SME leaders and subordinates stated that specific transformational behaviours which are categorized under *Intellectual Stimulation* are indicated by most Malaysian leaders. They further stated that they perceive the transformational categories *Inspirational Motivation* and *Idealized Influence* as being the second- and third-strongest indications. While the specific behaviours of the transformational category *Individualized Consideration* were identified as the least pronounced through the questionnaires, most respondents directly referred to this leadership category within the interviews. By contrast, interviewees pointed to specific behaviours of the transformational leadership category *Inspirational Motivation* the least, while more frequently indicating behaviours of the categories *Idealized Influence* and *Intellectual Stimulation*.

Leadership categories	Questionnaires	Ranking	Interviews	Ranking
Idealized Influence Attribute	2.918	3/5	13	5/5
Idealized Influence Behaviour	2.855	4/5	27	3/5
Idealized Influence	2.887	3/4	40	2/4
Inspirational Motivation	2.992	2/4	25	4/4
Intellectual Stimulation	3.013	1/4	30	3/4
Individualized Consideration	2.785	4/4	56	1/4

Exhibit 16: A comparison of qualitative and quantitative research results
Source: Author's depiction, 2015

Even though research findings slightly differ with regard to the relative intensity of the specific transformational leadership behaviours covered by various categories, quantitative as well as qualitative data analysis confirm the main assumption *A* that Malaysian leaders of SMEs which are operating in the ICT sector of Kuala Lumpur predominantly demonstrate transformational leadership behaviours. Thereby, research question Q_1 is answered and the main assumption *A* is verified.

Research question Q_1		
Q_1	What are the predominant leadership behaviours of Malaysian SME leaders?	
A	Leadership behaviours of Malaysian leaders are more transformational than transactional.	✓

Exhibit 17: Verification of the main assumption *A*
Source: Author's depiction, 2015

4.1.2.3 Research interest 3 – Additional leadership behaviours

While the first analysis of the interview responses of SME leaders and institutional representatives was based on the MLQ framework, the author evaluated additional statements – which do not fit into this framework – through a more open approach. In fact, the author sought to gain additional insights into the unique leadership behaviours of Malaysian leaders, which might complement the already discussed research findings and might thereby confirm the relevance of the transformational leadership concept of Avolio and Bass (2004) within the Malaysian setting.

Qualitative data were analysed through three subsequent interpretation steps. Within the first coding process the author identified a total of 37 leadership behaviours. These behaviours were then summarized and grouped into 15 categories. Within the last step, the author defined six final categories – depicted by Exhibit 18 – of leadership behaviours, each of which entails two or three specific behaviours of Malaysian leaders. In the following, these leadership categories are first described and then compared to the specific categories of the MLQ.

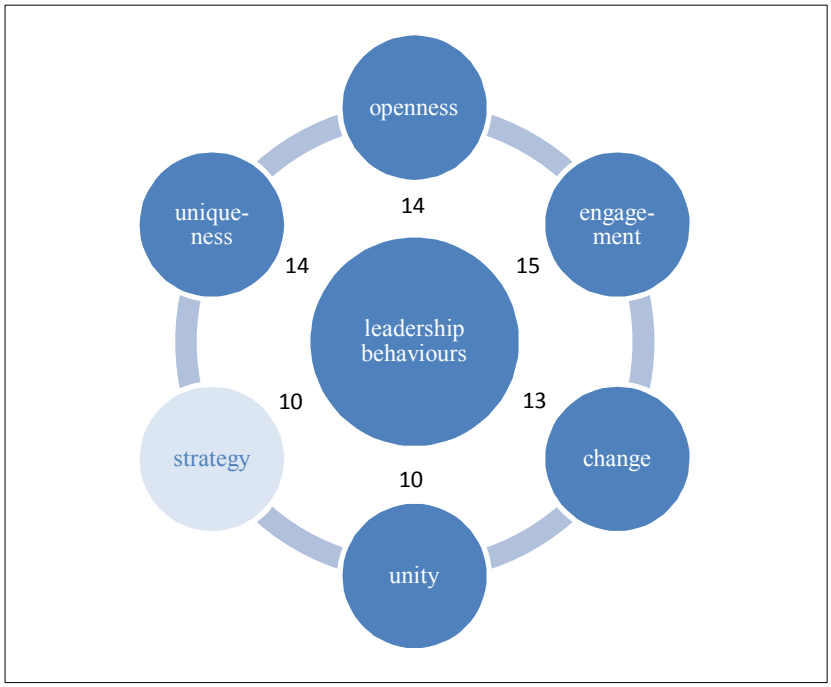


Exhibit 18: Additional leadership behaviours & categories
Source: Author's depiction, 2015

– *Openness*. Overall 14 respondents directly stated – through 20 statements – that they follow an open approach, by either supporting an open working environment or being curious, good listeners and keen observers. Leaders stated that they provide an open feedback culture and enough space for subordinates to speak up and bring in their own ideas, allow for criticisms from subordinates and that they are willing to constantly reflect on their own behaviours and to guarantee an open dialogue. While the first behaviour – to support an open working environment – further indicates the transformational leadership category *Intellectual Stimulation*, the second set of behaviours – to be curious, a good listeners and a keen observer – strengthens the transformational MLQ category *Individualized Consideration*.

– *Engagement*. With a total of 28 statements, 15 leaders indicated that they act in a responsible manner, display empathy and are emotionally engaged and willing to establish personal relationships. This category supplements the transformational MLQ categories *Idealized Influence* and *Individualized Consideration* with an emotional dimension.

  First, the author found, that some leaders compared their leadership roles with their role as family members – e.g. with their role as fathers. Their inputs thereby reflect the characteristics of the *father leadership approach*, which is practiced by leaders in several Asian countries and is fundamentally based on Asian and Islamic values, such as being collectivist, hierarchical and relationship-oriented (Low, 2013). Thereby, leaders take care of their subordinates, like fathers do (ibid). Other leaders clearly distinguished their responsibilities as leaders from their role as fathers, but instead pointed to the importance of being *responsible leaders*.

  Second, leadership behaviours described by interviewees cover emotional engagement and empathy. Leaders stressed the importance of their own emotional engagement and of their subordinates' positive concern for their company's success. Leaders also indicated that they trust their subordinates, as they believe in the good in people and in their motivation to do things from their heart. However, one leader explained that it is crucial to act with 'a soft heard and a hard mind'. Third, respondents stated that they establish personal relationships with their subordinates. Besides following fundamental values – such as trust, honesty and integrity – these leaders have a keen interest in their subordinates and in a close cooperation with them.

– *Change.* Overall 13 leaders stated – through 19 remarks – that they support flexible, and not too serious, working environments, that they act as facilitators and also that they are courageous people. First, some respondents stressed that being flexible is a crucial characteristic of their individual leadership style. In this context, leaders classified flexibility as necessary to meet the demands of people management, to find new opportunities, to modify old habits and to make quick decisions. The author identified flexibility as a specific behaviour of a transformational leader, which builds the basis for the further behaviours categorized by *Intellectual Stimulation* and *Individualized Consideration*.

  Second, acting as a facilitator and coordinator refers to the MLQ leadership category *Individualized Consideration* and to the specific behaviour of spending time for teaching and coaching. Besides coordinating the work of various specialists towards common goals, these leaders facilitate the development of each subordinate. Third, leaders indicated that they are courageous, which might be assigned to the transformational leadership category *Intellectual Stimulation* and *Inspirational Motivation*. Courage is needed to actively change existing procedures and settings as disruption always involves risk. Leaders must also be courageous if they are to articulate compelling visions and challenging goals, take bold decisions and express confidence. This proactive attitude inspires subordinates.

– *Unity*. Overall 10 leaders stated that they aim to build unity with their subordinates through encouraging an active participation by subordinates and by acting as a team member *on the ground*. First, respondents explained that they prefer participative working environments. Indeed, they delegate tasks and responsibilities to their subordinates and want them to bring in their own ideas. Leaders admitted that they thereby compensate for their own weaknesses, but also stated that they follow a continuous learning process and are thus better able to react to changing external requirements. The author assumed that leaders with this characteristic lay the foundation for the transformational leadership category *Intellectual Stimulation.* In fact, participative working environments serve as the basis for looking at problems from different perspectives and for developing new solutions.

  Second, six leaders explicitly stressed the importance of being an active part of the team. Indeed, they strive to show that every company member has the responsibility to think about existing processes and to bring forward new solutions.

Leaders are hence willing to get involved *on the ground* and to work together with their subordinates as one team. This encourages team spirit and inspires subordinates, both intellectually and in other ways. Hence, the author defined this quality of Malaysian leaders as another requirement for various transformational leadership behaviours, which are categorized by the MLQ under *Idealized Influence*, *Intellectual Stimulation* and *Individualized Consideration.*

– *Strategy*. With a total of 10 respondents the category *strategy* contains 14 statements, including leaders' own skills and experience and their ability to predict outcomes and choose the right timing. First, when talking about their strengths as leaders, almost half of all respondents explicitly pointed to their own comprehensive knowledge, high skills and many years of experience. Leaders indicated that this background enables them to answer all kind of questions, act as experts, make more secure decisions and quickly classify the scope and content of complex environments or situations.

  Second, leaders indicated that they have the ability to predict quite precisely the outcomes of their own behaviours and actions. This characteristic is seen to be directly based on their skills, experience and knowledge about the environment. Overall, the category *strategy* is partly linked to the MLQ leadership category *Individualized Consideration* as transformational leaders need to be aware of the potential and skills of their subordinates as to be better able to rate their actions.

– *Uniqueness*. With 22 remarks, 14 leaders pointed to the unique characteristics of their personality, including inborn social skills and a balanced, long-term oriented and patient mind. First, leaders stated that social skills cannot be fully learned, but should rather be thought of inborn characteristics. They thereby referred to fundamental values, such as compassion, solidarity, morality, mutual respect and appreciation. Leaders stated that these qualities enable them to inspire their subordinates.

  Second, leaders indicated that they are reflective, balanced, long-term oriented and patient. Third, leaders displayed protective leadership behaviours. In fact, respondents explained that they seek to protect their subordinates from too much work, negative news and ill-feeling from external pressures. These issues would only distract subordinates from their development and from daily business. The author classified this behaviour category as the basis for the transformational

leadership category *Idealized Influence* and its specific behaviours of instilling pride in subordinates, building subordinates' respect and considering the moral and ethical consequences of their decisions.

Almost every category – which has been derived from additional responses of SME leaders and institutional representatives and which covers specific characteristics and behaviours of Malaysian SME leaders – might be described as a *pre-condition* for various transformational MLQ leadership categories described by Avolio and Bass (2004). The transformational category *Individualized Consideration* requires leaders who show behaviours which are covered by the categories *engagement*, *change*, *unity* and *uniqueness*. In addition, behaviours of the leadership category *Intellectual Stimulation* call for leaders whose transformational behaviours can be found within the categories *change* and *unity*. Furthermore, *change* is necessary for the unfolding of the specific transformational leadership behaviours covered by *Inspirational Motivation*, whereby the transformational MLQ category *Idealized Influence* requires *engagement*, *unity* and *uniqueness*. By contrast, the category *strategy* cannot be described as a pre-condition, but is rather linked to the transformational category *Individualized Consideration*. Indeed, it can be thought of a result of these transformational leadership behaviours.

4.1.2.4 Relevance of the research model, Part I

Finally, the author analysed the relevance of the research model and its specific contextual factors. Specifically, leaders were asked to explain *situations in which their individual leadership approach is more effective*. As the author did not focus on a specific contextual variable – but indicated to respondents a general perspective – the selection of influence factors was left entirely to the respondents. Moreover, the author did not refer to a specific outcome variable – such as to organizational innovation – and thereby considers the term *effectiveness* in quite a broad manner.

The author grouped the responses of SME leaders and institutional representatives into four categories: transformational behaviours of leaders, the external environment, internal factors and the unique characteristics of the Malaysian setting.

– *Transformational behaviours*. First, when talking about the effectiveness of their leadership approach, more than half of all leaders directly pointed to one of the above-mentioned transformational leadership behaviours. In fact, they stated that their way of leading is positively influenced by their own behaviours, such as being

authentic and future-oriented and able to motivate subordinates through their positive (but demanding) vision and their focus on personal relationships and emotional engagement. This means that leaders are convinced that they can significantly improve the success of their leadership approach through showing transformational behaviours. Thereby, leaders pointed to the first hypothesis H_1 which assumes that transformational leadership behaviours do have the power to positively influence organizational innovation.

– *External environment*. Second, eight leaders stressed the crucial role of the external environment – demonstrated by the complex and steadily growing IT sector of the Malaysian economy – for the effectiveness of their leadership style. Leaders explained that they feel very comfortable within this environment, which requires an open, innovative, individual and flexible management approach. Indeed, these characteristics are typical ingredients of transformational leadership. Hence, leaders confirmed the practical relevance of the contextual variable *environmental dynamism* for the effectiveness of their leadership approach.

– *Internal Factors*. Third, nearly all respondents indicated that their subordinates have a significant influence on the effectiveness of their leadership approach. The importance of having personal relationships with their subordinates has been addressed by 15 leaders and has already been covered by the *engagement* category described above. In addition, six respondents directly referred to the power of their subordinates (through their skills and their ethnic diversity) to positively influence the effectiveness of their leadership behaviours. Hence, the relevance of the contextual variable *subordinates' professionalism* was confirmed.

– *The Malaysian setting*. Fourth, half of all leaders indicated that their strengths and their success as leaders are tremendously influenced by the various characteristics of the *Malaysian setting*. Some of these characteristics have already been discussed within the introductory part of this dissertation. Also, the representatives of regional institutions referred to several major challenges which Malaysian SMEs are facing and which have an impact on the effectiveness of their leaders. These challenges are summarized by Exhibit 19.

  Leaders stated that two characteristics of the Malaysian setting in particular have a significant impact on the effectiveness of the leadership approach – *state regulation* and *typical hierarchical relationships*. The latter seem to extensively

influence the function and task area of Malaysian leaders, in particular of transformational leaders. In fact, they have to change their subordinates' idea of interpersonal relationships – which is deeply hierarchical – in order to realize the full potential of their transformational behaviours. Respondents indicated that Malaysians are taught, from a very early stage in their schooling years and later on, that it is rude to speak up and that the authority of higher-ranking people must never be questioned (*power distance*). Indeed, Malaysian values are known as being collectivistic and hierarchical, Malaysian leaders are said to be distant (even though warm-hearted) and subordinates tend to be *yes-men*, over-dependent on their leaders and not really questioning or reasoning instructions (Low, 2013). Subordinates thereby tend to consider their leaders as knowing perfectly what is best. However, transformational respondents stressed that they do not support this particular attitude of their subordinates and do not follow this typical *power distance* behaviour. In fact, they indicated themselves as being very open and emotionally engaged, and maintaining close and personal relationships with their subordinates.

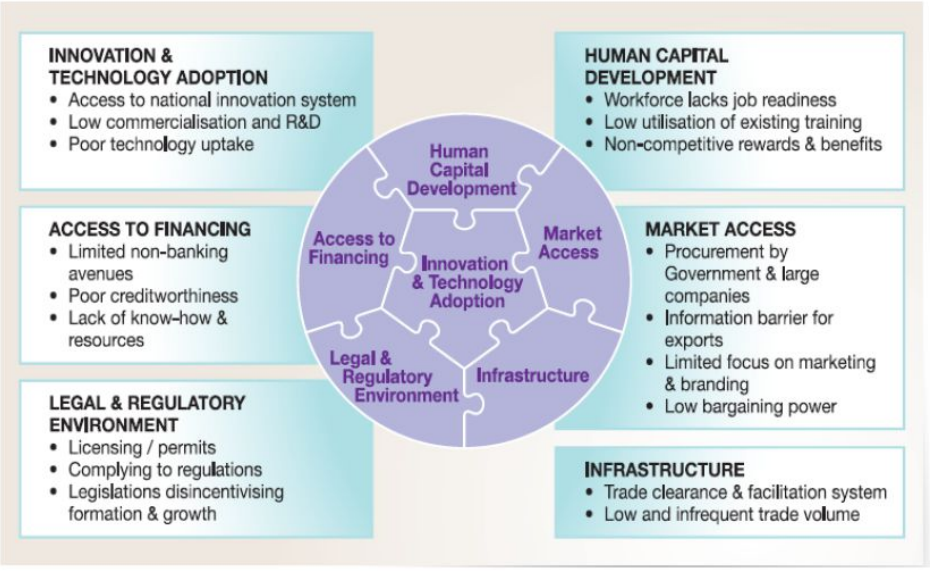


Exhibit 19: Key challenges faced by Malaysian SMEs – An overview
Source: SME Masterplan 2012-2020 (SME Corporation Malaysia, 2012)

Given this hierarchical understanding of interpersonal relationships, transformational leaders have a key function within the Malaysian economy and culture in that they teach their subordinates to open their minds, to speak up, voicing their own thoughts and ideas, and to critically question decisions. Respondents stated that this is not an easy task. Rather, it is difficult to change subordinates' values and attitudes, in particular that they should work alongside their leaders as part of one team. It is not yet rooted in the Malaysian culture that

subordinates are allowed to participate actively, as opposed to just following the instructions of their leaders without questioning them.

4.2 Impact of leadership on organizational innovation

The following section summarizes the answering and verification process of research question Q_2 and hypothesis H_1 which states that transformational leadership behaviours have a positive influence on organizational innovation. The author used logistic and linear regression models to evaluate the impact of transformational leadership on organizational innovation at various levels of aggregation. In addition, the practical relevance of this leadership-innovation relationship was confirmed by qualitative analysis.

4.2.1 Descriptive statistics – Organizational innovation

Respondents indicated that their companies mainly introduced three sub-types of organizational innovation[123] in the following order: new methods of organizing knowledge management (OI1KM)[124], of organizing external networks and alliances (OI3NA) and of organizing quality management (OI1QM). By contrast, relatively few SMEs introduced new methods of organizing supply chain management (OI1SCM)[125], of organizing external relations with other firms, public institutions or outsourcing partners (OI3OF, OI3OS) or changes to hierarchical levels or the divisional structures of business functions (OI2HL). Overall, 21 respondents answered all nine innovation questions positively, which amounts to 25 percent of all participants. While most companies introduced seven sub-types of organizational innovation[126], only 3.6 percent of all respondents, and hence the smallest portion, indicated that their companies introduced less than four different sub-types of organizational innovation. These results of the sub-types of organizational innovation are reflected at a higher level of aggregation. Indeed, most SMEs introduced procedural organizational innovation, followed through structural and inter-organizational innovation[127].

[123] When more than one subordinate filled out the questionnaire, the author calculated average values, which are rounded up. Due to their binary character the mean values of these sub-types of organizational innovation express the proportion of positive responses, covering those leaders and subordinates who answered the questions with *yes*. The author additionally analysed these dichotomous variables by multiple response and frequency analysis.

[124] In fact, 79 leaders and subordinates indicated that their companies introduced *OI1KM*. Relative to overall 592 yes-responses, these 79 responses account for 13.3 percent of all positive indications.

[125] Indeed, only 54 respondents positively answered the question regarding the sub-type *OI1SCM* (64.3 percent of all leaders and subordinates or 9.1 percent of all positive answers).

[126] 70.2 percent of all respondents positively answered at least seven questions on organizational innovation.

[127] *OI1*_mean=2.536 (SD=.7675), *OI2*_mean=2.369 (SD=.8471) and *OI3*_mean=2.333 (SD=.8962). In sample *S2*, mean values demonstrate the same order: *OI1*_mean=4.940 (SD=1.1434), *OI2*_mean=*4.643* (1.2986) and *OI3*_mean=*4.595* (SD=1.4785).

Only a few leaders and subordinates[128] added their own examples of organizational innovation under the respective categories. First, a total of nine respondents mentioned own procedural organizational innovation. These include new banking credit risk procedures, the integration of new technologies which act as enablers of better performance, new spending-, innovation-, risk- and idea-management, new management tools for ISO 27001, new project management frameworks and a new hardware-trading software. Second, four respondents indicated that their companies introduced the following specific structural organizational innovation: new structures for commoditized functions and core competencies, an enforced orientation of organizational structures along the values of transparency, auditability and accountability and new frameworks based on project management. Third, three respondents added examples of own inter-organizational innovation, which cover innovative transformation projects playing an advisory role to the government, a new integrated approach of supply management and a new cooperation platform with the community.

Finally, the author identified *if* and *to what extent* organizational innovation fulfils certain objectives. Respondents rated the positive impact of organizational innovation on the quality of their goods or services first, followed by their impact on the ability to develop new products and processes and to communicate or share information within the company or with other enterprises and institutions. By contrast, respondents indicated that the impact of organizational innovation on their pace to respond to customer or supplier needs is ranked last[129]. Overall, three respondents[130] mentioned additional objectives, which were not considered by the author, but were effectively satisfied through organizational innovation: the implementation of a multiplier effect, the provision of auditable insights for management analysis and an improved development of subordinates and their level of knowledge.

4.2.2 Qualitative results – Relevance of the research model, Part II

> 'Companies tend to create a division and call it *innovation department*. That doesn't work, because there are a lot of elements in an organization that would resist any change for a simple human reason * because we don't like changes.'
>
> *Owner of C23, interview on 10 April 2014*

Through qualitative analysis, the author aimed to identify *if* SME leaders and institutional representatives consider leadership or even transformational leadership as an essential trigger of organizational innovation in Malaysian SMEs. Findings were

[128] These respondents represent six leaders (*C5*, *C6*, *C8*, *C19*, *C20, C31*) and four subordinates (*C12*, *C20, C37*), whereby two subordinates of company *C20* answered this question. One respondent indicated that his company introduced all nine sub-types of organizational innovation and additionally mentioned own examples in each category (*C6*).
[129] Mean values of objectives: *Rqual*_mean=3.512, *Rabil*_mean=3.292, *Rcom*_mean=3.244 and *Rtime*_mean=3.101.
[130] These respondents cover two leaders (*C6* and *C8*) and one subordinate (*C21*).

mainly derived from inputs to the interview question: *What influences organizational innovation most?*

Summing up all responses, qualitative analysis clearly confirms the relevance of leadership as one of the main triggers of organizational innovation and hence verifies the practical relevance of the research question Q_2. However, inputs from both leaders and institutional representatives show considerable variety. Organizational innovation was considered to be influenced by internal factors, such as leaders' behaviours, the organizational culture and subordinates' characteristics. Also, SME leaders and institutional representatives pointed to the important role of external factors, which influence organizational innovation from outside a company's boundaries. Most respondents stressed the crucial role of leadership as a tool for stimulating or allowing benefits to flow from additional triggers for innovation, such as organizational culture.

First, respondents mentioned three internal factors, which influence the level of organizational innovation the most. Among them, leadership and subordinates' level of sophistication were thought of as having a direct impact on organizational innovation. By contrast, interviewees classified the working environments of their SMEs – whose characteristics are expressed by respective organizational cultures – as clearly being affected by the individual behaviours and values of SME leaders. Hence, most leaders assumed a causal relationship between leadership and organizational culture and between subordinates' professionalism and organizational innovation. These relationships are not reflected by the research model of the dissertation.

– *Leadership*. For most respondents, the answer to the question – what influences organizational innovation – was crystal-clear '*It's quite simple, it's leadership*' (C1). In fact, 16 leaders immediately mentioned leadership as the main trigger. They indicated that the willingness of leaders to accept, and even support, changes is a precondition for any form of organizational innovation, as change processes are mostly initiated by leaders themselves. Respondents classified the identification of market opportunities and the anticipation of problems and potential risks as their core responsibilities. Therefore, it is important that leaders are flexible and open-minded, encouraging their subordinates to question everything constantly, to be willing to adapt to change and preferably to create change. In addition, leaders explained that they support organizational innovation by acting as supervisors, coaches and motivators for their subordinates. Leaders also, provide training facilities to develop their subordinates' skills and strengths. Moreover, respondents

pointed to the influence of subordinates' positive attitudes, their motivation and their enjoyment in behaving in an innovative way. '*By supporting people to enjoy what they are doing, I create and boost their motivation for innovation*' (C20). Thereby, leaders respect and consider subordinates' individual needs and ethnic backgrounds. In addition, institutional representatives stressed the crucial role of Malaysian leaders in improving organizational innovation. They were considered to directly influence innovation through encouraging 'out-of-the-box' thinking and the creativity of their subordinates.

– *Culture*. In order to stimulate organizational innovation, nearly all leaders pointed to the essential task of leaders to create non-hostile, open and flexible working environments, in which mistakes are allowed, individual development is supported, feedback is requested, learning processes boost innovation and subordinates do not experience negative pressures. They described innovative working environments through the delegation of authority and responsibilities and subordinates' active participation. This means that they steadily question things and speak up. The cooperation of leaders and subordinates as members of the same team – following the same values and goals and pulling in the same direction – was described as a crucial ingredient for innovative environments by about half of all respondents. '*Everyone has to believe in improvements and development. Every single person has the power and the responsibility to think about existing processes and maybe bring forward new ways of doing things*' (C6). Furthermore, respondents explained that an open working environment is needed to implement a continuous learning process – from the past, from own experiences and from best practice of other companies or regions which might be more developed than Malaysia.

– *Subordinates*. Overall five leaders referred to the essential role of subordinates and their individual characteristics as an internal trigger of organizational innovation. Respondents assumed that subordinates have the power to influence organizational innovation independently from the respective leadership approach. Even though respondents recognized the central role of leaders and open working environments as initiators of innovative processes and change within an organization, they believed that subordinates' talents, experience, skills and creativity build the basis for a company's ability to innovate successfully. In the end, it seems to be a matter of having '*the right people*' (C29).

Second, about the half of all respondents suggested that external contextual factors – in particular the location of the company and the dynamics of its environment – influence organizational innovation the most. In order to best support the potential positive impact of these external triggers, the behaviours of Malaysian leaders were seen as being particularly important. In fact, SME leaders explained that they have to identify and seize new opportunities to react quickly and collectively – with their subordinates – in order to create and implement organizational innovation successfully.

– *Company location*. Three respondents stated that the location of a company builds the basis for the generation of (as well as the absence of) innovation. They pointed to places – such as Silicon Valley – which are *hubs of innovation, creativity and development*. Such innovative environments, which embody deeply-rooted innovative values and behaviours, will be particularly successful in attracting creative people. Hence, these respondents categorized innovative communities as triggers for all kinds of innovation.

  By contrast, SME leaders identified locations that scotch innovation due to their specific characteristics. Respondents classified Malaysia as a perfect example of a difficult environment for innovation. These respondents explained that the introduction of organizational innovation at the level of Malaysian SMEs is tough and challenging, due to regulatory, cultural and ethnic reasons. As an example one leader referred to the already mentioned *power distance* which is traditionally taught to Malaysians from their early years of schooling. '*People keep quiet, as it is rude to speak up and to disagree with the authority of the leader*' (C8). As a consequence, respondents stated that leaders tend to be the only innovative thinkers in most companies. In other words, they are not in a position to pick up the best innovative ideas from all workers in the company. In such an environment, leadership is all the more important. In fact, respondents stressed that they have the crucial task to oppose these ancient values and to go beyond traditional principles, in order to show subordinates that their individual views, critical questions, continuous feedback, different perspectives and creativity are not only allowed, but also expected. However, in Malaysia this form of leadership – which is assumed to trigger organizational innovation – '*is relatively new and not followed by many*' (C36), as it means that leaders share their power. This can be viewed as undermining the traditional values of the society.

– *Dynamics of the environment*. Overall, five respondents pointed to the dynamics of the external environment as being a key trigger for organizational innovation. Leaders explained that the growing complexity of, and rapid change in, market requirements continuously create new opportunities. But rapid change in the external environment requires that organizations are flexible and quick to adopt. Even though these five respondents tended to highlight their role in initiating innovative processes, some leaders considered the impact of the external environment as being equally important. The owner of company C23 even stated that '*leadership is important, but environment is the bigger driver of organizational innovation*'.

The results of this qualitative evaluation confirm the relevance of the research question Q_2 and the hypothesis H_1, on which the following analysis is focused. Not only do respondents view leadership as the crucial trigger of organizational innovation, they also describe – without being explicitly asked – transformational leadership behaviours as essential stimulators for continuous organizational change, development and innovation. Furthermore, respondents discussed several contextual factors of the research model and thereby confirmed the suitability for further research.

4.2.3 Diagnostics – Assumptions of regression analysis

Before conducting logistic and linear regression analysis, the author tested whether collected data satisfy the various requirements. Thereby, a high quality of the study and the reliability and validity of research results are ensured.

4.2.3.1 Linear regression analysis

Linear regression analysis requires that data fulfil quite comprehensive assumptions, depicted by Exhibit 21 and discussed in the following.

– *Validity*. First, in order to enhance the strength and validity of the research findings, the author selected specific tools to measure model variables, which were further developed in accordance of the research model, such as indicated in section *3.2.1.1.2 Measures of model variables*. As described within the section *4.1.1.2 Reliability and construct validity of the MLQ*, the study additionally confirmed the consistency of the pre-specified factor structure of the MLQ with collected data. Furthermore, the sampling procedure was developed on the basis of clear rationales and was accurately implemented, as explained in sections

3.1.1 Rationales for the sampling frame and *3.1.2 The selection procedure*. Thereby, an appropriate reflection of the research interest was ensured.

– *Types of variables*. Second, the key dependent and independent variables organizational innovation and leadership, as well as potential moderator and mediator variables were measured on the following five scales – (1) Likert, (2) importance, (3) frequency, (4) rating and (5) efficiency. These indicators represent interval data, which are appropriate for statistically more robust data analysis and quantitative correlation and linear regression research (Avolio and Bass, 2004; Carifio and Perla, 2007; Cashman, 2008).

– *Normality*. Third, the author analysed the distribution of model variables and conducted tests for a normal distribution. Besides looking for normality through histograms, the author used the Shapiro-Wilk test to statistically analyse individual distributions. With the exception of the following variables[131], the significance of most model variables indicates normal distributions: *inter-organizational innovation*, the transformational leadership categories *Idealized Influence Behaviour*, *Inspirational Motivation* and *Intellectual Stimulation*, the transactional leadership category *Contingent Reward*, *passive leadership* and its categories *Passive Management-by-Exception* and *Laissez Faire* as well as the potential moderator *environmental dynamics*.

  In order to further analyse *how* these model variables deviate from a normal distribution, the author computed scores for skewness and kurtosis. Skewness and kurtosis ratios confirmed non-normality in only two cases. First, *passive leadership* is positively skewed with an asymmetric tail extending towards the right and scores clustered on the left. Second, *Laissez Faire* is also positively skewed and additionally has a leptokurtic distribution. Compared to defined thresholds, the other variables show only moderate deviations from a normal distribution. In order to analyse if normality could be improved, the author calculated square root, logarithmic and inverse data transformations of the original model variables. Based on a visual inspection of the shape of the individual distributions and on the skewness and kurtosis scores of the respective transformations, the author decided not to exclude *Idealized Influence Behaviour*, *Inspirational Motivation*, *Intellectual Stimulation*, *Contingent Reward* and *inter-organizational innovation* from further analysis. Indeed, Shapiro-Wilk test results were only slightly below the threshold

[131] The majority of these values are close to .05, indicating a normal distribution.

for significance. This might be linked to the relatively small sample size. In addition, the author decided to consider squared transformations of *passive leadership* and its categories *Passive Management-by-Exception* and *Laissez Faire* within further analysis. Based on the results of the respective transformations and the significance values of the Shapiro-Wilk test, the author decided not to include any transformation of the potential moderator *environmental dynamism* within further regression analysis[132].

– *Linearity*. Fourth, the author used scatterplots to visually and roughly determine if there are linear relationships between overall, procedural, structural and inter-organizational innovation and the various leadership behaviours and categories. In addition, the author computed Pearson's *r* to conduct a statistical test for linearity, whereby the direction and strength of relationships were analysed[133]. Furthermore, the author analysed whether and how the potential mediation and moderation variables correlate with the independent and dependent variables of the research model. First, the study examined correlations of the potential mediator CSR engagement with organizational innovation and leadership behaviours, as mediation analysis requires that the mediator must be significantly correlated with both the dependent and independent variables (Baron and Kenny, 1986; Fairchild and MacKinnon, 2009; Hayes, 2013). Second, the author took a critical look as to whether potential moderators indicate linear relationships with independent leadership variables. This is important because – in contrast to a potential mediator – moderators *should* not correlate with the independent variables; at least correlations should not be substantial, as this might cause problems for further estimations (Kraemer et al., 2002; Mazurek Melnyk and Morrison-Beedy, 2012). Moreover, potential moderators *should* not correlate with the dependent variables (Hosek et al., 2006; Koslowsky et al., 1995; Woehr Pletcher, 2008).

  - *Overall organizational innovation.* The aggregated form of transformational leadership and all its five categories show positive linear relationships with overall organizational innovation, ranging from r=.452** (*Idealized Influence Behaviour*) to r=.237* (*Idealized Influence Attribute*). In addition, transactional

[132] Looking at sample *S2*, the Shapiro Wilk test showed significant values and hence non-normality for the following three model variables: the transformational leadership category *IM*, *passive leadership* and its sub-type *LF*. While skewness and kurtosis scores indicated a normal distribution of *IM*, values pointed to positive skewness of *PL* and *LF*, whereas the latter also showed a leptokurtic distribution. Transformations of model variables resulted in normal distributions in every case. Hence, the author replaced *IM* by *IM_inv*[132] and the passive leadership style and its category by their squared transformations *PL_sq* and *LF_sq*. In addition, the author transformed the non-normal distributed control variables *number of employees* and *company age* by taking their natural logarithms.

[133] The following overview is focused on aggregated forms of organizational innovation and leadership variables.

leadership (r=.273*) and its category *Contingent Reward* (r=.279*) are positively and linearly related to overall organizational innovation. The passive leadership category *Laissez Faire* is negatively correlated with overall organizational innovation (r=-.227*).

- *Procedural organizational innovation*. With exception of the transformational leadership category *Idealized Influence Attribute*, there are significant and positive linear relationships between procedural organizational innovation and transformational leadership and four of its categories, ranging from r=.397** (*transformational leadership*) to r=.299** (*Inspirational Motivation*). Looking at transactional and passive leadership categories, only the passive leadership category *Laissez Faire* (r=-.255*) and its squared transformation (r=-.236*) have a significant but negative linear relationship with procedural organizational innovation.

- *Structural organizational innovation*. The aggregated form of transformational leadership and four of its categories linearly and positively relate to structural organizational innovation, ranging from r=.412** (*Idealized Influence Behaviour*) to r=.225* (*Inspirational Motivation*). By contrast, the transformational category *Intellectual Stimulation* does not significantly correlate with this form of organizational innovation. In addition, there are positive correlations between transactional leadership and both categories with structural organizational innovation, ranging from r=.339** (*Contingent Reward*) to r=.228* (*Active Management-by-Exception*). Compared to other forms of organizational innovation, transactional leadership correlates with structural innovation the most. By contrast, passive leadership does not show any linear relationship with this specific form of organizational innovation.

- *Inter-organizational innovation.* The transformational leadership categories *Idealized Influence Attribute* and *Individualized Consideration* do not linearly relate to inter-organizational innovation. The other categories of transformational leadership and its aggregated form positively correlate with inter-organizational innovation, ranging from r=.388** (*Idealized Influence Behaviour*) to r=.233* (*Intellectual Stimulation*). By contrast, the author found no linear relationships with transactional leadership behaviours. However,

passive leadership (r=-.227*) and its sub-type *Laissez Faire* (r=-.215*) negatively correlate with inter-organizational innovation [134].

- *The mediator variable*. Looking at leadership styles and categories, the potential internal mediator *CSR engagement* is significantly and positively correlated with transformational leadership (r=.484**) and three of its categories, ranging from r=.511** (*Individualized Consideration*) to r=.323* (*Inspirational Motivation*). In addition, CSR engagement has a positive linear relationship with transactional leadership (r=.381*) and its category *Contingent Reward* (r=.325*). Looking at organizational innovation, CSR engagement is significantly and positively related to all forms of organizational innovation, including overall organizational innovation (r=.520**), procedural organizational innovation (r=.370*), structural organizational innovation (r=.305*) as well as inter-organizational innovation (r=.489**).

- *The moderator variables*. There are no significant correlations between leadership variables and the potential moderators subordinates' professionalism, environmental dynamism[135] and external communication. By contrast, the internal moderator empowerment climate significantly and positively correlates with transformational leadership (r=.384*) and three of its categories, ranging from r=.421** (*Individualized Consideration*) to r=.322* (*Intellectual Stimulation*). Thus, only one potential moderator is significantly and linearly related to organizational innovation. In fact, there is a positive correlation with overall organizational innovation (r=.517**) and two of its forms procedural (r=.488**) and inter-organizational innovation (r=.449**).

Exhibit 20 gives an overview of the total number of significant correlations between leadership styles, categories and behaviours and procedural, structural and inter-organizational innovation[136]. While the first part of Exhibit 20 details the positive and negative linear relationships, the second part shows the absolute

[134] In sample *S2*, there are fewer linear correlations. In fact, overall organizational innovation significantly and positively correlate with transformational leadership (r=.368*) and its categories *IIB*, *IM, IM_inv* and *IC*. While passive leadership correlates with overall organizational innovation through *LF_sq* (r=-.360*), transactional leadership behaviours do not show any linear relationship – neither with overall organizational innovation, nor with the three forms of procedural, structural and inter-organizational innovation. The transformational leadership categories *IIA* and *IS* are not linearly related to procedural organizational innovation. By contrast, correlations of other transformational leadership categories range from r=.415** (*IC*) to r=.331** (*IM*). By contrast, the passive leadership category *LF_sq* shows a negative correlation (r=-.417**). There are linear and positive relationships between structural organizational innovation and transformational leadership (r=.307*) as well as its category *IIB* (r=.386*). Only *IIB* is positively related to inter-organizational innovation (r=.386*).

[135] It has to be noted that the transformational category *IC* linearly relates to environmental dynamism (r=.337*).

[136] Exhibit 20 does not include aggregated forms of organizational innovation, but focuses on specific types of organizational innovation only.

number of significant correlations. Compared to transactional and passive leadership, transformational leadership behaviours – at aggregation levels I, II and III – are mainly positively related to organizational innovation, whereby the highest and largest number of correlations is found with procedural and structural organizational innovation.

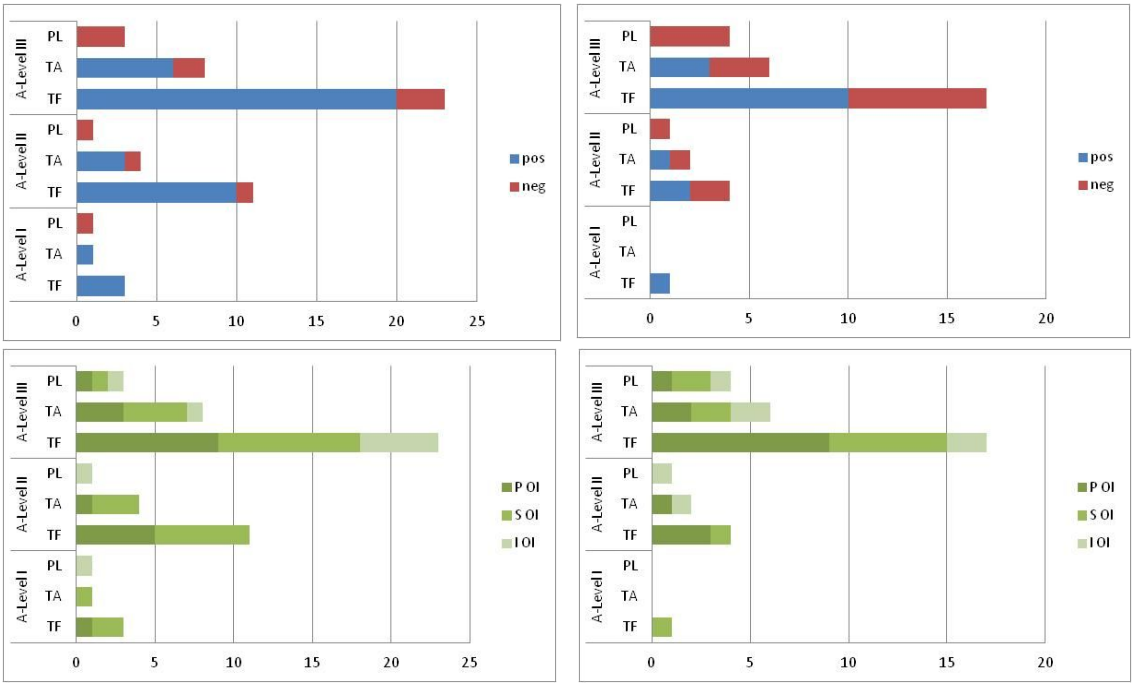


Exhibit 20: Significant correlations – Sample *S1* (left) & sample *S2* (right)
Source: Author's depiction, 2015

– *Outliers*. Fifth, the author initially looked for outliers through boxplots (which create a visual depiction of the distribution of model variables) by splitting them into quartiles. In fact, boxplots show that some responses of SME leaders and subordinates deviate from other observations, being either below or above the upper and lower boundaries. In addition, the study employed the *outlier labelling rule* as to use a more accurate and a statistical procedure. The author found that the respective multiplier has a decisive influence on the identification of outliers. While the *old* multiplier of 1.5 indicates approximately the same outlying values as the visual depictions, the revised multiplier of 2.2 (Hoaglin and Iglewicz, 1987) indicates that there are no extreme deviations of observations. Hence, the author did not need to adjust any outlying values in further analysis[137].

– *Multicollinearity*. Sixth, the author analysed Pearson's *r* to identify potential high correlations between the independent, the mediator and the moderator variables of

[137] In sample *S2*, the *outlier labelling rule* states that there are no outlying values which violate the assumption.

the research model. Looking at various categories of transformational and transactional leadership the author found only one combination which shows a high correlation. This is the relationship between transactional leadership and its category *Active Management-by-Exception*[138] (r=.913**). As the author evaluated the impact of leadership variables at the same level of aggregation, these behaviours will not be simultaneously entered into one regression equation. Hence, the author decided not to exclude one of these variables from further regression analysis[139]. Looking at the contextual variables, no multicollinearity between the independent variables was identified.

– *Residuals*. Seventh, the author analysed random occurrence, whether the assumption of normal distribution held, as well as the homoscedasticity of residuals in the course of regression analysis. In fact, SPSS offers several graphic representations of the regression model results, such as histograms and scatterplots of standardized residuals (**zresid*) and standardized predicted values (**zpred*). The latter offers the most informative visual opportunity to look for heteroscedasticity. Where the author considered that this assumption might be violated, additional regression models with transformed model variables were run.

– *Reliability*. The author gauged the internal consistency of the model variables through Cronbach's alpha. First, procedural, structural and inter-organizational innovation (.814 in both samples), transformational leadership categories[140] (.851/*S1* and .843/*S2*) and passive leadership categories (.753/*S1* and .772/*S2*) demonstrate high internal consistencies. These values cannot be improved by removing any item. Mirroring the results at the most disaggregated level, transactional leadership categories indicate a lower internal consistency (.494/*S1* and .435/*S2*).

  Second, the items of the potential mediator CSR engagement have an alpha coefficient of .841, which indicates a relatively strong level of internal consistency. This coefficient could slightly be improved to .887 by the removal of the philanthropic dimension in CSR. The author decided not to remove this dimension, as the level of consistency is sufficient, the improvement would only be marginal and a correlation with the composite score from CSR engagement items exists.

[138] Between *TF* and its categories are strong relationships up to r=.812**. However, no correlations exceed .9.
[139] *MbeP_sq* and *PL_sq*, as well as *LF* and *PL*, show correlations above .9. These leadership categories are not included in one regression model, nor do they show linear relationships with organizational innovation. Looking at sample *S2*, there is no multicollinearity between independent model variables.
[140] Reliability tests of leadership behaviours can be found in chapter *4.1.1.2 Reliability and construct validity of the MLQ*.

Third, looking at the potential moderator subordinates' professionalism, items display an alpha coefficient of .389, which indicates a very low level of internal consistency. The author improved the reliability by removing the dimension *experience* from the overall measure of subordinates' professionalism, which correlates only slightly (but negatively) with the composite score from subordinates' professionalism items. Thereby, Cronbach's alpha is increased to .676 and cannot be further enhanced by the removal of another dimension.

Fourth, Cronbach's alpha of the items of the potential internal moderator empowerment climate is .712, which indicates an acceptable level of internal consistency. The alpha coefficient could only be slightly improved to .728 by removing the item *impact*. Based on the same reasoning as above, the author decided not to exclude this dimension from the overall empowerment climate moderator variable.

Finally, the items of the external moderators environmental dynamism and external communication have a Cronbach's alpha of .737 and .788. These values again indicate acceptable levels of internal consistency. Furthermore, the coefficients cannot be enhanced through the removal of any item in this test.

Test of requirements for linear regression analysis		***S1* // *S2***
Assumption 1	*Validity – Reflection of research interest*	✓
Assumption 2	*Types of model variables – Interval or ratio variables*	✓
Assumption 3	*Distribution of variables – Normality*	✓
Assumption 4	*Relationship between variables – Linearity*	✓
Assumption 5	*Outliers – No significant outliers*	✓
Assumption 6	*Independence – No multicollinearity of independent variables*	✓
Assumption 7	*Residuals – Distribution, relation and homoscedasticity*	✓
Assumption 8	*Reliability – Reliable variables*	✓

Exhibit 21: Assumptions of linear regression analysis – Test results
Source: Author's depiction, 2015

4.2.3.2 Logistic regression analysis

In contrast to the comprehensive requirements for linear regression models, logistic regression has less stringent assumptions (Lani, 2014). Nevertheless, the author conducted four tests to ensure that data satisfy all requirements for using logistic regressions.

First, the types of model variables were checked. While the different forms of organizational innovation are dichotomous variables, leadership behaviours are measured on a continuous scale. Second, a specific coding of the dependent variable organizational innovation was implemented. In fact, the factor level of organizational innovation represents the desired outcome that the company has introduced the respective sub-type of organizational innovation. Third, as the case selection process was arbitrary, the order of observations is random. Moreover, the author used questionnaires to collect data. This hinders the use of the so-called *Durbin-Watson test* for testing auto-correlation of residuals. Hence, this assumption is visually tested in the course of running individual regression models. In addition, the author tested for multicollinearity between independent variables and confirmed that data at respective aggregation levels as well as their combinations satisfy this assumption.[141] Fourth, linearity was tested through the *Box-Tidwell procedure*, whereby interaction terms were added to logistic regression models. With the exception of five models[142], all interaction terms are insignificant, whereby linearity was confirmed. Finally, the minimum sample size requirement of 10 observations per independent variable is met, as sample *S1* includes 84 cases[143].

4.2.4 Quantitative results

The author used logistic and linear regression analysis to answer research question Q_2 and test hypothesis H_1, which was subdivided into hypotheses H_{1a} and H_{1b} in order to accurately analyse the impact of transformational leadership on various aggregation levels of organizational innovation. First, logistic regression models were established in order to evaluate whether transformational behaviours of Malaysian leaders have a significant and positive influence on the most disaggregated sub-types of procedural, structural and inter-organizational innovation. Thereby, the first sub-hypothesis H_{1a} was tested. Second, the author used linear regression analysis to test if transformational leadership behaviours significantly and positively influence various aggregated forms of organizational innovation, covering overall organizational

[141] At aggregation level I the VIF values range from 1.021 to 1.250. At aggregation level II, transformational leadership categories indicate VIF values between 1.479 and 2.717. Transactional and passive leadership categories have values of 1.000. In addition, their combination does not point to multicollinearity. At aggregation level III, VIF values are the following: *IIA1-IIA4* (1.006 to 1.241), *IIB1-IIB4* (1.052 to 1.377), *IM1-IM4* (1.101 to 1.271), *IS1-IS4* (1.022 to 1.447) and *IC1-IC4* (1.101 to 1.341). Transactional leadership behaviours show VIF values between 1.013 and 1.111 (*CR1-CR4*) and from 1.200 to 1.800 (*MbeA1-MbeA4*). VIF values of passive leadership behaviours range from 1.052 to 1.490 (*MbeP1-MbeP4*) and from 1.168 to 1.959 (*LF1-LF4*).

[142] Five logistic regression models show nonlinear terms. These include three models *with more than one predictor – IM1-IM4* with *OI3NA* (.013 for ln(*IM1*)), *IC1-IC4* with *OI3OS* (.028 for ln(*IC1*)) and *CR1-CR4* with *OI2DI* (.029 for ln(*CR3*)) – and two models *with one predictor – IC4* with *OI2ES* (.018) and *IC* with *OI2ES* (.013).

[143] Logistic regression analysis was conducted with the data from sample *S1*, as this is the only sample in which organizational innovation is measured as a dichotomous variable.

innovation and procedural, structural and inter-organizational innovation. Through this part of the quantitative analysis the second sub-hypothesis H_{1b} was tested.

4.2.4.1 Results of logistic regression analysis

4.2.4.1.1 Models with more than one predictor

In a first step, the author conducted 156 logistic regressions with *more than one predictor*, combining leadership behaviours of specific aggregation levels[144]. Thereby, the impact of 13 groups of leadership behaviours on the most disaggregated sub-types of procedural, structural and inter-organizational innovation[145] was analysed. Nearly 18 percent of these 156 regression equations include at least one significant predictor, the others being insignificant. Regardless of how many leadership variables are considered within one model, results of logistic regression shows no more than two significant predictors. From these 28 logistic regression models a total of eight models indicate good model fit and a significant predictive capability[146]. The author focuses on six of these models in the following discussion, as two of them include additional organizational innovation variables, such as OI1add.

– *Logistic models with predictors of Idealized Influence Behaviour (IIB1 to IIB4)*. This combination of transformational leadership behaviours is significantly and positively predicting procedural as well as inter-organizational innovation. In fact, it explains between 15.3 and 29.6 percent of the variation in OI1SCM, OI1QM and OI3NA. Excepting one specific behaviour of the category *Idealized Influence Behaviour*, the components display significant values, controlling for individual differences in the other predictors.

  First, the author found that when Malaysian leaders intensively talk about their most important values and beliefs, the probability that their companies introduce organizational innovation – in terms of new methods of organizing supply chain management (OI1SCM) – amounts to 78.09 percent. By contrast, when leaders rarely talk about their values and beliefs, this probability decreases to 45.04

[144] *Aggregation level I* has one group (*TF*, *TA*, *PL*), *aggregation level II* has three groups (*IIA*, *IIB*, *IM*, *IS*, *IC* // *CR*, *MbeA* // *MbeP* and *LF*) and *aggregation level III* has 9 groups (e.g. *IIA1*, *IIA2*, *IIA3*, *IIA4*).

[145] These 12 forms of organizational innovation include procedural (*OI1SCM*, *OI1KM*, *OI11QM*, *OI1add*), structural (*OI2DI*, *OI2ES*, *OI2HL*, *OI2add*) and inter-organizational innovation (*OI3OF*, *OI3NA*, *OI3OS*, *OI3add*).

[146] In comparison with the intercept model, the predictive capacity of 19 logistic models[146] seems to not have experienced any significant improvement by entering predictor variables. In contrast, the H-L goodness-of-fit test statistic is in approximately 93 percent of all models insignificant, which means that most models are well-fitted. *Nagelkerkes* R^2 indicates that at least 7.4 percent (*IIA1* to *IIA4* with *OI3OF*) and no more than 29.6 percent (*IIB1* to *IIB4* with *OI1QM*) of the variation in organizational innovation is explained by individual logistic models. The additional organizational innovation variables, such as *OI2add*, are excluded.

percent. In other words, if leaders strengthen this specific leadership behaviour by one unit, SMEs are nearly two times more likely to be innovative (*exp(b)*=1.943).

Second, the specific leadership behaviour of Malaysian leaders to emphasize the importance of having a collective sense of mission has a significant and positive impact on the introduction of procedural organizational innovation, controlling for the other predictors. In fact, if leaders strongly emphasize this leadership behaviour, the probability that SMEs are innovative – in the sense of introducing new methods of organizing quality management (OI1QM) – amounts to over 97.52 percent. An increase of this leadership behaviour by one unit leads to a more than six times greater likelihood that SMEs innovatively change their quality management (*exp(b)*=6.756). By contrast, Malaysian leaders who specify the importance of having a strong sense of purpose have a negative impact on the introduction of new methods of organizing quality management (exp(b)=.331). It has to be noted, that this negative influence is not significant when looking at a logistic regression with this specific behaviour as sole predictor of OI1QM. In addition, Malaysian leaders who stress the importance of having a collective sense of mission have a significant and positive impact on inter-organizational innovation, and thereby on the probability that new methods of organizing external networks or alliances (OI3NA) are introduced (*exp(b)*=5.368).

– *Logistic models with predictors of Intellectual Stimulation (IS1 to IS4)*. This group of transformational leadership behaviours displays a significant predictive capacity regarding structural organizational innovation. In fact, these leadership behaviours explain 25.1 percent of the variation in new methods of organizing internal education and training systems (OI2ES). However, only two specific behaviours show significant values, controlling for differences in the other predictors.

  When Malaysian leaders seek differing perspectives when solving problems this has a negative impact on the probability that new methods of organizing internal education and training systems are introduced (*exp(B)*=.283), controlling for differences in other predictors. However, this influence is not significant when looking at a logistic regression model with this specific behaviour as the sole predictor of OI2ES.

  By contrast, Malaysian leaders who suggest new ways of looking at how to complete assignments positively influence OI2ES. In fact, a strengthening of this

specific leadership behaviour by one unit results in a 3.293 times greater likelihood that SMEs introduce new methods of organizing internal education and training systems, controlling for other predictors. The probability for this organizational innovation to occur is only 22.69 percent when Malaysian leaders rarely suggest new ways for completing assignments.

		Goodness of fit tests			*Sig.*	*Variables in the equation*			*p(y=1)*	
		Nagel-kerkes R^2	*Omnibus Test*	*H-L Test*		*B*	*Sig*	*exp(b)*	*high*	*low*
IIB1-IIB4	OI1SCM	.153	.047	.822	IIB1	.664	.010	1.943	78.1	45.0
	OI1QM	.296	.005	.180	*IIB2*[147]	*-1.106*	*.047*	*.331*	---	
					IIB4	1.910	.002	6.756	97.5	45.2
	OI3NA	.273	.017	.588	IIB4	1.680	.011	5.368	98.5	52.7
IS1-IS4	OI2ES	.251	.008	.812	*IS2*	*-1.264*	*.027*	*.283*	---	
					IS4	1.192	.022	3.293	94.2	22.7

Exhibit 22: Significant results of logistic regression analysis – Part I[148]
Source: Author's depiction, 2015

– *Logistic models with transactional predictors (CR and MbeA)*. Besides transformational leadership behaviours, transactional leadership categories significantly influence organizational innovation in two logistic models. These models explain 9.6 and 12.5 percent of the variation in the sub-type of structural organizational innovation OI2ES. However, only those transactional behaviours which can be summarized under the category *Contingent Reward* – such as providing assistance in exchange for subordinates' efforts or expressing satisfaction when goals are achieved – show a significant impact on the introduction of new methods of organizing internal education and training facilities (*exp(b)*=4.817), controlling for the other predictors. In fact, high levels of this transactional leadership category lead to a probability of 96.97 percent that this specific sub-type of structural organizational innovation is introduced, whereas low levels of *Contingent Reward* result in a probability of 21.13 percent.

4.2.4.1.2 Models with one predictor

The following analysis has two aspects. First and in contrast to the six models selected from analysing models with *more than one predictor* with good model fit and significant predictive capability, 20 logistic regressions with *more than one predictor* show poor model fit indicators and hence were not included within the first

[147] The author marked those leadership behaviours in italics which do not have a significant impact within logistic regression models with one predictor only.
[148] When looking at logistic regression models with more than one predictor, these are the only significant results of transformational leadership behaviours, which are found at aggregation level III.

interpretation step. However, these models included further significant leadership variables. Therefore, the author tested the impact of these individual leadership behaviours on organizational innovation through additional logistic regressions. Having assessed the results, the author modified the remaining 20 logistic models through keeping the significant predictors and dropping insignificant leadership behaviours from the model (Burns and Burns, 2008). Thereby, the predictability of 15 models was increased and the significance of the remaining predictors was held. In addition, the author analysed those leadership behaviours, which had not shown significant values within the logistic models with *more than one predictor*, but nevertheless seemed to have significant impacts according to the baseline model. Results are grouped according to different leadership behaviours at various levels of aggregation[149].

– *Transformational leadership*. The aggregated form of transformational leadership has a significant and positive impact on procedural and structural organizational innovation. In fact, this leadership style explains either 7.8 (OI2ES) or 19.3 (OI1KM) percent of the variation in organizational innovation. If Malaysian leaders act in a more transformational manner, it is 15.950 times more likely that their SMEs introduce new methods of organizing knowledge management. By contrast, if Malaysian leaders do not show any transformational leadership behaviours, the probability that their companies are innovative in terms of new methods of organizing knowledge management will drop massively down to .87 percent. The significant impact of transformational leadership on structural organizational innovation – in particular on new methods of organizing internal education and training systems – is not as powerful (*exp(b)*=3.749).

  Looking at the second level of aggregation, each transformational leadership category – with exception of *Idealized Influence Attribute* – has an influence on at least one form of organizational innovation[150]. While the leadership category *Inspirational Motivation* positively influences procedural organizational innovation through new methods of organizing knowledge management (*exp(b)*=12.707), the influence of the leadership category *Intellectual Stimulation* is twofold. First, it has a positive impact on the introduction of new methods of organizing knowledge management (*exp(b)*=7.876). Second, *Intellectual Stimulation* significantly and

[149] Results of logistic regression analysis regarding the impacts of leadership behaviours on additional variables of organizational innovation (*IO1add*, *IO2add, IO3add*) are not included, as their explanatory power is limited.
[150] The significant impact of the *IIB*-behaviours on organizational innovation was described in section *4.2.4.1.1 Models with more than one predictor*.

negatively influences structural organizational innovation in terms of new methods of organizing the integration or separation of departments and the centralization or decentralisation of functions (*exp(b)*=.319). Where *Intellectual Stimulation* is ranked intensively, this is associated with a lower probability (55.06 percent) of such structural organizational innovation occurring. However, compared with *Intellectual Stimulation*, the leadership category *Individualized Consideration* has a stronger impact on structural organizational innovation and this impact is positive. *Individualized Consideration* results in a 3.092 times higher likelihood that new methods of organizing internal education and training systems are introduced[151].

At the third level of aggregation, the author identified 13 significant impacts of nine transformational leadership behaviours on organizational innovation. While only two behaviours of Malaysian leaders – grouped under the categories *Intellectual Stimulation* and *Individualized Consideration* – negatively influence structural and inter-organizational innovation, seven leadership behaviours have a positive impact on various forms of procedural, structural and inter-organizational innovation.

First, procedural organizational innovation is influenced most extensively by the transformational behaviours of Malaysian leaders. In fact, at least one specific transformational leadership behaviour from every category – with the exception of *Idealized Influence Attribute* – has a positive impact on the likelihood that new methods of organizing knowledge management are introduced[152]. However, Malaysian leaders who emphasize the importance of having a collective sense of mission (*Idealized Influence Behaviour*, *exp(b)*=6.360) and who talk enthusiastically about what needs to be accomplished (*Inspirational Motivation*, *exp(b)*=6.187) influence this specific form of procedural organizational innovation the most. In addition, Malaysian leaders who support their subordinates in developing their strengths – *Individualized Consideration* – have a positive impact on an additional sub-type of procedural organizational. In fact, with the support of this transformational behaviour it is 2.272 times more likely that the respective SMEs introduce new methods of organizing quality management.

Second, four transformational leadership behaviours have a positive as well as negative impact on structural organizational innovation. The introduction of new methods of organizing internal education and training systems is positively

[151] It should to be noted that the linearity assumption is violated (*IC* with *OI2ES*).
[152] They include *IIB4*, *IM2*, *IS4*, *IC1* and *IC4*.

influenced by the behaviours of the leadership categories *Idealized Influence Behaviour* and *Individualized Consideration*[153]. In fact, Malaysian leaders, who instil pride in their subordinates in that the subordinates are associated with them and who help subordinates to develop their strengths, trigger a between 2.279 and 2.895 times higher likelihood that this special sub-type of organizational innovation is introduced. On the other hand, two behaviours of Malaysian leaders which can be summarized under the categories *Intellectual Stimulation* and *Individualized Consideration*, negatively influence structural organizational innovation. Changes of hierarchical levels or divisional structures of business functions are negatively influenced by Malaysian leaders who get their subordinates to look at problems from many different angles (*exp(b)*=.402). If this leadership behaviour is strongly displayed the probability that the respective SMEs introduce new hierarchical levels or divisional structures of business functions is 56.41 percent. By contrast, in the absence of this leadership behaviour the probability that companies are innovative in this sense rises to 98.03 percent. In addition, an increase in the transformational leadership behaviour whereby each individual is considered as having different needs, abilities and aspirations – by one unit – leads to a reduction by more than half in the probability that the respective SMEs introduce new methods of organizing the integration or separation of departments and the centralization or decentralisation of functions (*exp(b)*=.473).

Third, three transformational leadership behaviours significantly influence inter-organizational innovation. Even though one specific behaviour which can be summarized under the category *Individualized Consideration* has a negative impact[154], the positive power of transformational leadership behaviours clearly prevails. The behaviours of the category *Idealized Influence Attribute*, to instil pride in their subordinates that they are associated with them, results in a 1.792 times greater likelihood that the respective SMEs are innovative in terms of introducing new methods of organizing external relations with other firms or public-institutions. In addition, transformational leaders who express confidence that goals will be achieved – *Inspirational Motivation* – have a positive impact on organizational innovation, as it is 3.429 times more likely that SMEs introduce new methods of organizing external networks or alliances.

[153] It should be noted that the linearity assumption is not satisfied (*IC4* with *OI2ES*).
[154] In fact, when Malaysian leaders consider subordinates as having different needs, abilities and aspirations it becomes less likely that SMEs introduce new methods of organizing outsourcing relations (*exp(b)*=.5).

		Goodness of fit tests			*Variables in the equation*			*p(y=1)*	
		Nagel-Kerkes R^2	*Omnibus Test*	*H-L Test*	*B*	*Sig*	*exp(b)*	*high*	*low*
Aggregation Level I									
TF	OI1KM	.193	.014	.763	2.769	.027	15.950	99.8	.87
	OI2ES	.078	.043	.338	1.321	.050	3.749	95.4	9.6
Aggregation Level II									
IM	OI1KM	.207	.010	.958	2.542	.024	12.707	99.8	16.1
IS	OI1KM	.148	.031	.684	2.064	.045	7.876	99.5	27.9
	OI2DI	.083	.030	.105	-1.142	.037	.319	55.1	97.4
IC	OI2ES	.116	.013	.001	1.129	.019	3.092	95.3	18.3
Aggregation Level III									
IIAI	OI2ES	.111	.015	.594	.824	.019	2.279	100	99.9
	OI3OF	.068	.043	.825	.583	.048	1.792	83.9	33.7
IIB4	OI1KM	.258	.008	.829	1.850	.021	6.360	99.8	64.7
IM2	OI1KM	.237	.006	.982	1.822	.018	6.187	99.6	52.4
IM4	OI3NA	.111	.026	.523	1.232	.035	3.429	96.5	16.4
IS3	OI2HL	.090	.020	.531	-.912	.030	.402	56.4	98.0
IS4	OI1KM	.139	.037	.980	1.179	.041	3.250	98.8	42.3
IC1	OI1KM	.153	.029	.649	1.086	.042	2.962	99.0	56.9
IC3	OI2DI	.097	.019	.726	-.750	.030	.473	60.1	93.5
	OI3OS	.104	.012	.344	-.737	.020	.478	52.2	90.9
IC4	OI2ES	.153	.004	.015	1.063	.009	2.895	93.7	37.8
	OI1KM	.172	.020	.522	1.196	.024	3.306	98.6	37.4
	OI1QM	.096	.029	.148	.821	.034	2.272	92.9	53.0

Exhibit 23: Significant results of logistic regression analysis – Part II[155]
Source: Author's depiction, 2015

– *Transactional leadership*. The aggregated form of transactional leadership does not significantly influence any form of organizational innovation. Looking at the negative positive power of transactional leadership, the author found that the transactional category *Contingent Reward* and one of its behaviours negatively influences procedural organizational innovation, in particular the introduction of new methods of organizational supply chain management (*exp(b)*=.313 and *exp(b)*=.505). A strengthened transactional leadership category *Contingent Reward* leads to a probability of only 34.50 percent that SMEs are procedurally innovative in this respect, whereas very low values of *Contingent Reward* increase the probability to 94.47 percent. Besides, one specific transactional leadership behaviour significantly and negatively influences a sub-type of structural organizational innovation – new methods of organizing the integration or separation of departments and the centralization or decentralisation of functions (*exp(b)*=.404).

[155] Exhibit 23 includes significant values of transformational leadership behaviours only.

By contrast, three transactional leadership behaviours have a positive impact on procedural, structural and inter-organizational innovation. Malaysian leaders who make clear what subordinates can expect to receive when performance goals are achieved (*Contingent Reward*), are associated with an increased likelihood that their respective SMEs will introduce new methods of organizing quality management (*exp(b)*=2.125) and new methods of organizing internal education and training systems (*exp(b)*=2.252). In addition, leaders who strengthen their concentration on dealing with mistakes, complaints and failures (*Active Management-by-Exception*) by one unit, provoke a 1.631 times greater likelihood that their respective SMEs are innovative in terms of introducing new methods of organizing supply chain management. Finally, inter-organizational innovation of SMEs regarding new methods of organizing external outsourcing relation is positively influenced by the behaviour of Malaysian leaders (*Active Management-by-Exception*) to direct their attention toward failures in their efforts to meet required standards (*exp(b)*=1.677).

– *Passive leadership*. The aggregated form of passive leadership negatively influences inter-organizational innovation. In fact, an increase in the passive behaviours of Malaysian leaders by one unit results in a reduction of more than half in the probability that the respective SMEs introduce new methods of organizing external networks and alliances (*exp(b)*=.319).

At the second and third aggregation level, *Laissez Faire* (*exp(b)*=.384) and one of its behaviours – to avoid getting involved when important issues arise (*exp(b)*=.560) – have a significant and negative impact on inter-organizational innovation. In fact, a strengthening of this passive leadership behaviour results in a probability that companies introduce new methods of organizing networks or alliances of 56.32 percent. By contrast, the absence of this passive leadership behaviour is associated with a probability of 92.92 percent that the respective SMEs are innovative in this way.

4.2.4.1.3 Results from an innovation perspective

The author found that the transformational leadership behaviours of Malaysian leaders have the most comprehensive, positive influence on all forms of organizational innovation, followed by transactional leadership behaviours. In contrast, passive leadership does not have the power to positively influence any form of organizational innovation.

Procedural organizational innovation is most extensively influenced by transformational leadership behaviours. In fact, every specific sub-type is positively influenced by various transformational behaviours of Malaysian leaders – with the exception of *Idealized Influence Attribute* – at different aggregation levels. In addition, procedural innovation is also influenced by transactional leadership, but to a far lesser extent. In fact, transactional behaviours of Malaysian leaders do not have a significant impact on the introduction of new methods of organizing knowledge management. Moreover, their impact on the introduction of new methods of organizing supply chain management is negative. Finally, passive leadership behaviours do not demonstrate any significant impact on procedural organizational innovation.

Structural organizational innovation is also positively influenced by transformational leadership the most. While *Inspirational Motivation* does not have any influence on this specific form of organizational innovation, the impact of *Intellectual Stimulation* is not only positive. In fact, *Intellectual Stimulation* negatively influences the implementation of new hierarchical levels or divisional structures of business functions. In addition, the author identified a negative impact of a specific behaviour of the transformational category *Individualized Consideration* on the introduction of new methods of organizing the integration or separation of departments and the centralization or decentralisation of functions. However, the positive impact of transformational leadership behaviours on structural organizational innovation is stronger than the impact of transactional behaviours and this is again found at all levels of aggregation. In fact, transformational leadership significantly and positively influences the introduction of new methods of organizing internal education and training systems, an area in which transactional behaviours also have a positive impact. By contrast, a specific behaviour of the transactional category *Contingent Reward* negatively influences the introduction of new methods of organizing the integration or separation of departments and the centralization or decentralisation of functions. Again, passive leadership behaviours do not have any impact on structural organizational innovation.

Compared to other leadership behaviours, transformational behaviours of Malaysian leaders have the greatest positive impact on inter-organizational innovation, in particular on the introduction of new methods of organizing networks or alliances and of organizing external relations with other firms or public-institutions. By contrast, only one specific behaviour of the transactional leadership category *Active Management-by-Exception* positively influences the likelihood that SMEs introduce

new methods of organizing outsourcing relations. Viewed together, both transformational and transactional leadership approaches have a positive impact on all three sub-types of inter-organizational innovation. By contrast, one specific behaviour of the transformational leadership category *Individualized Consideration* negatively influences the introduction of new methods of organizing outsourcing relations. In addition, passive leadership, its category *Laissez Faire* and one of the specific behaviours within *Laissez Faire* all have a negative impact on the introduction of new methods of organizing networks or alliances. This influence is quite strong and appears at various levels of aggregation.

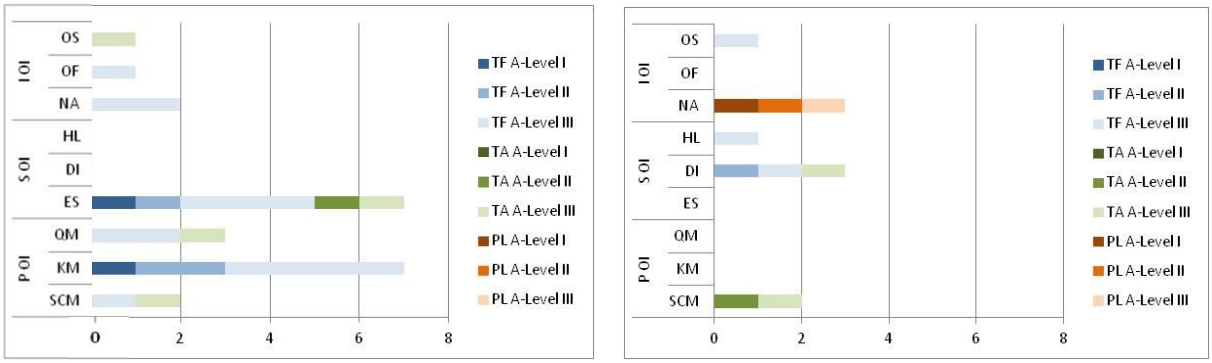


Exhibit 24: Overview logistic regression results – Positive (left) & negative (right)
Source: Author's depiction, 2015

Research results of logistic regression analysis hence verify hypothesis H_{1a} which states that transformational leadership has a positive influence on the most disaggregated sub-types of procedural, structural and inter-organizational innovation.

4.2.4.2 Results of linear regression analysis

4.2.4.2.1 Simple linear regression models

Through simple linear regression analysis the author evaluated the impact of leadership styles and categories (aggregation level I and II) on aggregated forms of organizational innovation, covering procedural, structural and inter-organizational innovation as well as overall organizational innovation.

– *Transformational leadership*. The aggregated form of transformational leadership significantly predicts all forms of organizational innovation. In fact, 17.2 percent of the variation in overall organizational innovation can be explained by changes in transformational leadership. This impact is positive, as for every unit increase in transformational leadership[156] the level of overall organizational innovation

[156] One unit increase in any leadership variable means that the respective style, category or behaviour is more pronounced. Leadership is measured on a scale from 0 to 4, as described in section *3.2.1.1.2 Measures of model variables*.

increases by 7.940 units[157]. In companies whose leaders do not show any transformational behaviour, overall organizational innovation would be minimal (.117 units as demonstrated by the intercept of the model). In comparison to transactional leadership, whose absence would lead to a level of overall organizational innovation of 12.869 units, this is a very low value. Hence, the author reasoned that without transformational leaders, SMEs are unlikely to introduce overall organizational innovation[158]. Looking at the sub-types of organizational innovation, transformational leadership has the greatest influence on procedural organizational innovation (b=2.869, R^2=.157, i=-.235), followed by structural organizational innovation (b=2.607, R^2=.112, i=.023) and inter-organizational innovation (b=2.465, R^2=.101, i=.329)[159].

At the second level of aggregation, the transformational categories of Malaysian leaders have several significant and positive impacts on organizational innovation. Indeed, all five transformational leadership categories influence overall organizational innovation. In this context, *Idealized Influence Behaviour* has the greatest influence (b=6.399, R^2=.204, i=4.964), followed by *Inspirational Motivation* (b=5.265, R^2=.108, i=7.532) and *Intellectual Stimulation* (b=5.131, R^2=.095, i=7.916). However, when considering the different forms of organizational innovation, four of the five categories of transformational leadership have an influence on procedural organizational innovation, and a different group of four categories of transformational leadership have an influence on structural organizational innovation. The level of inter-organizational innovation is positively affected by only three of the five transformational leadership categories. These are *Idealized Influence Behaviour*, *Inspirational Motivation* and *Intellectual Stimulation*. Malaysian leaders who display behaviours of the transformational leadership categories *Idealized Influence Behaviour* and *Inspirational Motivation* have the most powerful (positive) impact. In fact, these leaders positively influence all three forms of organizational innovation. By contrast, transformational behaviours which are covered by the category *Idealized Influence Attribute* only have a significant influence on overall organizational innovation and on structural organizational innovation as illustrated by Exhibit 25[160].

---

[157] When overall organizational innovation increases by one unit, one have to remember the underlying formula (*OI1+OI2+OI3*)**Rtot* as described in section *3.2.1.1.2 Measures of model variables*. An increase might be due to increased organizational innovation or an increased effectiveness.

[158] The author interpreted the intercepts cautiously, referring to other indicators.

[159] In sample *S2*, transformational leadership significantly influences overall organizational innovation (b=14.828, R^2=.135, i=2.002), procedural organizational innovation (b=5.999, R^2=.162, i=-1.785) and structural organizational innovation (b=4.796, R^2=.094, i=.823).

[160] In sample *S2*, Malaysian leaders who display behaviours of the transformational leadership category *Idealized Influence Behaviour* have a significant and positive impact on all forms of organizational innovation. Compared to other leadership

		ANOVA		R^2	*Coefficient & Intercept*		
		F	*Sig*		*b*	*Sig*	*i*
Aggregation Level I							
TF	OItot	16.699	.000	.172	7.940	.000	.117
	OI1	15.310	.000	.157	2.869	.000	-.235
	OI2	11.427	.001	.112	2.607	.001	.023
	OI3	9.215	.003	.101	2.465	.003	.329
Aggregation Level II							
IIA	OItot	4.861	.030	.044	4.051	.030	11.570
	OI2	5.840	.018	.055	1.717	.018	2.649
IIB	OItot	21.011	.000	.204	6.399	.000	4.964
	OI1	11.905	.001	.116	1.904	.001	2.693
	OI2	16.770	.000	.160	2.271	.000	1.123
	OI3	14.250	.000	.140	2.224	.000	1.148
IM	OItot	9.904	.002	.108	5.265	.002	7.532
	OI1	8.023	.006	.078	1.807	.006	2.731
	OI2	4.390	.039	.051	1.406	.039	3.429
	OI3	9.101	.003	.100	2.052	.003	1.372
IS	OItot	8.645	.004	.095	5.131	.004	7.916
	OI1	13.232	.000	.139	2.337	.000	1.122
	OI3	4.722	.033	.054	1.569	.033	2.821
IC	OItot	8.481	.005	.094	4.010	.005	12.085
	OI1	10.267	.002	.111	1.649	.002	3.524
	OI2	7.172	.009	.080	1.445	.009	3.589

Exhibit 25: Results of SLR analysis – Transformational leadership
Source: Author's depiction, 2015

– *Transactional leadership*. The aggregated form of transactional leadership significantly and positively influences overall organizational innovation (b=4.111, R^2=.075, i=12.869) as well as structural organizational innovation (b=1.873, R^2=.092, i=2.866). In fact, transactional leadership explains 7.5 percent of the variation in overall organizational innovation and 9.2 percent of the variation in structural organizational innovation.

  At the second level of aggregation, both transactional leadership categories – *Contingent Reward* and *Active Management-by-Exception* (b=.894, R^2=.052, i=5.678) – positively influence structural organizational innovation, whereby Malaysian leaders who display the behaviour category *Contingent Reward* explain its variation to a greater extent (b=2.247, R^2=.115, i=1.150). In addition, *Contingent Reward* significantly and positively influences overall organizational innovation (b=4.760, R^2=.078, i=9.601). By contrast, transactional behaviours of

categories, *Idealized Influence Behaviour* has the greatest influence on overall organizational innovation (b=15.831, R^2=.205, i=.152). While the transformational categories *Idealized Influence Attribute* and *Intellectual Stimulation* do not have any impact on organizational innovation, *Inspirational Motivation* and *Individualized Consideration* positively influence overall and procedural organizational innovation. Inter-organizational innovation is hence only influenced by the transformational leadership category *Idealized Influence Behaviour* (b=5.690, R^2=.149, i=.-1.531).

Malaysian leaders do not have any impact on procedural and inter-organizational innovation[161].

– *Passive leadership*. The aggregated form of passive leadership has a significant and negative impact on overall organizational innovation (b=-1.829, R^2=.035, i=9.329). In addition, the squared transformation of the passive leadership category *Laissez Faire* significantly and negatively influences procedural organizational innovation (b=-1.484, R^2=.056, i=9.288)[162].

Through binary logistic and simple linear regression analysis, the author focused on the impact of specific leadership behaviours and their categories on organizational innovation. Even though Malaysian leaders might display behaviours associated with different leadership categories at the same time, the author aimed to improve the understanding of the sole impact of specific leadership behaviours or categories. Moreover, results show that there was no need to combine these leadership behaviours within one model. Exhibit 24 indicates that the impacts of transformational and transactional leadership behaviours on the sub-types of procedural, structural and inter-organizational innovation do not offset one another[163]. Looking at structural organizational innovation as an example, transformational and transactional leadership behaviours both positively influence the introduction of new methods of organizing internal education and training systems. By contrast, both leadership behaviours have a negative impact on the other sub-types of structural organizational innovation. Hence, transformational and transactional leadership behaviours do not offset one another and their consideration within one logistic regression model would not improve the analysis.

Even though the author decided not to further analyse these relationships through logistic regression analysis, the simultaneous effect of different leadership styles and categories (aggregation level I and II) on overall, procedural, structural and inter-organizational innovation was evaluated. As the key variables organizational innovation and leadership are here considered at high levels of aggregation, estimates of the *real* impacts – such as were identified at lower levels of aggregation – might be biased and insignificant in further multiple linear regression analysis.

[161] In sample *S2*, transactional leadership categories do not have any statistically significant influence.
[162] In sample *S2*, the impact of the squared transformation of the passive leadership category *Laissez Faire* on procedural organizational innovation is strengthened (b=-5.465, R^2=.174, i=20.659). Moreover, *Laissez Faire* has a significant and positive impact on overall organizational innovation (b=-12.741, R^2=.129, i=56.815).
[163] There are two exceptions here. Transformational and transactional leadership have significant and offsetting impacts on *OI1SCM* and *OI3OS*. However, both sub-types of procedural and inter-organizational innovation are rare at the level of Malaysian SMEs.

4.2.4.2.2 Multiple linear regression models

As described in section *3.2.2.2.1 Linear regression analysis*, the author conducted hierarchical multiple regression analysis. While dummy and control variables[164] – covering *gender*, *number of employees*[165], *company age*[166] and *ethnicity*[167] – are added to the model in a first step, leadership variables (whose influence is the author's primary interest) are entered in sequential steps. Compared to the first so-called *baseline model* (M1), which includes control variables only, changes in R^2 indicate *how much* the predictive power of the overall regression model is improved by adding respective leadership behaviours. In addition, the significance of the *f*-statistic shows whether the individual regression models significantly predict changes in different forms of organizational innovation[168].

– *Transformational leadership*. First, the author established multiple linear regression models[169] which consider all the five categories of transformational leadership. These regression models explain between 21.4 and 26.3 percent of the variation in overall organizational innovation and its specific forms. By contrast, these models do not significantly predict changes in procedural organizational innovation. However, the only transformational leadership category, which indicates significant coefficients while others remain constant, is *Idealized Influence Behaviour*. Thus, the transformational behaviours which are covered by *Idealized Influence Behaviour* significantly and positively influence overall organizational innovation (b=5.176, p=.011, R^2=.246), structured organizational innovation (b=2.392, p=.003, R^2=.263)[170] and inter-organizational innovation

[164] The author considered various dichotomous control and dummy variables within the multiple linear regression models. Thus, control variables – whereby the main aim behind their inclusion is to avoid biased results and spurious relationships – vary depending on the individual sample. While *gender* is added in sample *S1*, sample *S2* additionally entails *number of employees* as well as *company age*. In order to include the nominal, non-quantitative variable *ethnicity* – which entails four categories *Malay*, *Chinese*, *Indian* as well as *Others* – the author creates dummy variables for both samples.

[165] In sample *S2*, the *number of employees* positively influences organizational innovation. In fact, one additional employee results in an increase of organizational innovation by approximately 1.2.

[166] The *company age* has a significant and positive impact on the transformational leadership category *Idealized Influence Attribute*. With every year a Malaysian SME becomes older, *Idealized Influence Attribute* becomes more profound (*S2*). This might be due to the fact that *Idealized Influence Attribute* covers transformational leadership attributes, such as confidence, respect and pride, which take substantial time to unfold fully.

[167] The author found a significant relationship between *ethnicity* and transactional leadership in both samples. Compared to *Chinese* leaders, *other* ethnicities, which include for example Korean, lead to an increase in transactional leadership of .543 (*S2*). In sample *S1*, when compared to *Chinese*, the ethnicity *Malay* and the subcategory *others* both influence significantly and slightly positively the transactional leadership behaviour *CR*.

[168] Typically, the *M1* models do not have significant *f*-statistic values, as control variables do not have a significant influence on the research interest underpinning the regression models. In contrast, the *f*-statistics of subsequent models *M2* and *M3* – depending on how many blocks of independent variables are included – indicate whether at least one independent variable significantly helps to predict organizational innovation.

[169] At aggregation level I, the consideration of the dummy and control variables yields results that are quite close to those of simple linear regression analysis, in both samples *S1* and *S2*.

[170] The author identified that compared to *Chinese* leaders, the ethnicity category *other*, which includes for example Korean, leads to an increase of structural organizational innovation by 2.584 (p=.037), when other variables are held constant.

(b=1.963, p=.020, R^2=.214), while the other transformational categories remain constant[171].

– *Transformational and transactional leadership*. Second, the author analysed the simultaneous influence of transformational and transactional leadership. In this analysis, only the transformational leadership style of Malaysian leaders displays a significant and positive impact on overall organizational innovation (b=6.967, p=.002, R^2=.204), procedural organizational innovation (b=2.678, p=.002, R^2=.204) and inter-organizational innovation (b=2.252, p=.017, R^2=.145). In fact, transactional leadership adds only marginal power to the predictability of the various forms of organizational innovation. While transformational leadership, for example, explains 14.5 percent of the variation in inter-organizational innovation, transactional leadership increases this figure by only .02 percent.

  By contrast, both transformational and transactional[172] leadership simultaneously have an impact on structural organizational innovation. When controlling for *gender*, this multiple linear regression equation can be written as $OI2tot = -1.338 + 1.914TF + 1.236TA$. This formula shows that transformational leadership has a greater power to positively influence structural organizational innovation than transactional leadership. In fact, transformational leadership explains 13 percent in the variation of this specific type of organizational innovation, whereas transactional leadership adds only 3.5 percent to this figure. When Malaysian leaders display neither transformational nor transactional behaviours, structural organizational innovation becomes less likely[173].

  At the second level of aggregation, the author analysed multiple regression models with all seven categories of transformational and transactional leadership behaviours. Again, only the transformational category *Idealized Influence Behaviour* indicates a significant and positive impact on overall organizational innovation (b=4.853, p=.020, R^2=.246) and structural organizational innovation (b=2.217, p=.005, R^2=.263), when looking at these leadership categories

[171] In sample *S2*, multiple linear regression models which include all transformational leadership categories do not significantly predict procedural or inter-organizational innovation. It is again *Idealized Influence Behaviour* that shows a positive impact on overall organizational innovation (b=14.585, p=.038, R^2=.368) and on structural organizational innovation (b=5.971, p=.026, R^2=.395), while holding the other variables constant. In the latter model, the transformational leadership category *Intellectual Stimulation* indicates a negative influence on structural innovation (b=-5.460, p=.065), while other variables remain constant. However, the respective coefficient is slightly below the threshold for significance.

[172] It should be noted that the coefficient of transactional leadership is slightly below the threshold for significance.

[173] In sample *S2*, the author found that, when the transformational leadership style of Malaysian leaders significantly and positively influence overall organizational innovation (b=13.464, p=.046, R^2=.248) and procedural organizational innovation (b=6.550, p=.007, R^2=.307), if the other variables are held constant. Again, transactional leadership rarely contributes to the predictability of the regression models.

simultaneously. Transactional categories again only add marginal explanatory power to the predictability of organizational innovation with none of its coefficients being significant, when other variables are held constant[174].

Transformational and passive leadership. Multiple linear regression models which cover all five categories of transformational leadership and the squared transformation of the passive leadership category *Laissez Faire* indicate a significant impact on overall and procedural organizational innovation only in sample *S2*. First, the transformational leadership category *Idealized Influence Behaviour* indicates a positive impact on overall organizational innovation (b=14.433, p=.036, R^2=.368), while other variables remain constant. Second, the passive leadership category *Laissez Faire* negatively influence procedural organizational innovation (b=-4.320, p=.045, R^2=.412). This leadership category increases the predictability of organizational innovation by 7 percent, which is quite substantial compared to the explanatory power of other models, such as described above.

Even though many coefficients are not significant, the author decided not to conclude that some leadership behaviours and categories do not have a *real* impact on overall, procedural, structural and inter-organizational innovation. In fact, there might be several reasons *why* an independent variable, when considered on its own, has a significant impact on organizational innovation, while it is not indicated as having a significant impact on the respective form of organizational innovation within a multiple linear regression model (Creech, 2011). However, in small samples 'a nonsignificant coefficient is not a sufficient reason for concluding that a variable has no effect on the dependent variable. Even if the sample is not small, there is another reason for being cautious in concluding that a variable has no effect: It's possible that other variables mediate the effect of that variable' (Allison, 1998: 60). Hence, insignificant coefficients might indicate that important indicators, which have not yet been considered within these models, have a significant impact on organizational innovation or on the leadership-innovation relationship. The third section of *chapter four* which focuses on the research question Q_3 addresses this topic in more detail.

4.2.4.2.3 Results from an innovation perspective

The author found that overall organizational innovation of Malaysian SMEs is significantly influenced by the transformational and transactional behaviours of their

[174] In sample *S2*, transactional leadership does not show any significant impact on organizational innovation.

leaders. Looking at the separate impacts of the various leadership behaviours and categories, 17.2 percent of the variation in overall organizational innovation can be explained by changes in transformational leadership, whereas only 7.5 percent can be accounted for by transactional leadership. All five categories of transformational leadership behaviours significantly and positively influence the overall level of organizational innovation. Thereby, the category *Idealized Influence Behaviour* has the greatest influence, followed by *Inspirational Motivation* and *Intellectual Stimulation*. It should be noted, that of all the transformational categories of Malaysian leaders in both samples, *Idealized Influence Behaviour* has the largest influence on overall organizational innovation. Looking at transactional leadership categories, only *Contingent Reward* significantly and positively influences overall organizational innovation. Finally, passive leadership has a significant but negative impact on overall organizational innovation through its category *Laissez Faire*. The simultaneous analysis of the different leadership behaviours and categories, adjusted by various dummy and control variables, shows that only transformational leadership and its category *Idealized Influence Behaviour* significantly and positively influence overall organizational innovation, holding all other variables constant.

Looking at the three main forms of organizational innovation, the author found that transformational leadership has the greatest influence on procedural organizational innovation. This is also indicated by the results of multiple linear regression analysis. With the exception of *Idealized Influence Attribute*, all transformational categories significantly and positively influence the introduction of procedural organizational innovation. In both samples, transactional leadership behaviours do not have any influence on procedural organizational innovation. By contrast, the passive leadership category *Laissez Faire* significantly and negatively influences the introduction of procedural organizational innovation. This negative impact is also found through multiple linear regression analysis, which additionally covers all five transformational leadership categories and controls for *gender*, *company age* and *number of employees*. Structural organizational innovation is influenced much more strongly and positively by transformational leadership behaviours, than by transactional ones. Four transformational categories – *Idealized Influence Attribute*, *Idealized Influence Behaviour*, *Inspirational Motivation* and *Individualized Consideration* – separately have a positive impact on structural organizational innovation. While *Idealized Influence Attribute* predicts the variation in structural organizational innovation only slightly, *Idealized Influence Behaviour* explains its incidence to the greatest extent. In addition, structural organizational innovation is the only form of organizational

innovation on which both transactional leadership categories – *Contingent Rewards* and *Active Management-by-Exception* – have a significant influence. By simultaneously analysing the impact of more than one leadership approach, the author confirms the significant power of transformational and transactional behaviours of Malaysian leaders. The regression equation $OI2tot = -1.338 + 1.914TF + 1.236TA$ shows that those leaders who act in a transformational way have a greater impact on the implementation of structural organizational innovation than those who follow transactional behaviours, if the data are adjusted for *gender*. Results even show a decrease in structural organizational innovation in the absence of transformational and transactional behaviours.

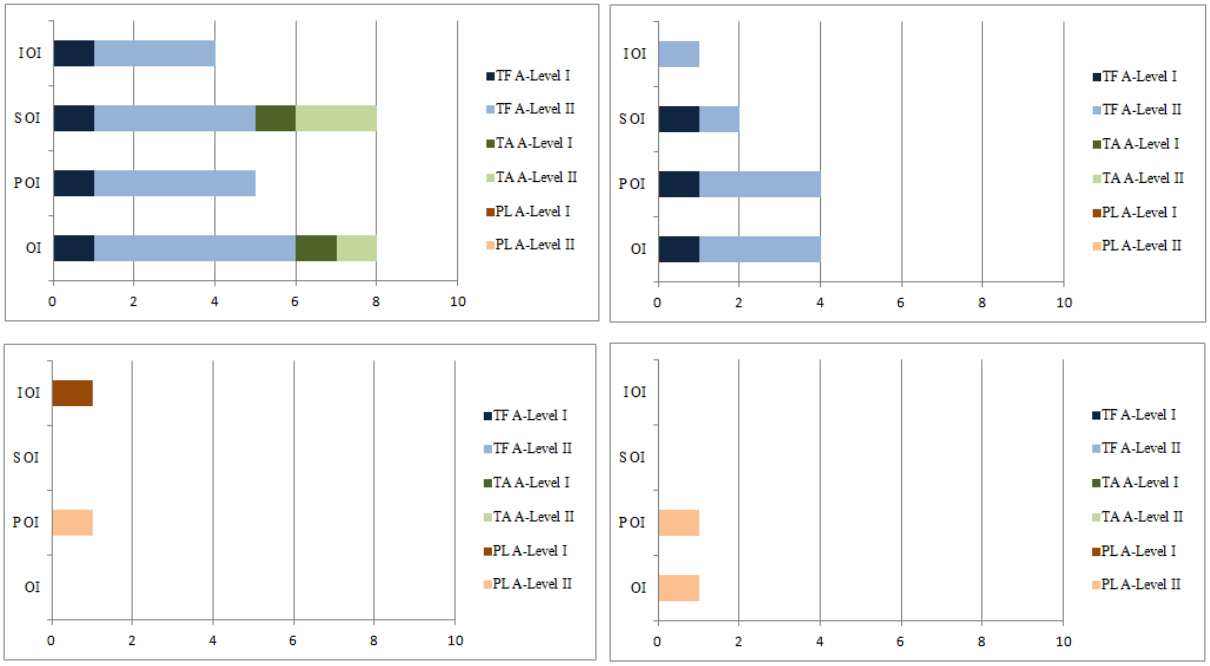


Exhibit 26: Overview SLR results – Sample *S1* (left) & sample *S2* (right)
Source: Author's depiction, 2015

Finally, inter-organizational innovation is significantly and positively affected by transformational leadership and three of its categories – *Idealized Influence Behaviour*, *Inspirational Motivation* and *Intellectual Stimulation* – if their influence is analysed singly. By contrast, the introduction of inter-organizational innovation is not influenced by either transactional or passive leadership behaviours. This is confirmed by simple as well as multiple linear regression analysis. However, multiple regression models show that transformational leadership and its category *Idealized Influence Behaviour* have a positive and significant impact on inter-organizational innovation, while controlling for transactional leadership and its categories, and additionally controlling for gender and ethnicity.

In conclusion, research results of simple and multiple linear regression analysis verify hypothesis H_{1b} that transformational leadership has a significant and positive influence on aggregated forms of organizational innovation. Together with the findings of binary logistic regression analysis, the overall hypothesis H_1 is hence verified.

Research question Q_2		
Q_2	How does transformational leadership influence organizational innovation?	
H_1	Transformational leadership has a positive influence on organizational innovation.	✓
H_{1a}	Transformational leadership has a positive influence on the most disaggregated sub-types of procedural, structural and inter-organizational innovation.	✓
H_{1b}	Transformational leadership has a positive influence on aggregated forms of organizational innovation.	✓

Exhibit 27: Verification of hypothesis H_1 (H_{1a} and H_{1b})
Source: Author's depiction, 2015

4.3 Effectiveness of leadership

In this third section of chapter four, the author analysed research question Q_3 and tested the specified hypotheses H_2-H_6, which indicate how internal contextual conditions – specifically *subordinates' professionalism*, *empowerment climate* and *CSR engagement* – and external contextual conditions – specifically *environmental dynamism* and *external communication* – moderate or mediate the relationship between transformational leadership and organizational innovation. In addition to quantitative analysis, through which the moderation and mediation effects of contextual variables are tested, the author conducted qualitative analysis to evaluate how SME leaders and institutional representatives rate the engagement of Malaysian SMEs in CSR activities.

4.3.1 Descriptive statistics

4.3.1.1 Internal contextual variables

First, the author found that the subordinates of Malaysian SMEs have a balanced level of professionalism which is higher-than-average[175]. The first dimension of subordinates' professionalism *education* shows that subordinates have, on average, completed at least a post-secondary education. However, their skills and abilities are only occasionally developed through additional external and internal courses. Even though this low frequency of ongoing training offsets the high educational level of subordinates, the overall level of the first dimension *education* indicates that

[175] The mean value of subordinates' professionalism (*SP*) is 1.995 (SD=.4227). When the item *experience* is excluded from the overall indicator – which is done within further analysis in order to satisfy the reliability requirement for linear regression analysis – this mean value of subordinates' professionalism (*SP_exex*) is 2.456 (SD=.5623).

subordinates in Malaysian SMEs are well educated[176]. The second category *experience* shows that subordinates have on average between one and six years of working experience[177]. The third dimension *external communication* indicates that the average subordinate interacts with the external environment – for example through their professional activities – with a medium intensity, which is slightly below the results for their leaders. The fourth dimension *perceptions of own abilities and skills* shows that subordinates of Malaysian SMEs are aware of their strengths and potential. In fact, subordinates stated that they are able to apply their skills effectively.

Second, results show that subordinates perceive the level of psychological empowerment and hence the empowerment climate as quite high[178]. In fact, the dimension *meaning* contributes to the overall empowerment climate the most. This indicates that the work activities in which subordinates are involved are considered important and meaningful to them. By contrast, respondents indicated that they experience the dimensions *competence* and *impact* to only a low degree, whereby *impact* is least pronounced.

Third, results show that leaders indicated that CSR activities and initiatives are very important for their companies[179]. This high relevance was confirmed by their subordinates. In fact, nearly 75 percent[180] stated that they are aware of the concept CSR and of the respective CSR initiatives in which their companies are engaged. However, within CSR the philanthropic responsibilities are, on average, perceived as being the least satisfied by their companies.

In addition, the author evaluated how SME leaders rate the relative importance of different social responsibilities[181]. More than half of all leaders ranked economic responsibilities as the most important social obligation their companies have, followed by ethic and legal responsibilities[182]. Whereas just two leaders classified philanthropic responsibilities as the most important social obligation, far more – a total of 22 leaders

[176] Findings reflect the educational level of the Malaysian workforce, as the Human Development Index ranked Malaysia at position 62, indicating *high human development* (United Nations Development Program, 2014).
[177] As only 28 subordinates indicated their salary, the author did not consider this item in the overall indicator.
[178] The mean value of the potential moderator empowerment climate (*EC*) is 3.096 (SD=.4366).
[179] The mean value of the potential mediator CSR engagement is 3.081 (SD=.5249).
[180] A total of nine of these 31 subordinates stated that they are *very good* informed about their companies' CSR activities. Responses of eleven subordinates are not considered. Of these eleven, three subordinates knew of the concept CSR, but not of their company's engagement with CSR activities, one subordinate was aware of corporate engagements, but said he was not aware of CSR itself and seven subordinates did not know about the concept of CSR and also did not know of their company's engagements in this field.
[181] With one exception, all Malaysian leaders answered this question. It should be mentioned, that eleven leaders ranked more than one CSR objective equally.
[182] Even if legal and ethic responsibilities seem to be equally ranked, as both have an average value of 2.073, more leaders – compared to those who prioritized legal responsibilities – classified ethic obligations as most important.

– ranked them as the least important obligation their companies should aim to satisfy. One reason for this might be that SMEs often have limited financial resources, due to their relatively small size and low company age[183]. The ranking of CSR objectives – derived from the responses of Malaysian SME leaders assessed by the author in relation to remarks of their subordinates – is depicted by Exhibit 28 and demonstrates the following order: (1) economic, (2) ethic, (3) legal and (4) philanthropic obligations.

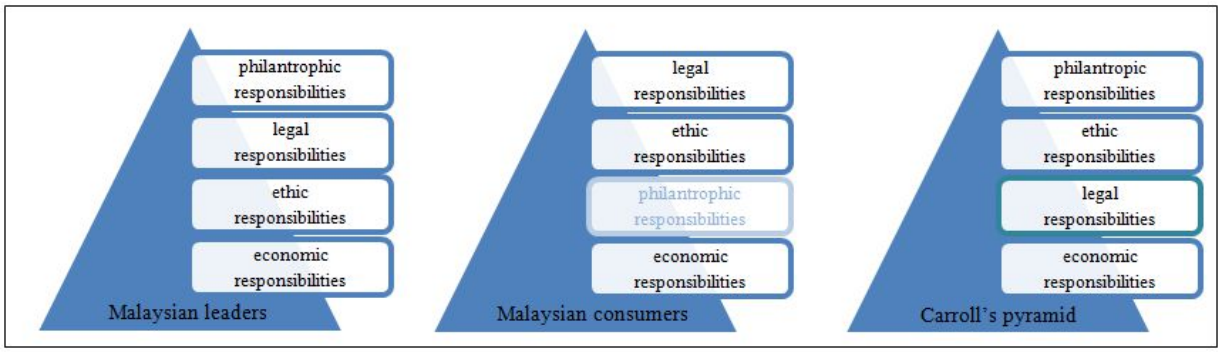


Exhibit 28: Relative importance of CSR components – A comparison
Source: Author's depiction, 2015

With the exception of the relative ranking of philanthropic responsibilities – which might be due to the characteristics of the specific sample – present findings correspond with research results of Rahim and colleagues (2011), rather than with Carroll's pyramid. Malaysian SME leaders hence attach the same relative importance to CSR responsibilities as Malaysian consumers. This consistency might lead to a competitive advantage as Raman and colleagues (2012) identified a significant and positive relationship between the CSR engagement of Malaysian SMEs and the loyalty of Malaysian consumers.

4.3.1.2 External contextual variables

The first external contextual variable *environmental dynamism* shows that SME leaders and their subordinates perceive their economic, social, political and technological environment as being moderately dynamic[184]. Most respondents strongly agreed that their environments are very dynamic and rapidly changing with regard to technical, economic and cultural dimensions. However, only a few SME leaders and subordinates perceived their environments as being very stressful, exacting, hostile and hard to keep afloat.

[183] For example, the owner of company C23 stated that the engagement of his company in philanthropic CSR is low because the company is a *start-up* and hence has only limited financial resources.
[184] The mean value of the potential moderator environmental dynamism (*ED*) is 2.778 (SD=.5364).

The second external factor of the research model *external communication* indicates that the external contacts and networks of both companies and their leaders, are developed moderately to fairly strongly[185]. However, only two leaders provided examples of individual forms of external communication. The first leader indicated that he follows an *inclusive business model* – which allows a close cooperation with other companies and financial institutions – and participates in various community programs. The second leader mentioned that his company is widely recognized by international consultants and analysts and is thereby part of an international community. Overall, only one leader indicated that he does not have any external relationships – in the sense of extra-organizational professional activities, teaching cooperation arrangements, social networks and project groups or workshops outside of his company. However, the majority of leaders stated that they and their companies do not establish very extensive relationships when questioned by the author.

4.3.2 Moderation and mediation effects

4.3.2.1 Moderation effects

As described in section *4.2.4.2.1 Simple linear regression models*, the author analysed the impacts of the behaviours of Malaysian leaders on overall, procedural, structural and inter-organizational innovation through simple linear regression analysis[186].

Leadership styles & categories	Overall organizational innovation	Procedural organizational innovation	Structural organizational innovation	Inter-organizational innovation
Transformational leadership (TL)	✓	✓	✓	✓
Idealized Influence Behaviour (IIB)	✓	✓	✓	✓
Inspirational Motivation (IM)	✓	✓		
Individualized Consideration (IC)	✓	✓		
Laissez Faire (LF_sq)	✓	✓		

Exhibit 29: Overview results SLR analysis – Sample *S2*
Source: Author's depiction, 2015

As illustrated by Exhibit 29, findings show that transformational leadership, three of its sub-types and one category of passive leadership significantly influence procedural organizational innovation as well as overall organizational innovation. By contrast, structural and inter-organizational innovation is only significantly impacted by transformational leadership and its category *Idealized Influence Behaviour*.

[185] The mean value of the potential moderator external communication (*ExC*) is 2.406 (SD=.7307).
[186] The following part focuses on sample *S2*, due to the data collection process.

Within further moderation analysis, the author did not only focus on these significant relationships, but expanded research to cover all possible leadership-innovation combinations. The author thereby took into account that 'a moderation effect is often sought-after when a hypothesized causal relationship is weak or not found empirically' (Wu and Zumbo, 2008) and a significant leadership-innovation relationship is not required for mediation analysis (Warner, 2013). Following this line of reasoning – and reflecting the procedures of existing studies (e.g. Al-Matari et al., 2014) – the study evaluated the potential moderation effects of contextual variables on all leadership-innovation relationships[187], even though not all the relationships between leadership and organizational innovation – without the consideration of potential moderators – are statistically significant. Significant findings are reported in the following section.

4.3.2.1.1 Internal moderator I – Subordinates' professionalism

First, the author analysed the moderation effect of subordinates' professionalism – represented by the specific interaction term described by equation (*e17*) – at the first level of aggregation of leadership behaviours[188]. Even though one multiple linear regression model significantly predicts overall organizational innovation, the coefficient of the moderation effect β_3 is insignificant – which is true for all models at the first level of aggregation. Hence, subordinates' professionalism moderates none of the relationships between transformational, transactional and passive leadership and the various forms of organizational innovation.

Looking at the second aggregation level, the author found that one moderation model indicates that subordinates' professionalism has a significant effect. Thus, subordinates' professionalism statistically significantly moderates the relationship between the transformational leadership category *Individualized Consideration* and overall organizational innovation[189] (β_3=-13.590, p=.044). This moderation model significantly predicts overall organizational innovation (p=.038) and explains 13.4 percent of its variation. While the coefficients of *Individualized Consideration* β_1 and subordinates' professionalism β_2 are statistically insignificant[190], the coefficient of the moderator effect β_3 shows a significant value and provides an estimate of the moderation effect. Thus, subordinates' professionalism negatively moderates the relationship between *Individualized Consideration* and overall organizational

[187] Overall, the author calculated 208 multiple regression models, covering 52 moderation models for each internal and external contextual variable of the research model.
[188] Aggregation level I covers transformational, transactional and passive leadership styles and their impact on four forms of organizational innovation (procedural, structural and inter-organizational innovation and overall organizational innovation).
[189] SLR results show a significant impact of *IC* on overall organizational innovation (R^2=.106, b=8.111, p=.036).
[190] The independent variables must be included even if their coefficients are statistically insignificant (Hayes, 2013).

innovation in the data set. The following equation indicates that the impact of *Individualized Consideration* on overall organizational innovation is reduced by 13.590 units when the moderator increases by one unit.

$$OItot = i_{IC/SP} + 5.694IC + 4.808SP - 13.590(IC * SP) + e_{IC/SP} \qquad (e18)$$ [191]

This moderating power of subordinates' professionalism is also marginally observed when looking at the impact of *Individualized Consideration* on procedural (β_3=-4.217, p=.079) as well as inter-organizational innovation (β_3=-5.650, p=.057). However, statistical significance is not sufficiently satisfied, as the p-values associated with the f-statistics of the interaction coefficient and of the overall model do not indicate acceptable values for both, the explanatory capability and the moderation effect.

DV	IV	R^2	Adj. R^2	F	β_1	β_2	β_3
Aggregation level II							
OItot	IC	.197	.134	3.109 (.038)	5.694 (.149)	4.808 (.256)	-13.590 (.044)
OI1	IC	.252	.193	4.268 (.011)	3.306 (.022)	.315 (.834)	-4.217 (.079)
OI3	IC	.120	.050	1.721 (.179)	.398 (.816)	2.844 (.130)	-5.650 (.057)
OItot	MbeP	.110	.040	1.564 (.214)	-2.990 (.355)	-.595 (.833)	-12.138 (.072)
OI2	MbeP	.105	.034	1.483 (.235)	-.461 (.712)	-.218 (.890)	-5.011 (.056)

Exhibit 30: Extract of MLR analysis – Subordinates' professionalism
Source: Author's depiction, 2015

In addition, two moderation models – which refer to the relationship between the passive leadership category *Passive Management-by-Exception* and structural and overall organizational innovation – display values marginally above the threshold for significance for the coefficients of the moderation effects. However, the predictive capability of these models is clearly insignificant. Hence, the author concluded that the internal contextual variable subordinates' professionalism does not moderate any relationship between transactional and passive leadership behaviours on the one hand and different forms of organizational innovation on the other. Significant and marginally insignificant results of the various multiple linear regression models are listed by Exhibit 30.

As described in section *3.2.2.2.4 Moderation analysis*, it is not possible to describe the nature of the moderator impact of subordinates' professionalism more accurately

[191] The author marked statistically significant coefficients in green.

solely by using the coefficient β_3. Hence, the author employed a method recommended by Hayes (2013) for visualizing the relationship between *Individualized Consideration* and overall organizational innovation as a function of the moderator. Therefore, the author created three moderator categories covering a relatively low level ($\overline{MSP} - SD_{MSP}$=1.89), a medium[192] level ($\overline{MSP}$=2.46) and a relatively high level of subordinates' professionalism ($\overline{MSP} + SD_{MSP}$=3.02).

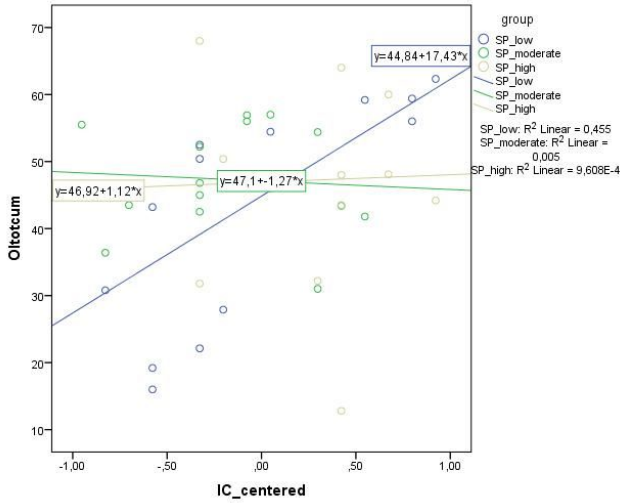


Exhibit 31: Scatterplot I – Subordinates' professionalism
Source: Authors' depiction, 2015

Exhibit 31 illustrates the moderation effect of subordinates' professionalism on the relationship between the transformational leadership category *Individualized Consideration* and overall organizational innovation as practiced by the respective Malaysian SMEs. The scatterplot indicates that low levels of the moderator demonstrate the strongest regression effect of R^2=.455. In other words, when subordinates are characterized by only low professionalism, the regression equation can be written as $OItot_{lowSP} = 44.84 + 17.43IC$. This strong correlation drops when the professionalism of subordinates increases to a medium level. In fact, R^2 of the leadership-innovation relationship then amounts to only .005 and the influence of *Individualized Consideration* even turns negative ($OItot_{modSP} = 47.1 - 1.27IC$). When the level of subordinates' professionalism is high, the leadership-innovation relationship is slightly positive, but almost disappears with an R^2 of 9.608E-4. This leadership-innovation regression at relatively high levels of the moderator can be written as $OItot_{highSP} = 46.92 + 1.12IC$. Therefore, the author found that the strong positive influence of the transformational category *Individualized Consideration* on the overall organizational innovation substantially decreases when subordinates are

[192] The scatterplots use another terminology for the *medium* level. The medium level corresponds to the *moderate* level shown in the scatterplots.

characterized by higher levels of professionalism and that the relationship even turns negative at medium levels of professionalism.

To sum up, research results show that the hypothesis H_2 – which assumes that subordinates' professionalism substitutes for transformational leadership which itself is less effective at higher levels of subordinates' professionalism – is partly supported. In fact, the significance of the moderation effect is limited to the influence on overall organizational innovation of those behaviours of Malaysian leaders which are covered by the transformational category *Individualized Consideration*. However, this moderation effect of subordinates' professionalism substitutes for the transformational leadership category *Individualized Consideration* which itself is less effective at higher levels of subordinates' professionalism.

4.3.2.1.2 Internal moderator II – Empowerment climate

At the first level of aggregation, empowerment climate significantly moderates the relationship between transformational leadership and procedural organizational innovation[193]. This moderation model is highly significant (p=.011) and predicts 19.1 percent of the variation in procedural organizational innovation, whereby the coefficients of transformational leadership β_1 and the moderation effect β_3 are both significant. The coefficient β_3 estimates that the effect of transformational leadership on procedural organizational innovation increases by 12.005 units if the moderator empowerment climate increases by one unit. In addition, the conditional simple positive effect of transformational leadership on procedural organizational innovation amounts to 5.817 when the empowerment climate equals zero.

DV	IV	R^2	Adj. R^2	F	β_1	β_2	β_3
Aggregation level I							
OI1	TF	.251	.191	4.236 (0.11)	5.817 (.014)	1.477 (.433)	12.005 (.040)
Aggregation level II							
OItot	IS	.162	.096	2.451 (.078)	4.650 (.394)	9.645 (.067)	28.852 (.032)
OI1	IS	.235	.175	3.893 (.016)	3.805 (.053)	2.618 (.157)	12.931 (.007)
OI2	MbeP	.141	.073	2.079 (.119)	-1.152 (.363)	2.434 (.188)	-6.591 (.031)

Exhibit 32: Extract of MLR analysis – Empowerment climate
Source: Author's depiction, 2015

[193] SLR results show a significant impact of *TF* on procedural organizational innovation (R^2=.162, b=5.999, p=.008).

Looking at the second level of aggregation, empowerment climate significantly moderates the impact of the transformational leadership category *Intellectual Stimulation* on procedural organizational innovation[194]. Again the overall model and both coefficients β_1 and β_3 are statistically significant. The model predicts 17.5 percent of the variation in procedural organizational innovation. While β_3 estimates that the effect of *Intellectual Stimulation* on procedural organizational innovation increases by 12.931 units when the moderator empowerment climate increases by one unit, β_1 indicates that *Intellectual Stimulation* positively influences procedural organizational innovation when the moderator amounts to zero. In addition, the author found a significant moderation effect β_3 in the relationship between the same transformational leadership category – *Intellectual Stimulation* – and overall organizational innovation. Anyway, it should be mentioned that the overall model does not achieve statistical significance (p=.078). However, the moderation effect is highly significant and indicates that the impact of *Intellectual Stimulation* on overall organizational innovation increases by 28.852 units as the moderator empowerment climate increases by one unit.

Exhibit 32 illustrates that the interaction term in the regression model covered by the relationship between the passive leadership category *Passive Management-by-Exception* and structural organizational innovation is also statistically significant. The author decided not to include this model in further analysis, as the moderation model does not demonstrate a significant predictive capability. Relevant equations can be written as:

$$OI1 = i_{TF/EC} + 5.817TF + 1.477EC + 12.005(TF * EC) + e_{TF/EC} \quad (e19)$$

$$OItot = i_{IS/EC\_tot} + 4.650IS + 9.645EC + 28.852(IS * EC) + e_{IS/EC\_tot} \quad (e21)$$

$$OI1 = i_{IS/EC\_1} + 3.805IS + 2.618EC + 12.931(IS * EC) + e_{IS/EC\_1} \quad (e20)$$

In order to gather more detailed information about the nature of the significant moderation effects, the author again divided the level of empowerment climate into three categories, covering relatively low level ($\overline{MEC} - SD_{MEC}$=2.66), medium levels ($\overline{MEC}$=3.10) and relatively high levels ($\overline{MEC} + SD_{MEC}$=3.53) of empowerment climate.

The scatterplot indicates a weak relationship (R^2=.073) between transformational leadership and procedural organizational innovation at low levels of empowerment climate. This regression – which can be written as $OI1_{lowEC} = 16.58 + 3.19TF$ – is marginally weaker when empowerment climate is at a medium level

[194] SLR results indicate that *IS* does not have a significant impact on procedural organizational innovation (p=.095), nor does it have a significant impact on overall organizational innovation (p=.368).

$OI1_{modEC} = 14.9 + 2.87TF$. However, when subordinates perceive their empowerment as relatively high, the positive impact of transformational leadership on procedural organizational innovation substantially increases to $OI1_{highEC} = 15.26 + 12.05TF$. This moderation model has the greatest regression effect (R^2=.594). Hence, the moderator empowerment climate strengthens the positive relationship between transformational leadership and procedural organizational innovation.

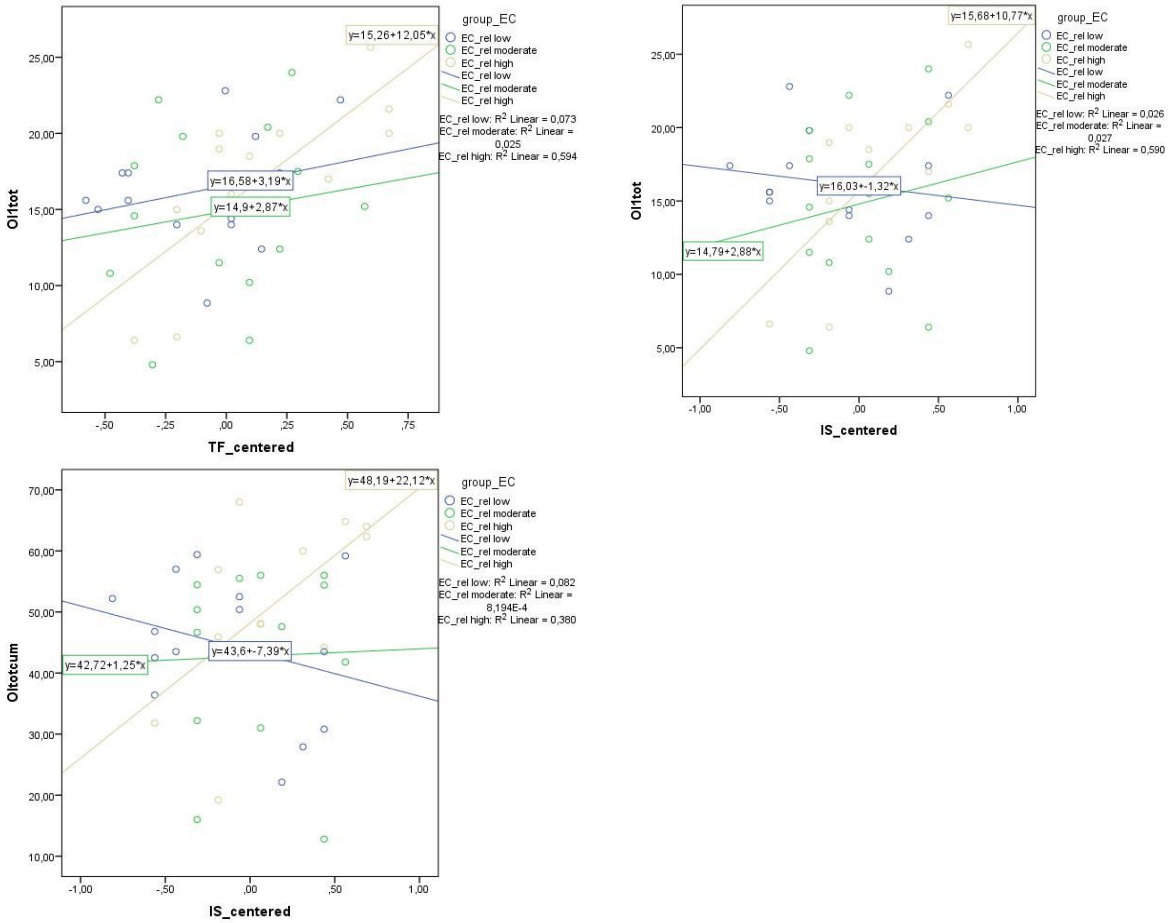


Exhibit 33: Scatterplots II – Empowerment climate
Source: Author's depiction, 2015

This moderation effect appears to be even stronger when looking at the second level of aggregation and specifically at the impact of the transformational leadership category *Intellectual Stimulation*. While the influence of *Intellectual Stimulation* on procedural organizational innovation is slightly negative at relatively low levels of empowerment climate ($OI1_{lowEC} = 16.03 - 1.32IS$), this negative impact turns positive when subordinates perceive a higher level of empowerment. In fact, when the level of empowerment climate is high, the transformational leadership category *Intellectual Stimulation* influences procedural organizational innovation strongly (R^2=.590). The equation can be written as $OI1_{highEC} = 15.68 + 10.77IS$. Even though the overall moderation model is slightly insignificant, the empowerment climate reinforces the

impact of *Intellectual Stimulation* on overall organizational innovation. While the effect of *Intellectual Stimulation* is negative when subordinates perceive their empowerment climate as relatively low ($OItot_{lowEC} = 43.6 – 7.39IS$), high levels of the moderator generate a positive impact of *Intellectual Stimulation* on overall organizational innovation with a high regression effect of (R^2=.380). The latter can be written as $OItot_{highEC} = 48.19 + 22.12IS$. Hence, at increasing levels of subordinates' empowerment, the internal moderator empowerment climate turns the influence of the transformational leadership category *Intellectual Stimulation* on procedural and overall organizational innovation from negative into positive and thereby considerably strengthens the positive potential of transformational leadership.

To sum up, hypothesis H_3 – which assumes that the internal contextual factor empowerment climate moderates the relationship between transformational leadership and organizational innovation, so that higher levels of empowerment climate substitute for transformational leadership and make it less effective – is not supported. In fact, the author discovers a statistical significant moderation effect. However, this moderation effect tended to enhance, rather than, diminish the effectiveness of transformational leadership on organizational innovation. As an example high levels of empowerment climate turn the influence on organizational innovation of the transformational category *Intellectual Stimulation* from being negative to positive. The positive power of transformational leadership to change organizational innovation is hence, at times, significantly enhanced by the moderator empowerment climate.

4.3.2.1.3 External moderator I – Environmental dynamism

In contrast to both internal contextual variables of the research model, the first external factor environmental dynamism does not show a (highly) significant moderation of any leadership-innovation relationship. However, the author found one moderation model which falls only marginally short of statistical significance.

DV	IV	R^2	Adj. R^2	F	β_1	β_2	β_3
Aggregation level II							
OI1	IS	.166	.100	2.513 (.073)	3.200 (.094)	2.042 (.161)	-6.690 (.068)

Exhibit 34: Extract of MLR analysis – Environmental dynamism
Source: Author's depiction, 2015

As shown by Exhibit 34, environmental dynamism demonstrates a nearly significant moderation effect on the relationship between the transformational leadership category *Intellectual Stimulation* and procedural organizational innovation. However, the

moderation coefficient indicates that the effect of *Intellectual Stimulation* on procedural organizational innovation decreases by 6.690 units when the moderator increases by one unit.

$$OI1 = i_{IS/ED} + 3.200IS + 2.042ED - 6.690(IS * ED) + e_{IS/ED} \quad (e22)$$

Looking at the respective scatterplot – which illustrates relatively low levels ($\overline{MED} - SD_{MEC}$=2.24), medium levels ($\overline{MED}$=2.78) and relatively high levels ($\overline{MED} + SD_{MEC}$=3.31) of the moderator – one can see that the impact of *Intellectual Stimulation* on procedural organizational innovation is reduced at higher levels of environmental dynamism.

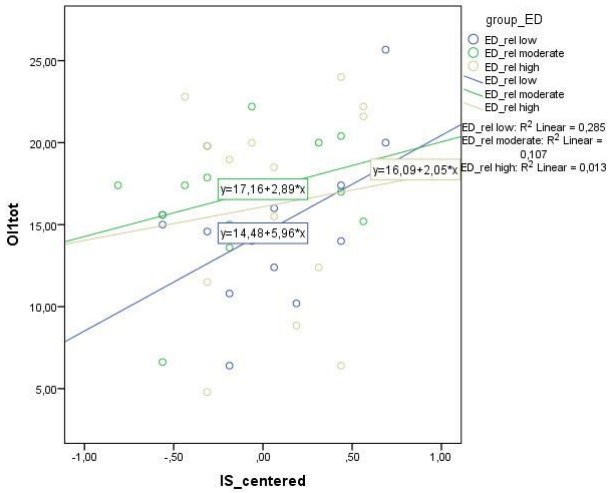


Exhibit 35: Scatterplot III – Environmental dynamism
Source: Author's depiction, 2015

While the R^2 amounts to .285 at relatively low levels of dynamism, this decreases to .013 in relatively dynamic environments. A comparison of both situations shows that the impact of the transformational leadership category *Intellectual Stimulation* on procedural organizational innovation is greater within the context of low environmental dynamism ($OI1_{lowED}$ = *14.48 + 5.96IS*), but this influence slightly decreases in highly dynamic environment ($OI1_{highED}$ = *16.09 + 2.05IS*).

Hence, the specified hypothesis H_5 – which assumes that environmental dynamism moderates the relationship between transformational leadership and organizational innovation, such that the effectiveness of transformational leadership is strengthened when there is a high level of environmental dynamism – is not supported. With the exception of one moderation model discussed in the previous paragraphs, multiple regression analysis shows insignificant values for both the overall moderation model as well as its coefficients.

4.3.2.1.4 External moderator II – External communication

In comparison with the other three moderators of the research model, external communication has the most intensive moderation effect on the impact of leadership on organizational innovation. In fact, external communication significantly moderates ten leadership-innovation relationships, whereby most of these include either transactional leadership categories or inter-organizational innovation[195].

Looking at the first level of aggregation, external communication has a significant moderating influence on the effectiveness of all three leadership styles (aggregation level I), including transformational, transactional as well as passive leadership.

- First, external communication moderates the relationship between transformational leadership and inter-organizational innovation[196]. The respective regression model predicts 31.4 percent of the variation in this type of organizational innovation. The coefficient β_3 estimates that the impact of transformational leadership on inter-organizational innovation decreases by 8.461 units as the moderator external communication increases by one unit.

- Second, the moderation effect of external communication is strongest regarding the impact of transactional leadership on various forms of organizational innovation, including overall, procedural and inter-organizational innovation[197], as depicted by Exhibit 36. Multiple linear regression models predict between 31.3 and 36.4 percent of the variation in the respective type of innovation. Looking at the aggregated form of organizational innovation[198], the moderation effect β_3 indicates that the impact of transactional leadership is reduced by 11.751 units when external communication increases by one unit. Moreover, the conditional simple positive effect of transactional leadership on overall organizational innovation amounts to 10.433 units when external communication equals zero.

- In contrast to its negative influence on the effectiveness of transformational and transactional leadership, *external communication* enhances the influence of passive leadership on organizational innovation. In fact, its impact on inter-organizational

[195] It should be noted that the coefficient of external communication is significant in a total of 44 out of 52 MLR models. This might indicate a considerable *direct* impact of the moderator variable on different forms of organizational innovation. Anyway, these effects were not the subject of further analysis.
[196] SLR results indicate that *TF* does not significantly influence inter-organizational innovation (p=.129).
[197] SLR results show that *TA* and *PL* do not significantly influence any form of organizational innovation.
[198] The interaction term is not (quite) significant with a p-value of .056.

innovation is increased by 4.578 units when external communication increases by one unit.

The following overview of significant moderation effects shows that external communication influences the effectiveness of transactional leadership and the improvement of inter-organizational innovation the most.

$$OI3 = i_{TF/ExC} + 3.728TF + 4.375ExC - 8.461(TF * ExC) + e_{TF/ExC} \quad (e23)$$

$$OItot = i_{TA/ExC\_tot} + 10.433TA + 11.294ExC - 11.751(TA * ExC) + e_{TA/ExC\_tot} \quad (e24)$$

$$OI1 = i_{TA/ExC\_1} + 3.252TA + 4.150ExC - 5.461(TA * ExC) + e_{TA/ExC\_1} \quad (e25)$$

$$OI3 = i_{TA/ExC\_3} + 3.556TA + 4.591ExC - 5.388(TA * ExC) + e_{TA/ExC\_3} \quad (e26)$$

$$OI3 = i_{PL/ExC} - 1.439PL + 3.512ExC + 4.578(PL * ExC) + e_{PL/ExC} \quad (e27)$$

At the second level of aggregation, the moderation effects of external communication are similarly reflected, as demonstrated by the equations listed above, whereby the effectiveness of the transformational category *Individualized Consideration*, the transactional leadership category *Contingent Reward* and the passive leadership category *Laissez Faire* are all influenced by changes in the moderator.

– First, external communication moderates the relationship between *Individualized Consideration* and inter-organizational innovation. In fact, the moderation effect β_3 – stating that the effectiveness of *Individualized Consideration* is reduced – is just short of significance. However, this model indicates significant predictive capability.

– Second, the highest percentage of variation in organizational innovation is explained by the moderation model including the relationship between *Contingent Reward* and overall organizational innovation (R^2=.405). The moderation coefficients β_3 state that the influence of *Contingent Reward* is reduced by 20.650 units (overall organizational innovation), 7.333 units (procedural organizational innovation) or 9.586 units (inter-organizational innovation) when the moderator increases by one unit.

– Third, external communication moderates the relationship between the passive leadership category *Laissez Faire* and inter-organizational innovation. The model predicts 36.0 percent of the variation in inter-organizational innovation, whereby the influence of *Laissez Faire* is enhanced at higher levels of external communication.

DV	IV	R^2	Adj. R^2	F	β_1	β_2	β_3
Aggregation level I							
OI3tot	TF	.365	.314	7.265 (.001)	3.728 (.115)	4.375 (.000)	-8.461 (.028)
OItot	TA	.410	.364	8.812 (.000)	10.433 (.012)	11.294 (.000)	-11.751 (.056)
OI1tot		.391	.343	8.120 (.000)	3.252 (.035)	4.150 (.000)	-5.461 (.020)
OI3tot		.363	.313	7.232 (.001)	3.556 (.047)	4.591 (.000)	-5.388 (.045)
OI3tot	PL	.363	.312	7.205 (.001)	-1.439 (.246)	3.512 (.001)	4.578 (.034)
Aggregation level II							
OI3tot	IC	.325	.272	6.109 (.002)	1.735 (.257)	4.094 (.000)	-4.173 (.068)
OItot	CR	.448	.405	10.293 (.000)	9.546 (.017)	11.424 (.000)	-20.650 (.011)
OI1tot		.391	.343	8.146 (.000)	2.727 (.075)	4.056 (.000)	-7.333 (.019)
OI3tot		.412	.365	8.861 (.000)	2.985 (.081)	4.659 (.000)	-9.586 (.007)
OI3tot	LF	.407	.360	8.686 (.000)	-2.399 (.024)	3.510 (.001)	3.848 (.033)
	LF_sq	.406	.359	8.650 (.000)	-3.775 (.051)	3.310 (.002)	7.466 (.0269

Exhibit 36: Extract of MLR analysis – External communication
Source: Author's depiction, 2015

The moderation effects of external communication at the second level of aggregation are again mainly focused on the influence of transactional leadership and the outcome variable inter-organizational innovation. It thereby significantly decreases the effectiveness of leadership. Regression equations of the moderator models – covering external communication relating to categories of all three styles of leadership – can be written as follows:

$$OI3 = i_{IC/ExC} + 1.735IC + 4.094ExC - 4.173(IC * ExC) + e_{IC/ExC} \quad (e28)$$

$$OItot = i_{CR/ExC\_tot} + 9.546CR + 11.424ExC - 20.6550(CR * ExC) + e_{CR/ExC\_tot} \quad (e28)$$

$$OI1 = i_{CR/ExC\_1} + 2.727CR + 4.056ExC - 7.333(CR * ExC) + e_{CR/ExC\_1} \quad (e29)$$

$$OI3 = i_{CR/ExC\_3} + 2.985CR + 4.659ExC - 9.586(CR * ExC) + e_{CR/ExC\_3} \quad (e30)$$

$$OI3 = i_{LF/ExC} - 2.399LF + 3.510ExC + 3.848(LF * ExC) + e_{LF/ExC} \quad (e31)$$

As these regression equations do not offer precise information about the moderation effect, the author established scatterplots of the significant moderation models described within previous paragraphs. The data categories include relatively low levels ($\overline{MExC} - SD_{MExC}$=1.68), medium levels ($\overline{MExC}$=2.41) and relatively high levels ($\overline{MExC} + SD_{MExC}$=3.14) of external communication.

While the impact of transformational leadership on inter-organizational innovation is positive at low levels of external communication with the strongest regression effect R^2 of .294 ($OI3_{lowExC} = 12.14 + 12.72TF$), this relationship turns negative when companies and their leaders develop their relationships with external partners. While the influence of transformational leadership on inter-organizational innovation can be written as $OI3_{modExC} = 13.7 - .31TF$ at medium levels of external communication, the impact decreases to $OI3_{highExC} = 19.39 - 4.41TF$ when SMEs and their leaders have high levels of external communication. Looking at the impact of transactional leadership on inter-organizational innovation, the author discovers that its positive influence, while diminished at high levels of the moderator, remains positive, if only marginally so. This is indicated by the equations $OI3_{lowExC} = 12.02 + 9.11TA$ (R^2=.201) and $OI3_{highExC} = 18.73 + 1.14TA$ (R^2=.031). Looking at passive leadership, the moderator also has a considerable impact on the influence on inter-organizational innovation. In fact, at higher levels of external communication the negative impact on inter-organizational innovation ($OI3_{lowExC} = 12.24 - 7.38PL$ with the strongest regression effect of R^2=.352) of passive leadership is turned into a positive effect ($OI3_{highExC} = 19.19 + 2.94PL$).

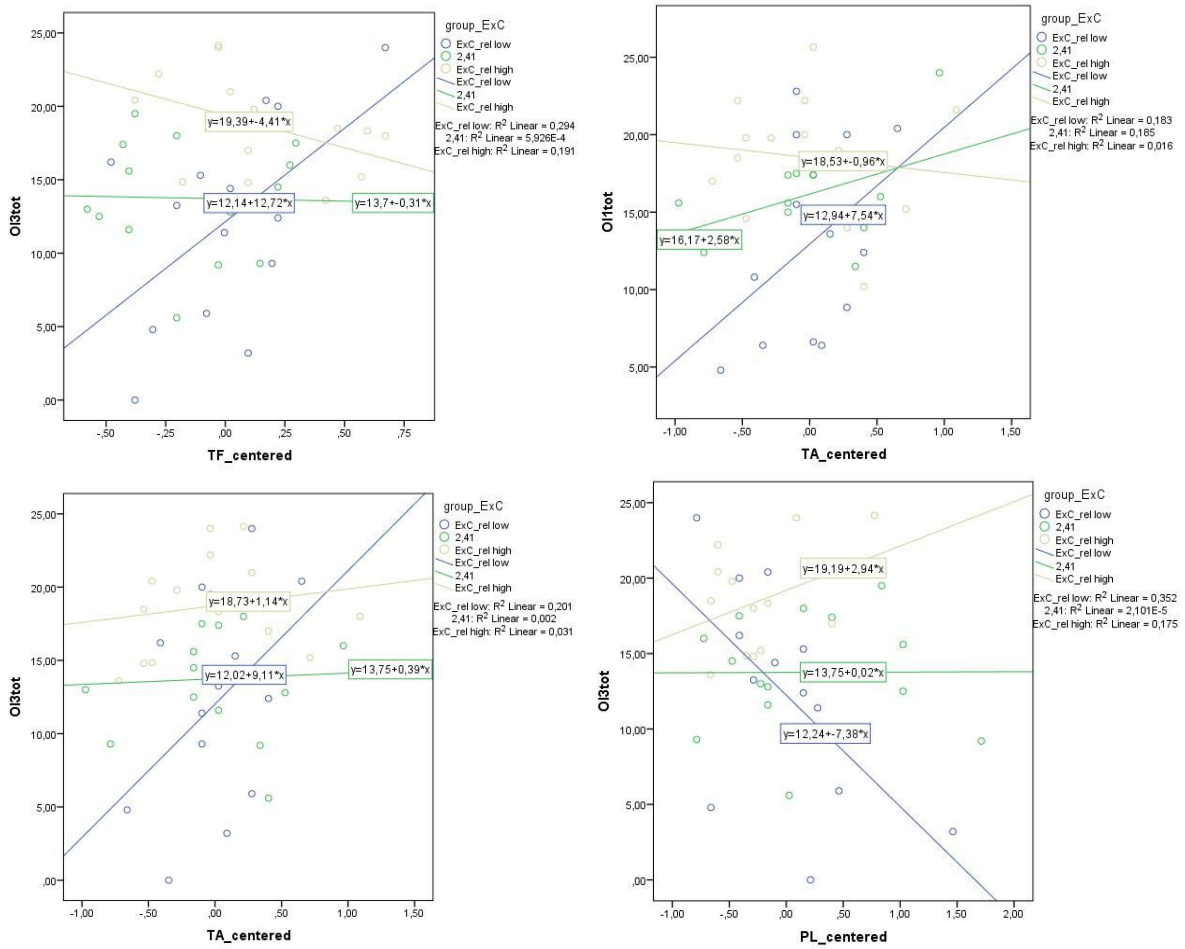


Exhibit 37: Scatterplots IV – External communication (aggregation level I)
Source: Author's depiction, 2015

Hence, the moderator external communication negatively influences the relationships between transformational and transactional leadership, on the one hand, and inter-organizational innovation on the other, tending to offset the impact of leadership and, at higher levels for the moderator, causing leadership to have a negative impact on inter-organizational innovation. By contrast, external communication positively moderates the influence of passive leadership on inter-organizational innovation, whereby at low levels of the moderator the influence of passive leadership is negative and at high levels this influence is positive.

In addition, the moderator changes the relationship between transactional leadership on the one hand and procedural organizational innovation as well as overall organizational innovation on the other. While transactional leadership has a strong positive impact on overall organizational innovation at low levels of external communication ($OItot_{lowExC} = 39.01 + 20.14TA$ with a regression effect of R^2=.161), its impact considerably decreases with higher levels of the moderator ($OItot_{highExC} = 54.46 + 2.69TA$)[199]. Even so, at these higher levels of the moderator, the influence is still positive, if only marginally so. By contrast, the effectiveness of transactional leadership turns negative regarding procedural organizational innovation at high levels of the moderator. While transactional leadership positively influences this form of organizational innovation at relatively low levels of external communication ($OI1_{lowExC} = 12.94 + 7.54TA$), it has a negative impact when the relationships of companies and their leaders with external individuals and groups increase ($OI1_{highExC} = 18.53 - .96TA$).

At the second level of aggregation, the external moderator external communication significantly changes the impacts of both the transactional leadership category *Contingent Reward* and the passive leadership category *Laissez Faire* on inter-organizational innovation. In fact, the positive impact of *Contingent Reward* on inter-organizational innovation reduces as the level of external communication rises. At high levels of external communication, this impact turns negative. This relationship is indicated by the following two equations: $OI3_{lowExC} = 10.3 + 17.06CR$ and $OI3_{highExC} = 18.7 - .92CR$. In addition, this moderation effect also seems to influence the relationship between the transformational leadership category *Individualized Consideration* and inter-organizational innovation. However, the respective interaction term slightly falls short of being significant. Finally, the effectiveness of the passive leadership category *Laissez Faire* on inter-organizational innovation is significantly

[199] It should be noted that the moderation effect is slightly above the threshold for significance (p=.056). That is why the author decided not to include the respective scatterplot.

moderated by external communication. As the respective scatterplot shows, this effect is quite similar to that observed in the first level of aggregation.

In addition, external communication significantly moderates the impact of the transactional leadership category *Contingent Reward* on overall and procedural organizational innovation. While *Contingent Reward* has a very strong positive impact on overall organizational innovation at low levels of external communication ($OItot_{lowExC} = 35.34 + 36.61CR$ with a regression effect of R^2=.388), its impact substantially decreases when the moderator increases ($OItot_{highExC} = 54.39 - .77CR$ with the R^2=.001). The effectiveness of *Contingent Reward* also turns negative regarding procedural organizational innovation. This change at higher levels of the external moderator is stronger than at the first aggregation level as it turns from $OI1_{lowExC} = 11.82 + 11.31CR$ to $OI1_{highExC} = 18.54 - 1.98CR$.

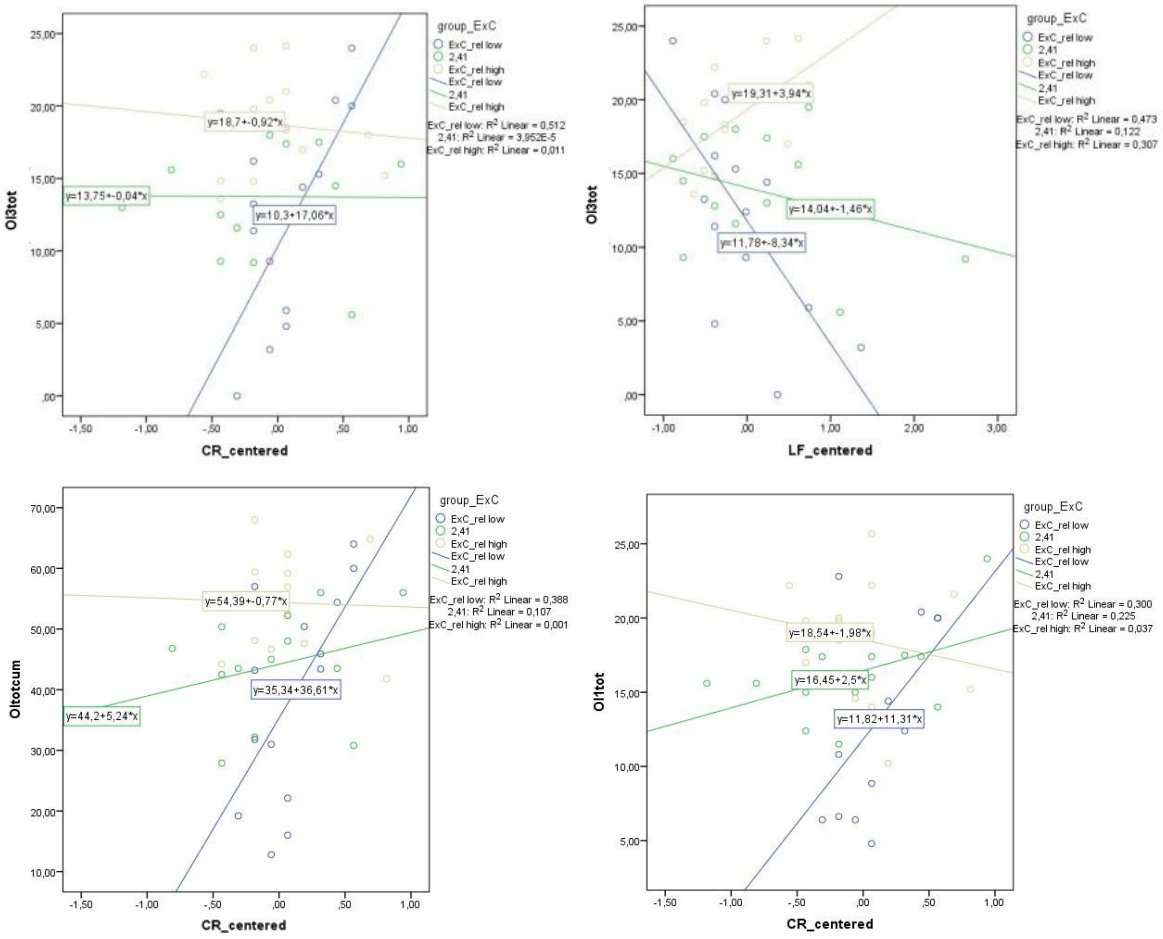


Exhibit 38: Scatterplots V – External communication (aggregation level II)
Source: Author's depiction, 2015

To sum up, the hypothesis H_6 – which states that the relationship between transformational leadership and organizational innovation is moderated by the external contextual variable external communication, such that the effectiveness of

transformational leadership is strengthened by more comprehensive external communication – is not supported by research results. Even though external communication statistically significantly moderates the impact of transformational leadership on inter-organizational innovation, it clearly reduces rather than enhances the effectiveness of transformational leadership. When SMEs and their leaders increase their relationships with various external partners, the influence of transformational leadership even turns negative. Looking at the second level of aggregation, there is no statistically significant moderation effect. In fact, the moderation of the relationship between the transformational category *Individualized Consideration* and inter-organizational innovation is slightly above the threshold for significance.

4.3.2.2 Mediation effects – CSR engagement

4.3.2.2.1 Qualitative results

> 'We are all business men [...] meaning, if there are certain complains from our customers we have to react. These are our business responsibilities [...]. It's very different from a social point of view. I think these responsibilities are bigger for big players. For SMEs in Malaysia, I would say that these social responsibilities are not that heavy.'
>
> *Owner of C1, interview on 31 March 2014*

When talking about the CSR engagement of Malaysian SMEs, many respondents assumed that companies participate in such projects because they are striving for marketing effects, an improved image and brand-building. However, they do not recommend this strategy but rather condemn it. In fact, the owner of company C6 stated that it is a '*waste of time*' when '*companies do these little, ineffective things with huge marketing and public relation effects'*. Also other SME leaders stressed that companies tend to initiate projects with no *real* need more as a consequence of pressures from markets and customers, than based on principles of sustainable development. Respondents expected that it is mainly the bigger sized SMEs which are facing these external pressures and hence having these marketing reasons for their CSR engagements. Some respondents explicitly explained that they do not want to attract great attention through their engagement in CSR initiatives. Instead of publishing photographs and press releases, they apparently prefer to focus on the success of their CSR projects without aiming at potential marketing effects.

A total of five respondents admitted that they have not yet been as effective as they could have been in CSR projects. In fact, they indicated that this limited engagement was due to their relatively small company size, their limited financial resources and capacities and their daily struggle with an overload of operational issues and growing competition. Also, companies which stated they regularly participate in CSR activities,

follow in some cases quite different approaches. While one SME leader indicated that his company develops five-year CSR plans, another respondent stated that his company allocates specific budgets for CSR engagements. Only a few leaders mentioned environmental activities – such as one company which launched a project to encourage staff to take public transportation to the office. Rather, most respondents referred to the social and philanthropic projects in which they are involved. Examples range from the support of community projects for children to an impressive project launched by the owner of company C8 which covers various programs and activities to support the education and career opportunities of underprivileged children and orphans. The commitment of these companies and their owners caring about the development of Malaysia through the support of the young, orphans and handicapped children seems to be of great importance. Indeed, the intention to change traditional attitudes – such as *power distance* – and to improve the opportunities for further development was mentioned by several leaders. Some respondents stated that they offer internships or projects for students and thereby make a contribution to the development of youth and of the overall community. These leaders and companies strive to teach young people that they are allowed to speak up, to question habits and to bring forward their ideas and also teach them that deeply-rooted values – such as mutual respect, trust, openness and reliability – should be the basis for every relationship.

Even though most respondents do not comment on the CSR engagements of other companies, several SME leaders assumed that almost every company is, in some way, doing CSR. In addition, institutional representatives suggested that the majority of SMEs seems to be acting in a responsible manner, despite the fact that some companies are handicapped in this area due to a lack of resources or experience. One respondent even stated that Malaysians generally act in a socially responsible manner because of their ethnic and cultural backgrounds. By contrast, only a very few respondents suggested that most Malaysian SMEs do not follow any CSR guidelines, do not intensively engage in CSR activities, and specifically are not involved in philanthropic projects. Within this minority group, one leader stated that in South-Asia, and particularly in Malaysia most SMEs are not acting in a responsible manner, but are quite convincing in showing this behaviour as a front.

However, what do the respondents think that the CSR of Malaysian SMEs is really all about? First, they referred to *CSR as a platform* for establishing and maintaining new partnership relations. Through close contacts on a regular basis with students, the

community and other companies, stakeholders might learn from companies how to operate in a responsible manner and *vice versa* companies might learn from stakeholders about specific needs and potential areas for improvement. Hence, in a best case scenario the engagement of companies in CSR activities creates a win-win situation from which all participants benefit.

Second, respondents assumed that *CSR is all about economics* and hence about the efficient use of natural resources and the optimisation of products and services. Respondents stressed that CSR should not be seen as charity, but as an opportunity to support sustainable initiatives and business ideas. In this sense, CSR is about value creation, about ensuring a fair access to markets and about receiving support for sustainable projects which provide an added value for the community as a whole. In this context, the owner of company C6 referred to *Sustainable Consumption and Production*, in short SCP, which is a comprehensive cross-cutting concept that aims to change the mind-set of Malaysian SMEs to become smarter businesses, gain an improved reputation and increase operating efficiencies and new market opportunities (EUMCCI, 2014). 'SCP is the use of goods and services that respond to basic needs and bring a better quality to life, while minimising the use of natural resources, toxic materials and emissions of waste and pollutants over the life cycle, so as not to jeopardise the needs of future generations' (ibid: 18).

Third, interview partners classified the CSR engagement of Malaysian SMEs as a *tool to develop Malaysian human capital*, to improve workplaces and working conditions and to appreciate subordinates' efforts. Besides projects for students, respondents referred to the open architecture of their offices and to a responsible leadership style. Thereby, SME leaders express their social and transparent management approach which aims to treat subordinates in a socially responsible manner. This approach aims at developing human resources, adopting traditional values, implementing procedures for collective idea generation and generating a new feeling of integrity, communal belonging and self-confidence. One SME leader stated that the CSR projects that are located inside the company '*are by far more important*' than any external initiatives.

Finally, the author concluded that the level of CSR engagement is based on a *multi-stage learning process*. Some SMEs successfully imitate socially responsible behaviours from pioneers and fast-movers. The progress of other, less successful, SMEs reflects the constraints of the Malaysian society, and its educational and value systems. In these areas, the Government has a lot of power to 'set the tone'. If state

and company policies and the individual behaviours of leaders were consistently based on the principles of transparency, accountability and auditability, there would be more opportunity for social engagement, sustainable development, fair market access and efficient resource allocation.

4.3.2.2.2 Quantitative results of mediation analysis

As illustrated by the research model, the author assumes that the third internal contextual variable CSR engagement intermediates in the leadership-innovation relationship. Through regression analysis and the SPSS PROCESS macro from Preacher and Hayes (2008), the author evaluated 48 mediation models. The four-step approach – which has been described in section *3.2.2.2.3 Mediation analysis* – was employed for identifying mediator effects and testing their statistical significance[200].

Step 1 – Total effect leadership on innovation. In a first step the impact of leadership styles on organizational innovation is analysed, according to $Y = i_1 + cX + e_{Y1}$. This analysis has already been conducted in the course of answering research question Q_{1b}.[201] At the first level of aggregation, regression results of simple linear regression analysis indicate that only transformational leadership has a significant and positive impact on overall organizational innovation (R^2=.135), procedural organizational innovation (R^2=.162) and structural organizational innovation (R^2=.094). For every unit increase in transformational leadership overall organizational innovation is expected to increase by 14.828 units, procedural organizational innovation by 5.999 units and structural organizational innovation by 4.796 units. By contrast, neither transactional nor passive leadership styles significantly influence organizational innovation in sample *S2*.

Looking at the second level of aggregation, the author found that all the categories of transformational leadership – except for *Idealized Influence Attribute* and *Intellectual Stimulation* – have a significant and positive impact on organizational innovation. First, *Idealized Influence Behaviour* is the only category of transformational leadership behaviours which significantly influences all forms of organizational innovation. In fact, it has a significant impact on overall organizational innovation (R^2=.205, b=15.831, p=.003), procedural organizational innovation (R^2=.144, b=4.909, p=.013), structural organizational innovation (R^2=.149, b=5.232, p=.012) as well as on inter-organizational innovation (R^2=.149, b=5.690, p=.011). Hence, *Idealized Influence*

[200] The study focuses on sample *S2* – such as within moderation analysis – due to the data collection process.
[201] While the author focuses on results of sample *S1* in section *4.2.4.2.1 Simple linear regression models*, the following findings are based on sample *S2*.

Behaviour predicts between 20.5 and 14.4 percent of the variation in various forms of organizational innovation. Second, the transformational leadership category *Inspirational Motivation* positively influences overall organizational innovation (R^2=.116, *b*=12.058, *p*=.027) and procedural organizational innovation (R^2=.110, *b*=4.344, *p*=.032). Finally, the transformational category *Individualized Consideration* has a positive impact on overall organizational innovation (R^2=.106, *b*=8.111, *p*=.036) and procedural organizational innovation (R^2=.172, *b*=3.833, *p*=.006). Therefore, the transformational leadership categories *Idealized Influence Behaviour*, *Inspirational Motivation* and *Individualized Consideration* have a significant impact on overall organizational innovation, whereby *Idealized Influence Behaviour* explains its variation best. While an increase in *Idealized Influence Behaviour* by one unit is expected to increase overall organizational innovation by 15.831 units, an increase in *Individualized Consideration* by one unit leads to an increase in overall organizational innovation of only 8.111 units.

Even though the passive leadership category *Laissez Faire* shows a significant and negative impact on overall and procedural organizational innovation, these models fail to meet essential requirements for mediation analysis. In contrast, none of the transactional leadership categories demonstrate significant coefficients in simple linear regression analysis. However, some equations – which refer to the relationship between the transactional leadership category *Contingent Reward* and organizational innovation – satisfy mediation assumptions as will be demonstrated below.

Overall, 16[202] out of 48 regression models have a statistically significant *total effect* of leadership on innovation represented by the path coefficient *c*. From those models, the author excludes four models from further research as the *a* coefficients do not show statistical significance, nor are the second and third requirements satisfied as shown in Exhibit 39. To the remaining 12 models the author added 11 other models[203] as they also fulfil crucial assumptions of mediation analysis.

Step 2 – Effect of leadership on CSR engagement / 1st requirement for significance (I). The second step aims to predict CSR engagement from the key independent variable leadership as follows $M = i_2 + aX + e_M$. Thereby, the coefficient *a* explains the impact of leadership on the mediator CSR engagement. In this step the author established

[202] 16 models cover 4 models at aggregation level I and 12 models at aggregation level II.
[203] These 11 models include 4 models from aggregation level I (*TA* on all *OI*) and 7 models from aggregation level II (*IM* on *OI2* and *OI3, IC* on *OItot*, *OI2* and *OI3* and *CR* on *OItot* and *OI3*).

12 regression models[204] according to the number of leadership categories, from which seven include statistically significant *a* coefficients. As one of these seven models – the regression of CSR engagement on the transactional category *Active Management-by-Exception* – violates requirements two and three (see Exhibit 39), only six regression models describing the leadership-CSR relationship satisfy all three requirements as discussed in section *3.2.2.2.3 Mediation analysis*.

At the first level of aggregation, findings show that transformational and transactional styles of Malaysian leaders significantly and positively influence their company's engagement in CSR activities. First, transformational leadership explains 23.4 percent of the variation in CSR engagement (R^2=.234, *a*=.762, *p*=.001). The coefficient a_{TF} indicates that SMEs' engagement in CSR activities is expected to increase by .762 when transformational leadership is strengthened by one unit. Second, transactional leadership explains only 14.5 percent of the variation in CSR engagement (R^2=.145, *a*=.444, *p*=.013). Its coefficient a_{TA} shows that a more profound transactional leadership style has a lower impact on CSR engagement than a transformational style. In contrast, passive leadership does not have any statistically significant influence on the CSR engagement of their companies.

Looking at the second level of aggregation, the three transformational leadership categories *Idealized Influence Behaviour*, *Inspirational Motivation* and *Individualized Consideration* and the two transactional categories *Contingent Reward* and *Active Management-by-Exception* indicate a significant and positive influence on CSR engagement. The category *Individualized Consideration* predicts the variation in a company's engagement in CSR activities best (R^2=.261, *a* =.498, *p*=.001), followed by *Idealized Influence Behaviour* (R^2=.247, *a* =.679, *p*=.001) and *Inspirational Motivation* (R^2=.104, *a* =.447, *p*=.037). In addition, both transactional categories show significant and positive coefficients. While *Contingent Reward* explains 10.5 percent of the variation in CSR engagement (R^2=.105, *a* =.398, *p*=.036), *Active Management-by-Exception* explains 9.2 percent (R^2=.092, *a*=.238, *p*=.050). Hence, the explanatory power of models covering transactional leadership categories is far smaller than those models covering transformational leadership categories.

Step 3 – Direct effect of leadership on innovation / 1st requirement for significance (II). The third equation is run to predict organizational innovation from both leadership and CSR engagement, as described by $Y = i_3 + c'X + bMe + e_{Y2}$. The author analysed

[204] These 12 models comprise 3 models at aggregation level I which correspond to transformational, transactional and passive leadership styles and 9 models at aggregation level II which correspond to the respective leadership categories.

those regression models which fulfil the first requirements of significant *a* and *b* coefficients. These models predict between 49.2 and 23.0 percent of the variation in various forms of organizational innovation. In fact, 49.2 percent of the variation in overall organizational innovation is described by the regression models which include the transformational leadership category *Idealized Influence Behaviour* and the potential mediator CSR engagement (R^2=.492, *b*=.15.808, *p*=.000). By contrast, the regression model which covers *Idealized Influence Behaviour* and CSR engagement predicts only 23.0 percent of the variation in structural organizational innovation (R^2=.230, *b*=4.291, *p*=.008).

The PROCESS output indicates that all 48 mediation models show significant path coefficients *b* based on *t*-tests. As half of the models show serious violations of significance requirements, the author considered a total of 24 models[205] in further research. At the first level of aggregation, the mediator CSR engagement has a positive impact on overall organizational innovation (b_{TF}=17.108/b_{TA}=17.961), procedural organizational innovation (b_{TF}=4.781/ b_{TA}=5.768), structural organizational innovation (b_{TF}=4.778/b_{TA}=4.760) and inter-organizational innovation (b_{TF}=7.549/b_{TA}=7.433) controlling for transformational as well as transactional leadership.

Looking at the second level of aggregation, CSR engagement statistically significantly and positively influences overall organizational innovation (b_{IIB}=15.808/b_{IC}=18.145/ b_{IM}=16.576), procedural organizational innovation (b_{IIB}=4.940/b_{IC}=4.732/$_{b_{IM}}$=5.014), structural organizational innovation (b_{IIB}=4.291/b_{IC}=5.021/b_{IM}=4.900) and inter-organizational innovation (b_{IIB}=6.578/b_{IC}=8.392/b_{IM}=6.662) controlling for the transformational leadership categories *Idealized Influence Behaviour, Individualized Consideration* or *Inspirational Motivation.* In addition, overall organizational innovation (b_{CR}=17.645), procedural organizational innovation (b_{CR}=5.606), structural organizational innovation (b_{CR}=4.746) as well as inter-organizational innovation (b_{CR}=7.293) are significantly and positively influenced by CSR engagement when controlling for the transactional leadership category *Contingent Reward*.

As already explained in section *3.2.2.2.3 Mediation analysis*, the significance of the coefficient *c'* is not an essential requirement for identifying a significant mediation effect. With the exception of three models, which do not satisfy crucial assumptions, all mediation models indicate insignificant *c'* coefficients based on *t*-tests. Hence, all the leadership behaviours covered by all three leadership styles show no significant

[205] These 24 models include 8 models at aggregation level I – which cover transformational and transactional leadership styles – and 16 models at aggregation level II – which include the categories *IIB*, *IM*, *IC* and *CR*.

direct effects on the various forms of organizational innovation, when controlling for CSR engagement. According to Zhao and colleagues (2010), this points to an *indirect-only mediation*, which is consistent with the typology of *full mediation* of Baron and Kenny (1986). In other words, leadership significantly affects CSR engagement but does not affect organizational innovation directly when controlling for the indirect effect. Based on the assumption that *ab* is significant – which is confirmed within the subsequent step – *indirect-only mediation* means that CSR engagement clearly acts as a mediator in all 24 models (Zhao et al., 2010).

		1st Requirement (I)		1st Requirement (II)			2nd and 3rd Requirement				
		R^2	a	R^2	c'	b	a*b	Z	P	Boot $_{LLCI}$	Boot $_{ULCI}$
Aggregation level I											
OI	TF	.234	.762 (.001)	.476	1.798 (.738)	17.108 (.000)	13.030	2.837	.005	6.243	22.636
OI1		.234	.762 (.001)	.357	2.358 (.288)	4.781 (.001)	3.641	2.403	.016	1.307	7.269
OI2		.234	.762 (.001)	.272	1.157 (.638)	4.778 (.004)	3.639	2.261	.024	1.241	6.908
OI3		.234	.762 (.001)	.433	-1.717 (.467)	7.549 (.000)	5.750	2.843	.005	2.662	10.261
Aggregation level II											
OI	IIB	.247	.679 (.001)	.492	5.100 (.274)	15.808 (.000)	10.730	2.826	.005	3.821	21.079
	IM	.104	.447 (.037)	.492	4.643 (.284)	16.576 (.000)	7.415	1.974	.048	1.834	14.910
	IC	.261	.498 (.001)	.477	-.927 (.784)	18.145 (.000)	9.038	3.022	.003	4.034	16.403
OI1	IIB	.247	.679 (.001)	.349	1.556 (.424)	4.940 (.001)	3.353	2.469	.014	1.076	7.115
	IM	.104	.447 (.037)	.361	2.101 (.243)	5.014 (.000)	2.243	1.845	.065	.583	4.869
	IC	.261	.498 (.001)	.357	1.476 (.2919	4.732 (.002)	2.357	2.451	.014	.744	5.223
OI2	IIB	.247	.679 (.001)	.230	2.320 (.278)	4.291 (.008)	2.913	2.154	.031	.659	6.687
	IM	.104	.447 (.037)	.272	.999 (.617)	4.900 (.002)	2.192	1.773	.076	.646	4.577
	IC	.261	.498 (.001)	.268	.214 (.891)	5.021 (.003)	2.501	2.377	.018	.908	5.252
OI3	IIB	.247	.679 (.001)	.431	1.225 (.554)	6.578 (.000)	4.465	2.749	.006	1.468	9.033
	IM	.104	.447 (.037)	.435	1.542 (.421)	6.662 (.000)	2.980	1.940	.052	.597	6.787
	IC	.261	.498 (.001)	.471	-2.616 (.074)	8.392 (.000)	4.180	3.112	.002	1.940	7.399

Exhibit 39: Extract of PROCESS output – Transformational leadership
Source: Author's depiction, 2015

Step 4 – Indirect effect of leadership on innovation / 2nd & 3rd requirement for significance. In the last step, the author analysed if the mediator effect is statistically significant. From overall 48 models a total of 19 indirect *ab* effects have *p*-values which are smaller than .05 and hence indicate significant mediator effects. Even though five additional models fall marginally short of being significant, bootstrapping confidence intervals represent acceptable values. Due to the shortfalls of the normal theory approach, the author focused on results of bootstrapped intervals in cases where the *p*-values fell short of significance, which clearly demonstrate significant indirect effects. Hence, the author uses bootstrapping as a control tool to either confirm significant mediation effects detected by the first significance test, or to evaluate those models which are slightly above the significance benchmarks of the Sobel test.

Summing up these results, the author found that the indirect effects of transformational and transactional leadership on overall, procedural, structural and inter-organizational innovation through CSR engagement are significant. Also at the second level of aggregation, the engagement of SMEs in CSR activities is significantly functioning as a mediator of the impact of the transformational leadership categories *Idealized Influence Behaviour*, *Inspirational Motivation* and *Individualized Consideration* and the transactional leadership category *Contingent Reward* on various forms of organizational innovation. By contrast, the author identified no significant mediation effect of CSR engagement on the relationship between passive leadership categories and organizational innovation according to the Sobel test as well as on the basis of the bootstrapping method.

Effect size. Finally, the author analysed the effect size for mediation effects using the method from Preacher and Kelley (2011), who establish the kappa-squared index κ^2. PROCESS outputs show that – at the first level of aggregation – the effect size κ^2 is between .1823 and .3427, which means that the indirect effect is about 18.23 to 34.27 percent of its maximum possible value. In other words, the indirect effect of transformational leadership on overall organizational innovation through CSR engagement is around 32.83 of the maximum value that it could have been. Compared to Cohen's (1988) criteria – which were described in section *3.2.2.2.3 Mediation analysis* – this effect is fairly large regarding the relationship between transformational and transactional leadership and overall organizational innovation and inter-organizational innovation. The mediation effect on the impact of both leadership styles on procedural and structural organizational innovation can be described as being

medium. In addition, the bootstrapping confidence intervals[206] provide evidence for a medium to strong mediation effect. In fact, these intervals do not contain zero and include the relevant benchmarks .09 or rather .25 (Cohen, 1988).

At the second level of aggregation, the effects size κ^2 is between .1583 and .4086 with bootstrapped confidence intervals between .0662 and .2223 (lower and upper limits). Again, indirect effects of the transformational leadership categories *Idealized Influence Behaviour* and *Individualized Consideration* on overall and inter-organizational innovation through CSR engagement are between 30.00 and 40.86 percent of their maximum possible values. These are fairly large size effects. By contrast, the mediation effects regarding the relationship between the transformational leadership category *Inspirational Motivation* and the various forms of organizational innovation as well as those regarding the relationship between transformational leadership and procedural and structural organizational innovation are medium sized, ranging from 16.30 to 24.96 percent. In addition, the author identified a medium size effect for the indirect effect of the transactional leadership category *Contingent Reward* on overall, procedural, structural and inter-organizational innovation through the engagement of SMEs in CSR activities.

As Zhao and colleagues (2010) indicate, if results show an *indirect-only mediation*, it is unlikely that additional relevant mediators have been omitted. When controlling for CSR engagement, this means that the impact of transformational and transactional leadership behaviours are effective solely through their influence on the mediator CSR engagement. First, transactional leadership only generates a significant influence on a company's level of organizational innovation through the corporate engagement in CSR activities. Hence, it can be said that through the engagement of their companies in CSR activities, transactional leaders of Malaysian SMEs are able to have a significant indirect impact on overall, procedural, structural and inter-organizational innovation. In the sample of Malaysian SMEs (*S2*), transactional leaders who do not follow any CSR activity do not have any significant impact on organizational innovation. Second, transformational leaders can benefit from the CSR engagement of their companies, as it strengthens their impact on overall and inter-organizational innovation. Looking at the second level of aggregation, the influence of the transformational categories *Inspirational Motivation* and *Individualized Consideration* on various forms of organizational innovation are, at times, substantially improved through the engagement of their companies in CSR activities. In contrast, the total

[206] Intervals range from .0353/.3782 (*TA* and *OI2*) to .1735/.5040 (*TF* and *OI3*).

effect of *Idealized Influence Behaviour* is higher when CSR engagement is not considered in the models. Therefore, the fourth hypothesis H_4 – which assumes that the relationship between transformational leadership and organizational innovation is mediated by CSR engagement, such that the impact of transformational leadership on organizational innovation is strengthened through CSR engagement – is mainly supported, with the exception of the category *Idealized Influence Behaviour*.

4.3.2.3 Significant effects – An overview

Exhibit 40 summarizes results of moderation and mediation analysis, which answer research question Q_3. Findings are categorised according to specified hypotheses of the research model.

	Research question Q_3 and hypotheses	Verified or rejected	Significant effect	Remarks
Q_3	How do contextual conditions moderate and/or mediate the effectiveness of leadership on organizational innovation?			
H_2	The impact of transformational leadership on organizational innovation is moderated by subordinates' professionalism, such that subordinates' professionalism substitutes for transformational leadership which itself is less effective at higher levels of subordinates' professionalism.	✓*	✓	* The moderation effect is limited to the impact of the transformational leadership category *Individualized Consideration* on overall organizational innovation.
H_3	The impact of transformational leadership on organizational innovation is moderated by empowerment climate, so that higher levels of empowerment climate substitute for transformational leadership and make it less effective.	✗	✓	The impacts of transformational leadership and its category *Intellectual Stimulation* are in fact positively moderated by empowerment climate, even turning the negative influence of *Intellectual Stimulation* positive at higher levels of empowerment.
H_4	The relationship between transformational leadership and organizational innovation is mediated by CSR engagement, such that the impact of transformational leadership is strengthened through CSR engagement.	✓**	✓	** The analysis identifies an exception. In fact, the total effect of *Idealized Influence Behaviour* is higher when CSR engagement is not considered.
H_5	The impact of transformational leadership on organizational innovation is moderated by environmental dynamism, such that the effectiveness of transformational leadership is strengthened when there is a high level of environmental dynamism.	✗	✗***	*** One moderation model – the influence of *Intellectual Stimulation* on procedural organizational innovation – only slightly exceeds significance benchmarks. This effect weakens the positive impact of leadership.
H_6	The impact of transformational leadership on organizational innovation is moderated by external communication, such that the effectiveness of transformational leadership is strengthened by more comprehensive external communication.	✗	✓	The moderator reduces the effectivenss of transformational leadership and its category *Individualized Consideration* on inter-organizational innovation. The relationship turns negative at high levels of the moderator.

Exhibit 40: Overview hypotheses H_2-H_6 and results
Source: Author's depiction, 2015

5 Discussion, limitations and future research

5.1 Discussion of main research results

Based on the threefold purpose of the research model, chapter five is made up of three sections. Relating to the respective research questions, these sections include a review and discussion of the main research results. Thereby, the author explains how the dissertation contributes to existing knowledge, demonstrates the relevance of the key findings for academic research, and draws implications for the companies themselves.

Using a sample of 42 SMEs – which covers 42 leaders and 52 subordinates, all operating in the ICT sector of Kuala Lumpur, Malaysia – and three representatives of local institutions, the author analysed (1) *predominant leadership behaviours* of Malaysian leaders, (2) *organizational innovation*, its emergence and its support through specific and aggregated leadership behaviours and (3) the *moderation and mediation impact* of contextual factors on the effectiveness of these leadership behaviours in terms of enhanced organizational innovation. Even though the specified hypotheses focus on transformational leadership, the author additionally evaluated transactional and passive leadership behaviours, their influence on various forms of organizational innovation and their effectiveness when contextual factors are considered. Through a multiple triangulated research design the author improved the validity and reliability of the dissertation project and strengthened the quality of its results. In particular, the author considered multiple perspectives and employed qualitative and quantitative research methods in order to gain a deeper understanding of the model variables. Quantitative analysis (of questionnaire data) was conducted mainly to test the hypotheses of the research model. Qualitative analysis (of interview data) enabled the author to confirm the relevance of the research model (regarding the key relationship between leadership and organizational innovation and the consideration of the respective contextual variables *subordinates' professionalism*, *empowerment climate* and *environmental dynamism*). Through her analysis of the interview data, the author also gained better insights into the predominant leadership behaviours in the respective companies and learnt more about the importance of CSR activities at the level of Malaysian SMEs.

5.1.1 Predominant behaviours of Malaysian leaders

Even though transformational leadership theory dominates huge areas of leadership research, there are only a few empirical studies which confirm its relevance within the Malaysian setting. Moreover, existing research has produced conflicting results and

mainly involved samples of larger companies and state institutions. However, the research results of the quantitative analysis of MLQ data confirmed the main assumption of the research model that behaviours of Malaysian SME leaders are more transformational than transactional, whereby *Intellectual Stimulation* was identified – by questionnaire respondents – as the most pronounced transformational leadership category. By contrast, Malaysian leaders display hardly any passive leadership behaviours. The qualitative analysis of interview data supported these results and confirmed the relevance of the transformational leadership concept of Avolio and Bass (2004) within the Malaysian setting. In contrast to respondents of questionnaires, interview partners indicated that they demonstrate a different category within transformational leadership – namely *Individualized Consideration* – most extensively. The dominance of *Individualized Consideration* might result from the multi-ethnic setting of Malaysia, which requires an individualized leadership approach in order to consider the specific needs and aspirations that derive from different ethnic backgrounds.

Through an extensive qualitative analysis of the interview data, which went beyond a mere categorisation of leadership behaviours on the basis of existing frameworks, the author identified additional transformational leadership behaviours. The resulting findings enlarge the traditional concept of Avolio and Bass (2004) by adding further transformational behaviours – which are categorized by *openness*, *engagement*, *change*, *unity*, *strategy* and *uniqueness* – to the existing MLQ structure. These findings either are integrated into existing MLQ groups of leadership behaviours to better describe particular categories of transformational leadership, or are added to existing leadership categories as subsequent or preliminary categories. The latter include specific leadership behaviours which are required for the traditional leadership categories to fully unfold. An example for such a preliminary category is the *unique personality* of transformational leaders – characterized by inborn social skills, fundamental and deeply-rooted values and a balanced and patient mind. These attributes are needed for the development of various behaviours within the transformational category *Idealized Influence*.

In addition, the author found that transformational leaders play a very specific role in the Malaysian setting; one which clearly differs from the role of Western leaders. The various characteristics of the Malaysian economy and society – involving state policies, persistent income and opportunity disparities and preferential treatment based on ethnicity – represent, at times, a difficult environment for transformational leaders

and their individualized and supportive leadership approach. At the same time, traditional attitudes and values – which are taught to Malaysians from their early schooling years – represent challenges for transformational leaders, their abilities, assertiveness and persuasiveness. Indeed, the transformational approach of Malaysian leaders and the typical attitudes of their subordinates towards relationships with their superiors – which are mainly characterised by *power distance* – are two completely contradicting concepts. Therefore, Malaysian leaders who follow a transformational leadership style face additional requirements – such as having to change their subordinates' idea of relationships with their superiors – if they are to be effective and successful. In fact, leaders have to teach their subordinates to speak up, to question habits and decisions and to bring in their own ideas. In this way, Malaysian leaders can support their subordinates in developing critical thinking abilities, open attitudes, as well as self-confidence, skills and personalities.

This additional task of transformational leaders in Malaysia is not typical for Western countries and societies, which are mainly characterized by individualism, freedom of expression, the delegation of authority and subordinates' participation. The traditional transformational leadership approach is hence challenged within the Malaysian setting. It should be noted that transformational leadership is a relatively new concept in Malaysia, which has to prevail over ingrained cultural and ethnic habits. Leaders try to implement this transformational approach through an innovative environment whereby subordinates are supported to develop and 'grow beyond themselves'.

Conclusion 1

Leaders display more transformational than transactional behaviours in the sample of Malaysian ICT SMEs. Their behaviours reflect the traditional leadership concept of Avolio and Bass (2004) and supplement the existing MLQ structure with additional leadership behaviours and categories. However, the traditional transformational leadership approach is challenged within the Malaysian setting, due to its specific characteristics. Malaysian transformational leaders play a very specific role in the Malaysian society which is different from Western transformational leaders.

5.1.2 Leadership as enabler of organizational innovation

Despite today's comprehensive literature on innovation, there is only limited empirical research focusing on an *unaltered* form of organizational innovation and the way it is influenced by transformational leadership behaviours. At the level of Malaysian SMEs, these shortcomings become all the more obvious. In addressing these under-researched topics, the dissertation identifies the crucial role of innovation as an integrated part of organizational life and as the main trigger of several performance

indicators, such as productivity and competitiveness. This study thus strengthens the results of existing research in that it confirms the importance of transformational leadership behaviours as a driving force for organizational innovation. To the best of the author's knowledge this study is the first to deal with the impact of leadership behaviours – demonstrated at different levels of aggregation – on various forms of organizational innovation in their unaltered form at the level of Malaysian ICT SMEs. Moreover, the dissertation is the first which analyses how leadership behaviours influence the specific sub-types of procedural, structural and inter-organizational innovation. Besides their academic contribution, the research results are of high practical relevance for the leaders of Malaysian ICT SMEs as they provide information as to how organizational innovation might be influenced through specific leadership behaviours.

The qualitative analysis of interview data confirms the relevance of this research interest. SME leaders and institutional representatives stressed the crucial importance of leadership for triggering organizational innovation. Without being explicitly asked, respondents described transformational leadership behaviours as an essential motive force for continuous organizational change, development and innovation. Besides this qualitative analysis, the author employed quantitative research methods – covering linear and logistic regression models – to evaluate the key relationships between leadership behaviours and the various forms of organizational innovation. Research results support the hypothesis that transformational leadership behaviours positively influence organizational innovation.

Positive impact of transformational leadership. Compared to transactional and passive leadership behaviours, the transformational behaviours of Malaysian leaders have the strongest positive impact on the specific sub-types of procedural, structural and inter-organizational innovation as well as on their aggregated forms. Findings reveal that overall organizational innovation is most intensively triggered by the transformational leadership category *Idealized Influence Behaviour* and its specific behaviours. Hence, those leaders who talk about their most important values, who specify the importance of having a strong sense of purpose and a collective sense of mission and who consider the moral and ethical consequences of their decisions are able to significantly improve the overall level of organizational innovation in their respective companies. Compared to their transactional and passive counterparts, transformational leadership behaviours and categories influence the specific subtypes of procedural, structural and inter-organizational innovation and their aggregated forms the most.

First, transformational leadership behaviours have a positive impact on all the three sub-types of *procedural organizational innovation*. The introduction of new methods of organizing knowledge management – which is the most frequently introduced sub-type of organizational innovation – is the most positively influenced. In addition, the aggregated forms of procedural organizational innovation is also most strongly influenced by transformational leadership. Of the five categories of transformational leadership, only *Idealized Influence Attribute* appears to not play a significant role.

Second, when the sub-types of structural organizational innovation are considered, the positive influence of transformational leadership behaviours is limited to one specific sub-type, namely the introduction of new methods of organizing internal education and training systems. This sub-type is intensively triggered by three transformational leadership categories, covering *Idealized Influence Attribute*, *Intellectual Stimulation* and *Individualized Consideration.* The aggregated form of structural organizational innovation is also positively influenced by four of five categories of transformational leadership, whereby *Idealized Influence Behaviour* explains its variation best. When considering transformational and transactional leadership within one model, the transformational leadership style has the stronger positive impact on structural organizational innovation. The significant influence on various forms of organizational innovation of the category *Idealized Influence Behaviour* is outstanding when analysing different leadership categories simultaneously through multiple linear regression models.

Compared to the sub-types of procedural and structural organizational innovation – most of which are positively influenced by all aggregation levels of transformational leadership – the sub-types of *inter-organizational innovation* are only triggered by the most disaggregated transformational leadership behaviours. These specific behaviours – which are covered by the categories *Idealized Influence Behaviour*, *Idealized Influence Attribute* and *Inspirational Motivation* – have a positive impact on two forms of inter-organizational innovation, in particular on the introduction of new methods of organizing external relations with other firms or public-institutions and on the introduction of new methods of organizing networks or alliances. The latter was classified as the second mostly introduced sub-type of organizational innovation by the respondents of questionnaires. In addition, the aggregated form of inter-organizational innovation is positively influenced by transformational leadership and three of its categories *Idealized Influence Behaviour, Inspirational Motivation* and *Intellectual*

Stimulation. Findings reveal that the transformational leadership category *Idealized Influence Behaviour* is again highly important in stimulating inter-organizational innovation.

Negative impact of transformational leadership. In contrast to the generally positive impact of transformational leadership on aggregated forms of organizational innovation, the findings of binary logistic regression analysis show that transformational leadership behaviours also slightly negatively influence certain sub-types of organizational innovation. However, this negative influence only relates to a few transformational leadership categories. Thus, two forms of structural organizational innovation – new methods of organizing the integration or separation of departments and the centralization or decentralization of functions and new methods of organizing hierarchical levels or divisional structures of business functions – are negatively impacted by the categories *Individualized Consideration* and *Intellectual Stimulation*. Also, one sub-type of inter-organizational innovation – the introduction of new methods of organizing external outsourcing relations – is negatively influenced by a specific behaviour of the category *Individualized Consideration.* This negative influence of certain transformational leadership behaviours might be the reason for the as yet only limited introduction of these specific sub-types of organizational innovation within the sample of Malaysian SMEs.

Influence of other leadership behaviours. Besides the positive effects of transformational leadership behaviours, the author found that aggregated forms of organizational innovation and their specific sub-types are also significantly influenced by transactional and passive leadership behaviours, but to a far lesser extent than by transformational leadership behaviours.

First, overall organizational innovation is only influenced by the transactional leadership category *Contingent Reward*. Looking at various forms of organizational innovation, the author found that transactional behaviours positively influence two sub-types of procedural organizational innovation, in particular the introduction of new methods of organizing supply chain management and new methods for organizing quality management. This impact of transactional leadership on procedural organizational innovation is not only positive. Indeed, *Contingent Reward* and two of its specific behaviours negatively influence one sub-type of procedural organizational innovation – new methods of organizing supply chain management. Looking at the aggregated form of structural organizational innovation, findings reveal that both

transactional behaviour categories – *Contingent Reward* and *Active Management-by-Exception* – have a significant and positive influence. Additionally, the author found that *Contingent Reward* and one of its specific behaviours also have a positive impact on the structural organizational innovation sub-type new methods of organizing internal education and training systems. By contrast, one sub-type of structural organizational innovation – new methods of organizing the integration or separation of departments and the centralization or decentralization of function – is negatively influenced by a specific behaviour of the transactional category *Contingent Reward*. Results show that transactional leadership has hardly any significant impact on inter-organizational innovation. Indeed, only one specific behaviour of the category *Active Management-by-Exception* has a positive effect. Second, the passive leadership category *Laissez Faire* has a significant and negative impact on overall and procedural organizational innovation. While aggregated forms of structural and inter-organizational innovation are not triggered by passive leadership behaviours, the sub-type new methods of organizing networks or alliances is strongly and negatively impacted by passive leadership behaviours at all aggregation levels.

Conclusion 2

Findings confirm that transformational leadership behaviours positively influence overall, procedural, structural and inter-organizational innovation. Compared to transactional and passive behaviours, transformational leadership behaviours – in particular those covered by the category *Idealized Influence Behaviour* – have the greatest impact on various forms of organizational innovation. This positive power is most intensely demonstrated in the sub-type of procedural organizational innovation new methods of organizing knowledge management as well as in the sub-type of structural organizational innovation new methods of organizing internal education and training systems. Thus, research results reveal that transformational leadership triggers mainly those specific sub-types of organizational innovation which follow an educational and developmental approach. By contrast, the negative impact of transformational leadership behaviours is limited to certain sub-types of structural and inter-organizational innovation which are only rarely introduced at the level of Malaysian SMEs. Besides, the author found that transactional and passive leadership behaviours also significantly influence organizational innovation. Passive leadership behaviours only demonstrate a negative impact – especially on inter-organizational innovation – but transactional leadership behaviours show a positive impact on overall, procedural, structural and inter-organizational innovation.

Malaysian leaders could improve organizational innovation through focusing on specific leadership behaviours which are mainly classified as transformational. As many of these behaviours are expected to arise from inborn social competences, one might not be able to imitate these behaviours exactly. However, leaders should at least try to avoid passive behaviours in order not to hinder the further improvement of organizational innovation, especially with external partners.

5.1.3 Effectiveness of leadership

Up to this point, research results confirmed the predominance of transformational leadership behaviours at the level of Malaysian SMEs and their significant and positive influence on overall, procedural, structural and inter-organizational innovation. In the next step, the author analysed contextual variables – which are acting from within and outside the boundaries of the companies studied – and their influence on this positive impact of transformational leadership. Thereby, findings improve the understanding as to *when* specific contextual variables strengthen or reduce the effectiveness of transformational leadership to enhance organizational innovation (moderation models), and *how* transformational leadership has an impact on organizational innovation (mediation models). As existing literature does not provide a commonly accepted set of contextual factors which have to be considered when studying the effectiveness of transformational leadership, the author based the selection of suitable contextual variables on a broad review of existing literature as well as their topicality. The author thus addresses significant gaps in existing research and substantially improves the understanding of the relationship between transformational leadership and organizational innovation at the level of Malaysian SMEs. To the best of the author's knowledge, the present study is the first that empirically evaluates *subordinates' professionalism* as a potential moderator and *CSR engagement* as a potential mediator of the relationship between transformational leadership and organizational innovation at the level of Malaysian SMEs. Regarding the potential moderators – *empowerment climate*, *environmental dynamism* and *external communication* – the study complements existing literature which is, as yet, limited and has produced different findings.

5.1.3.1 The impact of internal and external moderators

Findings of moderation analysis reveal that – with the exception of *environmental dynamism* – all contextual variables considered have a significant impact on the effectiveness of transformational leadership to enhance organizational innovation. While *empowerment climate* strengthens the positive impact of transformational leadership, *subordinates' professionalism* and *external communication* substitutes for transformational leadership which itself is less effective at higher levels of these two contextual variables. High levels of *external communication* even turn the positive influence of transformational leadership into a negative one.

First, research results show that the internal contextual variable *subordinates' professionalism* signficantly moderates the positive influence on overall organizational

innovation of the transformational leadership category *Individualized Consideration*. This moderation effect substitutes for *Individualized Consideration*, whereby the effectiveness of *Individualized Consideration* is reduced at higher levels of subordinates' professionalism and even turns negative at medium levels of subordinates' professionalism. Thus, the author found support for the findings of Nübold and colleagues (2013) and Rank and colleagues (2009). Descriptive statistics show that the sample displays a balanced level of subordinates' professionalism which is slightly higher than average. In other words, subordinates are aware of their strengths and potential, have at least completed the post-secondary education level, occasionally develop their skills and abilities, and also network with their external environment with a medium intensity. Hence, sampled subordinates display a medium level of professionalism, which is expected to significantly decrease the effectiveness of transformational leadership, in particular of its category *Individualized Consideration*.

Second, the author found a significant moderation effect of the internal contextual variable *empowerment climate*. However, this impact does not reduce the positive impact of transformational leadership on organizational innovation – as had been initially assumed by the author – but rather strengthens the positive impact of transformational leadership. Specifically, this moderator positively influences the effectiveness of transformational leadership on procedural organizational innovation. In addition, high levels of empowerment climate turn the negative influence of *Intellectual Stimulation* on overall and procedural organizational innovation into a positive one. The positive power of transformational leadership to change organizational innovation is hence, at times, strongly enhanced. Therefore, findings do not support the research results of Si and Wei (2012) and of Jung and colleagues (2008) who found that empowerment climate negatively moderates the effectiveness of transformational leadership. Descriptive statistics reveal that subordinates of Malaysian SMEs experience the level of their empowerment climate as being quite high. Hence, the positive impact of transformational leadership and its category *Intellectual Stimulation* on procedural and overall organizational innovation is positively moderated by this high level of empowerment climate.

Third, research results show that the external contextual variable *environmental dynamism*[207] does not significantly moderate the effectiveness of transformational leadership regarding enhanced organizational innovation. Thereby, the author found

[207] SME leaders and their subordinates perceive their economic, social, political and technological environment as being moderately dynamic.

support for the findings of Ussahawanitchakit (2011), who was also not able to confirm a significant moderating impact from environmental dynamism. However, it should be noted that one moderation model only falls marginally short of being significant. Given this, the author cautiously suggests that environmental dynamism weakens the positive impact of *Intellectual Stimulation* on procedural organizational innovation. Hence, the findings of Purvee and Enkhtuvshin (2014) are not supported by the research results of this dissertation.

Fourth, research results do not support the findings of Gumusluoglu and Ilsev (2009a), as the author found that the contextual factor *external communication* negatively moderates the effectiveness of transformational leadership. Indeed, the moderator reduces the impact of transformational leadership on inter-organizational innovation. When SMEs and their leaders considerably increase their relationships with external partners, the influence of transformational leadership on inter-organizational innovation even turns negative. By contrast, external communication does not significantly moderate the relationships between the categories of transformational leadership and the various forms of organizational innovation. It should be noted that only one moderation model at this level of aggregation – which focuses on the impact of *Individualized Consideration* on inter-organizational innovation – is slightly above the threshold for significance. Looking at descriptive statistics, the author found that external contacts and networks of both companies and their leaders, are fairly strongly developed in the sample. This might partially explain the relatively low influence of transformational leadership on inter-organizational innovation – compared to other forms of organizational innovation – and the insignificant[208] or negative influence of *Individualized Consideration* on one sub-type of inter-organizational innovation, namely the introduction of new methods of organizing outsourcing relations.

In contrast to the other moderators of the research model, external communication, in addition to influencing the effectiveness of transformational leadership behaviours, significantly influences the effectiveness of transactional and passive leadership behaviours. In fact, external communication moderates the impact of transactional leadership on overall, procedural and inter-organizational innovation. Thereby, the effectiveness of transactional leadership on procedural and inter-organizational innovation substantially decreases at higher levels of external communication. The impact of transactional leadership on procedural organizational innovation even turns

[208] SLR analysis shows that *IC* does not have a significant impact on inter-organizational innovation. Logistic regression analysis indicates that specific behaviours of the categories *IIA*, *IIB* and *IM* have a positive influence on inter-organizational innovation. *IC* shows a negative impact, albeit marginally below the threshold for significance.

negative at high levels of the moderator. In addition, external communication moderates the influence of passive leadership on inter-organizational innovation. At higher levels of external communication the otherwise negative influence of passive leadership turns positive.

5.1.3.2 The mediation effect of CSR engagement

To the best of the author's knowledge, this dissertation is the first which analyses the mediation effect of SMEs' engagement in CSR activities on the relationship between transformational leadership and organizational innovation. Findings of the dissertation support existing research which focuses on the positive impact of transformational leadership on CSR activities (e.g. Dimitrov, 2015; Jha, 2013).

Descriptive statistics show that the majority of participating subordinates are aware of the concept CSR and the current initiatives of their companies. In addition, SME leaders rate their company's engagement in these activities as being very important. They rank the relative importance of CSR responsibilities in the same order as did Malaysian consumers within a study conducted by Rahim and colleagues (2011). Malaysian companies and their consumers attach the greatest importance to economic responsibilities, followed by legal and ethic obligations. Philanthropic responsibilities are seen as least important. When considering the response of companies, this is partly because of the characteristics – such as available resources – of the SMEs questioned.

In addition, qualitative research results reveal that most Malaysian SMEs seem to act in a responsible manner, even though they are not as effective as they could be due to their specific characteristics, such as limited available resources. To some extent, SMEs strive for larger marketing effects and improved image and brand-building through their engagement in CSR activities. In this respect, companies tent to initiate projects with no *real* need as a result of pressures from markets and consumers. Interview partners described CSR at the level of Malaysian SMEs as a platform for establishing and maintaining new partnerships and as a tool for efficiently using natural resources, optimising the individual offering, developing human capital, improving workplaces and working conditions and showing their appreciation of subordinates' efforts. Even though philanthropic projects were rated as less important in their responses to questionnaires, SME leaders referred to several of their CSR engagements, including those for supporting the education and career opportunities of underprivileged children.

Findings of mediation analysis show that the engagement of SMEs in CSR activities functions significantly as a mediator of the impact of transformational and transactional leadership on the various forms of organizational innovation. First, transformational leadership positively influences the CSR engagement of SMEs, whereby the impact of *Idealized Influence Behaviour* is strongest. Once activated, CSR engagement positively influences overall, procedural, structural and inter-organizational innovation, controlling for transformational leadership and its categories *Influence Behaviour*, *Inspirational Motivation* and *Individualised Consideration.* CSR engagement has the greatest impact on overall and inter-organizational innovation, controlling for the aggregated form of transformational leadership and its category *Individualized Consideration*. Second, transactional leadership explains variations in CSR engagement to a lesser extent than does transformational leadership. However, the influence of transactional behaviours on CSR engagement is both significant and positive. Through CSR engagement, transactional leaders are able to positively influence all forms of organizational innovation, whereby inter-organizational innovation is most intensively influenced, controlling for transactional leadership and its category *Contingent Reward*.

Research results point to a so-called *indirect-only mediation* which indicates that transformational and transactional leadership does *not* directly influence organizational innovation when controlling for CSR engagement. Hence, leadership behaviours influence organizational innovation solely through their impact on the mediator CSR engagement as soon as these activities have been initiated by the respective companies. With the exception of *Idealized Influence Behaviour*, the positive impact of transformational leadership is, at times, substantially improved through engagement in CSR activities. Regarding the transactional behaviours of Malaysian leaders, the CSR mediator has a pivotal role. Indeed, transactional leadership and its category *Contingent Reward* only have the power to significantly influence organizational innovation through their companies' engagement in CSR activities.

Conclusion 3

High levels of *subordinates' professionalism* substitute for transformational leadership. Specific transformational behaviours (*Individualized Consideration*), which might involve spending time for coaching and developing subordinates strengths, only slightly influence overall organizational innovation when subordinates are well educated, undertake ongoing training and are good networkers.

Empowerment climate positively moderates the effectiveness of transformational leadership and its category *Intellectual Stimulation* improving overall and procedural organizational innovation. The impact of transformational leaders – who suggest new ways of completing assignments and get subordinates to look at problems from many different angles – is strengthened when subordinates perceive their empowerment as being high.

External communication negatively moderates the effectiveness of transformational leadership on inter-organizational innovation, whereas high levels of the moderator turn its influence negative. The moderator also significantly affects the impact of transactional and passive leadership styles and their respective behaviour categories.

Stimulated by transformational leadership, *CSR engagement* positively influences all forms of organizational innovation, when controlled for transformational leadership and its categories *Influence Behaviour*, *Inspirational Motivation* and *Individualised Consideration*. Inter-organizational innovation is influenced the most. The impact of transformational leadership and its categories *Inspirational Motivation* and *Individualized Consideration* is substantially improved through the CSR mediator. Moreover, transactional leadership behaviours only have the power to influence organizational innovation significantly through CSR activities. As leadership does not have a direct influence on organizational innovation when the mediator is considered, research results point to a so-called *indirect-only mediation*.

5.2 Research limitations and future research directions

The dissertation has several limitations arising from the specific sample size, the characteristics of sampled companies – the sector in which they are operating and the geographical region where they are located – and the pre-defined content of the interviews. Given these research limitations, the author considers future research directions, which would improve an understanding of the field, and suggests various ways in which the research limitations of this dissertation could be overcome.

Some limitations result from the relatively small sample size, which is a consequence of the time-constrained research stage in Kuala Lumpur and the difficulty in arranging meetings in advance by phone. However, the sample fulfilled the purpose of the dissertation, which is to draw conclusions about the relationship between *individual* leadership styles, categories and behaviours and the various forms of organizational innovation, as well as their moderation and mediation by *individual* contextual factors.

First, the qualitative analysis is based on a limited number of interviews as well as on the responses of SME leaders and institutional representatives only. While 20 SME leaders and 3 institutional representatives participated in interviews and thereby offered more detailed qualitative information, the author did not conduct interviews with the subordinates, who just filled out the questionnaires and thereby provided mainly quantitative data. Second, the participation of at least two subordinates from every company would improve the quality of data. Through this higher participation rate, a more realistic picture of the research field might be established. Third, the relatively small sample size prevents the author from including several moderators and mediators within one model, so that their relative influence might be considered on a simultaneous basis. In the present research project this procedure made little sense, as significant moderation and mediation effects mostly occur in the context of very specific leadership-innovation relationships and generally do not show offsetting impacts.

Another drawback of the research sample is its emphasis on those SMEs which are operating in the ICT sector of Kuala Lumpur. Thereby, the author limited the analysis to a specific sector of the Malaysian economy as well as to a specific region of Malaysia. Even though the author derived these sample characteristics from clear rationales, this sector- and region-specific sample hinders a generalisation of research results.

A further limitation of the dissertation stems from the qualitative data. First, these data were collected through interviews with SME leaders and institutional representatives, whereby subordinates were not considered. Second, interview questions have a clear focus on leadership behaviours and refer to only a few additional variables of the research model. In fact, the author only included two additional questions, one about potential triggers of organizational innovation and one about the engagement of Malaysian SMEs in CSR activities. Through this interview structure the author primarily aimed to collect data about leadership behaviours in order to test the leadership concept of Avolio and Bass (2004) within the Malaysian setting. However, as the author formulated questions in a sufficiently open way, SME leaders and institutional representatives referred to other model variables on their own initiative, whereby the suitability and relevance of the research model was confirmed.

Research results and limitations provide various opportunities whereby subsequent research could follow on from this in a way that might produce more precise results

and might allow for a greater generalization of the conclusions. The sampling of a larger number of SMEs would offer several benefits. Besides increasing the power of statistical testing[209], an increased number of observations would strengthen the quality of the research results and increase the probability of detecting the true effects of leadership behaviours on organizational innovation as well as of potential moderation and mediation effects on various leadership-innovation relationships. Moreover, a combination of the various moderators and mediators within the same model would then be possible and statistically relevant. All these procedures might permit further conclusions beyond those that can be drawn from the present dissertation.

Even though the selection of contextual factors in the research model was based on existing research and its gaps and topicality, future research could focus on additional moderators and mediators. Thereby, the understanding of the relationship between leadership behaviours and organizational innovation could be further deepened and contextual variables with a significant effect could be identified.

Furthermore, findings could be improved by conducting interviews additionally with subordinates. Whereas the author focused on the inputs of SME leaders and institutional representatives, the inclusion of subordinates at the interview stage might generate a more differentiated picture. Future research could also consider a higher number of interview questions and thereby collect more qualitative data on other model variables without mainly focusing on leadership behaviours. In addition, subsequent research might sample more sectors and/or a broader geographical region. One possibility would be to compare predominant leadership behaviours and their impact on organizational innovation within different sectors of the Malaysian economy. Alternatively, data could be collected from a broader regional area within Asia.

Based on research results of moderation analysis, future research might analyse the direct impact of the contextual factor *external communication* on various forms of organizational innovation. Thereby, one could gain a better understanding as to how the contacts and networks of SMEs and their leaders directly – without considering specific leadership behaviours – influence procedural, structural and inter-organizational innovation. Findings might be of high relevance as external

[209] The author computed the sample size in advance of data collection (Hedges and Pigott, 2004) by using the so-called *G*power* program (Faul et al., 2015). As multiple regression models with three predictors achieve a power of .8 by the combination of a medium effect size f^2 of .15 and an error probability of .05 with a sample size of 55, future research could improve this power by increasing the sample size above that in this study.

communication sharply diminishes the effectiveness of transformational leadership. Hence, the business and scientific communities might be interested in how external relationships influence organizational innovation.

The study analysed the predominant leadership behaviours of Malaysian leaders and their impact on various forms of organizational innovation, but future research might evaluate the reasons *why* the transformational leadership style predominates. Explanations which might range from the sector in which the companies are operating to the cultural and ethnic factors within the society.

Finally, the author found that the traditional transformational leadership approach is challenged within the Malaysian setting, due to its specific cultural and ethnic characteristics. In contrast to the dissertation – whereby the author discovered these cultural influences through interviews with SME leaders and institutional representatives – subsequent research might focus on the impacts of the cultural and ethnic characteristics of Malaysia and specifically on the impact of this cultural context on transformational leadership and its relation to organizational innovation. The unique role of Malaysian transformational leaders which differs from the role of transformational leaders in Western countries and societies could thereby be analysed and perhaps better-understood.

5.3 Closing remarks

Existing leadership and innovation research at the level of SMEs and with a focus on the Malaysian setting, the limitations of this research and its, at times, divergent findings build the basis for the present dissertation. The study demonstrates that leadership behaviours of Malaysian leaders are more transformational than transactional. This might be partially due to the specific characteristics of the SMEs. However, the author found that the traditional transformational leadership approach is challenged within the specific setting of Malaysia, due to cultural and ethnic factors.

Research results confirm that leadership behaviours are a crucial tool for stimulating various forms of organizational innovation. Those leaders who display transformational behaviours have the greatest positive influence on procedural, structural and inter-organizational innovation. By contrast, transactional and passive leadership behaviours affect organizational innovation to a lesser extent, with the latter only showing negative impacts. However, the influence of all these leadership

behaviours is reduced and strengthened within different contexts. While *subordinates' professionalism* reduces the effectiveness of specific transformational leadership behaviours, *empowerment climate* strengthens the positive impact, in particular in terms of enhanced procedural organizational innovation. By contrast, extensive external contacts and networks of SMEs and their leaders reduce the effectiveness of transformational leadership, especially regarding inter-organizational innovation. This so-called *external communication* also moderates the positive influence on organizational innovation of transactional and passive leadership behaviours. Finally, the study's findings show that the engagement of Malaysian SMEs in CSR activities at times greatly strengthens the positive impact of transformational leadership. Also, CSR engagement allows transactional Malaysian leaders to influence various forms of organizational innovation, something which does not occur outside this CSR context.

The dissertation provides an agenda for leaders who are active in ICT SMEs in Kuala Lumpur. This agenda includes various recommendations on how to maintain and enhance specific forms and sub-types of procedural, structural and inter-organizational innovation. The dissertation improves the understanding of organizational innovation and leadership at the level of Malaysian SMEs. Besides its relevance for academic research, the dissertation supports the development of ICT SMEs in Malaysia suggesting ways in which organizational innovation might be supported. In turn, this might further enhance the competitiveness and productivity of the respective companies.

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Appendix 1 – Data sample

Company code	Number of employees	Number of participating subordinates	Date[210]	Interview	Function of interviewee	Recorded	Duration of interview
C1	5	2	31 March 2014	Yes	Owner	Yes	50m
C2	7	1	31 March 2014	Yes	Owner	No	20m
C3	6	1	1 April 2014	No	Owner	--	--
C4	50	1	1 April 2014	No	Department Head	--	--
C5	70	1	2 April 2014	Yes	Management	Yes	35m
C6	7	1	2 April 2014	Yes	Owner	Yes	75m
C7	7	1	3 April 2014	Yes	Owner	No	30m
C8	30	1	3 April 2014	Yes	Owner	Yes	100m
C9	103	1	9 April 2014	Yes	Management	No	40m
C10	37	1	7 April 2014	No	Department Head	--	--
C11	51	2	7 April 2014	No	Management	--	--
C12	9	2	29 April 2014	Yes	Management	Yes	20m
C13	73	2	29 April 2014	Yes	Management	No	60m
C14	20	2	28 April 2014	No	Department Head	--	--
C15	14	1	31 March 2014	Yes	Management	No	20m
C16	70	1	8 April 2014	No	Management	--	--
C17	13	1	8 April 2014	No	CEO	--	--
C18	71	1	25 April 2014	No	Management	--	--
C19	15	2	8 April 2014	Yes	Management	Yes	30m
C20	100	2	8 April 2014	Yes	Management	Yes	25m
C21	10	1	24 April 2014	Yes	Owner	No	15m
C22	63	1	10 April 2014	No	Department Head	--	--
C23	9	1	10 April 2014	Yes	Owner	Yes	60m
C24	7	1	14 April 2014	Yes	Owner	No	15m
C25	70	2	11 April 2014	No	Department Head	--	--
C26	40	1	11 April 2014	No	Department Head	--	--

[210] The author visited the majority of SMEs more than once during the research stage in Malaysia. Exhibit 41 indicates the date of the first meeting.

Company Code	Number employees	Number of participating subordinates	Date	Interview	Function of Interviewee	Recorded	Duration of Interview
C27	57	1	23 April 2014	No	Department Head	--	--
C28	47	1	25 April 2014	No	Department Head	--	--
C29	50	1	23 April 2014	Yes	Department Head	Yes	20m
C30	59	1	18 April 2014	Yes	Department Head	No	30m
C31	31	1	18 April 2014	No	Owner	--	---
C32	90	1	22 April 2014	No	Department Head	--	--
C33	25	1	14 April 2014	No	Department Head	--	--
C34	70	1	14 April 2014	No	Department Head	--	--
C35	23	1	23 April 2014	No	Owner	--	--
C36	30	1	18 April 2014	Yes	Department Head	Yes	30m
C37	26	2	18 April 2014	No	Owner		
C38	69	1	17 April 2014	Yes	Owner	Yes	35m
C39	30	1	17 April 2014	No	Management		
C40	7	1	11 April 2014	Yes	Owner	No	20m
C41	34	2	11 April 2014	No	Department Head	--	--
C42	30	1	28 April 2014	No	Management	--	--

Exhibit 41: Overview participants (SME leaders & subordinates)
Source: Author's depiction, 2015

Appendix 2 – Curriculum Vitae

Work Experience

2011 - 2015 **LGT Bank Ltd.**

Head Management Office Market Europe, *Zurich*

Assistant to the Executive Management, *Vaduz*

2008 - 2011 **Bank für Tirol und Vorarlberg**

Co-Advisor // Assistant to the Executive Management, *Corporate clients*

Relationship Manager // Support of strategy projects, *Private clients*

2007 - 2008 **Gasthaus zum Bad Diezlings, family business**

Support in management, human resources and marketing issues

2006 - 2007 **Austrian Ministry for Europe, Integration and Foreign Affairs**
Candidature for UN Security Council 2009-2010
International Development Cooperation, Policy and Evaluation

2005 **Austrian Ministry for Transport, Innovation and Technology**
Austrian Reform Programme in Innovation 2005-2008

2005 **Austrian Foundation for Development Research, ÖFSE**
Member of the research team
Own publication ‚Forum 29'

1998 - 2002 **Various Internships**

Bischof Wirtschaftstreuhand, *Accounting*
Jesuheim retirement home, *Care of the elderly*
Caritas, *Project for permanently unemployed*
M&H Schindler, *Telemarketing*
VIVA Cantina Mexicana, *Waitress*
Kika furniture, *Office work*

Education

2013 - 2015 **University of St. Gallen**
Doctor of Philosophy in Management

2009 - 2012 **University of Liechtenstein**
Executive MBA in Wealth Management
Certified Private Banking Expert

2002 - 2006 **Vienna University of Economics and Business Administration**
Magistra in Economics

2000 - 2002 **Bundeshandelakademie Bregenz**
Commercial diploma

1992 - 2000 **Bundesgymnasium Blumenstrasse, Bregenz**
Test of maturity