Faculty of Organizational Sciences

Doctoral Dissertation

Influence of Sustainable Quality Management on Organisational Performance

September 2013

Author: Matjaž Maletič

Supervisor: Assoc. Prof. Boštjan Gomišček
Co-supervisor: Prof. Jens J. Dahlgaard, Professor Emeritus

ACKNOWLEDGEMENTS

Through the entire process of completing my dissertation, I had incredible support and help from many people, and to whom I would like to express my deep gratitude. Indeed, it is impossible to maintain the degree of focus and dedication required for its completion without the help and support of many people.

First and foremost, I would like to thank the members of the PhD committee, Prof. Dr. Zvone Balantič, Prof. Dr. Jens Jörn Dahlgaard, Prof. Dr. Borut Rusjan and Assoc. prof. Dr. Boštjan Gomišček, for their guidance and thesis evaluation. It is my great pleasure and privilege to be associated with such a distinguished committee.

I would like to express my wholehearted and sincere gratitude to my supervisor, Assoc. Prof. Dr. Boštjan Gomišček. I wish to thank you for your significant contribution in making this journey a memorable and pleasurable experience. I am especially grateful for the strong support and encouragement you have shown during all phases of writing my PhD thesis. Thank you also for providing me the freedom to read, learn and grow … in our search of new research avenues. Mainly these new directions and our constant curiosity brought us close to the question which this thesis attempts to answer.

I would then like to give special thanks to my co- supervisor, Prof. Dr. Jens Jörn Dahlgaard, for your guidance, passion for perfection, and providing me with excellent advice throughout this process. I am most thankful for your detailed, critical and at the same time constructive comments that I have tried to address in this thesis. I am truly honoured to have been given an opportunity to collaborate with you. Your profound knowledge in the field of Quality Management is truly inspiring.

Special acknowledgements belong also to many people, without whom I could not have realized the international survey. Only through their commitment, generosity and enthusiasm, this thesis can build the bridge between theory and empiricism. Dr. Beata Starzyńska, Poznan University of Technology, Dr. Carmen Jaca, Tecnun, University of Navarra, Prof. Dr. Jovan Filipović, University of Belgrade, Prof. Dr. Michael Brusch, Anhalt University of Applied Sciences, Assoc. Prof. Dr. Wieslaw Urban, Bialystok Technical University …

… Thank you all for your invaluable contributions!

Furthermore, I would like to express my sincere thanks and appreciation to Prof. Dr. Borut Rusjan, University of Ljubljana, Assoc. Prof. Dr. Matevž Bren, University of

Maribor, Assoc. Prof. Dr. Petra Šparl, University of Maribor, Assis. Prof. Dr. Milena Alič, Mag. Katja Podlipnik, Ilirija, d.d., and Mag. Anton Petrič, TPV, d.d., for their immense input in the questionnaire design.

I would also like to take this opportunity to thank University of Maribor, Faculty of Organizational Sciences for giving me the opportunity to carry out my doctoral research.

I would like to thank my colleagues at the University of Maribor, Faculty of Organizational Sciences, for their contributions to the empirical survey. In particular, I would like to express my sincere appreciation to Mojca Zadnikar, for her kindness and support during the whole process of the PhD study.

I also want to thank my friends who always motivated me; you have given me the strength to believe in myself and pursue my dreams.

Special thanks go to my parents and my brother who are always there for me. My work has been a challenging endeavour and it would not have been possible without your limitless patience, support, and understanding. Without the friendly environment and your encouraging words I would not be able to accomplish my goals.

September 2013

Matjaž Maletič

ABSTRACT

The issues that stakeholders are currently bringing to the corporate agenda are diverse indeed, ranging from those pertaining to quality, environmental sustainability, health and safety to a responsible approach towards society through corporate practices. As a consequence, an increasing number of organisations are now finding themselves in a position where they are compelled to address a wide range of issues even though such issues arise beyond their scope of direct influence.

The purpose of this research is to present and test a conceptual framework to aid in understanding and explaining the relationship between sustainability practices and organisational performance. The relevant theoretical insights are presented first, followed by a discussion of the relationship between quality management and sustainability. An extensive literature review is conducted on key intersections of quality management and sustainability. The research further investigates the dimensions of sustainability practices through the review. It develops a reliable and valid instrument for the sustainability practice constructs, which could be beneficial for both practitioners and academicians. Based on the notion of exploitation and exploration concepts, the research delineates sustainability practices and proposes causal relationships between sustainability practices and organisational performance.

Furthermore, the conceptual framework is further discussed in terms of different outcomes related to sustainability performance, quality performance and business performance. One of the primary propositions of this framework is that the alternative relationships between sustainability practices (exploitation and exploration) and organisational performance depend on different factors, including environmental uncertainty, competitiveness, long-term orientation and institutional approaches. Therefore, the research is an attempt to cover the relatively less empirically explored area of the dynamics of corporate sustainability and organisational performance.

The empirical data for this study was drawn from a large-scale international survey based on the following countries: Slovenia, Spain, Serbia, Poland, and Germany. A total of 247 organisations participated in the survey.

The outcome of regression analyses provides the evidence that sustainability practices positively and significantly influence organisational performance. Regarding the antecedents of sustainability practices, our findings suggest that the main enablers for the successful adoption of sustainable practices are the support of top management, the integration of sustainability into vision and strategy, and the establishment of a sustainability centred culture.

Furthermore, empirical evidence from this research also confirmed the existence of ambidextrous orientation, suggesting that organisations that are able to simultaneously pursue exploratory and exploitative sustainability practices can also expect performance benefits. However, the results indicate that when organisations maintain relatively high levels of exploratory and exploitative practices, significant relationship between sustainability practices and organisational performance seems to disappear.

The results of the MANOVA analysis indicate that there are significant mean differences in organisational performance measures for low and high levels of sustainability practices. Therefore, by focusing on exploration and exploitation practices, organisations can expect to achieve higher performance outputs and outcomes. In addition to the direct influence of sustainability practices on the organisational performance, results also revealed that the innovation performance serves as a mediator in the relationship between sustainability practices and financial and market performance. This suggests that greater engagement in sustainability exploration and sustainability exploitation leads to greater innovation performance, which in turn leads to greater financial and market performance.

The results also support the contingency and institutional view with regard to the relationship between sustainability practices and performance rather than relying upon a 'universal' view of sustainability practices. For example, the results show that in moderate environmental contexts (moderate competitiveness and uncertainty) sustainability exploitation practices seem to be a predominant predictor of organisational performance. However, it appears that when the level of competitiveness increases, sustainability exploration practices become positively and significantly related to the organisational performance.

Overall, through the theoretical discussion and empirical assessment, the thesis contributes to a greater clarity and better understanding of how organisations may effectively pursue sustainability practices to gain performance benefits.

Keywords: corporate sustainability, sustainability exploitation, sustainability exploration, quality management, organisational performance

POVZETEK

Organizacije so dandanes soočene z zelo raznolikimi pričakovanji in zahtevami zainteresiranih udeležencev, vključujoč zahteve glede kakovosti, varstva okolja, zdravja in varstva pri delu in ne nazadnje odgovornega ravnanja do družbe v katerem deluje organizacija. V zadnjem času trajnostni razvoj organizacije pridobiva vse večjo pozornost, tako z vidika raziskovalnega področja, kakor tudi z vidika praktične vrednosti ter s tem povezanim iskanjem konkurenčnih prednosti. Glavni namen pričujoče doktorske disertacije je prispevati k poglobljenemu razumevanju interdisciplinarnega področja trajnostnega razvoja organizacije in potencialnih povezav z različnimi vidiki učinkovitosti in uspešnosti organizacije.

V znanstveni literaturi konceptualizacija in operacionalizacija konstrukta trajnostnega razvoja organizacije ni jasno opredeljena, zato je prvi del disertacije posvečen oblikovanju konceptualnega okvira in konceptualizaciji posameznih spremenljivk obravnavanih konstruktov. V ta namen je bil opravljen pregled literature, s poudarkom na stičnih točkah managementa kakovosti in trajnostnega razvoja organizacije. V sklopu konceptualizacije konstrukta trajnostnega razvoja organizacije, disertacija obravnava dva, v literaturi s področja organizacije in managementa, uveljavljena koncepta, in sicer: izkoriščanje – SEI (ang. exploitation) in odkrivanje – SER (ang. exploration). V okviru konceptualnega okvira so obravnavani konstrukti, ki so predmet proučevanja doktorske disertacije ter predlagane hipoteze, katere vsebujejo predpostavljene povezave med posameznimi pod-konstrukti in predpostavljene vplive v disertaciji proučevanih dejavnikov.

V empiričnem delu doktorske disertacije je najprej obravnavana metodologija razvoja raziskovalnega instrumenta ter preverjena zanesljivost in veljavnost merskih lestvic konstrukta trajnostnega razvoja organizacije. V nadaljevanju empiričnega dela disertacije, so predstavljeni rezultati kvantitativne anketne raziskave, ki je bila izvedena v petih državah: Nemčija, Slovenija, Španija, Srbija in Poljska. V okviru spletne ankete je bilo pridobljenih 247 uporabnih odgovorov iz organizacij različnih dejavnosti in velikosti.

Rezultati raziskave so pokazali, da so dejavniki implementacije trajnostnega razvoja organizacije, katerih konstrukt je bil koneptualiziran in operacionaliziran v kontekstu podpore in zavezanost vodstva, vključitve vidikov trajnostnega razvoja v vizijo in strategijo in vzpostavitve trajnostno usmerjene organizacijske kulture, pozitivno in statistično značilno povezani z dejavnostmi trajnostnega razvoja organizacije.

Rezultati regresijske analize potrjujejo pozitiven in statistično značilen vpliv dejavnosti trajnostnega razvoja organizacije na učinkovitost in uspešnost organizacije, tako z vidika sestavljenega (agregiranega) konstrukta učinkovitosti in uspešnosti organizacije, kot tudi z vidika posameznih dimenzij: finančna in tržna uspešnost, učinkovitost na področju kakovosti, učinkovitost na področju inovativnosti, okoljska učinkovitost, družbena učinkovitost. Prispevek dejavnosti trajnostnega razvoja organizacije k učinkovitosti in uspešnosti organizacije dodatno osvetljujejo tudi rezultati multivariatne analize variance (MANOVA). Rezultati kažejo na to, da obstaja statistično značilna razlika med aritmetičnimi sredinami posameznih merskih spremenljivk učinkovitosti in uspešnosti organizacije z ozirom na nizko in visoko stopnjo izvajanja dejavnosti trajnostnega razvoja organizacije. MANOVA torej potrjuje statistično značilen vpliv neodvisne spremenljivke (dejavnosti trajnostnega razvoja organizacije, SEI/SER) na vse odvisne spremenljivke (merske spremenljivke konstrukta učinkovitosti in uspešnosti organizacije). Navedene ugotovitve lahko dodatno podkrepimo še z ugotovitvami mediacijske analize, s pomočjo katere smo ugotovili, da je učinkovitost na področju inovativnosti mediator na povezavi med dejavnostmi trajnostnega razvoja organizacije (na primeru SEI in SER) in finančno in tržno uspešnostjo.

Pomemben prispevek doktorske disertacije se izkazuje tudi v proučevanju vpliva kontingenčnih dejavnikov (konkurenčnost, negotovost in dolgoročna usmerjenost organizacije) in institucionalnega dejavnika (država izvora organizacije) na povezavo med dejavnostmi trajnostnega razvoja in učinkovitosti in uspešnosti organizacije. S tem disertacija prispeva k relativno manj empirično raziskanim področjem. Raziskava je pokazala, da organizacije, ki poslujejo v okolju kjer prevladuje zmerna stopnja konkurenčnosti in zmerna stopnja negotovosti, v večji meri pridobijo prednosti od izvajanja SEI, kot pa z angažiranjem glede izvajanja SER. Rezultati raziskave nakazujejo, da z naraščanjem stopnje konkurenčnosti, SER vplivajo na učinkovitost in uspešnost organizacije v večji meri kot SEI. V kontekstu institucionalnega dejavnika lahko argumentiramo, da obstaja nekaj empiričnih dokazov glede vpliva institucionalnega mehanizma na izvajanje dejavnosti trajnostnega razvoja in doseganja nivoja učinkovitosti in uspešnosti organizacije.

Ključne besede: trajnostni razvoj organizacije, management kakovosti, učinkovitost in uspešnost organizacije

UDK klasifikacija: 005.336.3:502.131.1(043.3)

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

Part I
General Introduction

1 INTRODUCTION

This chapter lays the foundation for the doctoral dissertation by identifying the problem, explaining its contextual background, and by delineating the research methodology framework. The research problem, thesis, research aim and objectives of the thesis are introduced. The chapter concludes with an outline of the thesis chapters.

1.1 THEORETICAL BACKGROUND

In recent years, the concept of sustainable development has been increasingly addressed by the business sector (Hahn and Scheermesser, 2006). In the current business environment, more and more organisations see the need to look beyond the traditional concerns of running a business for immediate profit and to begin to deal with factors in the greater world that impinge on their medium to long-term success (Fairfield et al., 2011). It is now commonplace that without corporate support, society will never achieve sustainable development, as corporations represent the productive resources of the economy (Bansal, 2002). In the current highly competitive context, the question arises whether engaging in sustainability can bring an advantage to the organisation. In response to this question, Azapagic (2003) elaborates that for many industry leaders and corporations, corporate sustainability has become an invaluable tool for exploring ways to reduce costs, manage risks, create new products, and drive fundamental internal changes in culture and structure. Nowadays, it is widely recognised that corporations need to act in a socially responsible way in order to contribute to the social well-being and competitiveness as well as the financial success of the firm (Moneva and Ortas, 2010). Therefore, an active corporate commitment to environmental and social goals can increase shareholder value as well as can contribute to creating long-term enterprise values (Figge, 2005).

According to the above point of view, sustainability refers to an organisation's activities that demonstrate the inclusion of social and environmental concerns in business operations and in interactions with its stakeholders (van Marrewijk and Were, 2003). Typically, approaches to sustainable development have had a narrow environmental focus. In recent years, however, there has been a growing recognition that environmental protection is only a sub-set of corporate sustainability (Asif et al., 2011). As Hart (1997) explains:

> […] Those who think that sustainability is only a matter of pollution control are missing the big picture.

Hence, corporate sustainability is now widely conceptualised in terms of the 'triple bottom line' (TBL) (Elkington, 1999) which implies that organisations will create more value over the long run if they take into consideration environmental (planet), social (people), and financial (profit) issues (Dyllick and Hockerts, 2002; Holliday, 2001). Where sound economic performance (profit) in the past was expected to guarantee corporate success, business is today increasingly led by the so-called triple bottom line in which economic results are balanced by the minimisation of ecological footprints and attention to social aspects (Lee, 2009).

Due to the increased focus on multiple bottom lines, the scope of quality management also seems to change (Klefsjö et al., 2008). Today, organisations aim to deliver high quality products whilst trying to balance between economic prosperity, social issues, and a healthy ecological environment. In this context, organisations are challenged to identify multiple stakeholder groups as well as to recognise that each stakeholder group may have different expectations (Asif et al., 2010). Because of these challenges, there is a tendency to include a variety of phenomena under the concepts of quality management and organisational sustainability, which in turn increases the complexity of defining the concepts of quality management and organisational sustainability.

Quality management's main focus has typically been to satisfy the needs of the organisation and the main stakeholders (Zink, 2007), whereas managing for sustainability also requires including the ecological and social aspects of the stakeholders. While quality management has also played an important role in preparing organisations to pursue sustainability and social responsibility (e.g. McAdam and Leonard, 2003; Castka and Balzarova, 2007) it is worth mentioning that there are some recent suggestions in the sustainability literature to integrate organisational sustainability and quality management (Zink, 2007; Isaksson, 2006).

1.2 RESEARCH PROBLEM DEFINITION

Increasingly, researchers have acknowledged that integration of sustainability dimensions (e.g., natural environment and social equity) into quality management is a necessary step to take (Zhao, 2004; Isaksson, 2006; Asif et al., 2011), since broader and more systemic approaches in addressing sustainability can lead to better performance results (Zairi and Peters, 2002; Wagner, 2010; Chang and Kuo, 2008; Orlitzky et al., 2003). However, a review of the current literature suggests that there is a substantial challenge in applying sustainable development at the corporate level, especially in terms of translating and integrating the normative sustainability concepts into day-to-day business practices (Scherrer et al., 2007), and, in spite of a generally

expressed high level of relevance of sustainable development, the implementation of corporate sustainability in corporate practice varies considerably (Hahn and Scheermesser, 2006).

The topic of this thesis emerges from quality management as an underlying fundamental theme, and builds further on sustainability as explained below.

In the first stage of the evolution of quality thinking, quality has been related primarily to products and services, and the performances of those products and services (Garvin, 1988). The traditional approach to analysing the evolution and understanding of the concepts of quality management – from inspection to quality control, quality assurance, and Total Quality Management (Dahlgaard et al., 1998) – does not tell much about new external pressures for the organisation, such as concern for the environment and society. However, it may be argued that the term 'quality' has expanded beyond the classic interpretation of 'satisfying customer expectations related to products' to include also the environmental, safety, financial, and even social aspects of organisational performance (Boys et al., 2005). The concept of customer focus has developed into meeting the needs of a broader group of customers including human stakeholders, environmental stakeholders and other interested parties in societal sustainability (Garvare and Isaksson, 2001; Isaksson, 2006). Stakeholder theory, therefore, recognises that organisations have obligations not only to shareholders, but also to other interest groups such as customers, suppliers, employees and the wider community, amongst many others (Freeman, 1984). Meeting the demands of these stakeholders is necessary for long-term survival of business (Post et al., 2002). As such, the array of sustainability issues that need to be addressed within quality management increases substantially, if we extend the narrow customer definition also to include those affected by the products throughout the whole life cycle (Klefsjö et al., 2008). Indeed, the synergy between quality management and sustainability is discussed by a number of authors, especially in the light of business excellence models (Asif et al., 2011; Zink, 2007; McAdam and Leonard, 2003; Garvare and Isaksson, 2001). However, the identified literature is highly normative and conceptual with little empirical research.

While the importance of pursuing sustainability has often been highlighted (Sharma, 2003), much more remains to be understood about how sustainability practices contribute to the organisational performance. The argument that adapting sustainable business practices can help organisations improve their performance has been made before (Maletič et al., 2011; Fairfield et al., 2011), but there is little systematic evidence on how to customise sustainability practices within the quality management

framework, and whether these sustainability practices are context dependent. Therefore, a problem that is highlighted in this thesis is the uncertainty about the added value of different sustainability practices.

This study is undertaken in order to fill the knowledge gap on how to enhance organisational performance in the light of 'sustainable quality management', which is the term used in this thesis to conceptualise sustainability practices within the quality management framework. Specifically, this study intends to provide empirical evidence as to whether the adoption of sustainability practices significantly affects organisational performance and what the key practices contributing to organisational performance are. Obviously this constitutes a complex organisational phenomenon in which several processes and elements of quality and sustainable management are important.

Based on the above, it is argued that there is a need to develop a more comprehensive conception in order to understand the role of sustainable quality management in achieving higher organisational performance and increased competitive advantage.

1.3 RESEARCH AIM, OBJECTIVES AND RESEARCH QUESTION

Against this background, the aim of this research is to understand how various sustainability practices influence organisational performance. As previously noted, this is a topic of high relevance in modern economies, where corporate sustainability has become a mainstream issue (Dyllick and Hockerts, 2002; Epstein and Roy, 2001).

Prior empirical literature on corporate environmentalism and corporate contributions to sustainability was dominated by studies that examine the link between environmental and sustainable performance on one hand and economic performance on the other (Moneva and Ortas, 2010; Wagner et al., 2010; Chang and Kuo, 2008; Melnyk et al., 2003; Orlitzky et al., 2003). Moreover, prior research has also tended to focus on sustainability in a quality management context, albeit only at a conceptual level. Therefore, even if literature from both sides has contributed to valuable insights, empirical research that has examined performance implications from both perspectives is still lacking.

In summary, drawing from strategic management, innovation management, and organisational learning literature, one can identify strong indications regarding the need for organisations to follow two broad types of activities among which organisations can deploy attention and resources: *exploitation* and *exploration*.

The conceptual distinction between exploration and exploitation has been used, explicitly or implicitly, in a wide range of management research areas (Zhang et al., 2012; Jansen et al., 2009; O'Reilly and Tushman, 2007; He and Wong, 2004; Floyd and Lane 2000; March, 1991). However, while there is strong theoretical and empirical underpinning concerning the exploitation and exploration conceptualisation and operationalisation in the above literature, there is no existing research that provides a measurement instrument to operationalise the two distinction aspects of sustainability practices; consequently, there is a need to examine the relationship between these practices and organisational performance. This research, therefore, aims at:

Enhancing and understanding on how sustainability practices can contribute to the overall organisational performance.

The research study, therefore, aims at filling the gap in the sustainability and quality management literature by empirically testing the effects of various practices on organisational performance. This research aim has the following research objectives:

- investigation of the theoretical foundations of quality management, sustainability and organisational performance, based on professional/scientific literature and current international studies,
- investigation of the links between quality management and organisational/corporate sustainability,
- development of a conceptual framework/model based on a literature review,
- empirical testing of the conceptual model based on a large-scale survey,
- a cross-country comparison of the effects of sustainability practices by conducting an international survey.

Following previous literature, we classify sustainable quality management practices along two domains: (1) sustainability exploitation practices, and (2) sustainability exploration practices. It is expected that the current research will help researchers better understand the scope and activities associated with sustainable quality management systems that create enhanced levels of organisational performance.

The main research question guiding the present work is thus formulated as follows:

> ***How does the deployment of sustainability exploitation and sustainability exploration practices affect organisational performance?***

1.4 RESEARCH APPROACH

To address the above research question, quantitative research approaches will be applied, complemented with qualitative approaches, mainly limited to the pilot stage of designing the questionnaire. Quantitative data were obtained to examine the patterns of relationship between the identified constructs and to contribute to the greater generalisability of the results (Bryman, 1988). The research process (Brewerton and Millward, 2001) is discussed in the following.

The research approach can be broadly divided into three parts. The preliminary research (Maletič et al., 2011) was conducted at an early stage of the research process, aimed at testing some of the initial assumptions concerning the topic of this thesis. Therefore, the current research is based on evidence drawn from preliminary empirical findings.

During the second part, an overview of the literature is provided. Having a deductive approach in this study, the literature review part is the critical starting point. The focal point is the intersection between sustainable quality management and organisational performance. However, before going into detail about this connection, it was necessary to obtain a deeper understanding of both concepts.

To build a conceptual framework, both of these concepts were explored in relation to the aim of the research. We critically reviewed the growing literature on exploration and exploitation (e.g. Zhang et al., 2012; He and Wong, 2004; Jansen et al., 2009), quality management literature (e.g. Dahlgaard-Park, 2011; Dahlgaard et al., 1998; Kaynak, 2003) as well as literature on sustainability (e.g. Garvare and Johansson, 2010; Dyllick and Hockerts, 2002; Epstein and Roy, 2001). Insights from the literature review were used to specify the theoretical domains of the constructs and to develop a conceptual framework that hypothesises relationships between the constructs.

Once the conceptual framework had been determined, the next part was to determine what research methods to employ to best answer the research problem through the proposed framework.

Therefore, the third part of the research entailed design of the quantitative data collection, the development of suitable scales and a questionnaire, the collection of quantitative data, and the analysis of the obtained data regarding the research model. The study used scales adopted from the literature, but appropriate scales for exploratory and exploitative sustainability were not available. Therefore, we reviewed relevant literature and generated a pool of items corresponding to the domain of each construct. Next, to enhance the construct validity of the survey measures, we conducted a pre-test involving in-depth pilot interviews with several managers with various tenures at different branches. The managers were asked to complete the questionnaire and to indicate any comments on the items that they thought was ambiguous. During follow-up interviews, managers were invited to provide suggestions for improvement of the questionnaire. After this pre-test, the questionnaire items were further enhanced and thus resulting in the final version. Therefore, to ensure the quality of the instrument, the process of developing the survey followed these four stages (Carayon et al., 2006):

1) creating the initial survey from a literature review of existing scales,
2) conducting a pilot study with interviews to test the survey,
3) modifying the survey based on feedback from the pilot study,
4) implementing the revised survey.

1.5 THESIS STRUCTURE

Table 1 provides an overview of the dissertation structure and corresponding research activities. Where Chapter 1 provides a general introduction including the aims, objectives and the main research question, the rest of this thesis is split into three parts. First, Part II provides an overview of the relevant literature available regarding both the link between quality management and performance and the link between sustainability and performance (Chapter 2).

Chapter 3 provides a broad overview of the theoretical perspectives applied in this research, which serve as the scientific basis for the development of the conceptual framework. By introducing the conceptual framework, Chapter 2 results in a number of hypotheses explaining performance implications of sustainability practices.

Table 1. The structure of the thesis

Dissertation structure		Research activities
	PART I - General Introduction	
Chapter 1:	Introduction	Research problem definition Development of the aim, objectives, and the research question
	PART II – Theoretical Part	
Chapter 2:	Theoretical backgrounds	Literature review
Chapter 3:	Research framework and hypothesis development	
	PART III – Empirical Part	
Chapter 4:	Methodology	Questionnaire development Research design
Chapter 5:	Analyses and Results	Data Collection and analysis
	PART IV - Discussion, Implications, and Conclusions	
Chapter 6:	Discussion	Interpretation of the research findings
	Conclusions	Summary of the main findings

The next two chapters (4 and 5) constitute Part III, which contains the methodology of the thesis, the analyses and results of the empirical studies. Chapter 4 explains the research methodology, starting with a description of the research setting, the empirical study, methods as well as the reliability and validity of research, and Chapter 5 presents the analyses and results from the multiple case study investigation as well as from the large scale survey.

In Part IV of this thesis, findings from both the literature review and the empirical research are discussed, and the thesis ends with a discussion on limitations and future research issues and general conclusions.

Part II
Theoretical Part

2 THEORETICAL BACKGROUNDS

Chapter 2 presents and discusses relevant concepts and the theoretical underpinnings of various doctrines pertaining to quality management, sustainability and organisational performance. Following this, a synopsis of relevant literature will be presented, providing the theoretical foundation for both the conceptualisation and operationalisation of the thesis research.

2.1 SUSTAINABILITY-RELATED INITIATIVES

Interest in sustainability from the corporate sector is evidenced by over 8,000 companies in 140 countries (UNGC, 2010) that have signed the UN Global Compact, with discussions under headings such as Corporate Responsibility, Corporate Social Responsibility (CSR), Corporate Citizenship, Business Ethics, Stakeholder Relations Management, Corporate Environmental Management (Lozano, 2012; Dyllick and Hockerts, 2002). The growing number of sustainability assessment tools demonstrates an increasing awareness and need for standardised measures of corporate sustainability (Veleva and Ellenbecker, 2000).

For organisations to successfully develop sustainability, their activities have to be measured against identified objectives, and data and progress meaningfully have to be reported (Edwards, 2009). Consequently, in recent years, there has been growing pressure on organisations to include several broad measures of performance that traditionally have been regarded as lying outside their sphere of influence (Edwards, 2009). Therefore, various recommendations and guidelines for sustainability reporting have been published in recent years. Most prominent and most widely used are the Global Reporting Initiative (GRI) Guidelines. Their purpose is to support companies in creating sustainability reports that integrate social, environmental and economic impacts of business (Isaksson and Steimle, 2009). GRI is considered to be a rigorous framework for the application of the triple bottom line reporting (Lamberton, 2005). The purpose of the GRI reporting is, among others (GRI, 2006):

- benchmarking and assessing sustainability performance with respect to laws, norms, codes,
- performance standards, and voluntary initiatives,
- demonstrating how the organisation influences and is influenced by expectations about sustainable development, and
- comparing performance within an organisation and between different organisations over time.

The standardised management systems in common practice include ISO 9001 for quality management, ISO 9004 for managing the sustained success of an organisation in the context of the quality management, ISO 14001 and the Eco-Management and Audit Scheme (EMAS) for environmental issues, ISO 18001 (OHSAS) and ISO 31000 for risk management. Apart from standardised management systems, it is also important to highlight the AA1000 series standards for sustainability, ISO 26000 for corporate responsibility, and SA 8000 for social accountability.

According to the Ligteringen and Zadek (2005), sustainability initiatives can be categorised in terms of being normative frameworks, process guidelines and management systems (Table 2).

Table 2. The emerging global architecture

Normative Frameworks (i.e. what to do)	Provide substantive guidance on what constitutes good or acceptable levels of performance.	ILO Tripartite Declaration of Principles concerning Multinational Enterprises and Social Policy UN conventions and declarations on sustainable development issues UN Global Compact Principles OECD Guidelines for Multinational Enterprises (MNEs)
Process Guidelines (i.e. how to measure and communicate it)	Enable measurement, assurance and communication of performance	AA1000 Assurance Standard GRI Sustainability Reporting Guidelines
Management systems (i.e. how to integrate it)	Provide integrated or issue specific management frameworks to guide the ongoing management of environmental and social impacts	AA1000 Framework ISO 14001 (specialised) ISO Social Responsibility Guidance Social Accountability SA8000

Based on current trends and imperatives, the following is expected (Ligteringen and Zadek, 2005):

- further integration of existing international laws and agreements,
- increased regulatory requirement for transparency on standards used,
- alignment and integration of existing codes, tools and standards systems,
- attention to leading standards and guidelines by mainstream business and financial markets,
- use of software-based systems to measure and manage performance,
- increased alignment of standards, codes, tools and guidelines with civil society expectations.

2.1.1 ORGANISATIONAL SUSTAINABILITY IN THE CONTEXT OF ISO 26000: A QUALITY MANAGEMENT PERSPECTIVE

Dyllick and Hockerts (2002) delineated sustainability from the perspective of a business organisation that is '[…] meeting the needs of a firm's direct and indirect stakeholders without compromising its ability to meet the needs of future stakeholders as well.' In an attempt to better understand the complex and ambiguous concept, Faber et al. (2005), through conceptual analysis, conducted an in-depth investigation to expose the roots of the term. They formulated a framework that can be used to determine various properties of the concept of sustainability in use. This attempt to make sense of various definitions uncovered three distinct orientations towards sustainability that have been developed across multiple disciplines: artefact, goal orientation, and behavioural interaction. The artifact can either be an *entity* or a *construct*. The identification of the focal artefact concerns the tangibility of the artefact to which sustainability is attributed. Goal orientation refers to the point of reference that can be used to determine whether an artifact is sustainable, and can be absolute or relative. From an absolute standpoint, an artifact is either sustainable or not (e.g. your car is either an eco-friendly hybrid or it is not). From the relative standpoint, an artifact can have varying degrees of sustainability and can continually improve its processes to achieve more sustainable outcomes. In the static case, the artifact is changing but the environment is considered to be unchanging. In the dynamic case, both the artifact and the environment are changing. Adopting their perspective, sustainability is the equilibrium between an artifact and its environment that is achieved without mutual detrimental effects.

With the increasing global focus on sustainability and social responsibility, the ISO 26000 (Castka and Balzarova, 2007) standard can be expected to achieve greater importance in the upcoming years. The need for companies to undertake activity that

might be regarded as socially responsible has been discussed in the literature and has been a topic of academic study for decades (e.g. Carroll and Shabana, 2010; Moir, 2001; Carrol, 1991). Although the concept of corporate social responsibility (CSR) has emerged over the previous two decades, it is only in recent years that the number of organisations engaging in such behaviours and activities has increased markedly (e.g. Carroll and Shabana, 2010; McWilliams et al., 2006).

Organisations that commit to improving social responsibility must understand the critical elements of the standard to deliver on those goals. The following section seeks to present the ISO 26000 in the context of quality management.

The ISO 26000 framework

The ISO 26000 guidance standard consists of seven clauses (Table 3) and an annex. At the heart of ISO 26000 is the guidance it provides on seven core subjects of social responsibility:

- organisational governance,
- human rights,
- labour practices,
- environment,
- fair operating practices,
- consumer issues,
- community involvement and development.

Each of these subjects is dissected into the important issues an organisation should understand and integrate into its operations. This analysis provides an organisation with an explanation of the issue and understanding of the fundamental actions and societal expectations.

Table 3. ISO 26000 outline

Clause title	Clause number	Description of clause contents
Scope	Clause 1	Defines the scope of ISO 26000 and identifies certain limitations and exclusions.
Terms and definitions	Clause 2	Identifies and provides the definition of key terms that are of fundamental importance for understanding social responsibility and for using ISO 26000.

Understanding social responsibility	Clause 3	Describes the important factors and conditions that have influenced the development of social responsibility and that continue to affect its nature and practice. It also describes the concept of social responsibility itself – what it means and how it applies to organisations. The clause includes guidance for small and medium-sized organisations on the use of ISO 26000.
Principles of social responsibility	Clause 4	Introduces and explains the principles of social responsibility.
Recognising social responsibility and engaging stakeholders	Clause 5	Addresses two practices of social responsibility: an organisation's recognition of its social responsibility, and its identification of and engagement with its stakeholders. It provides guidance on the relationship between an organisation, its stakeholders and society, on recognising the core subjects and issues of social responsibility and on an organisation's sphere of influence.
Guidance on social responsibility core subjects	Clause 6	Explains the core subjects and associated issues relating to social responsibility. For each core subject, information has been provided on its scope, its relationship to social responsibility, related principles and considerations, and related actions and expectations.
Guidance on integrating social responsibility throughout an organisation	Clause 7	Provides guidance on putting social responsibility into practice in an organisation. This includes guidance related to understanding the social responsibility of an organisation, integrating social responsibility throughout an organisation, communication related to social responsibility, improving the credibility of an organisation regarding social responsibility, reviewing progress and improving performance and evaluating voluntary initiatives for social responsibility.

The guidance embodied in the ISO 26000 incorporates descriptions of the social responsibility, principles, stakeholder identification and engagement, core subjects and

operational areas through which social responsibility can be integrated into an organisation. These topics are addressed by Clauses 3 through 7 of the standard, respectively, as shown in Table 4. In addition, ISO 26000 provides a list of voluntary initiatives and tools for social responsibility as well as information on ISO 26000 core subjects and practices for integrating social responsibility to which these initiatives and tools relate. The latter is found in annex of the standard.

Sustainability, Social Responsibility, and Quality Management

Some synergies between sustainability and quality management were already identified and discussed in the literature (e.g. Isaksson, 2006; Zink, 2007). A few common points, especially in the context of ISO 26000, are discussed below in this section.

In a conceptual analysis (2009), Radziwill discusses the relationship between at the time upcoming standard ISO 26000 from the sustainability and quality management perspective. From the viewpoint of Radziwill (2009), organisational sustainability cannot be achieved in the absence of a framework for continuous improvement across the organisation. This framework should also be seen in a wider perspective that includes relationships with stakeholders and society. Therefore, sustainability should be seen in the context of linking the organisation's quality management approach with the larger environment. Recently, literature also stressed the importance of the stakeholder orientation in discussing the relationship between quality management and sustainability (e.g. Garvare and Johansson, 2010; Zink, 2007).

In fact, the text of the ISO 26000 specifically and fundamentally relates social responsibility to sustainable development. By the end of the first paragraph in the first clause of the ISO 26000, it is noted that the purpose of the standard is to 'assist organisations to contribute to sustainable development.' (ISO, 2010). ISO standards, such as ISO 14001 and related standards for environmental management, as well as the ISO 26000 standard for CSR, may be seen as global codes and standards incorporating sustainable development ideas (Sebhatu and Enquist, 2007; Schwartz and Tilling, 2009). In terms of the latter, it is argued that sustainability (Dyllick and Hockerts, 2002) can be achieved through socially responsible practices by underlying not only economic but also social and environmental aspects, which is in a line with the 'triple-bottom-line' concept.

In the following, we analyse the three ISO standards: ISO 9000, ISO 14000 and ISO 26000. The analysis of the similarities and differences is based on the literature (Castka and Balzarova, 2008; Castka and Balzarova, 2007).

Table 4. A comparison of standards (adapted from Castka and Balzarova (2008))

	ISO 9000	ISO 14000	ISO 26000
General description	Quality Management Systems standard	Environmental management systems standard	International Standard on Social Responsibility
Key elements	Quality management System Management responsibility Resource management Product realisation Measurement, analysis and improvement	Environmental policy Planning Implementation and operation Checking and Corrective Action Management review	The SR context in which all organisations operate SR principles relevant to organisations Guidance on core SR subjects/issues Guidance for organisations of implementing SR
Scope	Specifies requirements for a quality management system where an organisation needs to demonstrate its ability to consistently provide product that meets customer and applicable regulatory requirements, and aims to enhance customer satisfaction through the effective application of the system, including processes for continual improvement of the system and the assurance of conformity to customer and applicable regulatory requirements.	It defines a set of requirements for environmental management systems. The purpose of this standard is to help organisations to protect the environment, to prevent pollution, and to improve their environmental performance.	Promotes common understanding in the field of social responsibility; provides guidance that is applicable to all types of organisations; takes account of societal, environmental and legal diversity, as well as differences in economic development conditions, except where these are in conflict with broadly accepted international norms of socially responsible behaviour

(continued)

	ISO 9000	ISO 14000	ISO 26000
Principles	Customer Focus Leadership Involvement of People Process Approach System Approach to Management Continual Improvement Factual Approach to Decision Making Mutually beneficial Supplier Relationship	Shares common management systems principles with ISO 9001	Accountability Transparency Ethical behaviour Respect for stakeholder interests Respect for the rule of law Respect for international norms of behaviour

Perhaps one of the most obvious differences is that ISO 26000 is not a management system standard (as it is declared in the scope of this standard). This means that a third-party certification is not offered. The question whether or not ISO 26000 should be designed as a management system standard was present in the discussion on the social responsibility standard since the first initiatives (Castka and Balzarova, 2007). It stays at a broader level offering guidance on social responsibility (Castka and Balzarova, 2008). In contrast, ISO 9001 as well as ISO 14001, define the key requirements for a management system. The second difference is seen in the fact that management system standards are based on two distinct models. International standards related to quality management follow the so-called process approach, which conceptualises a management system as a set of interrelated processes that have to be systematically guided towards achieving set objectives (Karapetrovic, 2003). Since assuring product quality is the mainstay of these standards, they all include a 'product realisation' section, which presents requirements for various interconnected processes. The other common sections related to the elements that drive or support product realisation processes, including the policy, objectives, planning and responsibilities given in the 'management responsibility' section, various 'resources' needed to implement and maintain the quality management system, and the 'measurement, analysis and improvement' processes (Karapetrovic, 2003).

Management system standards, such as ISO 14001 for EMS, are all based on the plan-do-check-act (PDCA) cycle, and have five main elements: policy, planning, implementation and operation checking and corrective action and management review. However, the PDCA cycle is not mentioned in the ISO 26000 standard. Chapter 7.7 of the ISO 26000, entitled 'Reviewing and improving an organisation's actions and practices related to social responsibility', includes explanation on how to monitor and improve performance, but is rather more general description and does not suggest any certain methods, such as PDCA.

At a first glance, the ISO 26000 standard looks like it is not very compatible with the rest of the ISO family. ISO 26000 provides ample guidance, explanations as well as numerous examples regarding social responsibility initiatives and tools. The reason for this is most likely, as noted above, that ISO 26000 is not a certifiable standard. The standard is intended to provide guidance on the underlying principles of social responsibility, recognising social responsibility and engaging stakeholders, the core subjects and issues pertaining to social responsibility and on ways to integrate socially responsible behaviour into the organisation (ISO, 2010). Compared to other management system standards, this is a radically different approach to how the document is structured.

In terms of the scope of these standards, ISO 26000 takes a noticeably broader approach in comparison with other conventional management systems, such as quality and environment. For instance, whereas ISO 9001 focuses at quality management system (QMS) and its requirements, ISO 26000 addresses the social responsibility from different perspectives, such as societal, environmental, legal and organisational diversity, and places them in a global perspective.

Furthermore, the ISO 14000 standard was developed with aims of providing guidance for developing a comprehensive approach to environmental management (Prajogo et al., 2012), which means that the standard should be conceived as a framework for identifying and managing performance criteria that are set by organisations implementing the standard (Poksinska et al., 2003). A long-term goal of environmental management systems, like that of quality management systems, is to move towards a proactive, preventive stance through the incorporation of environmental issues into key organisations' processes (Tarí and Molina-Azorín, 2010).

To address social responsibility within an organisation, it is necessary for the organisation to understand the relationships between (1) the organisation and society, (2) the organisation and its stakeholders, and (3) the stakeholders and society (ISO

26000). This clearly indicates that stakeholder identification and engagement are central to addressing social responsibility. When comparing with other two ISO standards, one can find some similarities as well as some differences. As highlighted in a study by Zeng et al. (2005), while ISO 9001 is customer driven, ISO 14001 is more driven by stakeholders, the community or regulators. Therefore, whereas in ISO 9001 customers are the main stakeholders of interest, in ISO 14001 there are many additional external stakeholders to be considered (Poksinska et al., 2003; Karapetrovic and Willborn, 1998). This could be supported by the study of Delmas (2001), who found that external stakeholders' involvement in ISO 14001 plays an important and positive role in assisting firms to gain a competitive advantage. However, this author suggests that the involvement of external stakeholders is context dependent. For example, the involvement of external stakeholders may vary according to the country in which the organisation operates. The institutional environment also plays an important role in favouring the development of a standard.

ISO 9000 outlines a set of eight quality management principles. These principles are easily recognisable as the key elements of quality management. They serve as a guide to any organisation or management that desires improved performance and quality. Whilst ISO 9000 quality management principles are mainly focused at operationalisation of a QMS, ISO 26000 outlines a broader perspective. However, it could be argued that congruence exists between the principles of these two standards. As underlined by McAdam and Leonard (2003), CSR has a strong affinity with the principles of quality management. This could be somewhat substantiated by the argument that the principles of sustainable development may be integrated into the processes of any organisation (Rocha et al., 2007).

2.1.2 AN INTEGRATED APPROACH TO CORPORATE SUSTAINABILITY

With a basis in a stakeholder view (Asif et al., 2010), one could argue that there is need to manage all issues related to stakeholders from the viewpoint of integrated management system (IMS). In fact, one of the main reasons for the increased focus on integrated management systems is probably the expansion of the scope of quality concerns within organisations, in such a way that improved quality is seen as a way to satisfy multiple stakeholders in addition to customers (Karapetrovic, 2003). An integrated perspective on corporate sustainability is necessary if organisations are striving to capture the complex set of responses to the wide array of influences covered by organisations' sphere of influences (Benn and Dunphy, 2004). With respect to the IMSs, Karapetrovic (2002) distinguish between organisations that have integrated only the documentation, those which have aligned the processes, objectives and resources,

and finally those which have all parts of the management system integrated in a single management system.

The integration of corporate sustainability into business processes can be facilitated through an integrated management system (IMS) approach. In this respect, Asif et al. (2011) proposed a conceptual framework for corporate sustainability through the integration of management systems (Figure 1).

The conceptual framework adopts a meta-management approach, which is defined as the management of various sub-systems at a higher level of abstraction, logic, and inquiry (Asif et al., 2010). The systems approach to integration starts from a meta-level of inquiry, where it identifies the relevant stakeholders and their requirements. The stakeholder requirements then determine the design of an IMS. In this context, stakeholder orientation could be regarded as the prerequisite for sustainable development (Isaksson, 2006; Zink, 2005).

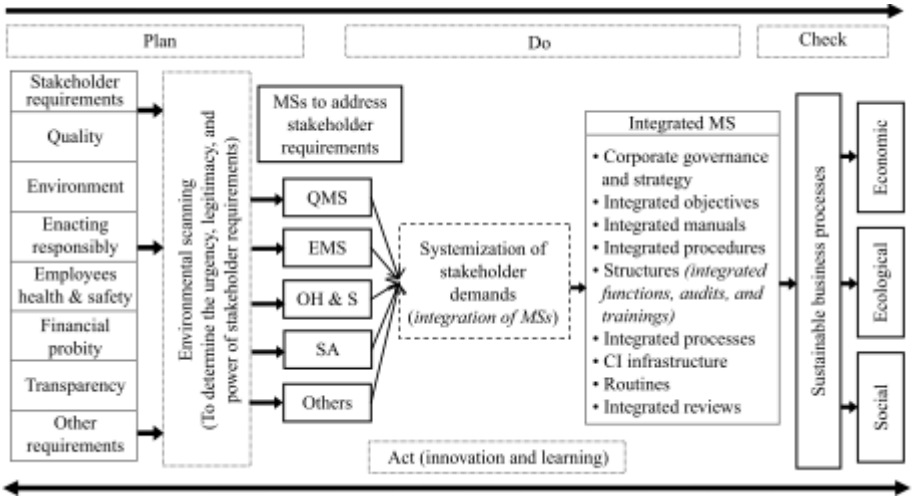


Figure 1. The framework for corporate sustainable development through an IMS approach (Asif et al., 2011)

The integration of sustainability into business processes requires that sustainability be an integral part of organisation's business strategy (Bonn and Fisher, 2011; Epstein and Roy, 2001), as well as continuous interaction with stakeholders, and innovative ways of designing, reviewing and updating business processes (Asif et al., 2011).

Consistently with an approach of Asif et al. (2010), the process of integrating sustainability starts with the identification of key stakeholders and their requirements.

Indeed, an organisation should identify and fulfil a wide variety of primary and secondary stakeholders' needs and expectations if organisational sustainability is to be reached (Garvare and Johansson, 2010). According to the Asif et al. (2011), the essential feature of an IMS is that it develops an integrated system to address stakeholder demands in a systematic manner. As shown in Figure 1, organisations may deploy a number of different management systems to meet key stakeholder requirements. As reflected by a study of Epstein and Roy (2001), translating a sustainability strategy into action and driving it through a complex organisation is a substantial challenge. In this regard, management systems are considered to be supportive in implementing a sustainability strategy through an organisation.

In order to evaluate the extent to which sustainable development has been integrated (Asif et al., 2011), as well as to monitor and assess the value of sustainability actions undertaken (Epstein and Roy, 2001; Schaltegger and Wagner, 2006a), performance indicators must be developed. Organisations may use various indicators to help quantify the efforts made to improve sustainability performance. Each element of sustainability actions must be translated into a metric that will eventually be linked to sustainability performance (Epstein and Roy, 2001).

2.1.3 SUMMARY

Organisations have been increasingly recognising their role in contributing to sustainability. In this context, a number of voluntary tools, approaches, and initiatives have been developed with the aim of providing a more systematic approach to cope with sustainability issues.

In this regard, Chapter 2.1 has outlined general features some of the most common sustainability initiatives. Among them, ISO 26000 is discussed in greater detail, predominantly from the quality management viewpoint. Firstly, it is proposed that organisational (corporate) sustainability cannot be achieved in the absence of a framework quality management. In this context, organisational sustainability should be closely tied with the interactions between an organisation's quality management approach and an organisation's environment (e.g. organisation's stakeholders). How the standard contributes to sustainability is described, and how the concepts and the emerging standard are related to quality systems is established.

As stated by Castka and Balzarova (2008a), ISO 9000 and ISO 14000 significantly influenced the first steps in the standardisation of social responsibility. Having this in mind, several similarities and differences between ISO 26000 and the abovementioned standards are described in this chapter.

ISO 9000 and ISO 14001 are different standards in comparison to ISO 26000, especially considering the scope of these standards. However, both standards (ISO 9000 and ISO 14000) can strongly contribute toward building a stakeholder-focused organisation, which is the focal point of ISO 26000.

It is also suggested that an integrated management system can be a way of systematically integrating sustainability into business processes. Proponents of the IMS approach advocates that an IMS approach can be used to structure the entire process of managing, measuring, and assessing progress towards corporate sustainability.

2.2 QUALITY MANAGEMENT AND PERFORMANCE

2.2.1 DEFINITION OF TERMS

The current debate on terms like performance, productivity and quality is still confusing, since adequate and commonly accepted definitions are rarely found within both academic and commercial circles (Tangen, 2005). However, 'performance' is the umbrella term of excellence and includes profitability and productivity as well as other non-cost factors such as quality, speed, delivery and flexibility (Tangen, 2005). In the following, we will start by illuminating some of the terms that are relevant to this research.

Probably one of the most the typical criterions to evaluate the functioning of an organisation is effectiveness. Effectiveness, which involves doing the right things, at the right time, with the right quality etc., can be defined as the *ratio* between actual output and expected output (Sink and Tuttle, 1989). However, effectiveness is a quite diffuse term and in most cases very difficult to quantify. It is often linked to the creation of value for the customer and mainly influences the numerator (outputs) of the productivity ratio (Tangen, 2005). In our point of view, *effectiveness refers to what extent the actual result (in terms of output and outcome) corresponds to the aimed for result*, which is somewhat consistent with the definition of Sumanth (1994).

Efficiency, however, refers to productivity ratio, and reflects how well the resources are utilised to accomplish the result (Sink and Tuttle, 1989; Sumanth, 1994). Therefore, efficiency is defined as the *ratio between resources expected to be consumed and resources actually consumed*.

Quality can be defined as *satisfying or exceeding customer requirements and expectations* and hence, to some extent, it is the customer who ultimately judges the quality of a product (Shen et al., 2000). Thus, the competitiveness of a company is mostly dependent on its ability to perform well in dimensions such as cost, quality, delivery dependability and speed, innovation and flexibility to adapt itself to variations in demand (Carpinetti et al., 2003). As proposed by Johnson and Kaplan (1987), quality should include measures such as scrap, rework, defect rates, customer complaints and warranty calls. Uyar (2009), however, stressed the importance of quality performance measures in the context of financial and non-financial measures. The author implies that organisations have begun to use new performance measures (non-financial measures) other than traditional measures. This is consistent with the findings of the Tangen (2003), who indicate that in some cases different performance dimensions may have to be combined to get a balanced and complete view of the situation. Respective to this view, Garvin (1987) identified eight competitive dimensions of quality: (1) performance; (2) features; (3) reliability; (4) conformance; (5) durability; (6) serviceability; (7) aesthetics; and (8) perceived quality. Quality management, as a strategy for efficiency and defectiveness improvement in organisations, is achieved in two ways (Ivanović and Majstrović, 2006):

- product quality improvement, and
- effectiveness / efficiency improvement in an organisation, as a system.

As such, higher quality can be achieved through (Dahlgaard et al., 1998):

- internal quality improvements,
- external quality improvements.

The main aim of internal quality improvements is to make the internal processes 'leaner', i.e. to prevent defects and problems in the internal processes which ultimately lead to lower costs. In contrast, external quality improvements are aimed at the external customer, with the aim of being able to increase customer satisfaction and thereby achieve a bigger market share (Dahlgaard et al., 1998).

2.2.2 ORGANISATIONAL PERFORMANCE

Issues concerning the organisational performance can be in general divided into two main fields (Škrinjar et al., 2008):

- performance measurement frameworks and systems, and
- performance measures.

The area in which the performance management theme has been most extensively and effectively investigated is that of performance measurement. As argued by Neely et al. (2005), performance measurement is a topic which is often discussed but rarely defined. However, from marketing perspective, organisations achieve goals, when they are able to satisfy customers with greater effectiveness than their competitors (Kotler, 1984). From an operations perspective, a business performance measurement system (PMS) is mainly perceived as a 'set of metrics used to quantify both the efficiency and effectiveness of actions' (Neely, 1994). In this regard, Neely (1994) proposed the following distinct definitions:

- *a performance measurement* can be defined as the process of quantifying the efficiency and effectiveness of action,
- *a performance measure* can be defined as a metric used to quantify the efficiency and/or effectiveness of an action,
- *a performance measurement system* can be defined as the set of metrics used to quantify both the efficiency and effectiveness of action.

According to Neely et al. (2005), the performance measurement system can be viewed regarding the three different levels:

- the individual performance measures,
- the set of performance measures, i.e. the performance measurement system as an entity, and
- the relationship between the performance measurement system and the environment within which it operates.

Attempts have been made in the past to measure performance based predominantly on financial measures, while less emphasis has been placed on the non-financial components of performance measurement. However, criticism of financial indicators, as merely stimulators of short-term thinking (e.g. Kaplan, 1983; Otley, 1999), has revealed the need to utility a more holistic approach of performance measuring. Consequently, as a response to relatively narrow point of view of performance measuring, a more advanced approaches of PMSs to include financial and non-financial performance measures, as well as explaining cause-and-effect relationships between the various measures, and providing better insight in terms of links between PMS and organisation's strategy (Kaplan and Norton, 1996; Otley, 1999; Neely and Adams, 2000; Brown, 2000) have been proposed. For instance, Gomes et al. (2011) suggest that organisation should (among other performance measures) also pay attention to softer performance measures, such as social responsibility. In this context, PMSs combine financial, strategic, and operating business measures to gauge how well a company meets its targets (Gates, 1999). This can be somewhat corroborated by the work of Ittner et al. (2003), who found that organisations that make more extensive

use of a broad set of financial and non-financial measures than those with similar strategies or value drivers earn higher stock returns. Advocates of this approach argue that it can lead to superior firm performance (e.g., Banker et al., 2000). More recently, literature indicates that the organisational focus should be redirected from performance measurement to performance management (Neely, 2005). This tends to emphasise the dynamic nature of performance measurement and measures.

As proposed by Franco-Santos et al. (2007), the role of business PMSs are as follows:

- 'measure performance' with the aim of monitoring progress and measuring performance as well as evaluating performance;
- 'strategy management', which refers to a planning, strategy formulation, strategy implementation/execution, and focus attention/provide alignment;
- 'communication', which comprises the roles of internal and external communication, benchmarking and compliance with regulations;
- 'influence behaviour', which refers to a rewarding or compensating behaviour, managing relationships and control; and
- 'learning and improvement' that encompasses the roles of feedback, double-loop learning and performance improvement.

The above-stated roles of BMPs, clearly reflect that on contrary to performance measurement, performance management refers to an underlying activities, such as the setting of objectives or strategies, development of an action plans, execution of action plans and the assessment of achievement of objectives (Franco-Santos et al., 2007; Bourne et al., 2000).

Considering the academic perspective, a number of studies have applied different ways to measure organisational performance (e.g. Ho, 2011; Lin and Kuo, 2011; Antony and Bhattacharyya, 2010; Prajogo and Sohal, 2006; Fuentes-Fuentes et al., 2004; Chenhall, 1996). For example, the earlier empirical studies (Choi and Eboch, 1998; Samson and Terziovski, 1999) used multiple items as indicators of organisational performance. Hence, different performance dimensions may have to be combined to get a balanced and complete view of the organisation's performance (Tangen, 2003). For instance, Venkatraman and Ramanujan (1986) consider three aspects of performance, among them are financial performance, business performance, and organisational effectiveness and the later have been subsequently known as organisational performance. They suggested that a broader conceptualisation of the organisational performance would (in addition to financial indicators) include operational indicators as well when measuring the organisational performance.

The operational indicators may include such measures as new product introduction, product quality, manufacturing value-added and marketing effectiveness.

A comparison of the organisational performance dimensions listed in Table 5 shows that there is some variation in academic research regarding the constructs of organisational performance used as dependent variables. As shown in Table 5, different performance measures are integrated by empirical studies in order to overall organisational performance.

Table 5. Organisational performance dimensions

Organisational performance dimensions (dependent variables)	Supporting studies
Financial performance, market performance	Ho (2011)
Inventory management performance, quality performance	Baird et al. (2011)
Manufacturing performance	Zhang et al. (2012), Chenhall (1996)
Market performance, human resources performance	Lin and Kuo (2011)
Product quality, product innovation, process innovation	Prajogo and Sohal (2006)
Financial performance, operational performance, employee performance	Fuentes-Fuentes et al. (2004)
Business performance (financial and market performance)	Curkovic et al. (2000)
Customer satisfaction, employee morale, productivity, quality of out-put and delivery performance	Samson and Terziovski (1999)
Quality, delivery, cost	Choi and Eboch (1998)
Activity, leverage, return on investment, liquidity	Yamin et al. (1997)

Previous research had used many variables to measure organisational performance, such as profitability, gross profit, return on asset (ROA), return on investment (ROI), return on equity (ROE), return on sale (ROS), revenue growth, market share, sales growth, and operational efficiency (e.g. Fuentes-Fuentes et al., 2004, Curkovic et al., 2000). When examining the issue of whether the variables used in these empirical studies actually measure the same phenomenon, i.e. overall organisational

performance, the question arises whether there is a content validity. Indeed, it is clear that the different measures of overall organisational performance used do not represent the same construct. In recent years, however, there has been a proliferation of approaches to performance measurement across a range of disciplines (Chenhall and Langfield-Smith, 2007), which can also be considered to be one of the causes of ambiguity in establishing the scale of measurement of overall organisational performance.

Despite the importance of accurately measuring organisational performance in most areas of academic research, there is a lack of studies that would directly address the question of how overall organisational performance is or should be measured. Perhaps more importantly, none of these studies seem to have significantly influenced how overall organisational performance is actually measured in most of the empirical research that uses this construct as a dependent measure.

2.2.3 THE LINK BETWEEN QUALITY MANAGEMENT AND ORGANISATIONAL PERFORMANCE

During the previous decade, quality management has become a major area of attention within academic research, especially in relation to performance implications (Schroeder et al., 2005; Samson and Terziovski, 1999). Quality management (QM) is defined and measured in empirical studies as practices of organisation by emphasising broader quality management (Zu, 2009; Sousa and Voss, 2002; Dean and Bowen, 1994). Quality management practices have been documented extensively in measurement studies that have developed and validated instruments capable of measuring the practices as well as the studies that have examined the relation of QM practices to organisational performance (Kaynak, 2003). An extensive review of the QM literature reveals practices that are most commonly examined in empirical QM studies. These practices are top management support, customer focus, supplier relationship, employee relations, Information and analysis, product/service design, and process management, which are implemented in the organisation in order to strive for continuous improvement and enhancing overall organisational performance (Choi and Eboch, 1998; Samson and Terziovski, 1999; Prajogo and Sohal, 2003; Kaynak, 2003; Lakhal et al., 2006). Table 6 summarises the most representative studies on efforts to measure the QM practices.

Table 6. QM practices and literature support

QM practice	Supporting studies
Top management commitment Strategic quality planning Customer focus Supplier relationship product/service design Process management Information and analysis Human resource management	Dean and Bowen (1994), Ahire et al. (1996), Ahire and O'Shaughnessy (1998), Samson and Terziovski (1999), Dow et al. (1999), Prajogo and Sohal (2003), Kaynak (2003), Lau et al. (2004), Demirbag et al. (2006), Lakhal et al. (2006), Singh and Smith (2006), Sila (2007), Zu (2009), Baird et al. (2011), Wu et al. (2011)

There is a growing body of empirical research supporting a direct relationship between quality management and organisational performance, as can be identified in total quality management (TQM) literature (e.g. Choi and Eboch, 1998; Dow et al., 1999; Samson and Terziovski, 1999; Kaynak, 2003; Sila and Ebrahimpour, 2005; Prajogo and Sohal, 2006). These studies typically conclude that TQM has a positive and significant relationship with organisational performance.

A link between quality management, customer-focus, and organisational performance has been made in relation to the management of operations (Terziovski and Samson, 1999). Terziovski and Samson (1999) concluded that TQM element, such as customer-focus, relate positively to organisational performance in the areas of customer satisfaction, employee morale, delivery, productivity, cash flow, and sales growth. Likewise, Lakhal et al. (2006) provided empirical evidence that quality management practices have a positive impact on organisational performance. Furthermore, the results of their study highlight the crucial role played by top management commitment and support. This is also consistent with the evidence of the empirical study (Sila and Ebrahimpour, 2005), indicating that especially leadership, and information and analysis play a significant role in shaping the quality focus of companies. There is also strong support provided by other empirical literature (e.g. Zu, 2009) for the importance of these two factors in achieving higher organisational performance. Nonetheless, the top management of the organisation is directly responsible for determining an appropriate organisation culture, vision, and quality policy (Dahlgaard et al., 1998). Top managers should also determine objectives, and develop specific and measurable goals to satisfy customer expectations and improve their organisations' performance

(Demirbag et al., 2006). Among QM practices, Demirbag et al. (2006) found that training, employee relations, and quality data and reporting are the most important ones regarding the relation to organisational performance. Therefore, the literature suggests that performance along the competitive dimensions of quality contributes to overall organisational performance and ultimately to competitive advantage (Curkovic et al., 2000).

2.2.4 SUMMARY

The literature provides recognition that performance has multiple dimensions. However, there is a lack of research on the conceptualisation and operationalisation of the organisational performance. Most importantly, it is difficult to find a consistent evidence of how organisational performance should be operationalised in empirical studies.

QM practices, however, have been documented extensively in measurement studies as well as in the studies that have investigated the relation of QM practices to various dependent variables.

The QM literature (e.g. Zu, 2009) in is agreement that QM practices are developed around two dimensions: core and infrastructure QM practices. A review of the literature also reveals that, although the relationship between quality management and organisational performance has been investigated in several empirical studies, the literature on quality management is not conclusive regarding the organisational performance point of view. First, as discussed above, there is no consistent way of operationalisation of organisational performance. Second, there is a need to better understand the effect of a different context on the relationship between QM practices and organisational performance.

2.3 SUSTAINABILITY AND PERFORMANCE

2.3.1 CORPORATE SOCIAL RESPONSIBILITY AND PERFORMANCE

Over the decades, the concept of corporate social responsibility (CSR) has continued to grow in importance and significance. The idea that business enterprises have some responsibilities to society beyond that of making profits for the shareholders has been around for centuries (Carroll and Shabana, 2010). Nevertheless, it is still difficult to obtain a precise definition of CSR. Even though the concept has become a popular buzzword on the academic and corporate agenda for decades, CSR is still a surrounded

by a great deal of ambiguity (Snider et al., 2003). However, this thesis adopts the view of the European Commission (EC) that defines CSR as: 'a concept whereby companies integrate social and environmental concerns in their business operations and in their interaction with stakeholders on a voluntary basis' (EC, 2001). CSR is, therefore, mainly defined as concepts and strategies by which companies voluntarily integrate social and environmental concerns with their business operations and stakeholder interaction (Enquist et. al., 2006). In this context, CSR is considered as a response to social pressures, relative to stakeholders' demands and expectations, thereby including environmental concerns, and social demands which characterise the dimensions of CSR (Dahlsrud, 2008; Campbell, 2007).

The term 'corporate social responsibility' is still in popular use, even though competing, complementary and overlapping concepts, such as corporate citizenship, business ethics, stakeholder management and sustainability, are all striving to become the most accepted and widespread notion of the field (Carroll and Shabana, 2010). At the same time, the concept of corporate social performance (CSP) has become an established umbrella term that embraces both the descriptive and normative aspects of the field, as well as placing an emphasis on all that firms are achieving or accomplishing in the realm of social responsibility policies, practices and results (Carroll and Shabana, 2010). Though CSR came about because of concerns about businesses' harmful impacts on society (Carroll and Shabana, 2010), it was only natural to raise the question whether is it pays for corporations to behave in social responsible ways (Campbell, 2007; Pedersen and Neergaard, 2009). The focus of CSR theories has moved to an organisational level, where the effects of CSR on a firm's financial performance are closely examined (Carroll and Shabana, 2010). As outlined by Sharp and Zaidman (2010), the literature regarding CSR can be divided into two in light of two basic strategic viewpoints: (1) the ethical or moral orientation; (2) the business orientation (Carroll, 1991: Driver, 2006; Godfrey and Hatch, 2007).

There have been many theoretical and empirical debates about the benefits of CSR activities. For example, on the basis of an extensive literature review, Weber (2008) divided the CSR business benefits in a five main areas:

1) Positive effects on company image and reputation,
2) Positive effects on employee motivation, retention, and recruitment,
3) Cost savings,
4) Revenue increases from higher sales and market share,
5) CSR-related risk reduction or management.

From a business perspective, researchers often argue that CSR can improve the competitiveness of an organisation (e.g. Burke and Logsdon, 1996). In the long term, this implies a positive relationship between the CSR involvement of an organisation and its financial success, suggesting that there is a business case for CSR (Weber, 2008). Most of the theoretically and empirically oriented studies on this subject have focused on investigating the connection between corporate social responsibility and corporate financial performance (e.g., Margolis and Walsh, 2003). Conflicting results emerged from empirical studies: For instance, Margolis and Walsh (2003) are unable to establish conclusive links between corporate financial performance and CSR, while Orlitzky et al. (2003) demonstrate that the practice of CSR has a positive impact on business results. However, there are also research results indicate that there is a negative correlation (Vance, 1975; Davidson and Worrell, 1988) or no correlation (Aras et al., 2010) between CSR and corporate financial performance.

Table 7 shows an exemplary overview of key research findings, concerning the relationship between CSR organisational performance discussed in current CSR research.

Table 7. Summary of recent articles and researches regarding the relationship between corporate social responsibility (CSR) and organisational performance

Type of research	Author(s)	Key research findings
Quantitative empirical research	Crisóstomo et al. (2011)	Results indicate that in the emerging market of Brazil, CSR is decreases value for firms and has no relation with financial accounting performance.
Quantitative empirical research	Chen and Wang (2011)	The results show that companies' social responsibility activity can improve the financial performances in Chinese firms.
Quantitative empirical research	Aras et al. (2010)	No evidence to confirm significant relationship between corporate social responsibility and financial performance / profitability in emerging markets..
Quantitative empirical research	Michelon et al. (2012)	The main findings of study is that, when companies link their CSR initiatives to likely preferences of the stakeholders and channel resources to these initiatives, they are able to

		maximise their CSR efforts in terms of improved company performance.
Quantitative empirical research	Arendt and Brettel (2010)	CSR affects companies' success in both types of industry, via increased image attractiveness (product-based industries) or stakeholder-company identification (service-based industries)
Case study research	Mittal et al. (2008)	It has been reported that there is little evidence that companies with a code of ethics would generate significantly more economic value added (EVA) and market added value (MVA) than those without codes
Quantitative empirical research	Callan and Thomas (2011)	CSP positively influences financial performance.
Qualitative research	Blomgren (2011)	The results indicate that there is no business case for CSR in the sense of helping achieve profits above industry average, but only a business case in the sense of helping achieve profits at industry average.
Quantitative empirical research	Lin et al. (2009)	Authors identified a positive relationship between CSR and financial performance.
Quantitative empirical research	Cegarra-Navarro and Martínez-Martínez (2009)	The results indicate that the benefits of CSR issues fall within five major categories; namely: quality of products and services, global business, innovativeness, corporate culture, and ethical obligations. The authors did not find evidence to support the significant effect of CSR on financial soundness.
Quantitative empirical research	Qu (2009)	CSR has a positive impact on organisational performance.

Bearing in mind the findings presented in Table 7, it can be argued that socially responsible corporate performance can be associated with a series of bottom-line benefits. For instance, prior studies provide evidence that socially responsible behaviour leads to better organisational performance (e.g. higher financial and non-financial performance, enhanced brand image and reputation, etc.).

As indicated by the literature (Ortiz Martinez and Crowther, 2005), there is no agreed-upon definition of exactly what constitutes CSR and consequently no agreed upon measure of CSR practices and how to relate them to the various dimensions of organisational performance. Determining how CSR and organisational performances are associated is further complicated by the lack of consensus of measurement methodology as it relates to corporate social performance. It has been shown that the current CSR and sustainability research lacks a systematic method to evaluate CSR activities (Weber, 2008). Nonetheless, empirical methods are used to identify the relationship between an organisation's engagement in CSR practices and its performance benefits. While the task of identifying the relationship between CSR and organisational performance has proven to be a difficult one, the identification of this relationship remains an important issue.

2.3.2 ENVIRONMENTAL PERFORMANCE

The context of environmental management

Recent decades have seen increased awareness of environmental issues throughout the world (Banerjee, 2001). As such, a global environmental concern has intensified the pressure on reconciling production with ecosystem conservation. Nowadays, the design and manufacture of environmentally friendly products have become an integral part of business strategies as driven by customer requirements, competitive pressures and resource conservation opportunities (Pun et al., 2002). Organisations that can simultaneously provide quality and environmentally friendly products tend to have a greater potential of capturing larger market shares and returns (Pun et al., 1998). As argued by Sarkis (2003), the issue of organisations incorporating the natural environment into strategic and operational decisions is a reality that they will or have already encountered. This means that organisations need to balance the business and environmental factors in each business decision, process and product development activity, and strategic planning (Sarkis, 2003). In this context, environmental management can be understood as a way of enhancing not only environmental performance but also economic performance, which subsequently leads to increased eco-efficiency (Figge, 2005).

According to the Hart (1997), an organisation's approach towards environmental strategy can evolve through operational focus on greening to a more external, strategic focus on sustainable development. As such, Hart (1997) differentiates among the earlier pollution prevention phase, the product stewardship phase, and the clean technology phase. However, apart from the pollution preventive perspective, environmental improvements should also be considered in terms of resource

productivity (Porter and van der Linde, 1995). In this regard, organisations must move their attention from merely pollution preventive activities to also include the opportunity costs of pollution: wasted resources, wasted effort, and diminished product value to the customer (Porter and van der Linde, 1995).

Taking into consideration the above point of view leads to a discussion about the competitive effects of the voluntary adoption of environmental management practices, and as such the competitive outcomes of a proactive environmental behaviour (Schaltegger and Synnestvedt, 2002). For instance, Rao and Holt (2006) indicate that greening leads to competitiveness and economic performance of the firm. They took into account the supply chain perspective and, as such, advocate that requiring suppliers to have their own EMS and greening their operations helps tremendously in reducing the production of waste at source (Rao and Holt, 2006). On the outbound side of the green supply chain, green marketing, environment-friendly packaging, and environment-friendly distribution are all initiatives that might improve the environmental performance of an organisation and its supply chain (Rao and Holt, 2006; Sarkis, 1999). Management of waste in the outbound function, such as reverse logistics and waste exchange, can lead to cost savings and enhanced competitiveness (Rao and Holt, 2006).

Similarly, greening of production results in the minimisation of pollution, a form of inefficiency (after Porter and van der Linde, 1995), re-use of materials and recycling initiatives. This leads to savings in raw materials, water and energy usage and thus leads to competitiveness and economic performance (Rao and Holt, 2006). Consistent with this perspective, Jacobs et al. (2010) argue that direct economic benefits from corporate environmental initiatives improve returns on investment and market value. Benefits include energy, raw material, and abatement cost reductions, as well as intangible advantages of improved consumer perception, community relations, employee morale, and access to new markets.

The literature reveals that a number of approaches and initiatives exist that can be implemented by an organisation to reduce its impact on the environment (e.g. Sarkis, 2001). Consistently, Poksinska et al. (2003) asserted that the increase of public interest in environmental concerns is reflected in a related increase in stakeholder environmental activism that has ultimately initiated the development of a number of different environmental programs (Poksinska et al., 2003). The implementation of formal an environmental management system (EMS) is one way to continuously improve environmental performance (Nawrocka and Parker, 2009). The two most frequently used guidelines for EMS design and certification are the international

standard, ISO 14001, and the European eco-management and audit scheme (EMAS). Among them, ISO 14001 aims to create sustainable improvements in the practices of participating firms through the implementation and integration of appropriate environmental-management tools (Sebhatu and Enquist, 2007). Link and Naveh (2006) suggest that in an environment where strong sustainability values prevail, organisations are more likely to adopt Viewing from the point where organisations are operating in an era that promotes the environment as a value on its own, might be sufficient motivation for adopting environmental standards (Link and Naveh, 2006). Moreover, meeting customer demands, complying with regulatory requirements, searching for competitive advantages, are as well identified as important organisational motives for the adoption of an EMS (Banerjee, 2003; Poksinska et al., 2003; González-Benito and González-Benito, 2005).

Perceptions of the EMS and the environmental performance

The ISO 14001:2004 standard defines an Environmental Management System (EMS) as 'a part of an organisation's management system used to develop and implement its environmental policy and manage its environmental aspects', where the environmental aspects are 'element of an organisation's activities or products or services that can interact with the environment'. Therefore, an EMS is a method of incorporating environmental care throughout the corporate structure. ISO 14001 is becoming a definitive actor in incorporating the mechanisms that organisations use to improve their environmental performance, without harming business performance (Link and Naveh, 2006). In fact, many organisations are seeking ways to understand, demonstrate and improve their environmental performances (Perotto et al., 2008).

According to ISO 14001:2004, environmental performance is expressed as: measurable results of an organisation's management of its environmental aspects; results can be measured against the organisation's environmental policy, environmental objectives, environmental targets and other environmental performance requirements.

According to the ISO 14031 standard, environmental performance evaluation (EPE) is 'an internal process and management tool designed to provide management with reliable and verifiable information on an ongoing basis to determine whether an organisation's environmental performance is meeting the criteria set by the management of the organisation'. An organisation with an environmental management system in place may evaluate its environmental performance against its environmental policy, objectives, targets and other environmental performance criteria (Jasch, 2000).

The connection between the EMS and the environmental performance

Researchers have been widely interested whether opportunities and competitive advantages in a relation to corporate environmentalism exist (e.g. Eiadat et al., 2008; Link and Naveh, 2006).

The literature reveals that there are competitive opportunities associated with environmentally friendly management (e.g. Poksinska et al., 2003; González-Benito and González-Benito, 2005). However, empirical support is sometimes also contradictory (Wagner et al., 2002; Sarkis and Cordeiro, 2001).

A significant and growing number of studies have attempted to examine the environmental outcomes of environmental management systems (EMS). Several studies focused on the impacts of EMS to environmental performance (Perotto et al., 2008; Nawrocka and Parker, 2009; Barla, 2007). Iraldo et al. (2009) show a positive effect of a well-implemented EMS (complying with EMAS) on competitive performance in the context of innovation performance, resource productivity, market performance and intangible asset.

2.3.3 SUSTAINABILITY PERFORMANCE MEASUREMENT

Sustainability is a critical part of most major corporations today. Furthermore, environmental and social demands from shareholders and stakeholders are contributing to the pressure for organisations to consider sustainability issues more seriously (Lee and Saen, 2011). A growing number of authors agree on the relevance of identifying and fulfilling stakeholders' needs, expectations and desires (Ayuso et al., 2011; Clarkson, 1995). In fact, the organisation must be able to identify stakeholders and their needs, because the starting point for deciding what to measure is established with the following question (Neely et al., 2001): 'Who are our key stakeholders and what do they want and need?' This is somewhat consistent with the systems approach to integration of management systems, indicating that process of integration starts from the identification of relevant stakeholders (Asif et al., 2010). In relation to performance measurement, the performance prism model was developed, aimed to integrate stakeholder perspective (Neely and Adams, 2000). Moreover, the well-known performance management system developed by Kaplan and Norton (2001) also recognises the need to broaden the model to include stakeholders' interests and needs. As stated by authors: 'All stakeholder interests, when they are vital for the success of the business unit's strategy, can be incorporated in a Balanced Scorecard'.

It is widely recognised that more and more businesses are aligning their activities with the principles of sustainable development. Therefore, they need to adapt their ways of measuring corporate performance (Keeble et al., 2003). Existing performance measurement systems are rarely sufficient to improve organisational performance. Typical critiques are that they encourage local optimisation, fail to account for issues other than financial performance, do not reflect the fact that the organisation has pluralistic goals, and do not recognise that the organisation operates in dynamic internal and external environments (Searcy et al., 2008). As stated by Veleva and Ellenbecker (2000), organisations have long used standard financial indicators to determine their business success. Only recently have a growing number of firms begun to use environmental, health and safety, and social indicators. Like all performance measurement systems, a sustainability performance measurement system (SPMS) is fundamentally based on the premise that the ability to measure performance is a prerequisite for business improvement (Lohman et al., 2004).

The objective of a sustainable measure is to assess a corporate contribution to sustainability comprising all three dimensions, environmental, social, and economic (Lawrence, 1997). In order to measure the progress toward sustainability, several indicators have increasingly been used. Indicators are typically numerical measures that provide key information about a physical, social or economic system (Veleva et al., 2001). They go beyond simple data to show trends or cause-and-effect relationships. Indicators have three key objectives: (1) to raise awareness and understanding; (2) to inform decision-making; and (3) to measure progress toward established goals (Veleva et al., 2001). Recently, literature (e.g. Keeble et al., 2003; Palme and Tillman, 2008; Searcy et al., 2007) has revealed a strong focus on the development of sustainable development indicators.

A sustainability performance management and measurement system could be defined as: ‘the measurement and management of the interaction between business, society and the environment‘ (Schaltegger and Wagner, 2006a). As stated by Henri and Journeault (2008), organisations are increasingly being held responsible for environmental actions, as reflected by the growing number of laws, regulations, and penalties in this area. Consequently, organisations are now obliged to measure, control, and disclose their environmental performance. According to the Schaltegger and Wagner (2006a), ‘Management of sustainability performance in all of its perspectives and facets requires a sound management framework which, on the one hand, links environmental and social management with the business and competitive strategy and management and, on the other hand, integrates environmental and social information with economic business information‘.

Managing and measuring the sustainability performance has been the subject of extensive research. (e.g. Epstein and Rejc-Buhovac, 2010; Searcy et al., 2008; Schaltegger and Wagner, 2006a; Figge et al., 2002). For example, Schaltegger and Wagner (2006a) proposed an integrated framework approach linking the Sustainability Balanced Scorecard with sustainability accounting and reporting in order to achieve the integrative task of sustainability performance measurement, management and reporting (Figure 2).

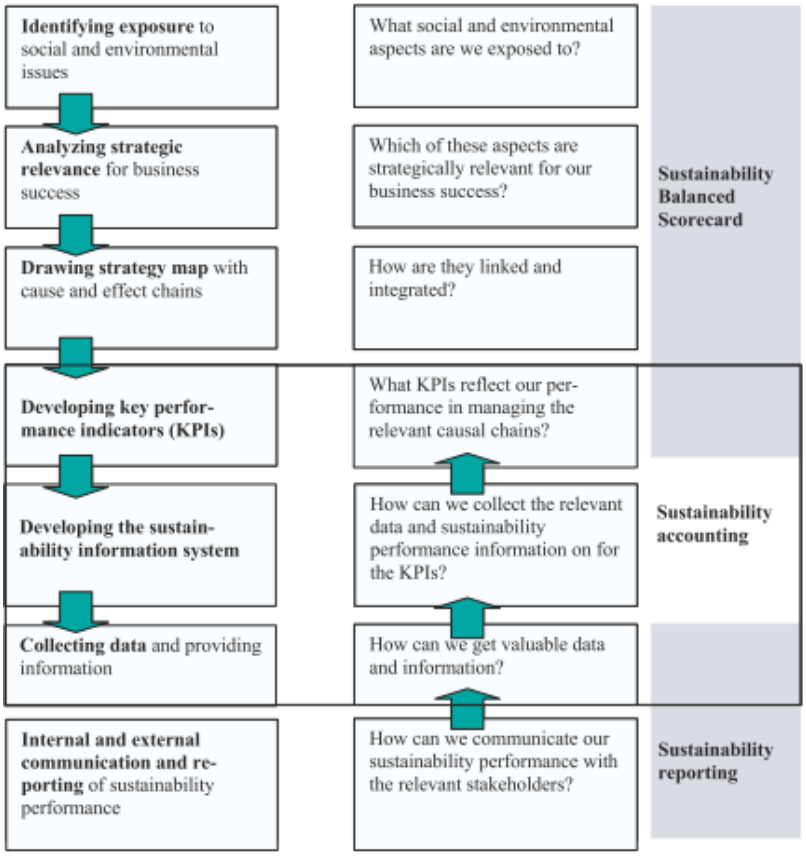


Figure 2. An integrated framework for sustainability performance measurement and management (Schaltegger and Wagner, 2006a)

The framework (Figure 2) shows core questions driving the management of sustainability performance in the right column and the respective management activities in the left column. As can be seen in the Figure, the questions and activities can be organised in three overlapping groups of approaches: the Sustainability Balanced Scorecard, sustainability accounting, and sustainability reporting.

Drawing upon empirical study (Maletič et al., 2011) as well as on the performance prism framework (Neely and Adams, 2000), certain authors (Maletič et al., 2012; Maletič et al., 2012a) proposed a sustainability performance measurement framework (Table 8).

Table 8. Sustainability performance measurement framework

		Proposed examples of Key Sustainability Performance Indicators KSPIs	
Factors: derived from Maletič et al. (2011)		***Output***	***Outcome***
	Stakeholders	Stakeholder satisfaction Turnover and absenteeism rate Improved image Community involvement/relationship Sponsorship/donations	ROE - return on equity ROA – return of assets ROI - return on investment % sales from 'green' products Sales growth Profit growth Market value added Growth in market share Investment in new processes and products (% of revenues) Reduced costs Decrease in CO_2 emission (tax)
Top management commitment CSR and local community engagement	**Strategies**	Percentage (%) of overall budget set aside for sustainability initiative Number of sustainability initiatives Number of new products/processes Number of significantly improved products/processes Number of new market segments	
Green development and environmental aspects	**Processes**	Efficiency and effectiveness of processes % change of energy use Consumption of energy by type % change in volume of hazardous waste % change of raw materials used Number of green procurement initiatives Number of products designed using DfE/ecodesign Product yield Tons of solid waste generated Tons of waste recycled Packaging volume or mass Number of audits Number of accidents	

Employee support	**Capabilities**	Environmental awareness training hours Competency training hours Hours training in DfE Number of employees trained (man-days / employee/ year) Submitted proposals for improvements Implemented proposals for improvements	

This presented conceptual framework for structuring the corporate sustainability performance indicators contributes to efforts to address measuring and managing the drivers of corporate sustainability. It is intended to support, rather than replace, existing performance measurement frameworks, such as the GRI.

It is proposed that factors identified with preliminary empirical study could be linked to the following three dimensions: *strategies*, *processes* and *capabilities*. Moreover, it is suggested that the development of a sustainability performance measurement framework can be divided into five main phases, in sequence: (1) stakeholder identification, (2) strategies, (3) processes, (4) capabilities, (5) key sustainability performance indicators (KSPIs). Each phase is described in more detail below.

Phase 1 (stakeholder identification)
The first perspective on sustainability performance is the stakeholder satisfaction perspective. Understanding how individuals or groups are or can be affected by an organisation's decisions and activities will make it possible to identify the interests that define the relationship with the organisation (ISO 26000). Moreover, identifying what stakeholders expect of the organisation and which policy commitments require substantiation are critical aspects for indicator development (Keeble et al., 2003). What organisations have to ascertain here is who the most influential stakeholders are and what it is that they want and need.

Phase 2 (strategies)
After stakeholders have been addressed, it is possible to progress to the second perspective on sustainability performance: strategies. The key question underlying this perspective is what strategies the organisation should adopt to ensure that the wants and needs of its stakeholders are satisfied. Apart from the stakeholders' wants and needs, an organisation vision all provides the basis for making strategic decisions.

Phase 3 (processes)
The third step addresses the question of which processes have to be put in place in order to allow the strategies to be delivered. An organisation that has aligned its processes perfectly with strategy has the potential to provide significant benefits to overall organisational performance. Regarding the green perspectives, it is essential for an organisation to move beyond regulatory compliance and needs to include conceptual tools such as pollution prevention, product stewardship and corporate social responsibility (Hart, 2005).

Phase 4 (capabilities)
The following step is associated with the capabilities that are required to operate these processes. By developing capabilities, organisation can ensure that employee skills and efforts are directed toward achieving organisational goals and strategies. In this regard, Phase 4 captures the common underlying dimension of the sub-theme related to capabilities that foster the competence of the business to operate in ways that are more sustainable and more innovative (von Kleef and Roome, 2007).

Phase 5 (key sustainability performance indicators (KSPIs))
The fifth phase comprises the development of potential measures (key sustainability performance indicators (KSPIs)) with a particular emphasis on the specific sub-themes. Furthermore, key measures and their associated metrics should be selected from the lists of potential measures and should be recommended for forming the core measures. Several criteria could be used during the indicator selection process. For example, Keeble et al. (2003) proposes the following criteria (they termed them as ‘screening‘ criteria): able to measure progress over time, measurable and verifiable, relevant to key internal/external concerns, potentially benchmarkable, critically activity-related, meaningful at group level.

2.3.4 SUSTAINABILITY MEASURES USED IN RECENT RESEARCH

While recognising that construct measurement development is at the core of theory building (Venkatraman, 1989), this section intends to reflect an overview of the recent empirical studies in the field of sustainability with a focus on sustainability measures. However, constructs are theoretical creations of phenomena that cannot be directly observed (Hair et al., 2010), and must be measured using theoretically derived indicators. Since the interpretation of the relationship between a constructs is closely linked to the relationship between a construct and its measures, construct measurement is central to theory-testing (Venkatraman, 1989). Some difficulties in theoretical foundation and construct development in the field of corporate sustainability are

expected, especially due to a problem of defining the concept of corporate sustainability (Van Marrewijk, 2003).

Since measurement involves the variables that represent a construct (Hair et al., 2010), it is in the interests of the researcher to use measures that capture the most accurate information possible about the phenomenon of interest regarding both content and construct validity. This is especially important in conducting an empirical study, since theory building involves making and testing assertions regarding a particular phenomenon, generally represented by relationships between variables in a conceptual model.

A number of fields, such as corporate environmentalism, corporate social responsibility, stakeholder, stakeholder theory and sustainable development, have contributed to the expansion of corporate sustainability literature. Hence, in order to assess the current state of corporate sustainability measurement, several empirical studies were reviewed in the fields of sustainability, corporate social responsibility and environmental performance. Table 9 summarises some examples of empirical studies and their approach on measuring different aspects of sustainability.

Table 9. Summary of recent articles and researches regarding the measurement of sustainability

Author(s)	Sustainability measures	Levels of measurement
Fairfield et al. (2011)	Integration/Alignment (8 items) Eco-efficiency (3 items) Employee-centred/ethics practices (4 items)	Ordinal (5-point Likert scale)
Chang et al. (2013)	Sustainability performance indicators (economic, environmental, and social responsibility) evaluated by Sustainable Asset Management (SAM); 3 factors for each dimension	Interval (scores are assigned based on industry-specific questionnaires)
Wagner (2010)	Sustainability performance index (two sub-indices: corporate environmental and social performance) derived from Kinder, Lydenberg, Domini & Co. (KLD) social ratings database	Interval (the indexes range from 0 to 19)
Michelon et al. (2012)	Data on CSR were drawn from the KLD Social Ratings database; Independent variables (stakeholder management): environment, community, corporate governance, diversity, employee relations, human rights, and product quality and safety.	Interval
Arendt and Brettel (2010)	CSR (4 items)	Ordinal (7-point Likert scale)
Hussey and Eagan (2007)	Environmental performance model includes: Leadership, Planning for continuous environmental improvement, Customer and supplier involvement, Information and analysis, Human resource	Ordinal (7-point Likert scale) A questionnaire was developed based on Baldrige Performance Excellence Criteria

	focus, Process and environmental management, Environmental results	
Hahn and Scheermesser (2006)	Activities and tools that support implementation of sustainable development.	Nominal
González-Benito and González-Benito (2005)	Environmental Management Practices (27 items)	Ordinal (6-point Likert scale)

The aforementioned difficulties in defining the concept of corporate sustainability as well as the multidisciplinary nature of sustainability leads to variations among authors in their preferred conceptualisations of sustainability constructs or sub-constructs. Clearly, there is a wide range of approaches to measure corporate sustainability, or at least some elements of corporate sustainability. As shown in Table 9, the most commonly used measures are derived from established sustainability indexes, such as the SAM Dow Jones Sustainability Index or the KLD Social Index. Likewise, the GRI intends to establish their guidelines as an internationally accepted framework that promotes comparable sustainability reporting by addressing the sustainability performance of the companies (Isaksson and Steimle, 2009). However, as noted above, most of these indexes represent measures of sustainability performance (generally reflected by dependent variables). In contrast, there is a lack of attempts to address the operationalisation and measurement of sustainability practices used in empirical studies as independent variables. In this regard, the use of perceptual measures is deemed appropriate and acceptable and it is used in most of the sustainability-related studies (e.g. Prajogo et al., 2012; Fairfield et al., 2011; Eiadat et al., 2008; Link and Naveh, 2006).

In recent years, there has been increased debate and interest in understanding the business case of environmental sustainability, predominantly from the perspective of the environmental performance as the measurement of corporate sustainability performance (e.g. Wagner, 2005; Wagner et al., 2002). As suggested by Prajogo et al. (2012), environmental performance studies can be improved by using real metric and objective data.

The greening of product innovation process has an influence on competitive performance; this has also been under study by researchers and it supported by empirical evidence (Pujari, 2006; Pujari et al., 2003). As far as environmental sustainability is concerned, there have also been some attempts in developing a scale

to measure environmental practices, mainly used as independent variables (e.g. González-Benito and González-Benito, 2005; Sarkis, 2003).

Therefore, by taking into account the above considerations, it can be concluded that some measures of environmental sustainability can be found in the literature. However, it can be argued that even without further empirical confirmation, it is clear that the different measures of environmental sustainability used in recent empirical studies do not represent the same construct. There is also a lack of a consistent definition of the construct of CSR, as well as its operationalisation and measurement (Williams and Aguilera, 2008) in the field of empirical CSR research. This lack of consistency of CSR conceptualisation and operationalisation across different empirical studies makes it difficult to evaluate and compare the findings because they usually refer to different dimensions of CSR (Williams and Aguilera, 2008; McWilliams and Siegel, 2000). In relation to this, efforts to further delineate the domain of corporate sustainability are necessary, since its measures have not been rigorously tested and validated. Therefore, it is evident that more effort should be devoted to developing valid measures to assess corporate sustainability.

2.3.5 SUMMARY

According to the Schaltegger and Wagner (2006), the literature on the link between sustainability performance, competitiveness and economic success suggests that the current literature stream can be structured according to:

- the theoretical questions analysed,
- the empirical research approaches taken,
- the normative conclusions drawn on how the relationship could be managed successfully.

As shown in the second chapter of this thesis, several authors discuss corporate sustainability performance from a CSR point of view and suggest that engagement on CSR initiatives leads to better business performance (Weber, 2008; Orlitzky et al., 2003). The relationship between sustainability-related activities and performance benefits remains an important research stream, because it is crucial to provide evidence concerning the positive effect on the bottom-line, especially form the business perspective.

Regarding the theoretical studies, Campbell (2007), for example, discusses under what conditions organisations act in socially responsible ways. However, there are a few empirical studies that investigate the relationship between corporate social responsibility and financial performance (e.g. Aras et al., 2010; Lin et al., 2009).

One branch of normative research focuses on how environmental and social issues can be integrated into management systems and linked to business strategy. These studies have focused predominantly on the development of a sustainability balanced scorecard (Figge et al., 2002; Hubbard, 2009). Another study (Weber, 2008), which is focused on the question of how to measure the company-specific value of CSR activities, is another an example of normative approach. However, most researchers have used the environmental performance of organisations as the measurement of corporate sustainability performance (Moneva and Ortas, 2010; Figge, 2005; Schaltegger and Synnestvedt, 2002).

A review of the sustainability literature, therefore, indicates that there is no single or preferred approach to measure corporate sustainability. It seems that sustainability research lacks systematic empirical studies that would directly address the question of how corporate sustainability is or should be measured. There are no consistent metrics for measuring sustainability, and little attention is paid to metrics that address the causality between corporate sustainability and organisational performance. In large part, this could be due to the many different approaches used in studies measuring sustainability from different perspectives.

3 RESEARCH FRAMEWORK AND HYPOTHESIS DEVELOPMENT

3.1 INTRODUCTION

The meaning of sustainability has often been the subject of intense debate. One commonly agreed definition refers to 'meeting the needs of people today without compromising the ability of future generations to meet their own needs' (World Business Council for Sustainable Development, 2005). In response to growing debates regarding the notion of corporate sustainability, one might infer that it is now commonly accepted that society will never achieve sustainable development without corporate support, as the private sector represents the productive resources of the economy (Bansal, 2002). Therefore, when transferring the notion of sustainability to business level, it can be accordingly defined *as meeting the needs of an organisation's direct and indirect stakeholders, without compromising its ability to meet the needs of future stakeholders* (Dyllick and Hockerts, 2002). In this way, expanding the boundaries of organisation's activities implies the integration of the concerns of more stakeholders. Traditionally, one might include a manufacturer (or service provider) and perhaps suppliers and/or customers; we now have to account for governments, local communities, public interest groups, and future generations (Corbett and Klassen, 2006).

It seems that despite the increased awareness surrounding sustainability issues and growing pressure on organisations to act in socially responsible ways (Epstein and Rejc-Buhovac, 2010), there is little understanding on whether organisations deploy different sustainability practices to gain performance benefits. Nevertheless, organisations are increasingly confronted with the paradoxical challenges of exploiting existing competencies and exploring new ones (Vera and Crossan, 2004). Organisations not only need to generate new knowledge associated with new products and services for emerging markets: they also need to improve current competences and exploit existing products and services (Danneels, 2002).

While the conceptual distinction between exploration and exploitation has been intensively studied in the management literature (e.g. March, 1991; Jansen et al., 2006), there is a lack of empirical investigation in corporate sustainability literature. Although some previous empirical studies (e.g. Maletič et al., 2011) have addressed the issue of conceptualisation and operationalisation of sustainability practices, there is little systematic evidence on how to distinguish between these two aspects within a corporate sustainability framework. To address this gap, the research objective of this

paper is to gain a greater insight into sustainability practices from the perspective of the concepts of exploration and exploitation.

It is also suggested that not all sustainability practices may need to be in place in order to produce superior outcomes. Like quality management practices (e.g. Zhang et al., 2012), sustainability practices may also be context dependent, especially if they are considered through the quality management lens. In order to address those shortcomings, this paper presents a conceptual framework that enables a concise characterisation of the proposed constructs, thereby filling the gap in the literature on the intersection of quality management and sustainability.

Based on this introduction, the remaining part of the paper is structured as follows. Section 3.2 discusses the relationship between Total Quality Management (TQM) and sustainability. Section 3.3 discusses the conceptualisation of sustainability practices and a research model that articulates the constructs included and the relationships that this study intends to address. Section 3.4 concludes the paper with contributions and possible directions for future research.

3.2 LITERATURE REVIEW

3.2.1 QUALITY MANAGEMENT AND CORPORATE SUSTAINABILITY

Before discussing the literature review on the relationship between quality management and corporate sustainability, it is necessary to clarify some of the terms related to both concepts.

Quality management has grown from being a strict, systematic, statistical methodology to an all-embracing philosophy of Total Quality Management (TQM) and Business Excellence (Robson and Mitchell, 2007; Dahlgaard-Park, 2011). Oakland (1989), as one of the first, defined TQM as:

> […] an approach to improving the effectiveness and flexibility of business as a whole. It is essentially a way of organising and involving the whole organisation; every department, every activity, every single person at every level. For an organisation to be truly effective, each part of it must work properly together, recognising that every person and every activity affects and in turn is affected by others.

Dahlgaard et al. (1998) later defined TQM as a *management philosophy* and *a company culture characterised by increased customer satisfaction through continuous*

improvements, in which all employees actively participate. Several other definitions can be found in the literature (Dahlgaard-Park, 2011).

The concept of business excellence that affects all aspects of business has emerged out of the total quality management philosophy (Ghobadian and Gallear, 2007; Robson and Mitchell, 2007). However, quality award criteria are the most commonly used method for categorising TQM elements (Samson and Terziovski, 1999; Prajogo and Sohal, 2004a). Despite diverse views on what constitutes TQM, there are a number of principles that can be summarised, such as: top management commitment, continuous improvement, focus on customers, total involvement, actions based on facts, focus on processes, focus on employees, focus on learning & innovation, etc. (see Dahlgaard-Park, 2011; Dahlgaard et al., 1998).

In contrast, the review of the literature revealed that a variety of subsequent definitions of sustainability emerged in relation to organisations, also referred to as corporate sustainability. These definitions vary on the degree to which authors discuss the corporate sustainability paradigm as either in the light of corporate environmentalism (e.g. Banerjee, 2001; Hart, 2005; Lee, 2009; Sarkis and Cordeiro, 2001), or as in the context of corporate social responsibility (e.g. McWilliams and Siegel, 2000; Enquist et al., 2006), or broaden the concept of corporate sustainability to integrate and reconcile economic with environmental and social concerns and issues (e.g. Dyllick and Hockerts, 2002; Moneva and Ortas, 2010; Wagner, 2010), or from the perspective of institutional theory (e.g. Bansal, 2002; Campbell, 2007; Schultz and Wehmeier, 2010). Furthermore, a review of the literature suggests that the concept of corporate sustainability borrows elements from four more established concepts (Wilson, 2003): 1) sustainable development, 2) corporate social responsibility, 3) stakeholder theory, and 4) corporate accountability theory.

According to Dyllick and Hockerts (2002), corporate sustainability comprises the following elements: (1) A sustainable corporation considers not only economic but also social and environmental aspects, which is in a line with the 'triple-bottom-line' concept; (2) Corporate sustainability requires a long-term business orientation as a basis for satisfying stakeholders' needs now and in the future; (3) A sustainable corporation follows the rule of living on the income from capital, not the capital itself. In order to achieve long-term sustainability, business will have to manage not only economic capital, but also their natural capital and their social capital. The environment as a capital concept has become widely adopted, because it is both simple and appealing (Hart, 1995). Two broad types of resources are associated with the natural capital: renewable and non-renewable resources (Hart, 1995).

However, social capital, which can be generally understood as networks of social relations characterised by norms of trust and reciprocity (Putnam, 2000), provides opportunities to gain a positive benefits (Adler and Kwon, 2002).

In relation to the above definitions, the concept corporate social responsibility (CSR) can be interpreted as a sub-area of corporate sustainability. Looking at a broader scope, CSR is connected with the ideas of sustainability and stakeholder orientation (Zink, 2005). Although the concept of CSR is widely discussed (Weber, 2008) in theory and practice, there is no general agreement about its definition. CSR could be conceived according to the definition of the European Commission as 'a concept whereby companies decide voluntarily to contribute to a better society and a cleaner environment' (COM, 2001) by integrating 'social and environmental concerns in their business operations and in their interaction with their stakeholders' (COM, 2001). The Strategic Advisory Group on CSR of International Organisation for Standardisation (ISO), describes CSR as 'a balanced approach for organisations to address economic, social and environmental issues in a way that aims to benefit people, community and society' (ISO, 2002). As stated by Werther and Chandler (2006), CSR can be recognised in these three words, and it is reflected through the relationships between corporations and the societies with which they interact. Hence, CSR is mainly defined as concepts and strategies by which companies voluntarily integrate social and environmental concerns with their business operations and stakeholder interaction (Enquist et. al., 2006). The need for companies to undertake activities that might be regarded as socially responsible has been discussed in the literature and has been a topic of academic study for several years (Campbell, 2007; Carroll and Shabana, 2010).

3.2.2 THE LINK BETWEEN QUALITY MANAGEMENT AND SUSTAINABILITY

In recent decades, the term 'quality' has expanded beyond the classic interpretation of 'satisfying customer expectations related to the supplied product' to include not only the fulfilment of diverse needs and requirements of various stakeholders, but also the environmental, safety, financial, and even social aspects of organisational performance (Boys et al., 2004). The word 'quality', in the global marketplace, suggests an inclusive approach for embracing major stakeholders, such as customers, employees, investors and society (Gentili et al., 2003). For example, some stakeholders may be most interested in effective management of quality, environmental issues, health and safety, and/or a responsible approach towards society through corporate practices (Asif et al., 2010). Foster and Jonker (2003) suggest that the quality movement has passed through its first and second generations and is moving into a third generation, which includes

a social perspective (among others). Taking into account this point of view, Garvare and Johansson (2010) argue that organisational excellence (Dahlgaard-Park, 2009), in terms of promoting both organisational and global sustainability, implies that the organisation should aim to satisfy, or preferably exceed, the needs and expectations of its stakeholders without compromising the ability of other parties to meet their needs. Stakeholder orientation, therefore, has to be seen as a part of sustainability, because it has become more obvious that sustainable success depends not only on the shareholder, but also other relevant stakeholders of an organisation (Zink, 2005). The stakeholders increasingly demand that businesses adopt a more holistic view of business success, with particular emphasis on considering the wider environmental and social implications of their decisions (Rocha et al., 2007).

Therefore, by enlarging focus from customers to the wider concepts of stakeholders, quality management theory recognises the importance of addressing sustainability issues. Certainly, there is room for debate on the extent to which the sustainability should be integrated in quality management. According to the point of view of Klefsjö et al. (2008), this depends on the definition of the customer. As stated by authors, the range of sustainability issues that needed to be addressed within quality management increases substantially, if we extended a narrow customer definition to include those affected by the product throughout its life cycle as well.

A key challenge of corporate sustainability integration is to address the diverse needs of different stakeholders and interested parties (Asif et al., 2011). To address these diverse needs, a wide variety of quality management approaches have been developed. For example, there are international standards for quality management (ISO 9001), business excellence models (BEMs), environmental management (ISO 14001), occupational health and safety (OHSAS 18001), and guidance on social responsibility (ISO 26000), among others.

As a part of quality management evolution, the recent goal of the quality movement is achieving business excellence (Dahlgaard-Park, 2009, 2011). Zhao (2004) says that many of today's BEMs focus predominantly on financial results rather than also attending to the social and environmental impact of businesses. Contemporary BEMs have been criticised for being overly focused on performance excellence and economic considerations, with more limited attention devoted to addressing the social and environmental issues that are critical components of corporate sustainability (Asif et al., 2011). In relation to BEMs, Kok et al. (2001) suggest that the social responsibility audit should be integrated as much as possible into the self-assessment process. However, despite the fact that BEMs have their roots in improving quality and

operations management, their focus has broadened in recent years to also accommodate several social and environmental issues (Asif et al., 2011). In addition to the EFQM Excellence Model, EFQM has also developed a Framework for Corporate Social Responsibility (EFQM, 2004). International excellence concepts have been focused on core stakeholders such as customers, shareholders, employees and society. All these models are coming from a total quality management culture looking for sustainable success including the relevant stakeholders (Zink, 2005). The TQM frameworks have been continuously developed and now include altruistic issues such as: corporate social responsibility and environmental responsibility as core values and concepts (Baldrige) or as a fundamental concept (EFQM) (Robson and Mitchell, 2007). In addition, the concerns and objectives of the stakeholders are important aspects to consider, in order to integrate corporate social responsibility (CSR) into business operations and activities of a company (Guadamillas-Gómez et al., 2010). Specifically, the strategic management literature opens the question whether CSR may be a source of a competitive advantage by differentiating products, processes or the firm itself from its competitors (McWilliams and Siegel, 2001). This perspective gives a rationale for the firm to integrate CSR into corporate and business strategy. Sharp and Zaitman (2010) examine the process of strategisation of CSR and indicate that CSR is a substantive strategic activity for the corporation.

Therefore, the CSR concept has also become interesting from the quality management point of view. CSR was found to have considerable congruence with TQM, which is shown to also have a strong ethical focus while at the same time contributing to organisational goals and measures (McAdam and Leonard, 2003). Further, CSR has a ‘strong affinity with the founding principles of quality management‘ through ethics, values-based governance, and respect for people (McAdam and Leonard, 2003). Castka and Balzarova (2007) argue that for the quality field this implies the need to further continue with a progression from management systems to more holistic excellence models of organisations. This is well captured in Zwetsloot (2003), who reports that CSR is very likely to develop on the management systems. From a CSR point of view, the existing generation of management systems with their focus on rational control (i.e. doing things right) can only be of limited use in the development of CSR. However, the preventive rationalities of management systems are important. Values and the principle doing the right things are extremely relevant for CSR. This goes far beyond the present generation of ISO type management systems; opportunities stem from building on TQM approaches like the EFQM Business Excellence model.

Corporate sustainable development involves the simultaneous pursuit of economic prosperity, environmental quality and social equity (Hardjono and van Marrewijk, 2001). In alignment with this perspective, business excellence ultimately implies that corporations integrate social, ethical and environmental criteria into their investment decision-making processes (Hardjono and van Marrewijk, 2001). Corporate social responsibility (CSR), which can be interpreted as sub-area of corporate sustainability (Weber, 2008), is therefore incorporated in the Business Excellence Model (EFQM) (McAdam and Leonard, 2003). Castka and Balzarova (2007) believe that CSR, similarly to quality, will become a cornerstone of future organisational activities.

To summarise, there is valid evidence of the quality management movement extending its scope to include social and environmental responsibility to address the changing demands of today's business. As already discussed, several authors focused on the CSR in relation to QM (e.g. Castka and Balzarova, 2007; Hazlett et al., 2007), as well as specifically in relation to BEMs (e.g. Asif et al., 2011; Zink, 2005; Hardjono and van Marrewijk, 2001).

3.3 CONCEPTUAL FRAMEWORK

3.3.1 SUSTAINABILITY EXPLORATION AND SUSTAINABILITY EXPLOITATION

The gradual evolution of quality to include sustainability aspects has been recognised by several authors, as discussed in the previous sections. Having this in mind, one can argue that quality management can provide a useful lens to distinguish different orientations of sustainability practices. Moreover, this study also uses the concepts of Exploration and Exploitation to develop a framework to classify and describe a construct of sustainability practices. However, key questions remains whether and under what circumstances an organisation should engage in sustainability practices. As our first attempt to examine how to tailor sustainability practices to improve organisational performance, we consider the following dimensions related to quality management: stakeholder orientation, process management, products/services design and learning orientation.

Defining the constructs of sustainability exploitation and sustainability exploration practices first requires specifying the common precepts underlying exploitation and exploration. The need for both exploration and exploitation is well accepted and recognised in the literature on ambidexterity (e.g. March, 1991; He and Wong, 2004; Jansen et al., 2006). Achieving long-term success requires a dynamic capability enabling firms to satisfy current demands while simultaneously being prepared for

tomorrow's developments (Gibson and Birkinshaw, 2004). As stated by Teece (2007), dynamic capabilities enable business enterprises to create, deploy, and protect the intangible assets that support superior long-run business performance.

More recently, literature has paid particular attention to the importance of exploitation and exploration in the field of quality management as well (Zhang et al., 2012; Wu et al., 2011; Luzon and Pasola, 2011). The conceptual distinction between exploitation and exploration also seems to be a promising approach in examining sustainability practices. It can be argued that the tension between exploitation and exploration also exists in corporate sustainability. Organisations must be able to measure and monitor economic, social and environmental performance in order to successfully manage sustainability issues in a way such that they have a positive effect on corporate success; at the same time, however, organisations need new insights for innovation and exploration of the unknown to contribute to the sustainable business management (Van Kleef and Roome, 2007). Therefore, in this thesis, we apply the distinction between exploration and exploitation to corporate sustainability. We argue that it is essential to distinguish two knowledge domains where different types of sustainability exploration and sustainability exploitation take place.

Sustainability exploitation. There are theoretical arguments that support the idea that exploitation concept can be utilized within the sustainability framework. One key starting point in the debate on sustainability management is the inclusion of stakeholders and the integration of their respective demands (Seuring and Gold, 2013), which is suggested to be crucial for driving sustainability performance as indicated by studies (e.g. Asif et al.; 2010; Searcy, 2011). From the perspective of sustainability exploitation practices, organisations need to achieve on-going incremental improvements (Stone, 2006) in order to effectively address the reductions in materials, water and energy use, and improvements in productivity. One of the key premises of sustainability exploitation practices is therefore to improve sustainability performance (Wagner, 2010) and to concurrently increase competitiveness (Schaltegger and Wagner, 2006). However, a wide variety of approaches can be employed by organisations to address sustainability issues and to improve performance. To monitor the progress of these various approaches, the organisation needs to develop suitable sustainability performance measurement systems (Searcy, 2011), which is also considered to be an important aspects of sustainability exploitation practices.

Sustainability exploration. It is recognised that organisations need new insights for innovation and exploration of the unknown to contribute to sustainable business management (Van Kleef and Roome, 2007). Recently, literature has paid attention to the sustainability-related innovation, predominantly through the search of the ways on

how to manage product development in a more sustainable way (Hallstedt et al., 2013), and in the context of a business case (Schaltegger and Wagner, 2006) for sustainability-related innovation (Wagner, 2008). Emanating from the previous studies on exploration and exploitation (e.g. Zhang et al., 2012) as well as on sustainability-related innovation (e.g. Klewitz and Hansen, 2013; Wagner, 2008), sustainability exploration practices reflect process innovation (e.g. end-of-pipe technological solutions), product innovation (e.g. improvements or entirely new products or services) as well as sustainability oriented learning (e.g. developing capabilities and competence for sustainability-related innovation).

Table 10 gives the constructs and the associated supporting literature.

Table 10. Description of the constructs of Sustainability Exploitation and Sustainability Exploration and supporting literature

	Sustainability Exploitation	**Sustainability Exploration**	**References**
Stakeholder orientation	Identify existing stakeholders Assess stakeholder's needs and expectation	Explore new needs and expectations of stakeholders Identify new stakeholders Involve stakeholders into the early stage of product/service development	Ayuso et al. (2011), Asif et al. (2011), Asif et al. (2010), Garvare and Johansson (2010), Driessen and Hillebrand (2010), Zink (2007), Polonsky and Ottman (1998)
Process management	Continuous improvement of existing processes Improve yield and/or material/energy consumption Performance measurement	Explore new ways for improving (new) processes Alternate/innovative technologies Dynamic change of the organisation	Bonilla et al. (2010), Sebhatu and Enquist (2007), Hussey and Eagan (2007), Rao and Holt (2006); Kleindorfer et al. (2005), Poksinska et al. (2003), Ammenberg (2001); Veleva et al. (2001), Veleva and Ellenbecker (2001)
Product/service design	Cost effectiveness Incremental improvements of existing products / services Systematic integration of sustainability aspects	Explore opportunities of new products/services Product lifecycle perspective Proactive approach to sustainability Cross-functional structure	Hallstedt et al. (2013), De Visser et al. (2010), Byggeth et al. (2007), Waage (2007), Jansen et al. (2006), O'Reilly and Tushman (2004), Maxwell and van der Vorst (2003)
Learning orientation	Continuous training and upgrading of employees' current skills	Developing new skills and capabilities External collaboration/interactions	Zhang et al. (2012), Wu et al. (2011), Velazquez et al. (2011), Espinosa and Porter (2011), Edwards (2009), Muller and Siebenhuner (2007), Siebenhuner and Anold (2007), Dahlgaard-Park (2006), Brik (2006), Molnar and Mulville (2003), Crossan et al. (1999), Cohen and Levinthal (1990)

Stakeholder orientation. Considering the long-term success and survival of a company, the measurement of corporate success cannot be limited to the creation of value for only one stakeholder group, i.e. the shareholders (Clarkson, 1995). More recently, this subject has received considerable attention in the literature (Ayuso et al., 2011; Asif et al., 2011; Asif et al., 2010; Garvare and Johansson, 2010). As reflected by the study Rocha et al. (2007), the role of stakeholders is dual, which suggests that all stakeholders provide both input to the organisation's systems and receive output from those systems. It is therefore necessary for organisation to identify these wants and expectations, to design products/services and production systems to meet those needs, and to measure the results as the basis for improvement. However, identifying stakeholder demands and then incorporating them into business processes requires a systematic approach characterised by planning, managing resources, designing processes, and continuous improvement (Asif et al., 2013). According to the above discussion, exploitative-oriented practices may pay more attention to measuring to what extent an organisation has addressed stakeholders' current needs and expectations (requirements). In contrast, however, exploration-oriented practices aim to identify new needs and desires of stakeholders. It has also been suggested that the green new product and service development process appears to extensively involve external stakeholders (Driessen and Hillebrand, 2010; Polonsky and Ottman, 1998). Specifically, exploration practices also emphasise the early involvement of relevant stakeholders, which generally enables better alignment of the product concept with customer and other stakeholders' requirements (Ernst, 2002).

Process management. Although the process management approach was first employed in the domain of manufacturing and operations improvement, mainly as a core element of a quality-related initiatives, its sphere of influence has migrated to also include those activities (practices) underlying the concept of corporate sustainability. For example, the main aim of internal quality improvements is to make the internal processes 'leaner', i.e. to prevent defects and problems in the internal processes which will lead to lower costs (Dahlgaard et al., 1998). A well-performing process is effective: i.e. it does the right thing for the customer. It is also efficient, which means it does everything in the right way to ensure minimum resource consumption. Therefore, adding the current view of sustainability to processes, i.e. a reduction in waste streams and improved energy efficiency can add value to more than just the economic bottom line. Kleindorfer et al. (2005) stress the synergies between environmental sustainability practices and quality performance (i.e., lean and green). The fundamental parallels between quality and environmental management include the reduction of wastes, efficient and effective use of inputs, and control of internal processes (Corbett and Klassen, 2006). Banerjee (2001) also highlighted that

environmental initiatives lead to benefits for organisations which in most cases meant reductions in waste, cost savings, and improvements in product and process quality. Therefore, the efforts to improve business operations that are aligned with sustainability concepts are part of the larger continuous pursuit of corporate sustainability. As reflected by a study of Espinosa and Porter (2011), sensitivity to key external changes and the flexibility to adapt in a timely manner are key success factors for organisations seeking to improve sustainability. In view of the above considerations, processes seem to be essential in terms of successful adaptation and could be considered as a way to effectively respond to those key external changes. A transition towards sustainability is also closely tied to a more efficient and conscious usage of raw materials, more efficient and conscious usage of energy sources, the adoption of innovative environmentally sound technological solutions, etc. (Bonilla et al., 2010).

Drawing on the above discussion, it is suggested that exploitation-oriented sustainability practices focus on increasing control and incremental refinements of existing processes, in order to enhance competitive advantage. It is also proposed that exploitative practices are related to the capability of an organisation to measure and monitor the environmental aspects of its operations (Poksinska et al., 2003). Therefore, in order to successfully put the concept of sustainable development into operation, a practical, cost-effective ways to assess performance and measure progress must be developed (Schwarz et al., 2002). However, to successfully put the concept of corporate sustainability into operation, a more comprehensive and pro-active approach of performance measurement should be established. In particular, a performance measurement system should be contingency based (capable of accommodating the wide variety of circumstances), linked to stakeholder theory as well as being practice oriented (Searcy, 2011).

Furthermore, exploration-oriented practices underline change in terms of a pro-active approach to continuous improvement and innovation. In view of the above considerations, processes are essential in terms of successful adaptation and could be considered as a way to effectively respond to those key external changes (Espinosa and Porter, 2011).

Product/service design. The essence of effective new product/service design lies in creating products whose core attributes (which deliver the basic benefits sought by customers) and auxiliary attributes (which help to differentiate between products) meet the needs of customers and other internal and external stakeholders (Pujari et al., 2003). Therefore, in addition to the traditional product criteria, e.g. economic, quality,

market, customer requirements, technical feasibility and compliance issues, the following two sustainability criteria should also be considered: 1) environmental impacts, and 2) social impacts. In this respect, integration of the sustainability criteria with traditional product and service specifications over the entire product life cycle could be seen as one of the features of developing sustainable products and/or services (Maxwell and van der Vorst, 2003).

It is suggested in this study that exploitation practices underline a systematic way of integrating sustainability aspects into product/service design. In particular, it means that the goal of product and/or service development processes is to produce products and/or to provide services that are more sustainable, meet customer requirements, and are cost effective (Maxwell and van der Vorst, 2003). However, integrating sustainability could also be seen from a perspective in which sustainable development itself provides a framework for innovation. This could lead to the development of new products and business ideas based on sustainability aspects (Byggeth et al., 2007). Another perspective recognises that the new product development process is a multidimensional phenomenon, encompassing development processes that focus on the improvement of existing products as well as processes that focus on the generation of new products (De Visser et al., 2010). As exploration-oriented practices underline the development of new products and/or services, while simultaneously being a strong foundation for identifying improvement opportunities, they are inherently related to cross-functional interactions and cooperation (Jansen et al., 2006).

Learning orientation. Over the previous decade, authors have stressed the importance of organisational learning in the pursuit of sustainability (e.g. Edwards, 2009; Siebenhuner and Anold, 2007), and links between organisational learning and sustainability have shown signs of increasing convergence (Senge and Carstedt, 2001; Molnar and Mulvihill, 2002; Smith and Sharicz, 2011). It is believed that the implementation of sustainability in any organisation necessitates organisational learning (Siebenhuner and Anold, 2007). Learning and development processes are believed to be an important path towards the sustainable development agenda (Muller and Siebenhuner, 2007). For top managers, sustainability-focused organisational learning (SFOL) (Molnar and Mulville, 2003) requires not only that they set a strong sustainability vision, but also that they recognise the value of bottom up innovation, educate middle managers in sustainability policy and cultural values, 'incentivise' new initiative development, and that they also reward both quantity and quality of initiative development (Espinosa and Porter, 2011). Exploration involves the development of new knowledge or replacing existing content within the organisation's memory (March, 1991). Exploitation refers to incremental learning focused on diffusion,

refinement, and reuse of existing knowledge (March, 1991). In accordance to these definitions, learning orientation for exploitation focuses on the skills required by a current job position, e.g. to ensure that employees are able to achieve the objectives of environmental management programs (Jabbour, 2011). In the context of exploitation, feed-back learning can also be achieved externally in the form of customer interaction (Crossan et al., 1999). If sustainability is characterised by the perspective of a complex system (Espinosa and Porter, 2011), a more innovative approach seems to be appropriate. This is also somewhat consistent with the work of Stone (2006) who proposes that the significance of the changes that are required for businesses in pursuit of sustainability suggests that 'double-loop' learning, which is characterised by changes to core values, needs to occur. As discussed by Dahlgaard-Park (2006), change, development and transformation are some of the most important and essential aspects of learning. Knowledge refinement and knowledge creation through continuous improvement is primarily involved in the double-loop learning (Wang and Ahmed, 2002). As stated by authors, radical innovation requires higher level of learning, i.e. triple loop learning. Learning and innovation efforts from which a firm may benefit need not necessarily be located within the organisation, but may well reside in the consumer environment (Franke and Shah, 2003). This can be reflected through user-driven innovation, which is considered beneficial for involved parties (Hockerts and Morsing, 2008). Moreover, Cohen and Levinthal (1990) argue that outside sources of knowledge are often seen as critical to the innovation process. They defined absorptive capacity as 'the ability of a firm to recognise the value of new, external information, assimilate it and apply it to commercial ends'.

Taking into account this point of view, we suggest that a learning orientation for exploration emphasises practices such as multi-task training in order to encourage creativity by the means of the ability to create or to be original, expressive and imaginative (DiLiello and Houghton, 2008). Indeed, creativity needs to be completed with constant organisational learning, which is recognised as a key skill for achieving sustainable development (Lozano, 2011).

3.3.2 RESEARCH MODEL

To summarise, this study aims to investigate the following research questions:

1. How do we distinguish between and measure SEI (Sustainability Exploitation) and SER (Sustainability Exploration) practices?
2. To what extent are sustainability practices affected by implementation enablers?

3. How do contextual factors (environmental uncertainty, hostility (competitiveness), long term orientation and proactiveness) affect the relationship of SEI and SER practices with performance?

With respect to the literature review related to the quality management and sustainability, a research framework is proposed, as shown in Figure 3.

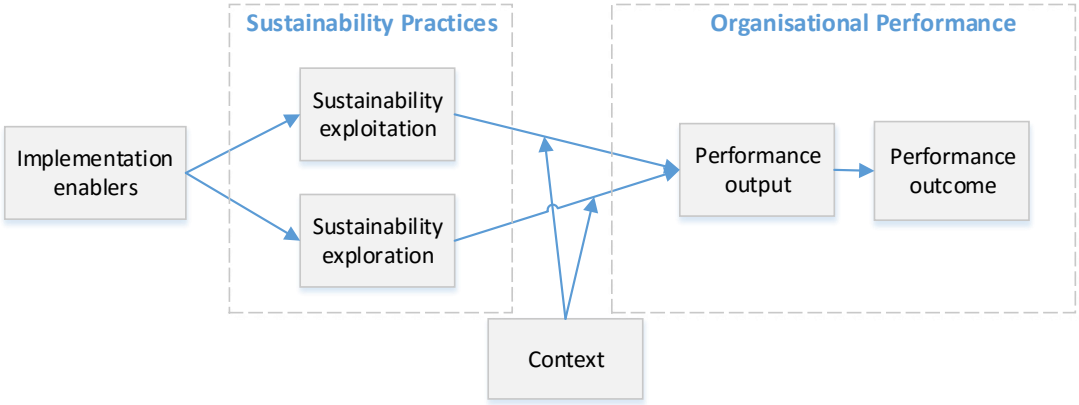


Figure 3. Research framework

As illustrated in Figure 3, this framework presents sustainability practices as a central point of the model. On the right side, the relationship between sustainability practices and organisational performance can be seen, in terms of output measures (such as sustainability, quality and innovation performance) and in terms of outcome measures (financial and market performance). While recognising that performance is multi-dimensional concept (Chenhall and Langfield-Smith, 2007), we designed our survey instrument to capture the most commonly studied dimensions of organisational performance. Three levels of performance measures were mainly identified and utilised in this study: financial, market, and operating. The financial and non-financial constructs were operationalised by developing several items based on a literature review (Baird et al., 2011; Han and Celly, 2008; Kaynak, 2003; Martensen et al., 2007; Prajogo and Sohal, 2003; Zu, 2009). It has become obvious that multiple perspectives of performance measures should be taking into account when assessing a modern company's performance (Chenhall and Langfield-Smith, 2007). Therefore, environmental and social performance measures should also be considered whilst conceptualising and operationalising the scale for measuring organisational performance. These survey items were developed based on body of research (Veleva et al., 2001; Veleva and Ellenbecker, 2001; Herva et al., 2011; Hutchins and Sutherland, 2008; Keeble et al., 2003; Olsthoorn et al., 2001; Jasch, 2000).

Given the literature survey conducted thus far, we expected that the more extensive use of socially and environmentally responsible sustainability practices (SEI and SER) would be associated with greater performance outcomes. This expectation is based on the increasing number of findings linking sustainability to corporate performance (Wagner et al., 2010; Moneva and Ortas, 2010; Chang and Kuo, 2008; Rao and Holt, 2006; Melnyk et al., 2003; Orlitzky et al., 2003).

As has been acknowledged in the literature, in much the same way as embedding quality management in an organisation takes time and often involves a culture change, the same is true for embedding sustainability (Bonn and Fisher, 2011; Epstein and Rejc-Buhovac, 2010; Fairfield et al., 2011; Baumgartner, 2009). This is also supported with the work of Zink (2007), who implies that a change in corporate culture is an important precondition to transfer corporate sustainability into practice. For Doppelt (2003), the ultimate key to organisations successfully embracing sustainability is leadership. Specific leadership capabilities include the ability to articulate a vision that clearly supports sustainability concepts and social responsibility (Jackson et al., 2003). There is also a need to act as a role model and to convince others of the positive impact of a commitment to sustainability (Gloet, 2006).

As Dudok van Heel et al. (2001) note, the business case for sustainable development is strongest when companies incorporate the sustainable development performance into mainstream business strategy. As far as strategies are concerned, it is essential that strategic planning is in first place linked to stakeholders (Neely et al., 2001) as well as to organisation's sustainability vision (Bonn and Fisher, 2011). Bonn and Fisher (2011) argue that for organisations to become more sustainable, managers must address the different dimensions of sustainability at the strategic level, both during the strategic decision-making process and as part of the strategy content at the corporate, business and functional levels Developing an organisation that regards sustainability as a cornerstone for doing business requires a strategic approach that integrates economic, environmental and social considerations into all aspects of the business on an on-going basis (Bonn and Fisher, 2011). Wiesner et al. (2011) also reveal the importance of the strategic orientation in the early phase of managing environmental sustainability change. Therefore, incorporating social and environmental issues, as well as stakeholders' needs, into corporate strategy (Porter and Kramer, 2006; Werther and Chandler, 2005; Molteni, 2006), culture, management systems, business processes and day-to-day decision making is essential in order to remain competitive in the current global context and to ensure long-term business success (Cresti, 2009).

Based on the extensive literature presented above, we developed the implementation enablers construct. As can be seen in Figure 3, we proposed that the implementation enablers construct is an antecedent in relation to sustainability practices. As such, we posit the following hypotheses:

Hypothesis 1: *There is a positive relationship between sustainability enablers and implementation of sustainability practices.*

> *H1a: There is a positive relationship between sustainability enablers and sustainability exploration practices.*
>
> *H1b: There is a positive relationship between sustainability enablers and sustainability exploitation practices.*

Hypothesis 2: *There is a positive relationship between both sustainability exploitation and exploration practices, and organisational performance.*

H2a: There is a positive relationship between sustainability exploration practices and organisational performance.

> *H2a1: There is a positive relationship between sustainability exploration practices and financial and market performance.*
>
> *H2a2: There is a positive relationship between sustainability exploration practices and quality performance.*
>
> *H2a3: There is a positive relationship between sustainability exploration practices and innovation performance.*
>
> *H2a4: There is a positive relationship between sustainability exploration practices and environmental performance.*
>
> *H2a5: There is a positive relationship between sustainability exploration practices and social performance.*

H2b: There is a positive relationship between sustainability exploitation practices and organisational performance.

> *H2b1: There is a positive relationship between sustainability exploitation practices and financial and market performance.*
>
> *H2b2: There is a positive relationship between sustainability exploitation practices and quality performance.*

H2b3: There is a positive relationship between sustainability exploitation practices and innovation performance.

H2b4: There is a positive relationship between sustainability exploitation practices and environmental performance.

H2b5: There is a positive relationship between sustainability exploitation practices and social performance.

Contingency approach

There is not only disagreement concerning the concept of corporate sustainability, there is also a lack of clarity on how to best implement corporate sustainability in organisational practice (Daily and Huang, 2001). However, since there is an enormous diversity in organisations and taking account the fact that one can identify different types of approaches to corporate sustainability (Schaltegger et al., 2002), we suggest that there is a need for a contingency theory on the implementation of sustainability practices. Contingency theory assumes that organisations attain effectiveness by fitting the characteristics of the organisation to contingencies that reflect the situation of the organisation (Donaldson, 2001). Having this in mind, we can argue that the implementation of sustainability practices is not the same for all organisations. In line with this theory, one can define two basic principles for sustainability practices implementation:

- there is no single best way for implementing sustainability practices within different organisations,
- there is no single right mix of sustainability exploitation and sustainability exploration practices that can be applied in all organisations.

Applied to sustainability, one can recognise several factors that might influence the implementation and configuration of sustainability oriented practices. However, there seems to be a lack of empirical evidence in the sustainability-related literature concerning the contingency theory; consequently, little attention is being given to the potential context-dependent argument. However, the quality management literature (e.g. Sousa and Voss, 2002; Zhang et al. 2012) emphasises the need to conduct contingency studies.

This study intends to examine the effects of internal contingency factors (long term orientation and proactiveness), external contingency factors (uncertainty (dynamism) and competitiveness). All the measurement items were generated from established researchers. In attempting to examine these perspectives, the measuring items were

compiled from works of various authors (Jansen et al., 2006, Baum and Wally, 2003; Prajogo and McDermott, 2011, Zhang et al., 2012).

Environmental Uncertainty

As stated by Daft (2004), environmental uncertainty means that decision makers have limited information about environmental factors and have a difficult time predicting external changes. In general, environmental dynamism refers to the rate of change and the level of factors instability within an environment (Li and Simerly, 1998). It could thus be defined with reference to technological change and instability or unpredictability of the environment (Tegarden et al., 2005). As such, the following hypothesis is developed:

Hypothesis 3a: *Higher levels of sustainability exploitation positively affect performance to a greater degree than sustainability exploration when environmental uncertainty is low.*

Hypothesis 3b: *Higher levels of sustainability exploration positively affect performance to a greater degree than sustainability exploitation when environmental uncertainty is high.*

Competitiveness

We expected that relationship between sustainability practices and organisational performance is also affected by the level of competitiveness. This argument is supported by Campbell (2007), who proposes that the socially responsible behaviour of organisation is associated with the level of competition. Moreover, this author argues that corporations will be less likely to act in socially responsible ways if there is either too much or too little competition. In fact, Vogel (2005) emphasises that no matter which CSR practices are implemented, companies must survive in a highly competitive market and under the pressure from financial markets. In the context of innovation, Jansen et al. (2006) proposed that environmental competitiveness negatively moderates the relationship between exploratory innovation and financial performance. However, they did not find empirical evidence to support the proposition, but nevertheless this proposition is consistent with the work of Zahra (1996), who argues that environmental competitiveness usually reduces available resources for exploratory innovations (Zahra, 1996). However, paradoxically, in a context of strong competition, the most pro-active firms require more stringent regulation to institutionalise the demand for CSR and restore the terms of competition (Quairel-Lanoizelée, 2011). In contrast, one can argue that with growing competition, organisations need to improve overall efficiency, encourage innovation and reduce

average operational cost in order to achieve competitive advantage. This point of view can be substantiated by the work of Teece (2007), who stresses the importance of dynamic capabilities in the competitive environment. In accordance with the above discussion, the following hypothesis is developed and proposed:

Hypothesis 4a: *Competitiveness negatively moderates the relationship between sustainability exploration and organisational performance*

Hypothesis 4b: *Competitiveness positively moderates the relationship between sustainability exploitation and organisational performance.*

Long-Term Orientation

The contingency approach is also used in this study to examine whether specific strategic orientation has impact on sustainability practices from the perspective of performance outcomes. More precisely, long term strategic orientation is proposed as internal contingency factor that could affect the implementation of sustainability practices. Achieving long-term success requires a dynamic capability enabling firms to satisfy current demands while simultaneously being prepared for future developments (Gibson and Birkinshaw, 2004). Corporate sustainability requires a long-term business orientation as a basis for satisfying stakeholders' needs now and in the future (Dyllick and Hockerts, 2002; Zink, 2007). In this context, organisations need to focus on long-term horizons and to adopt a strategic approach towards sustainability (Bonn and Fisher, 2011). Several authors (e.g. March, 1991; O'Reilly and Tushman, 2004) suggested that organisations need to balance reactive and proactive business logic to achieve long-term prosperity and to remain competitive. As such, the following hypothesis is developed:

Hypothesis 5: *There is a positive interaction effect between exploitation and exploration practices when organisation has a high level of long-term orientation.*

Proactiveness

Morgan and Strong (2003) include proactiveness as one of the dimensions of strategic orientation. However, the findings of their work do not support the argument that proactiveness in positively related to performance. In contrast, Hahn and Scheermesser (2006) find that organisations perceive sustainability strategy as being proactive in relation to environmental and social concerns and act as early adopters or even innovators in implementing environmental and social measures. Lee (2009) also supports the argument that over time, corporate attitudes to sustainability have changed

considerably from a reactive to a proactive stance. As such, the following hypothesis is developed:

Hypothesis 6: *Organisations with a strong focus on proactiveness are more likely to implement sustainability practices.*

Institutional approach

According to institutional theory, country of origin represents a cultural factor that may become institutionalised at the country level (Homburg et al., 1999). Regionally or nationally different societies have characteristic and specific elements such as a 'normative institutional order', as well as unique cultural characteristics and economic and industrial structures. Therefore, the organisational practices of companies that originate from different countries or regions may diverge (Harzing and Sorge, 2003). Therefore, we argue that this divergence might also be applicable to organisations implementing the sustainability-related practices. This argument can also be substantiated by the fact that certain differences exist in business environments (e.g. level of regulations, stakeholders' pressure, corporate cultures, etc.). For instance, government environmental policies and regulation, industry environmental management practices, and pro-environmental consumer behaviours are some methods that have emerged as a response to sustainability challenges (Banerjee, 2001). Therefore, increased regulatory forces and public environmental concern have the potential to influence business actions (Banerjee, 2001). As such, the above-stated institutional factor will be used to test the model proposed in this study. The following hypothesis is developed:

Hypothesis 7: *There is a significant difference on the effect of sustainability exploitation and sustainability exploration on organisational performance as a function of country of origin.*

3.4 CONCLUSION

The aim of this section was to provide a conceptual framework for assessing sustainability practices in the context of organisational performance. The thesis in first place acknowledges the interactions between the quality management and sustainability. While important contributions have been made in relation to the quality management and sustainability it is critical to move forward to the systemic issues that exist at the intersection of quality management and sustainability.

This section gives consideration to both quality management as well as to the sustainability. First, the relationship between these two concepts and previous work is considered. Second, the paper presents a conceptual framework that comprises three elements: sustainability enablers, sustainability practices and organisational performance. Based on the literature review, research questions are posited and propositions are developed. One of the primary propositions of this framework is related to the suggestion that organisations may need to vary between different types of sustainability practices (exploitation and exploration) along with the changes in their environmental contingencies.

Part III
Empirical Part

4 METHODOLOGY

4.1 ONTOLOGICAL AND EPISTEMOLOGICAL PERSPECTIVES

The primary objective of management research activities is to produce objective knowledge. Researching organisational sustainability and quality management is no exception in this regard. Although our objective is not to engage in deep philosophical discussions, it is nevertheless important to be aware of the interplay of ontological and epistemological assumptions, especially when studying diverse and complex phenomena. Understanding and positioning oneself in a specific research philosophy directs the whole research process and hence the research outcomes.

Therefore, in order to develop an appropriate research design, it is desirable to understand different philosophies and methodologies in the area of social science research. In social science, there is a spectrum of research methods available to be used. Each research method has a philosophical underpinning as to how the world is viewed (ontology), what is the relationship between the reality and the researcher (epistemology) and what method the researcher is using (methodology) (Easterby, Thorpe and Lowe 1991). Therefore, a research paradigm that demonstrates congruence between the philosophical and methodological stance can be defined as ‘a basic belief system or worldview that guides the investigator, not only in choices of method but in ontologically and epistemologically fundamental ways‘ (Guba and Lincoln, 1994).

In order to conduct a scientific examination of a field of object, understanding its ontology and epistemology is of great importance. These two terms will shortly be described in the following section.

Ontology is defined (Crotty, 2003) as ‘the study of being‘. It is concerned with ‘what kind of world we are investigating, with the nature of existence, with the structure of reality as such‘. Thus, ontology defines the fundamental categories of reality. Under the assumption that there is no truth or absolute reality to be established by the research, the philosophical approach is underpinned by a subjective view on the nature of reality (Guba et al., 1994).

In contrast, epistemology is ‘a way of understanding and explaining how we know what we know’, (Crotty, 2003). In the context of a research, epistemology shapes how researchers answer questions regarding the validity of knowledge (qualitative vs. quantitative, etc.), provides the justification of methods used to produce knowledge

(experimentation, induction, hypothesis testing, etc.), and delineates the assumptions inherent in particular conceptualisations of the object of study and certain methodologies (Miller et al., 208).

Science requires a solid foundation in order to make valid assessments of the reality that is studied. Having this in mind, positivists believe that reality is stable and can be observed and described from an objective viewpoint (Levin, 1988). Relying on the deductive approach, positivism focuses on efforts to verify *a priori* hypotheses that are most often stated in quantitative propositions that can be converted into mathematical formulas expressing functional relationships (Guba and Lincoln, 1994).

A positivist approach may not be suitable in social science research in which each situation is unique, and a person within a situation can give different responses depending on the nature of reality as he/she perceives it. However, wherever it is possible to identify and define constructs which are invariant across situations, a positivist approach has the advantage of being generalisable and reliable. Furthermore, a positivist approach that uses a deductive approach is useful in theory testing but not in theory building, which requires an inductive approach (Perry, Riege and Brown 1999). The realist/objectivist ontology and empiricist epistemology contained in the positivist paradigm requires a research methodology that is objective or detached, where the emphasis is on measuring variables and testing hypotheses that are linked to general causal explanations (Sarantakos, 2005).

A complicating factor in the positivist, anti-positivist and post-positivist quantitative and qualitative debate is that recently many researchers have been using a combination of research techniques; the term 'triangulation' is used describe this. Many researchers, therefore, are pragmatic critical realists and believe that the claims they make will be stronger if they can be supported by both quantitative and qualitative data. Critical realism, as formulated by Sayer (2000), proposes a way of combining a modified naturalism with recognition of the necessity of interpretive understanding of meaning in social life. An interpretivist and constructivist perspective sees the world as constructed, interpreted, and experienced by people in their interactions with each other and with wider social systems (e.g. Guba and Lincoln, 1994).

As shown in Chapter 3, the concept of corporate sustainability is infused with a great deal of equivocality, which means that the concept itself cannot be treated as an absolutely defined construct. Interpretations of sustainability and in particular corporate sustainability tend to be overly manifold. In academic debates and business environments, various concepts and definitions have been proposed such as

sustainable development, triple bottom line, corporate citizenship, sustainable entrepreneurship, corporate sustainability as well as corporate social responsibility (Van Marrewijk, 2003). This point of view has been relativised to some extent with Van Marrewijk's (2003) citation of Jacques Schraven, the chairman of the Dutch Employers Association, who stated:

> […] There is no standard recipe: Corporate Sustainability is custom-made process.

However, the definition of the corporate sustainability (Dyllick and Hockerts, 2002) depends whether it is viewed from the corporate environmentalism perspective (e.g. Banerjee, 2001), the corporate social responsibility perspective (e.g. McWilliams and Siegel, 2000) or in the context of the institutional theory (e.g. Bansal, 2002). A critical look at corporate sustainability through quality management lenses makes observation of the research object even more complex and ambiguous. For example, Van Marrewijk (2003) argue that organisations that continue to improve their quality, ultimately have to adopt a more social management style, i.e. move towards higher levels of corporate sustainability. As it is elaborated in the literature (Dahlgaard-Park, 2011; Dahlgaard-Park and Dahlgaard, 2010; Dahlgaard-Park, 2006), quality evolution has shifted from a rather mechanical view with a focus on objective and rational elements to a more holistic and organic view with a focus on both subjective and objective elements of organisational reality. As shown in Chapter 3, current scientific discussion on the link between sustainability and quality management usually starts from more or less well-established disciplinary perspectives. A comprehensive and truly trans-disciplinary view is mostly lacking and therefore theoretical requirements of a pragmatic concept of corporate sustainability are rarely fulfilled The fact that researchers from a variety of disciplines have examined (at a first glance) distinct but inherently linked aspects of corporate sustainability even increases the complexity and ambiguity of the corporate sustainability as a research object. Compounding this situation is the even greater lack of consensus on the definition of the broader concept of corporate sustainability. It is therefore suggested that a strict positivistic research paradigm does not fit well in studying the management concepts, such as corporate sustainability. However, considering ontology on a continuum between positivism and interpretivism (a broadly central ontological position, although with a stronger tendency towards positivism/objectivism) is advocated in order to address the research aim of this thesis.

The epistemological stance, in contrast, must be aligned with the overall research process. Drawn from the previous chapter (Chapter 3), the need for empirical research

is highlighted. Regarding the epistemological justification, it is therefore most appropriate to adopt merely a positivistic approach in order to investigate and describe cause-and-effect relationships between latent variables through statistical analyses. Hence, a quantitative approach is to be taken to gain a richer understanding of the subject of sustainability exploitation and sustainability exploration, emphasising the underlying 'what' of the research question. However, we argue that the forced choice of dichotomy between positivism and interpretivism/constructivism should not be the case in designing the research in this thesis. This deemed to be in a line with 'dialectical' perspective (Greene and Caracelli, 2003), which recognises that contradictions and tensions reflect different ways of knowing about and valuing the social world and says you can use multiple paradigms. For example, dealing with the 'how' and 'why' (Yin, 2003) question (e.g. how and why organisations achieve a balance between sustainability exploration and sustainability exploitation?) would require different methodology and therefore different epistemological stance.

However, there is a lack of philosophical attempts in the field of corporate sustainability. In fact, no attempts have been made in this respect, except, for example, perhaps in the field global sustainability (e.g. Wankel and Stoner, 2009), CSR (Kurucz et al., 2008), or in the field of green supply chain (Oral, 2009). As observed from the literature, critical realism as an ontological basis seems to be promising approach in the corporate sustainability research area. As argued by Sayer (2000), critical realism is relatively tolerant with respect to different research methods. Compared to positivism and interpretivism, critical realism is compatible with a relatively wide range of research methods, but it implies that the particular choices should depend on the nature of the object of study and what one wants to learn about it. Therefore, within a critical realism framework, both qualitative and quantitative methodologies are deemed appropriate (Healy and Perry, 2000) for researching the underlying mechanisms that drive actions and events. Research methods, such as case studies and consequently unstructured or semi-structured depth interviews as a data collection methods are acceptable and relevant within the paradigm (Easton, 2010) as are surveys and statistical analysis, such as those derived from structural equation modelling and other techniques (Sayer, 2000). For instance, Robson (1993) advocates the case study approach that involves an empirical investigation of a particular contemporary phenomenon within its real life context using multiple sources of evidence. Methods such as interviews, questionnaires, observation and review of relevant documents could be used. Methodological pluralism from this point of view provides broader perspectives than those offered by mono-method designs.

The above discussion has provided the background (and some justifications) for the adoption of a combined and complementary methodological choice and a critical realist paradigm within the broad context of corporate sustainability. Therefore, research paradigms might often involve more than one epistemological aspect, for instance, positivism and interpretivism. Another issue that has affected interdisciplinary research in the field of corporate sustainability and quality management is the epistemological and methodological shortcomings of research studies in the area. Examination of research literature reveals that biases exist along the lines of methodological alternatives as well as paradigmatic stances. It is therefore necessary to move beyond traditional disciplinary thinking, and even beyond inter-disciplinarity, towards intercultural, inter-institutional, and trans-disciplinary discourse. As such, epistemological pluralism is increasingly becoming accepted among researchers as a suitable approach for conducting innovative, collaborative and practically relevant research (Miller et al., 2008). According to Miller et al. (2008),

> Epistemological pluralism recognises that, in any given research context, there may be several valuable ways of knowing, and that accommodating this plurality can lead to more successful integrated study. This approach is particularly useful in the study and management of social–ecological systems.

4.2 RESEARCH DESIGN

A research design is a plan that concerns the specification of the methods and procedures for collecting and analysing the needed information (Brewerton and Millward, 2001). A research design depends primarily on the nature of research hypotheses or research questions, which may be broadly grouped into three types of designs namely: (a) case-study design; (b) correlational design; (c) experimental design.

Sayer (2000) distinguishes between extensive research designs. (e.g. surveys and statistical analysis) and intensive (e.g. qualitative analysis, ethnography) methods. ‘Extensive research shows us mainly how extensive certain phenomena and patterns are in a population, while intensive research is primarily concerned with what makes things happen in specific cases‘ (Sayer, 2000). The decision about the research design has been directed by the philosophical assumptions outlined in the previous sub-chapter (Chapter 4.1). Derived from the research philosophy, the thesis applies a quantitative research method that is aligned with the positivist paradigm as far as methodological perspective is concerned. The quantitative research method selected for this research study was the most appropriate given the purpose and problem

statement for the research study as well. Therefore, by adopting a merely quantitative approach, the present study shows a focus on theory testing wherein theory is first adopted as the conceptual framework for developing and testing hypotheses in a specific research context. This emphasises deductive orientation of the present study. Given the nature of the research objectives (i.e. to investigate the effects of the independent variables on the organisational performance outcomes) and the adequate availability of prior evidence to formulate hypothesised relationships for examination, it was deemed that a questionnaire, as a survey method, is the most appropriate option for this study.

Table 11 outlines the research objectives and the research process. In the first phase, the previously presented theories (Chapters Two and Three) set a general background to provide a theoretical grounding for the thesis. As such, the initial phase aimed to establish a theoretical background based on the literature review, identify research gaps and develop research objectives. However, the main aim was to provide theoretical support for the development of a conceptual framework. The subsequent literature review was performed in terms of identifying, evaluating and interpreting available research relevant to a research aim, research question, and as a consequence relevant to a phenomenon of interest. Therefore, detailed literature reviews were further conducted to explore and explain the relationship between quality management and performance as well as sustainability and performance. Consequently, a number of publications were analysed in order to address the first and the second research objectives which lead to the development of a conceptual background.

The second phase aimed at developing a conceptual framework concerning the relationship between sustainability practices and organisational performance. An extensive literature review was conducted in order to develop a conceptual framework outlining two fundamentally different dimensions of sustainability practices: sustainability exploitation practices and sustainability exploration practices.

Once all the constructs were identified and developed, it was possible to continue with the development of scales for the measurement of the constructs (latent variables). The purpose was to ensure adequate coverage of the domain of each of the identified and developed constructs (see Section 4.3 for details).

The third phase was intended to address the final objective. The empirical study is aimed at uncovering to what extent organisations deploy potentially contradictory exploitation and exploration sustainability practices and to reveal how these practices affect organisational performance. As such, all hypotheses that are derived from the

conceptual framework are empirically tested. Research methods are chosen according to the survey instrument development and validation (see Section 4.3 for details) as well as according to the hypotheses testing (see Section 4.4 for details).

The rationale for choosing international survey can be explained by the intention of obtaining a comprehensive and objective data set, allowing a detailed comparison as well as using different control variables. This rationale can also be discussed in terms of theoretical generalisation; i.e., by confronting the empirical findings with theoretical assumptions.

Table 11. Research objectives and the research process

Research objectives	Research process	Research method
To investigate the theoretical foundations of quality management, sustainability and organisational performance.	Phase I	Literature review (theoretical framework)
To investigate the links between quality management and organisational/corporate sustainability.	Phase I	Literature review (a critical summary and assessment of the range of existing studies)
To develop a conceptual framework/model.	Phase II	Literature review (conceptual framework)
To empirically test the proposed hypotheses based on a large-scale survey.	Phase III	Empirical research (survey)
To perform a cross-country comparison of the effects of sustainability practices by conducting an international survey.	Phase III	Empirical research (survey)

In sum, the research design was generally divided into the following phases: establishing a conceptual background, developing a conceptual framework, operationalising the model, and empirically testing the proposed hypotheses.

Taking the above into consideration, the remainder of this section schematically (Figure 4) presents the above-described research methodology.

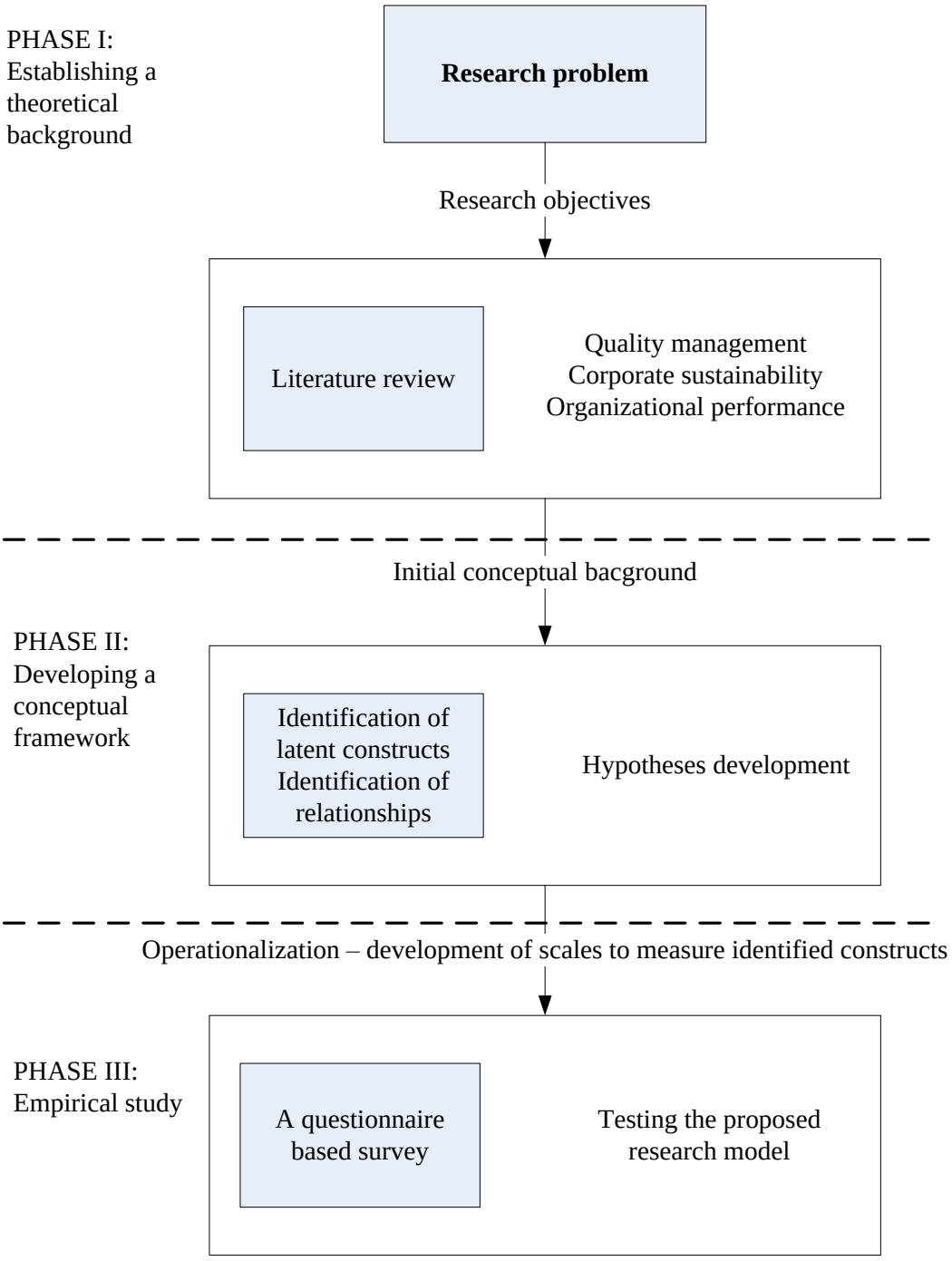


Figure 4. Research design

4.3 SCALE DEVELOPMENT AND VALIDITY

An initial list of items was generated through an exhaustive review of the research literature related to the topics of the thesis. Figure 5 shows a survey instrument development approach and corresponding methods.

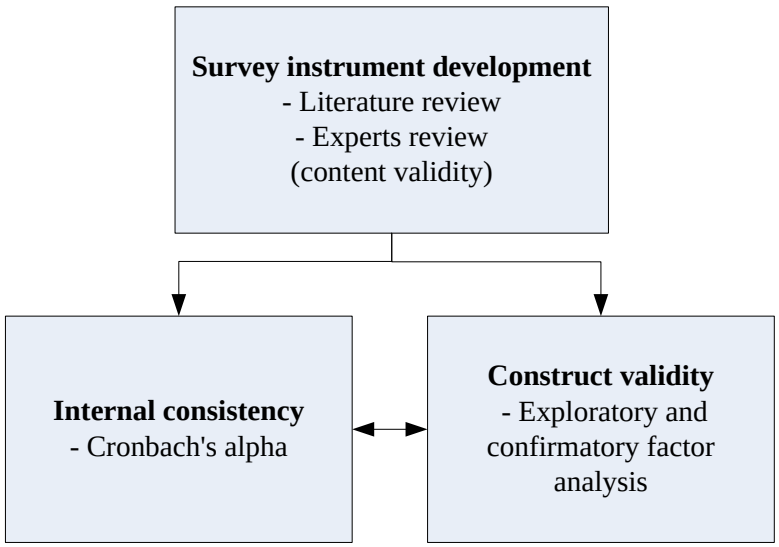


Figure 5. Survey instrument development

Validity was assessed in terms of content, convergent, and discriminant validity. Content validity is the degree to which a measure captures the full domain of a particular construct (Nunnally and Bernstein, 1994). Hence, content validity refers to the adequacy of items in accurately addressing all dimensions of the particular construct. Content validity was qualitatively evaluated in the early stage of the development process by examining the measurement items by several independent expert reviewers (researchers) covering the field of quality management, operations management as well as statistics.

In addition to ensure that each construct was consistent with regard to its conceptualisation, the items for all scales were subsequently evaluated by practitioners in the form of a pre-test study. The purpose was to ensure that the statements were understood without ambiguity. As such, experts were asked to provide feedback on the length of the questionnaire, clarity, ease of understanding and interpretation of the questions/statements.

According to the index construction procedure developed by Diamantopoulos and Winklhofer (2001), a ‘good‘ item is one that (a) captures a particular facet of the

construct's domain of content, (b) is not collinear with other items, and (c) it is linked with the corresponding latent variable. Therefore, instrument assessment is a very important research phase, followed by subsequent statistical analysis.

Overall, the resulting measurement scales are presented in Appendix B (English version is illustrated). Considering the international research, the survey questionnaire was translated into native language (i.e. Spanish, Polish, German, Serbian and English) prior conducting a survey. In addition to translation, researchers from partner universities/institutions were involved in improving the survey questionnaire.

In addition, several statistical techniques can be applied in the early stages of the empirical inquiry, especially when strong theory is lacking and the basic purpose is exploration. The traditional methods employed for development and evaluation of measurement scales include item-total correlations or corrected item-total correlations, exploratory factor analysis (EFA), and reliability estimation using Cronbach's alpha (Koufteros, 1999).

4.3.1 Instrument Assessment Methodology

Instrument assessment is an important step in the research examination process. In particular, CFA (confirmatory factor analysis) using AMOS software is utilised in this thesis to validate newly developed scales for sustainability practices and implementation enablers.

Construct validity

Given the importance of construct validity to the research process, it is essential that we have a clear understanding of the methods used in its assessment. In terms of the latter, construct validation is a multifaceted process that is comprised of three basic steps outlined in Figure 6 (O'Leary-Kelly and Vokurka, 1998).

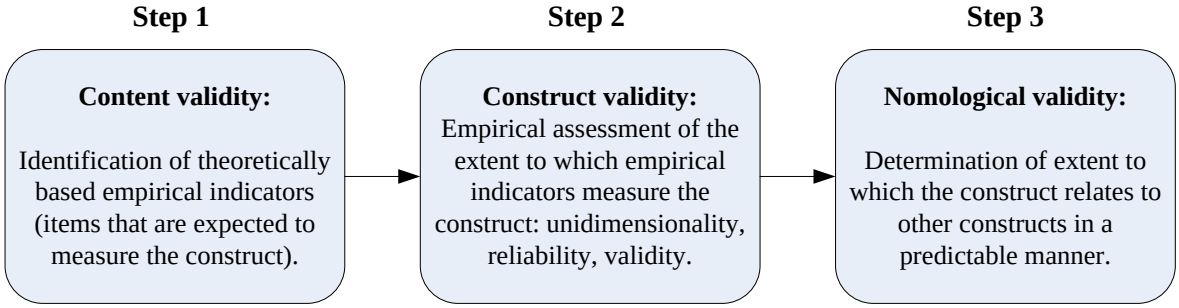


Figure 6. Construct validation process (O'Leary-Kelly and Vokurka, 1998).

It is necessary to demonstrate that the empirical indicators are theoretically related to the construct (O'Leary-Kelly and Vokurka, 1998). As reflected by studies (Coltman et al., 2008; Diamantopoulos, 2005), both theoretical and empirical criteria are necessary to design and validate measurement model. The second step establishes the degree to which the empirical indicators measure the construct and comprises a several empirical tests that examine the measurement properties of the indicators (O'Leary-Kelly and Vokurka, 1998; Hair, et al. 1998). The third step involves the determination of the extent to which a construct relates to other constructs in a predictable manner, which is essentially hypothesis testing. As such, nomological validity refers to whether measures are related to other constructs in a way that is theoretically meaningful (Pennings and Smidts, 2000).

Discriminant validity and convergent validity are the two common ways to measure construct validity. Both terms are briefly presented in the following section.

Convergent validity

Convergent validity is defined as the extent to which the measurement items converge into a theoretical construct (Hair, et al. 1998), as well as relate to the degree to which multiple methods of measuring a latent variable provide the same results (O'Leary-Kelly and Vokurka, 1998). One of the most commonly used method for assessing convergent validity is factor analysis. In particular, confirmatory factor analysis can be utilised by using AMOS software. Using AMOS, it is possible to specify, test, and modify the measurement model based on multiple fit indices. Assuming that the observed measures are multivariate normally distributed, the overall statistical acceptability of any CFA-model can be tested using the χ^2 statistic (O'Leary-Kelly and Vokurka, 1998). A GFI and AGFI score in the range of 0.8 to 0.9 is considered as representing a reasonable fit, while a score of 0.9 or higher is considered as evidence of good fit. An RMSEA value of less than 0.05 indicates a good fit, a value as high as 0.08 represents reasonable errors of approximation in the population (Hair et al., 1998; Segars and Grover, 1993). If the fit indices are not satisfactory, the modification indices are observed to check for any error term correlation.

Discriminant validity

Discriminant validity is the degree to which measures of different latent variables are unique (O'Leary-Kelly and Vokurka, 1998). Establishing discriminant validity, therefore, simply means that one can empirically differentiate the construct from other constructs that may be similar and that one can point out what is unrelated to the construct (Kerlinger, 1992).

For examining discriminant validity, the chi-square difference between two models is calculated: the unconstrained model and the constrained model are compared (Bagozzi and Phillips, 1982). In the unconstrained model, the covariance between particular two constructs was freely correlated. However, the covariance of a certain two construct was fixed to 1.0 in the constrained model. Two constructs are claimed as having well discriminant validity if the χ^2 difference between the two models is significant.

4.4 RESEARCH METHODS

4.4.1 Principle component analysis (PCA)

Exploratory techniques can help us develop hypothesised measurement models that can subsequently be tested via confirmatory analytic techniques (Koufteros, 1999). Principle component analysis (PCA) was utilised in this thesis for exploratory purposes, mainly to reveal the underlying structure of a different data sub-sets. A free software environment for statistical computing and graphics R was applied using the principal() function in the psych package. Principal Components Analysis (PCA) attempts to analyse the structure in a data set in order to define uncorrelated components that capture the variation in the data. The identification of components is often desirable as it is usually easier to consider a relatively small number of unrelated components which have been derived from the data than a larger group of related variables (Moutinho and Hutcheson, 2011).

4.4.2 Confirmatory Factor Analysis (CFA)

A measurement model may be developed based on theory and then tested with confirmatory factor analysis (CFA) (Hair et al., 2010). The measurement model typically represents all constructs with non-causal or correlational relationships among them.

This thesis adopts a commonly used approach for the assessment of uni-dimensionality and the evaluation of other measurement properties (Hair et al., 2010; Koufteros, 1999). The first step in analysing CFA is the model specification. The second step is an iterative model modification process for developing a more parsimonious set of items to represent a construct through refinement and retesting. The third step is to estimate the parameters of the specified model. The overall model fitness is evaluated by several measures of goodness of test to assess the extent to which the data supports the conceptual model. Various goodness of fit (GOF) measures used in this study include the likelihood ration chi-square (χ^2), the ratio of χ^2 to degrees of freedom

(χ^2/df), the GOF index (GFI), the adjusted GOF (AGFI), the root mean square error of approximation (RMSEA) and Tucker-Lewis index (TLI).

Absolute fit measures

The most fundamental measure of overall fit is the chi-square statistic (χ^2). Low values, which result in significance levels greater than 0.05, support the model as representative of the date, hence imply a good fit (Hair et al., 2010).

AMOS provides a second measure of overall fit and is called the goodness-of-fit index (GFI). The possible range of values is from 0 (poor fit) to 1 (perfect fit) (Hair et al., 2010).

Another widely used measure of overall fit is root mean square error of approximation (RMSEA). Values less than 0.05 indicate good fit, values as high as 0.08 represent reasonable fit, values ranging from 0.08 to 0.10 indicate mediocre fit, and those greater than 0.10 indicate poor fit.

Comparative Fit Measures

Normed and non-normed fit indexes are frequently used as adjuncts to chi-square statistics for evaluating the fit of a structural model. The normed fit index (NFI) is one of the original incremental fit indices, and ranges from 0 (no fit at all) to 1 (perfect fit). A commonly recommended value is 0.90 or greater (Hair et al., 1998).

Comparative fit indices (CFI) that is improved version of normed fit index (NFI). CFI values above 0.9 are usually associated with a model that fits well.

The TLI measure compares the proposed model to the null model. A TLI, an incremental fit measure, with a value of 0.9 or more indicates a good fit (Hair et al. 1998)

Parsimonious Fit Measures

The most widely used measure of parsimonious fit, provided by AMOS is the adjusted goodness-of-fit index (AGFI). The AGFI is an extension of GFI but adjusted by the ratio of degrees of freedom for the proposed model to the degrees of freedom for the null model. The AGFI is analogous to the Adjusted R^2 in multiple regression analysis. The AGFI value greater than 0.9 is an indicator of good fit (Segars and Grover, 1993).

Modification Indices

AMOS provides modification indices that suggest possible ways of improving the overall model fit. A modification index is calculated for each of the relationship that is not estimated in the model (Hair et al., 2010). A value of approximately 4.0 or greater indicates possible improvements (in terms of the overall model χ^2). Although modifications provide important diagnostic information, making changes based only on these indices should not be considered.

4.4.3 Mediation analysis

In order to test the mediation effects of proposed mediators on the relationship between sustainability practices and financial and market performance, we used SPSS procedure (SPSS macro) for estimating indirect effects in multiple mediation models proposed by Preacher and Hayes (2004).

The macros provide unstandardised coefficients as required to test mediation (Preacher and Hayes, 2008). Path a represents the effect of × on the proposed mediator, whereas path b is the effect of M on Y partialling out the effect of × (Figure 7B). All of these paths would typically be quantified with unstandardised regression coefficients. The indirect effect of × on Y through M can then be quantified as the product of a and b (i.e., ab). The total effect of × on Y is quantified with the unstandardised regression weight c (Figure 7A). The total effect of × on Y can be expressed as the sum of the direct and indirect effects: $c = c' + ab$.

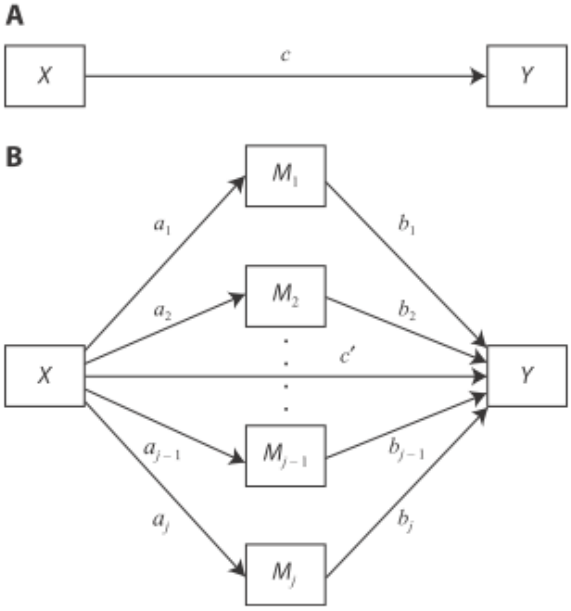


Figure 7. Illustration of a multiple mediation design. (A) × affects Y. (B) × is hypothesised to exert an indirect effects on Y through M_1, M_2, … M_j (Preacher and Hayes, 2008).

4.4.4 Regression analysis

Regression analysis was used in order to analyse the performance implications of sustainability practices, to explore the performance outcomes based on different contexts, and to examine the country of origin effects. Therefore, in a regression analysis we seek to predict an outcome variable from a single or multiple predictor variables by fitting a linear equation to observed data. The overall fit of the model can be assessed by R^2 and F statistics (Field, 2005). The term 'R-squared' refers to the fraction of variance explained by a model, while 'F statistics' refers to the overall significance of the regression model. Moreover, the contribution of the individual variable is assessed by the Beta value (obtained in the SPSS output). The Beta value indicates strength of the relationship between independent and dependent variable.

4.5 SAMPLE AND DATA COLLECTION

According to Kumar (2005), there are two ways of data collection methods for analysing and answering the research's questions: primary source and secondary source. This research adopts a questionnaire survey which corresponds to the primary source as a way of data collection method.

As indicated in Chapter One (Section 1.4) and Chapter Four (Section 4.2); quantitative data used in this study were collected using a large scale web-based survey conducted by a team of international researchers in the field of quality management. Within the data collection process, a survey coordinator was appointed in each participating country to: (a) review the questionnaire from the content validity perspective and (b) conduct the process of collecting the data.

To ensure a reasonable response rate, the survey was sent in two waves. The questionnaire with the cover letter indicating the purpose and significance of the study was emailed to target respondents. The selection of organisations was made through the website, Slovenian business register as well as through e-mail addresses stored in each of the participating universities' contact databases.

Data are collected from 247 organisations that are located in five countries (Table 12).

Table 12. Sample distribution by country

Country	Respondents (n)	Share (%)
Slovenia	116	47.0
Poland	57	23.1
Spain	34	13.8
Serbia	20	8.1
Germany	20	8.1
Total	247	100

The respondents to this survey are managers; in particular, target respondents were middle managers estimated as having adequate knowledge of the quality, sustainability and performance within their organisations. We distinguish the following hierarchical levels in the sample (Table 13); the sample's highest level managers (top management) are those who report directly to the organisation's chief executive officer (CEO) and are responsible for the performance of an organisation. They typically are the business unit's or production support unit's CEO, and the vice-president(s). The second level managers (middle management) are those managers who are responsible for a particular functional area.

The middle managers include department managers, plant managers, and directors of operations. For example, deputy quality managers were one of the main target respondents in the survey. The sample's lowest level managers (frontline management) are those who are responsible for a functional area of various units within an organisation.

Table 13. Structure of respondents by their function within the organisation

Respondent's function	Share (%)
Middle management	34.7
Data not available	24.5
Frontline management	23.7
Top management	17.1
Total	100 (N = 245)

In terms of organisational size (following the guidelines of the Statistical Office of the Republic of Slovenia), 4.8% of the sample was composed of micro-enterprises having five or fewer employees, 21.6% were small-sized organisations employing less than 50 employees, 29.1% were medium sized organisations, employing 50–250

employees, 8.4% organisations were with 250–500 employees and 26.9% organisations were with more than 500 employees (Table 14).

Table 14. Sample distribution by size of the organisations

Size	Share (%)
Data not available	8.9
0–5	4.5
5–50	24.3
50–250	27.5
250–500	8.9
over 500	25.9
Total	100

Based upon Slovenian Standard Industrial Classification Codes (SIC), Table 15 shows the industry structure of the organisations under investigation. As shown in Table 15, most respondents (42.7%) indicate that their organisation is in the ‘manufacturing‘ industry.

Table 15. Sample distribution by industry type

Industry (SIC)	Share (%)
Data not Available	8.5
Agriculture, Forestry and Fishing	0.4
Mining and Quarrying	0.4
Manufacturing	42.1
Electricity, Gas, Steam and Air Conditioning Supply	2.0
Water Supply, Sewerage, Waste Management and Remediation Activities	2.8
Construction	6.1
Wholesale and Retail Trade, Repair of Motor Vehicles and Motorcycles	6.1
Transportation and Storage	3.2
Accommodation and Food Service Activities	1.2
Information and Communication	6.5
Financial and Insurance Activities	3.6
Other	17
Total	100

Overall, the diversification in country of origin, industry type, company size, and respondents' function indicate that the survey has covered a wide range of organisations.

5 ANALYSES AND RESULTS

5.1 SUSTAINABILITY PRACTICES: MEASUREMENT AND VALIDATION OF CONSTRUCTS

5.1.1 Exploratory measurement results

The dimensions of the scale were examined by analysing the dataset using the exploratory factor analysis (EFA) and principal components analysis (PCA), as followed in the remainder of this section.

Exploratory factor analysis (EFA)

In order to confirm the latent factor structure for measured variables, an exploratory factor analysis (EFA) was performed using the principal components analysis with the Varimax rotation method. Table 16 shows the factor analysis results. The results show five factors with eigenvalues greater than one, accounting for 64.709% of the variance (K-M-O statistic 0.948; Bartlett statistic 435; significance 0.000). Thus, a model with five factors may be adequate to represent the data. Table 16 contains the rotated factor loadings, which are analogous to the correlations between the variable and the factor, and are used here for the interpretation of given factors.

In order to guarantee the convergent and discriminant validity, the low loading items (< 0.6) were excluded from the subsequent data analysis (one item whose loading is below cut-off value was left in the model due to content considerations).

Unexpectedly, several items for process management and product/service design are loading on Factor 1. Hence, the first factor shows the variables having a common underlying dimension of ‘sustainable product and process development‘. The main variables, which load heavily on this factor, are related to the sustainability improvements of products and processes. The results indicate that the construct of sustainable product and process development should be measured as single concept. The factor analysis results further reinforce the notion that two distinct concepts exist within process management dimension. The process management items that constitute the first factor are predominantly explorative, while two items representing process management for exploitation (i.e. q2.3 and q2.2) are loading on Factor 5.

Table 16. Results of exploratory factor analysis for sustainability practices

Item	F1	F2	F3	F4	F5
q2.4	.720				
q3.7	.711				
q3.2	.694	.384			
q2.8	.644				
q2.6	.617			.462	
q3.3	.604	.433			
q3.1	.574	.439			
q2.5	.545				
q3.5	.524	.488			
q1.8	.520				
q4.1	.519	.495			
q4.3		.781			
q4.6		.749			
q4.2		.747			
q4.7		.654			
q4.4		.626		.527	
q4.5		.599		.577	
q3.4	.445	.529			
q3.6	.477	.512			
q1.3			.768		
q1.4			.634		
q1.5			.615		
q1.2	.421		.468		
q2.7				.647	
q1.7			.350	.533	
q1.1	.368		.476	.487	
q1.6		.366	.460	.464	
q2.1				.445	.432
q2.3					.729
q2.2					.648
% of Variance	47.416	5.449	4.834	3.607	3.403

The second factor, named ‘sustainability-oriented learning’, includes the variables relating to improving employees’ knowledge and skills as well as supporting the learning culture, which facilitates innovation for sustainability. The third factor, ‘stakeholder orientation’ captures the common underlying theme of exploitative stakeholder orientation practices. The fourth factor is named ‘stakeholder

responsiveness and integration', in which loaded heavily variables are related to the organisation's responsiveness towards key stakeholder needs and demands and integration of these requirements in the product/service design and development process.

Principal Components Analysis (PCA)

The dimensions of the scale were examined by analysing the items using the PCA, which is often used as a first step of data reduction in order to replace original variables by the first few principal components in subsequent analyses (Dray, 2008). The PCA was applied to the entire dataset of sustainability practices aimed at providing some initial insights regarding the test of uni-dimensionality (to discriminate between exploitation practices and exploration practices). Table 17 summarises standardised loadings (pattern matrix) based upon the correlation matrix and communalities (h2) for the sustainability practices dataset.

Table 17. Summary of the PCA (component loadings and communalities) on the entire set

Item	PC1	PC3	PC2	PC5	PC4	h2	u2
q1.1	0.37			0.48	0.49	0.62	0.38
q1.2	0.42		0.47			0.59	0.41
q1.3			0.77			0.65	0.35
q1.4			0.63			0.62	0.38
q1.5			0.61			0.62	0.38
q1.6			0.46	0.46		0.65	0.35
q1.7				0.53		0.52	0.48
q1.8	0.52					0.45	0.55
q2.1				0.44	0.43	0.63	0.37
q2.2					0.65	0.72	0.28
q2.3					0.73	0.72	0.28
q2.4	0.72					0.61	0.39
q2.5	0.55					0.61	0.39
q2.6	0.62					0.65	0.35
q2.7				0.65		0.54	0.46
q2.8	0.64					0.68	0.32
q3.1	0.58					0.65	0.35
q3.2	0.69					0.70	0.30
q3.3	0.61					0.68	0.32
q3.4	0.45	0.53				0.62	0.38
q3.5	0.53	0.49				0.58	0.42

q3.6	0.48	0.51				0.60	0.40
q3.7	0.71					0.74	0.26
q4.1	0.52	0.49				0.63	0.37
q4.2		0.75				0.73	0.27
q4.3		0.78				0.80	0.20
q4.4		0.63				0.72	0.28
q4.5		0.60				0.73	0.27
q4.6		0.75				0.77	0.23
q4.7		0.65				0.57	0.43
Eigenvalues	5.67	5.50	3.16	2.97	2.12		
Proportion of Variance	0.19	0.18	0.11	0.10	0.07		

It appears that the PCA results very closely resemble common factor (EFA) results. As shown in Table 17, the majority of items are highly loading on the corresponding principal component. Items q1.1, q1.2, q1.6, q2.1, q3.4, q3.5, q3.6 and q4.1 could be removed from the interpretation because it loads more or less to the same extent on two different components.

Communality estimates that measure the percentage of variance in the observed variables accounted for by the retained components also support the PCA solution. However, certain items might be removed from further analysis in the case of a low communality value.

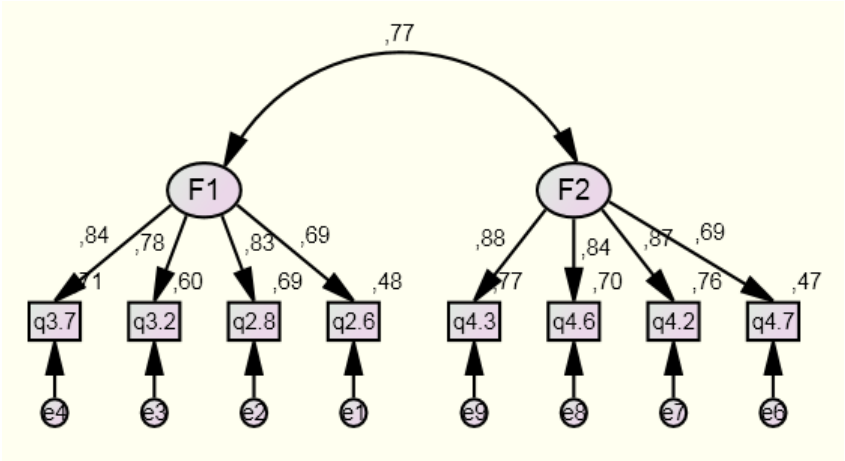
Nevertheless, the results of the EFA and the PCA reflect some divergence between the exploratory analysis and theoretical assumptions regarding the conceptualisation and operationalisation of the sustainability practices. For instance, items related to the learning orientation appear to converge into one factor (or component). Moreover, items related to exploration within the scope of process management and product/service design also have relatively strong loadings on one factor. Therefore, the results of the exploratory analysis in conjunction with a conceptual framework (presented in the Chapter 3) are taken into account in the subsequent CFA.

5.1.2 Measurement models

Validation of first-order constructs

The construct validity of each scale was assessed using CFA in order to establish how well the items measured the corresponding scales. The final measurement model for SER is shown in Figure 8. The results of the CFA for sustainability exploration measurement model show that measurement items are statistically significantly related

to the construct ($p < 0.05$), while the standardised loadings range from 0.69 to 0.88. According to Hair et al. (2010), the loading paths of all items should be statistically significant and exceed 0.50 to be consistent with convergent validity. The measurement model shows acceptable fit ($\chi^2 = 29.342$, $\chi^2/df = 1.544$, GFI = 0.969, AGFI = 0.942, NFI = 0.976, RMSEA = 0.048). The fitting indices were checked with their respective acceptance values (Hair et al., 2010).

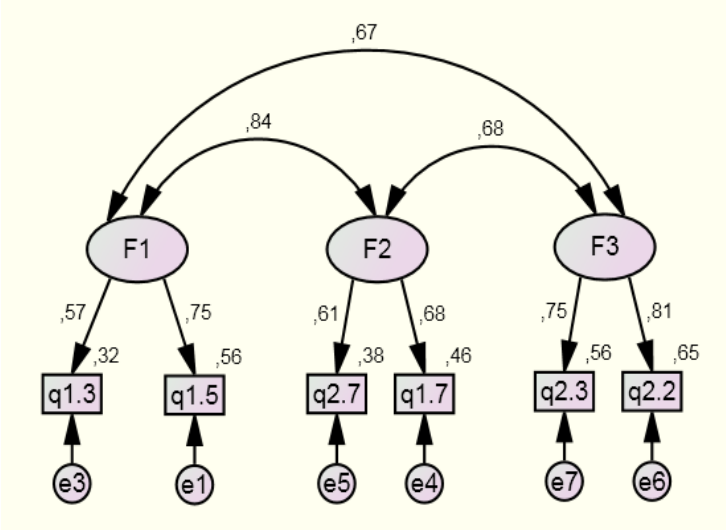


$\chi^2 = 29.342$ ($p = 0.061$); df = 19; $\chi^2/df = 1.544$; GFI = 0.969; AGFI = 0.942; RMSEA = 0.048

Figure 8. Final First-order model for SER

Based on the modification indices and standardised residual covariances, one item (q2.8) was excluded from the initial measurement model (from sub-construct F1).

The convergent validity of sustainability exploitation construct was also assessed using the CFA. The initial model fit indices for SEI consist of $\chi 2 = 25.612$ ($P = 0.007$), GFI = 0.970, AGFI = 0.925, and RMSEA = 0.074. These indices indicate that further model modification needs to be carried out in order to improve model fit indices. Based on the modification indices, one item (q1.4) was excluded from measurement model. In the final model, all factor-loading estimates were significant and exceeded 0.50 (ranged from 0.565 to 0.805). The model fit indices also indicate acceptable fit ($\chi^2 = 7.841$, $\chi^2/df = 1.307$, GFI = 0.989, AGFI = 0.963, NFI = 0.978, RMSEA = 0.036). The final measurement model for SEI is shown in Figure 9.



χ^2 = 7.841 (p = 0.250); df = 6; χ^2/df = 1.307; GFI = 0.989; AGFI = 0.963; RMSEA = 0.036

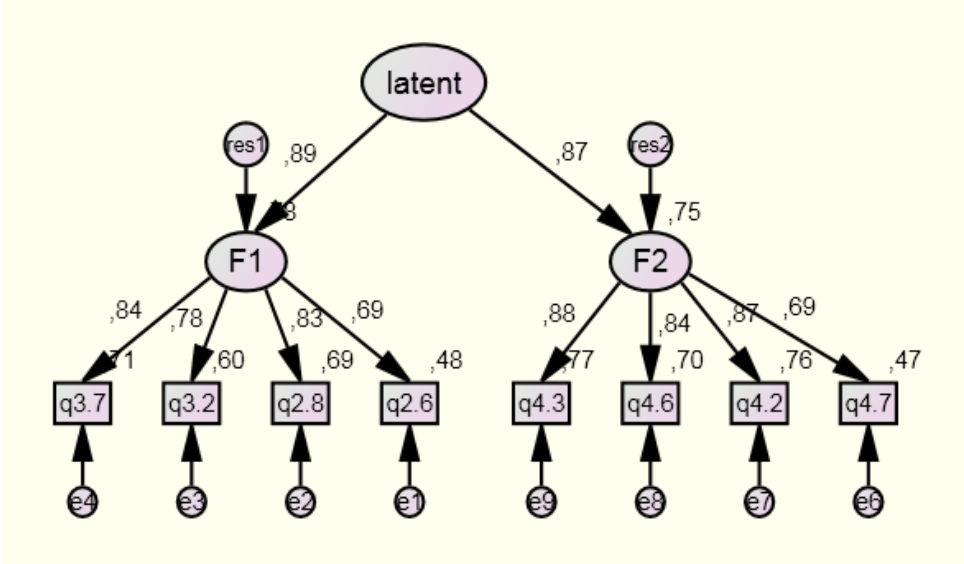
Figure 9. Final First-order model for SEI

Validation of second-order constructs

As shown in previous section, the first-order measurement models show a good fit. However, validation of the second-order constructs is also required to test the theoretically pre-defined conceptualisation and operationalisation of the exploitation as well as the exploration construct. The overall fit of a hypothesised model can be tested by using the maximum likelihood $\chi 2$ statistic provided in the AMOS output. Although the χ^2 statistic is one of the primary test of model's ability to reproduce the sample variance/covariance matrix, its significance levels are sensitive to sample size. As such, the χ^2 statistic must be interpreted with caution (Koufteros, 1999).

Researchers are using primarily the χ^2 per degree of freedom, CFI, and NNFI to assess model fit. Most current research suggests the use of ratios less than 2 as an indication of a good fit (Koufteros, 1999). Models that exhibit CFI and NNFI indices greater than 0.90 have adequate fit. These critical values indicate that one expects any model that adequately explain the variances and covariances in the observed data to reflect at least a 90% improvement over the null model.

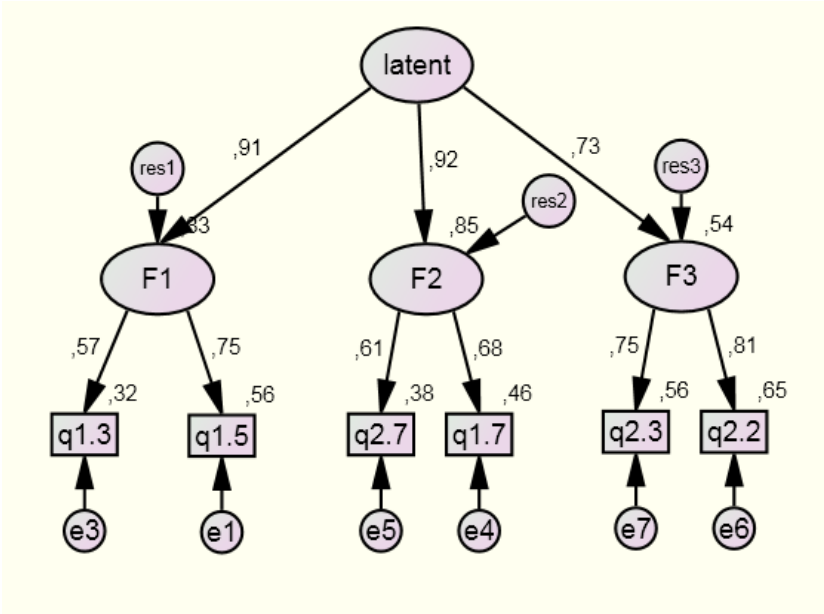
In the following, the validation for the second order construct is performed for the newly developed construct 'sustainability exploration' (Figure 10).



χ^2 = 29.342 (p = 0.061); df = 19; χ^2/df = 1.544; GFI = 0.969; AGFI = 0.942; RMSEA = 0.048

Figure 10. Final second-order model for SER

Fit indices for SER second-order model are satisfactory (χ^2/df < 2, NFI > 0.90, and CFI > 0.95). All measurement variables are statistically significantly related to constructs (p < 0.05) while the standardised loadings range from 0.69 to 0.88. The validation of the second order construct is also performed for the SEI construct (Figure 11).



χ^2 = 7.841 (p = 0.250); df = 6; χ^2/df = 1.307; GFI = 0.989; AGFI = 0.963; RMSEA = 0.036

Figure 11. Final second-order model for SEI

From Figure 11, it can be seen GFI (0.989), AGFI (0.963) are well above 0.9, RMSEA (0.036) is below 0.05 and thus indicative of a very good model-data fit. Furthermore, the standardised coefficients for the three sub-constructs are 0.91 for SOEI, 0.92 for RSI, and 0.73 for PMEI, and are all statistically significant; therefore, the higher-order construct (SEI) can be considered.

To summarise, a combined exploratory–confirmatory approach was used to validate sustainability exploration and sustainability exploitation constructs. The results revealed that sustainability exploration construct consists of two sub-constructs termed 'Sustainable product and process development' (F1 in Figure 10) and 'Sustainability-oriented learning' (F2 in Figure 10). Regarding the sustainability exploitation construct, the best overall fit of the model corresponds to the following sub-constructs: Stakeholder orientation for exploitation (F1 in Figure 11), Stakeholder responsiveness and integration (F2 in Figure 11), and Process management for exploitation (F3 in Figure 11).

Additionally, analysis of second-order models for sustainability exploration and sustainability exploitation provided empirical justification for combining constructs' process-based sustainability practices, sustainability-oriented learning, stakeholder orientation for exploitation, stakeholder responsiveness and integration, and process management for exploitation into aggregates.

5.1.3 Corrected item-total correlations

The corrected item-total correlation analyses were conducted for each construct. Table 18 shows the corrected item-total correlation scores, which ranged from 0.42 to 0.80. Rules of thumb suggest that the item-to-total correlations should exceed 0.5 (Hair et al., 2010).

Table 18. Corrected Item-total Correlations (CITC)

Sustainability exploitation			**Sustainability exploration**		
Construct	Item	CITC	Construct	Item	CITC
Stakeholder orientation	q1.3	0.425	Sustainable product and process development	q3.7	0.760
	q1.5	0.425		q3.2	0.697
				q2.8	0.743
				q2.6	0.663
Stakeholder responsiveness and integration	q2.7	0.420	Sustainability oriented learning	q4.3	0.802
	q1.7	0.420		q4.6	0.790
				q4.2	0.777
				q4.7	0.650
Process management for exploitation	q2.3	0.595			
	q2.2	0.595			

However, in spite of low values of item total correlations for items within the stakeholder orientation and the stakeholder responsiveness and integration construct, they were not removed from the model. The decision is justified based on content consideration and an acceptable fit of the measurement model.

5.1.4 Coefficient alpha and reliability

The three types of reliabilities tested in this study include internal consistency reliability using Cronbach's alpha coefficient, item reliability, and construct reliability using composite reliability measure.

Cronbach's alpha coefficient for each measure of sustainability exploration is shown in Table 19. Cronbach's alpha values for SPPD and SOL are 0.865 and 0.889, respectively. The alpha value for each construct was well above the recommended value of 0.70, which is considered satisfactory for exploratory research (Hair et al., 2010).

Table 19. Reliability test for sustainability exploration constructs

	Measurement item	Cronbach's Alpha
Sustainable product and process development (SPPD)		
SPPD1	The organisation makes improvements to radically reduce environmental impacts of products and services' life-cycles	0.865
SPPD2	We regularly make adjustments to existing products and services to reduce negative environmental and social impact	
SPPD3	The organisation undertakes regularly business process reengineering with a focus on green perspectives	
SPPD4	We acquire innovative environmental-friendly technologies and processes	
Sustainability oriented learning (SOL)		
SOL1	The organisation continuously strengthens employees' knowledge and skills to improve efficiency of current sustainability practices	0.889
SOL2	The organisation is characterised by a learning culture stimulating innovation for sustainability	
SOL3	The organisation upgrades employees' current knowledge and skills based on examples of best practices in corporate social responsibility	
SOL4	We search for external sources (e.g. partners, customers, research institutions) of knowledge in our search for innovative ideas related to sustainability	

Cronbach's alpha coefficients for sustainability exploitation sub-constructs are presented in Table 20; they range from 0.59 to 0.75, with the lowest value for the latent variable stakeholder responsiveness and integration and the highest value for process management for exploitation. However, there are some limitations associated with the use of Cronbach's alpha, including the fact that the alpha value is related to the number of items in the scale (Koufteros, 1999). Hence, confirmatory factor analysis is predominantly employed for the assessment of uni-dimensionality.

Table 20. Reliability test for sustainability exploitation constructs

	Measurement item	Cronbach's Alpha
Stakeholder orientation for exploitation (SOEI)		
SOEI1	We always respond to existing stakeholder issues in a regular/systematic way	0.594
SOEI2	The organisation constantly evaluates its external environment to uncover issues of importance to key stakeholders (customers, suppliers, local communities)	
Stakeholder responsiveness and integration (SRI)		
RSI1	The business processes are flexible allowing us to achieve high levels of responsiveness towards key stakeholder needs and demands	0.585
RSI2	The organisation involves key market stakeholders (customers, suppliers) early in the product/service design and development stage	
Process management for exploitation (PMEI)		
PMEI1	We make use of appropriate tools and techniques to reduce the variability of key processes	0.749
PMEI2	We have established key performance indicators (KPIs) to determine if the organisation is meeting sustainability goals	

The reliability of each construct is also examined by computing its composite reliability. The construct reliability is tested using composite reliability measure assessing the extent to which items in the construct measures the latent concept. A commonly acceptable value for composite reliability is 0.7 or more, although values below 0.7 have been considered acceptable (Hair et al., 2010).

The results of item reliability and composite reliability are presented in Tables 21 and 22. Table 21 shows the standardised factor loadings and reliability estimates for sustainability exploration. The results of composite reliability indicate acceptable reliability values. Moreover, The results of the CFA for sustainability exploration measurement model show that measurement items are statistically significantly related to the construct ($p < 0.05$), while the standardised loadings range from 0.685 to 0.89.

Table 21. Standardised factor loadings and reliability estimates for sustainability exploration

Item	SPPD	SOL	Item reliabilities	Error variance
SPPD1	0.842		0.709	0.291
SPPD2	0.777		0.604	0.396
SPPD3	0.830		0.689	0.311
SPPD4	0.691		0.477	0.523
SOL1		0.880	0.774	0.226
SOL2		0.839	0.704	0.296
SOL3		0.872	0.760	0.240
SOL4		0.685	0.469	0.531
Composite reliability	0.87	0.89		

In the following results of reliability estimation for sustainability exploitation construct are presented (Table 22). As shown by the results, the composite reliability estimate ranges from 0.59 (stakeholder responsiveness and integration) to 0.75 (process management for exploitation) indicating acceptable reliability values apart from the latent variable stakeholder responsiveness and integration. In spite of the low composite reliability value for this variable, the inclusion of it did not affect a good overall model fit. Therefore, it was retained in the model. The loadings of the items on the first-order factors (which are all significant at 0.01 significant level) and the loadings of the first-order factors on the two second-order factors (which are all significant at 0.01 significant level) also support acceptable reliability values.

Table 22. Standardised factor loadings and reliability estimates for sustainability exploitation

Item	SOEI	SRI	PMEI	Item reliabilities	Error variance
SOEI1	0.565			0.319	0.681
SOEI2	0.749			0.561	0.439
RSI1		0.612		0.375	0.625
RSI2		0.678		0.460	0.540
PMEI1			0.749	0.561	0.439
PMEI2			0.805	0.648	0.352
Composite reliability	0.61	0.59	0.75		

5.1.5 Discriminant validity

For examining discriminant validity, chi-square difference between two models (the unconstrained model and the constrained model are compared (Bagozzi and Phillips, 1982). In the unconstrained model, the covariance between particular two constructs was freely correlated. However, the covariance of a certain two construct was fixed to 1.0 in the constrained model. Two constructs are claimed as having well discriminant validity if the χ^2 difference between the two models is significant. A series of chi-square difference tests were then conducted and the results are shown in Table 23. The results indicated that all χ^2 difference test were significant at either at p value of 5 or 10%. The chi-square value for unconstrained measurement model was significantly lower than any constrained models with the possible pair of constructs. In sum, the findings revealed acceptable discriminant validity for all constructs.

Table 23. Chi-square difference tests for examining discriminant validity

Construct pair	Fixed correlation		Freely estimated correlation			Chi square difference
	d.f.	Chi square	Correlation	d.f.	Chi square	
(SOEI, RSI)	2	36.279	0.824	1	3.279	33
(SOEI, PMEI)	2	23.819	0.679	1	1.002	22.817
(SOEI, SPPD)	9	52.824	0.611	8	14.129	38.695
(SOEI, SOL)	9	62.951	0.613	8	25.262	37.689
(SPPD, SOL)	20	65.146	0.767	19	29.342	35.804
(SPPD, RSI)	9	65.609	0.759	8	18.571	47.038
(SPPD, PMEI)	9	37.192	0.747	8	13.752	23.44
(SOL, RSI)	9	72.041	0.708	8	19.430	52.611
(SOL, PMEI)	9	43.448	0.687	8	19.318	24.13
(PMEI, RSI)	2	46.726	0.684	1	0.115	46.611

In addition, discriminant validity was also assessed between to second-order factors. First, the high correlation between exploitation and exploration (r = 0.93) raises the concern that the two dependent variables may not be distinguishable statistically. Similarly, the literature has provided evidence that exploration and exploitation are highly correlated (Gupta et al., 2006). However, discriminant validity between the two second-order factors in this model is shown by a significant χ^2 difference (χ^2 = 25.912, d.f. = 1) with a p-value less than 0.001. Moreover, the correlation between composite

scores is 0.697 ($p < 0.01$), which does not represent any major multi-collinearity issue in further statistical analysis (e.g. regression analysis). Furthermore, two items (SPPD4 and SOL4) were excluded from the measurement model due to high modification indices.

5.2 DESCRIPTIVE STATISTICS

Prior to further statistical analysis, we first investigated the descriptive statistics for study variables. The descriptive statistics for sustainability practices are presented in Table 24 and Table 25 (descriptive statistics for all items are shown in Appendix B). Table 24 presents descriptive statistics for sustainability exploration practices. Observing the overall sustainable product and process development sub-construct, we can see that the highest mean value corresponds to the SPPD4 (3.93), while the lowest value corresponds to the SPPD3 (3.56). Therefore, the results indicate that the point estimate for the true mean of SPPD3 in the population is 3.56, and we are 95% confident that the true mean is between 3.4 and 3.7, while the true mean for SPPD4 lies between 3.8 and 4.1. Further examination shows that the margins of error are very similar for all items in the SPPD sub-construct, which can be attributed to a large sample size, to some extent.

Table 24. Descriptive statistics for sustainability exploration practices

Item	Mean	Std. Error	Std. Deviation	95% Confidence Interval	
				Lower Bound	Upper Bound
SPPD1	3.6591	0.07041	1.10659	3.5204	3.7978
SPPD2	3.7516	0.06391	1.00447	3.6257	3.8775
SPPD3	3.5648	0.07167	1.12644	3.4236	3.7060
SPPD4	3.9310	0.06814	1.07097	3.7968	4.0652
SOL1	3.7057	0.06948	1.09190	3.5688	3.8425
SOL2	3.5713	0.06918	1.08722	3.4350	3.7075
SOL3	3.6636	0.07168	1.12660	3.5224	3.8048
SOL4	3.7787	0.07054	1.10863	3.6398	3.9177

According to the results, the mean values for the SOL sub-construct range from 3.57 to 3.78, indicating moderate levels of the deployment of SOL practices. The highest mean value corresponds to the SOL4 (3.78), while the lowest mean value corresponds to the SOL2 (3.57).

In order to empirically assess whether there are significant differences between means of the two sub-constructs of sustainability exploration (mean for SPPD = 3.66 and mean for SOL = 3.65, respectively), we applied a paired-samples t-test. The results show that there is no significant difference between the mean values of the two sub-constructs ($t = 0.235$, $p > 0.05$).

Table 25 summarises the descriptive statistics for sustainability exploitation practices. As shown in Table 25, the mean values range from 3.6 to 4.1. The highest mean value corresponds to the RSI1 (4.1), while the lowest value corresponds to the PMEI1 (3.6). Taking as a set, the results suggest that organisations put more effort on implementing sustainability exploitation practices. The assumption will be further examined by the t-test of mean differences.

Table 25. Descriptive statistics for sustainability exploitation practices

Item	Mean	Std. Error	Std. Deviation	95% Confidence Interval	
				Lower Bound	Upper Bound
SOEI1	3.8540	0.06085	0.95641	3.7342	3.9739
SOEI2	3.8370	0.06582	1.03443	3.7074	3.9667
RSI1	4.0881	0.05594	0.87913	3.9779	4.1982
RSI2	3.9864	0.06142	0.96522	3.8655	4.1074
PMEI1	3.6030	0.06500	1.02158	3.4750	3.7311
PMEI2	3.7909	0.07323	1.15083	3.6467	3.9351

The results of the t-tests show that there is significant difference between mean values for the SOEI (3.85) and the RSI (4.04) ($t = -3.623$, $p < 0.01$) as well as between mean values for the SOEI (3.85) and the PMEI (3.69) ($t = 2.443$, $p < 0.05$). The results also support significant difference between mean values for the RSI (4.04) and the PMEI (3.69) ($t = 5.721$, $p < 0.01$).

According to the results, organisations deploy sustainability exploitation practices (mean = 3.86) to a greater extent than sustainability exploration practices (mean = 3.65). The results of the t-test show that the difference between SEI and SER is significant ($t = 5.060$, $p < 0.01$).

Figures 12 and 13 show the frequency distribution of the sustainability exploration score and the sustainability exploitation score. Both of them show a uni-modal distribution (one peak).

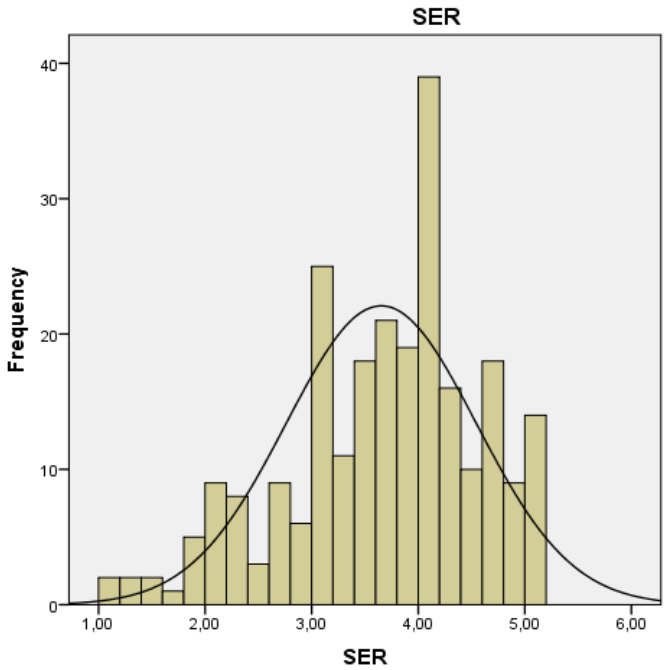


Figure 12. Frequency distribution of the sustainability exploration score (N = 247)

The results of descriptive statistics show a moderately negative Skewness (Skewness = - 0.624, Standard Error = 0.155) for SER score. The negative Skewness denotes the extent to which there is a ‘tail‘ below the mean. A negative kurtosis value (Kurtosis= - 0.123, Standard Error = 0.309) indicate that distribution is flatter than a normal distribution. One way of determining if the degree of kurtosis is ‘significantly non-normal‘ is to compare the numerical value for ‘Kurtosis‘ with twice the ‘Standard Error of Kurtosis‘. The latter suggests that Kurtosis is not significant.

Regarding the SEI score, results also indicate moderately negative Skewness (Skewness = - 0.699, Standard Error = 0.155). Moreover, a positive value of Kurtosis (Kurtosis= 0.659, Standard Error = 0.309) implies a leptokurtic distribution. However, a Kurtosis value of +/-1 is usually considered as acceptable.

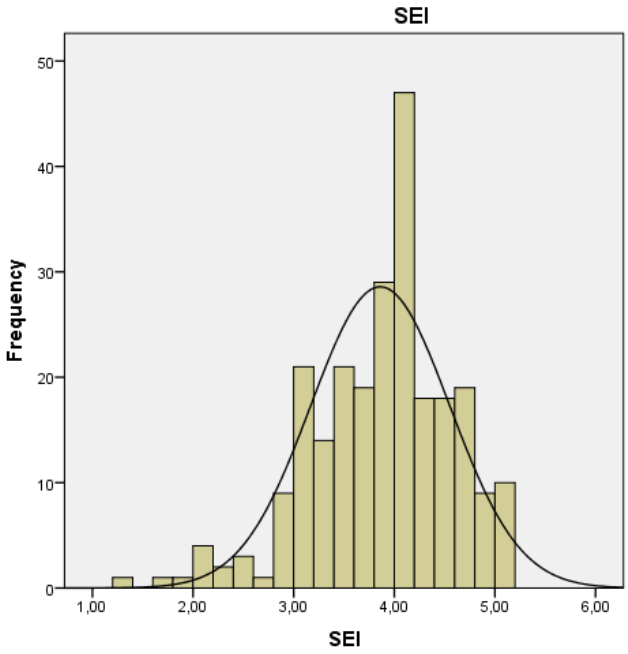


Figure 13. Frequency distribution of the sustainability exploitation score (N = 247)

By looking at the histogram presented in Figure 14, it can be seen that the organisational performance (OP) appears to be approximately symmetrically distributed, with the majority of data in the range of 3 and 4 with the rest of the scores spread out evenly. According to the descriptive statistics results, the distribution is moderately skewed (Skewness = - 0.410, Standard Error = 0.161).

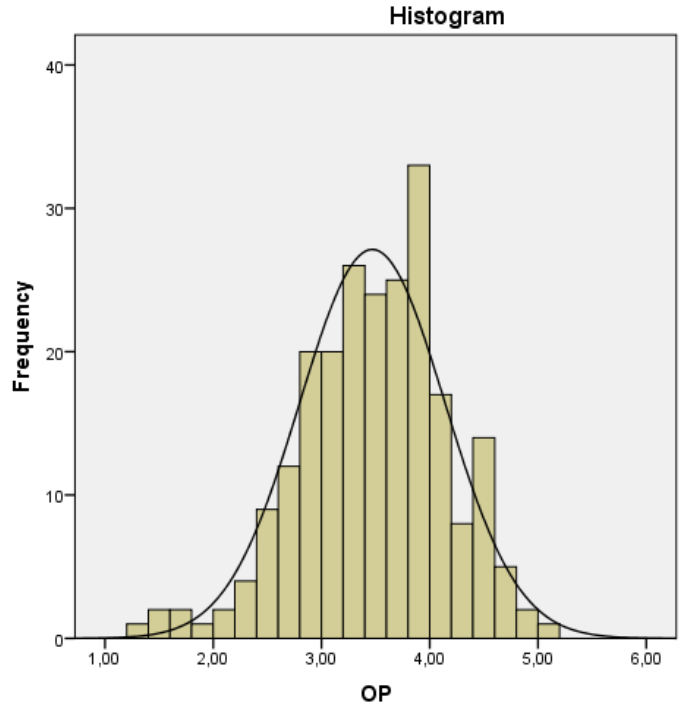


Figure 14. Frequency distribution of the organisational performance score (N = 228)

Furthermore, the Kolmogorov-Smirnov (K-S) test was used to test the normality of distributions. The results have shown that for both distributions, SER and SEI, the K-S test was significant, which indicates a deviation from normal distribution. Regarding organisational performance distribution, the K-S test was not significant ($p > 0.05$).

The descriptive results indicate that one should take caution when using parametric tests. Bearing this in mind, we checked assumptions referred to a particular statistical test. For example, regression diagnostic (Field, 2005) was used to check how well the assumptions of multiple linear regressions are satisfied.

Table 26 presents means, standard deviations, and bivariate correlations for all composite variables in this study. As expected, the results indicated positive relationships between sustainability practices and all organisational performance, with correlations ranging from 0.27 to 0.52 ($p < 0.01$). The results also indicate that a) SER correlates positively with innovation performance ($r = 0.406$, $p<.001$), and b) innovation performance correlates positively with financial and market performance ($r = 0.547$, $p < 0.01$). Furthermore, SEI shows the strongest correlation with quality performance ($r = 0.395$, $p < 0.01$), which is positively correlated with financial and market performance ($r = 0.343$, $p < 0.01$).

The results also indicate that the construct ‘implementation enablers‘ is strongly correlated to both SER ($r = 0.820$, $p < 0.01$) and SEI ($r = 0.691$, $p < 0.01$).

Regarding the environmental dimensions, competitiveness is positively correlated to the SER ($r = 0.193$, $p < 0.01$) and SEI ($r = 0.229$, $p < 0.01$), while the uncertainty is significantly correlated only to SEI ($r = 0.142$, $p < 0.01$). Moreover, competitiveness is also positively and significantly correlated to performance measures, with correlations ranging from 0.15 to 0.21 ($p < 0.05$). The only exception is environmental performance, which is not significantly correlated to the competitiveness ($p > 0.05$).

Table 26. Means, standard deviations and correlations

	Mean	SD	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
(1) *Implementation enablers*	3.99	.94												
(2) *Sustainability exploration*	3.65	.89	.820**											
(3) *Sustainability exploitation*	3.86	.69	.691**	.697**										
(4) *Organisational performance*	3.47	.67	.519**	.507**	.465**									
(5) *Financial and market performance*	3.24	.95	.296**	.270**	.293**	.724**								
(6) *Quality performance*	3.86	.79	.406**	.345**	.395**	.672**	.343**							
(7) *Innovation performance*	3.42	.96	.426**	.406**	.372**	.793**	.547**	.439**						
(8) *Environmental performance*	3.48	.93	.351**	.399**	.321**	.698**	.325**	.309**	.407**					
(9) *Social performance*	3.33	.94	.446**	.434**	.327**	.750**	.388**	.432**	.432**	.455**				
(10) *Competitiveness*	3.91	1.04	.217**	.193**	.229**	.196**	.149*	.212**	.158*	.087	.148*			
(11) *Uncertainty*	3.09	1.01	.058	.107	.142*	.090	.047	.120	.116	.017	.082	.488**		
(12) *Long-term orientation*	4.03	.83	.652**	.588**	.558**	.461**	.323**	.402**	.440**	.196**	.383**	.345**	.132*	-

**. Correlation is significant at the 0.01 level (2-tailed).
*. Correlation is significant at the 0.05 level (2-tailed).

5.3 THE EFFECTS OF SUSTAINABILITY IMPLEMENTATION ENABLERS

5.3.1 Exploratory measurement results

In order to validate the measurement instrument, we used a combined exploratory–confirmatory approach. First, data were subject to exploratory factor analysis. Then confirmatory factor analysis (CFA) was applied, with the aid of the AMOS software.

According to the aforementioned validation approach, in first phase, implementation enablers' practices were used as the measured variables of an EFA (varimax rotation method). The results of the EFA show one factor with an eigenvalue greater than one, accounting for 72.731% of the variance (K-M-O statistic 0.870; Bartlett statistic 15; significance 0.000). Factor loadings with their corresponding mean values and standard deviations are presented in Table 27.

Table 27. Mean, standard deviation, correlations and factor loadings

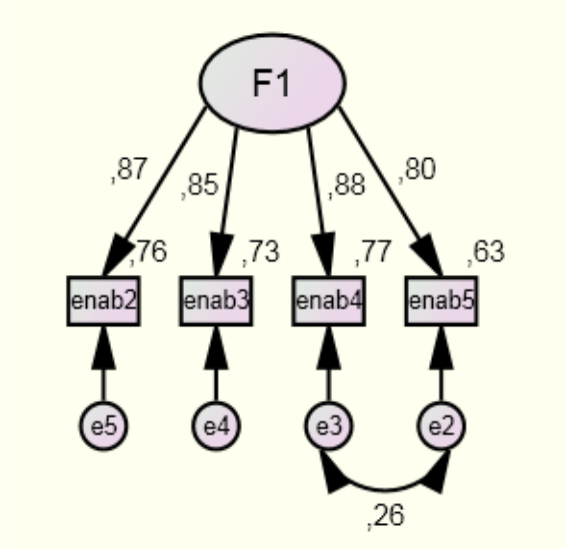
Item	F1	Mean	SD	4	2	3	5	1
ENAB 4	0.896	3.9965	1.02892					
ENAB 2	0.881	4.1909	0.98232	0.748**				
ENAB 3	0.876	3.9887	1.03597	0.757**	0.732**			
ENAB 5	0.867	3.743	1.1898	0.749**	0.685**	0.646**		
ENAB 1	0.827	3.9926	1.04155	0.642**	0.723**	0.707**	0.559**	
ENAB 6	0.764	3.6356	1.27886	0.603**	0.497**	0.569**	0.719**	0.537**

Notes: Study sample size = 247. All correlations are significant at $p < 0.01$

Respondents' organisations appeared to be implementing sustainability implementation enablers to a moderately high extent, both overall (mean 3.92) and in terms of the six specific items. The highest mean value was observed in regard to the perceived value of sustainability based on new market opportunities as recognised by the top management (mean 4.19), while the lowest mean value corresponds to the establishment of annual plans to carry out sustainability-related activities/practices (mean 3.63). Moreover, the results also support significant difference between mean values for the ENAB4 (4.19) and the ENAB6 (3.63) ($t = 7.449$, $p < 0.01$).

In general, the result (Table 27) suggests that the correlation coefficients show relatively equal value among the six implementation enablers' variables, ranging from 0.5 to 0.76. The highest correlation was found between ENAB3 and ENAB4 ($r = 0.757$, $p < 0.01$), while the lowest correlation coefficient was found between ENAB2 and ENAB6 ($r = 0.497$, $p < 0.01$).

The convergent validity of implementation enablers' scale was also assessed using CFA, mainly to examine how well the items measured the corresponding scale. Based on the modification indices, two items (enabler1 and enabler6) were excluded from the initial measurement model. In the final model, all factor-loading estimates were significant and exceeded 0.50 (ranged from 0.80 to 0.88). The model fit indices also indicate acceptable fit ($\chi^2 = 0.611$, $\chi^2/df = 0.611$, GFI = 0.999, AGFI = 0.987, NFI = 0.999, RMSEA = 0.000). The final measurement model for sustainability enablers construct is shown in Figure 15.



$\chi^2 = 0.611$ ($p = 0.435$); $df = 1$; $\chi^2/df = 0.611$; GFI = 0.999; AGFI = 0.987; RMSEA = 0.000

Figure 15. Sustainability enablers measurement model

The descriptions of the implementation enabler items and Cronbach's alpha coefficient are presented in Table 28. A high value of Cronbach's alpha ($\alpha = 0.914$) provides additional evidence that the items measure an underlying (or latent) construct.

Table 28. Reliability test for implementation enablers construct

	Measurement item	Cronbach's Alpha
ENAB2	Top management recognises the value of sustainability based on new market opportunities	0.914
ENAB3	The organisation is characterised by a culture in which the principles of social responsibility (accountability, transparency, ethical behaviour) are practised	
ENAB4	Sustainability concerns are an integral part of the strategic goal setting process	
ENAB5	A shared vision of sustainability is developed	

5.3.2 Regression analysis

To assess the effects of implementation enablers on sustainability practices, we applied regression analysis. The results show that implementation enablers variable is positively and significantly related to the SEI ($\beta = 0.691$, $p < 0.01$) and (SER $\beta = 0.820$, $p < 0.01$) (Table 29). Hypothesis 1, stating that there is positive relationship between sustainability enablers and sustainability practices, is therefore supported.

Table 29. Results of regression analysis: implementation enablers, SEI, and SER

	Standardised β coefficient	
	Dependent: SEI	**Dependent: SER**
Implementation enablers	0.691**	0.820**
R^2	0.477	0.672
Adjusted R^2	0.475	0.671
F	215.480	484.255
P-value of overall model	0.000	0.000

**P < 0.01

The maximum VIF within the models was 1, which is well below the rule-of-thumb cut-off of 10. Furthermore, R square values are high in both models ($R^2 = 0.477$ and $R^2 = 0.672$, respectively), suggesting that high portions of the variance in sustainability practices are explained by implementation enablers. According to the results, one can support the hypothesis that states that there is a positive relationship between sustainability enablers and implementation of sustainability practices.

5.4 THE PERFORMANCE BENEFITS OF SUSTAINABILITY PRACTICES

5.4.1 Exploratory measurement results

Organisational performance measures were assessed via responses to the question 'Please select the number (on a 5-point Likert-type scale) that accurately reflects the extent of your organisation's overall performance over the last three years on each of the following'. The following dimensions of organisational performance were included in the questionnaire: financial and market performance, quality performance, innovation performance, environmental performance and social performance.

Furthermore, factor analysis was applied with the aim of data reduction and, therefore, the simplification of a large number of inter-correlated measures of organisational performance to a few representative constructs or factors. The results show five factors with eigenvalues greater than one, accounting for 68.977% of the variance (K-M-O statistic 0.874; Bartlett statistic 210; significance 0.000). Descriptive statistics and the results of a factor analysis are shown in Table 30.

Table 30. Mean, standard deviation and factor loadings for organisational performance items

Item	F1	F2	F3	F4	F5	Mean	SD
PERF7	0.802					3.8054	1.02122
PERF8	0.774					3.7035	1.03839
PERF5	0.754					4.028	0.8973
PERF6	0.752					3.8687	0.85889
PERF3		0.866				3.1192	1.12027
PERF2		0.865				3.2677	1.09721
PERF1		0.754				3.1264	1.00516
PERF4		0.658				3.3933	1.15717
PERF16			0.774			3.398	1.1502
PERF15			0.770			3.372	1.1627
PERF13			0.755			3.601	1.0833
PERF14			0.728			3.618	1.0952
PERF17*			0.609			3.845	1.0200
PERF10				0.818		3.538	1.1093
PERF12				0.737		3.331	1.0804
PERF11				0.727		3.370	1.1406
PERF9*	0.439			0.699		3.748	0.9552
PERF19					0.828	3.382	1.0757

PERF20					0.777	3.353	1.0738
PERF18					0.674	3.2723	1.12768
PERF21*					0.481	3.600	0.9869
% of Variance	37.678	10.762	9.009	6.294	5.234		
Reliability (Cronbach's α)	0.845	0.865	0.798	0.841	0.819		

*item was excluded from further analysis

5.4.2 Regression analysis

First, mean scores were calculated from the scale's items to generate the composite scores for the organisational performance, which will be used in the regression analysis. Furthermore, the normality of the composite score was checked and the result indicated no major violation, with skewness and kurtosis values well within the accepted range (± 1 and <3, respectively). Additionally, the Kolmogorov-Smirnov test of normality supports the aforementioned arguments (K-S = 0.046, p = 0.200).

The Table 31 summarises the regression results for the effects of sustainability practices on the organisational performance.

Table 31. Results of regression analysis: SER, SEI, and organisational performance

	Dependent: organisational performance	
	Model 1	**Model 2**
SER	0.331**	
SEI	0.246**	
Ambidextrous orientation		0.532**
R^2	0.283	0.283
Adjusted R^2	0.277	0.280
F	43.455	87.294
P-value of overall model	0.000	0.000

*P < 0.05, **P < 0.01

The result of the Model 1 shows that both sustainability orientations have a significant relationship with organisational performance (β = 0.331, p < 0.01; β = 0.246, p < 0.01 respectively). Hypothesis 2, which posited a positive relationship between sustainability practices and organisational performance, is supported. The first model (Table 31) with SER and SEI in the equation shows the R square value of 28% with

an F value of 43.455 (P <.001). To examine multi-collinearity, we calculated variance inflation factors (VIF) for the regression equation. The VIF for the Model 1 was 1.94, which is well below the rule-of-thumb cut-off of 10.

Model 2 examines the ambidextrous orientation effect on organisational performance. Corresponding to the 'combined' view, ambidexterity can be operationalised as the product (e.g. He and Wong, 2004) or sum (e.g. Jansen et al., 2009) of exploration and exploitation. We ran three regression analyses in which exploration and exploitation were combined into a single index, first by subtracting exploitation from exploration, second by multiplying exploration and exploitation, and third by summing the two. The 'additive' model proved to be superior in terms of the overall fit of the model assessed by R square and F statistics (Field 2005). As such, we used the additive approach of combining the exploration and exploitation constructs. However, exploration and exploitation variables were not included in the Model 2 due to the multi-collinearity between the independent variables and their sum terms.

Regarding the effect of the ambidextrous orientation, Model 2 shows that the coefficient for this variable is positive and significant ($\beta = 0.532$, $p < 0.01$). R square shows that 28% of the variation in organisational performance is explained by the ambidextrous orientation.

Furthermore, the results show that sustainability exploration practices influence the financial and market performance ($\beta = 0.265$, $p < 0.01$) (Table 32). However, when sustainability exploitation construct is accounted for, the impact of sustainability exploration becomes insignificant (Model 2) ($p < 0.05$). As shown in Model 2, the coefficient for SEI is positive and significant ($\beta = 0.107$, $p < 0.05$). In summation, Hypothesis 2a1 is not supported, while there is empirical evidence to support Hypothesis 2b1.

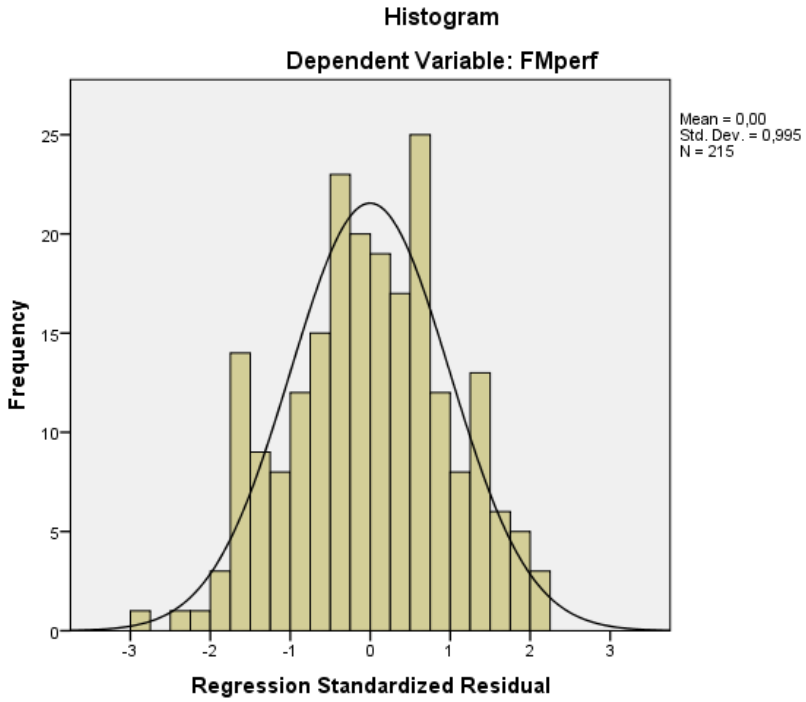
Table 32. Results of regression analysis: SER, SEI, and financial and market performance

	Dependent: Financial and market performance	
	Model 1	Model 2
SER	0.265**	0.107
SEI		0.224*
R^2	0.070	0.095
Adjusted R^2	0.066	0.087
F	16.059	11.173
P-value of overall model	0.000	0.000

*P < 0.05, **P < 0.01

As observed in Table 32, R square values are relatively low (0.070 and 0.095, respectively). However, the lack of explanatory power may not be that surprising, because many other characteristics of the organisation should influence the financial and market performance.

For the purpose of the regression diagnostic, a plot *ZRESID (y-axis) against *ZPRED (x-axis) was performed, mainly to determine whether the assumptions of random errors and homoscedasticity have been met. The pattern of residuals is indicative of situations in which the assumptions of linearity and homoscedasticity have been met. While some outliers were observed, the points are evenly dispersed through the plot. Furthermore, a histogram of the standardised residuals was used in order to check the assumption of normality of errors (Field, 2005).



Analysing the coefficients in Table 33, Hypothesis 1, stating, 'There is a positive relationship between sustainability exploration practices and quality performance,' could not be supported in this study. In contrast, as revealed in Table 33, the coefficient for SEI is positive and significant ($\beta = 0.293$, $p < 0.01$). Therefore, Hypothesis 2b2 is supported.

Table 33. Results of regression analysis: SER, SEI, quality performance, and innovation performance

	Standardised β coefficient	
	Dependent: Quality performance	**Dependent: Innovation performance**
SER	0.155	0.253**
SEI	0.293**	0.202*
R^2	0.174	0.177
Adjusted R^2	0.167	0.169
F	22.907	22.760
P-value of overall model	0.000	0.000

*P < 0.05, **P < 0.01

Regarding the effects on innovation performance, the results indicate that both SER and SEI are statistically significantly related to the innovation performance ($\beta = 0.253$, $p < 0.01$; $\beta = 0.202$, $p < 0.05$). Therefore, both Hypotheses 2a3 and 2b3 are supported.

The results presented in Table 34 show that the deployment of sustainability exploration practices significantly explains the environmental performance ($\beta = 0.325$, $p < 0.01$) and social performance ($\beta = 0.362$, $p < 0.01$). Therefore, the result illustrates the positive effects of SER on sustainability performance, thereby supporting Hypotheses 2a4 and 2a5. In contrast, SEI is not statistically significantly related with either the environmental performance or with the social performance. Thus, Hypotheses 2b4 and 2b5 are not supported.

Table 34. Results of regression analysis: SER, SEI, environmental performance, and social performance

	Standardised β coefficient	
	Dependent: Environmental performance	**Dependent: Social performance**
SER	0.325**	0.362**
SEI	0.097	0.088
R^2	0.159	0.184
Adjusted R^2	0.151	0.176
F	20.190	24.104
P-value of overall model	0.000	0.000

*P < 0.05, **P < 0.01

In addition, regression models were applied to examine the effects of the non-financial performance measures on the financial and market performance (Table 35). For the financial and market performance model, quality performance and innovation performance were entered first. Both coefficients are positive and significant ($\beta = 0.134$, $p < 0.05$; $\beta = 0.488$, $p < 0.01$), thereby indicating the innovation and environmental performance predict the financial and market performance.

Table 35.Results of regression analysis: Non-financial performance measures and financial and market performance

	Dependent: Financial and market performance	
	Model 1	Model 2
Quality performance	0.134*	0.098
Innovation performance	0.488**	0.417**
Environmental performance		0.036
Social performance		0.144*
R^2	0.313	0.327
Adjusted R^2	0.307	0.314
F	48.405	24.895
P-value of overall model	0.000	0.000

*P < 0.05, **P < 0.01

In the Model 2, environmental performance and social performance were added ($p < 0.000$), showing an increment of 1.4% in R^2. The results indicate that innovation performance is still positive and significant ($\beta = 0.417$, $p < 0.01$), while quality performance become insignificant ($p > 0.05$). Environmental performance is not found to be significant in the Model 2, indicating that environmental performance may be critical but not sufficient to achieve a greater financial and market performance. In contrast, social performance is positively and significantly related to the financial and market performance ($\beta = 0.144$, $p < 0.05$).

5.4.3 Multiple mediation analysis

Although we did not explicitly theorise non-financial performance as mediating variables, we also ran several mediation tests. We would like to examine whether the relationship between sustainability practices (in the context of SER and SEI) and financial and market performance is established indirectly through the effects of the non-financial performance measures.

In this sense, following Baron and Kenny (1986) who recommend that a mediator, rather than a moderator function, is better when there is an strong relationship between a predictor and a criterion variable, we consider that the predictor variable ‘sustainability practices‘ is related with the criterion variable ‘non-financial performance measures‘ and we take the position that non-financial performance measures have mediator functions on the relationship between sustainability practices and financial and market performance. Therefore, the purpose of this section is to

examine whether SER and SEI affect financial and market performance indirectly through nonfinancial performance measures.

In the following, we present simultaneous mediation by multiple variables; SER as independent variable, financial and market performance as dependent variable and quality performance, innovation performance, environmental performance, social performance as mediators. The results of the multiple mediation analysis are presented in Table 36 and Table 37.

Table 36. Mediation of the effects of the SER on financial and market performance through proposed mediators

	Coefficients			
Mediator	(a paths)	(b paths)	Total Effect (c path)	Direct Effect (c-prime path)
Quality performance	0.3469, p=0.000	0.1096, p=0.1880	0.2883, p=0.0001	-.0101, p=0.8932
Innovation performance	0.4264, p=0.000	0.4173, p=.0000		
Environmental performance	0.4465, p=0.000	0.0382, p=0.6091		
Social performance	0.4504, p=0.000	0.1451, p=0.0524		

The results indicate that direct effect is not statistically different from zero, indicating no relationship between SER and financial and market performance after controlling for mediators ($c' = -0.0101$, $p > .05$). The results indicate that mediation occurs in the relationship between SER and financial and market performance. It seems that innovation performance completely mediates the effect of SER on financial and market performance. However, other potential mediators appear not to be significant mediators. As can be seen in Table 36, the total and direct effects of SER on financial and market performance are 0.2883, $p < 0.01$, and -0.0101, $p < 0.08$, respectively.

The difference between the total and direct effects is the total indirect effect through the four mediators, with a point estimate of 0.2984 and a 95% BCa bootstrap CI of 0.1774 to 0.4340 (i.e. we can claim that the difference between the total and the direct effect of SER on financial and market performance is different from zero).

However, in multiple mediation models, the researcher is concerned not only with the total indirect effect of X on Y, but also with specific indirect effects (Preacher and

Hayes, 2008). The specific indirect effects are a_1b_1 = 0.0380 (through quality performance), a_2b_2 = 0.1779 (through innovation performance), a_3b_3 = 0.0171 (through environmental performance) and a4b4 = 0.0653 (through social performance) (Table 37). The SEs and critical ratios (Z values) for these effects are also reported in Table 37. Of the potential mediators examined, we can conclude that innovation performance is likely an important mediator (Z = 4.2806, p = 0.000).

Table 37. Bootstrap estimates of the mediated effect and its standard error - SER

Mediator	Point estimate	Product of Coefficients		Bootstrapping BCa 95% CI	
		SE	Z	Lower	Upper
Quality performance	0.0380	0.0291	1.3047	-0.0134	0.1254
Innovation performance	0.1779	0.0416	4.2806	0.1039	0.2785
Environmental performance	0.0171	0.0330	0.5171	-0.0611	0.0891
Social performance	0.0653	0.0344	1.8984	-0.0048	0.1500
TOTAL	0.2984	0.0555	5.3767	0.1774	0.4340

Bca -Bias Corrected and Accelerated Confidence Intervals, 1000 bootstrap samples

As mentioned in the introduction of this section, SEI is also a subject of mediation analysis. The results of the multiple mediation analysis are summarised in Table 38 and Table 39.

As can be seen in the results (Table 38), the total and direct effects of SEI on financial and market performance are 0.4316, p<.001, and 0.0797, p < 0.4, respectively. The difference between the total and direct effects is the total indirect effect through the four mediators, with a point estimate of 0.3519 and a 95% BCa bootstrap confidence interval (CI) of 0.2104 to 0.5245. Hence, we can claim that the difference between the total and the direct effect of SEI on financial and market performance is different from zero, which indicates that innovation performance is a mediator. Moreover, Baron and Kenny (1986) simply state that perfect mediation has occurred if c' becomes insignificant after controlling for M, which is so in our case (c' = 0.0797, p= 0.3985).

Table 38. Mediation of the effects of the SEI on financial and market performance through proposed mediators

	Coefficients			
Mediator	(a paths)	(b paths)	Total Effect (c path)	Direct Effect (c-prime path)
Quality performance	0.4992, p=0.000	0.0907, p=0.2833	0.4316, p=0.000	0.0797, p=0.3985
Innovation performance	0.5634, p=0.000	0.4063, p=.0000		
Environmental performance	0.4787, p=0.000	0.0250,p=0.7336		
Social performance	0.4761, p=0.000	0.1381, p=0.0605		

The point estimate of ab is simply the mean ab computed over 1,000 samples, and the estimated standard error is the standard deviation of the 1,000 ab estimates. As can be seen from the bootstrapped estimate of the indirect effect, the true indirect effect of innovation performance is estimated to lie between 0.1266 and 0.3676 with 95% confidence (Table 39).

Neither quality performance, environmental performance nor social performance contribute to the indirect effect above and beyond innovation performance.

Table 39. Bootstrap estimates of the mediated effect and its standard error - SEI

		Product of Coefficients		Bootstrapping BCa 95% CI	
Mediator	Point estimate	SE	Z	Lower	Upper
Quality performance	0.0453	0.0421	1.0753	-0.0372	0.1387
Innovation performance	0.2289	0.0536	4.2711	0.1266	0.3676
Environmental performance	0.0119	0.0347	0.3444	-0.0643	0.1044
Social performance	0.0658	0.0365	1.8017	-0.0070	0.1521
TOTAL	0.3519	0.0671	5.2474	0.2104	0.5245

Bca -Bias Corrected and Accelerated Confidence Intervals, 1000 bootstrap samples

In summary, the results of multiple mediation analyses provide evidence that, taken as a set, innovation performance does mediate the effect of both SER and SEI on financial and market performance. According to the results, the directions of the a and b paths are consistent with the interpretation that greater engagement in sustainability exploration and sustainability exploitation leads to greater innovation performance, which in turn leads to greater financial and market performance.

5.5 DIMENSION LEVEL ANALYSIS

5.5.1 Regression analysis

As observed in Chapter 4, we found a positive and significant relationship between sustainability practices and organisational performance. Furthermore, the results imply that neither exploration nor exploitation is identified as a statistically significant predictor of all organisational performance dimensions. In this regard, it would be interesting to investigate the effects of various sub-constructs (within a construct of each sustainability orientation practices) on the dependent variables. Such a detailed analysis shall contribute towards providing more meaningful research implications.

From the results (Table 40) it is clear that only one item of SER, SOL ($\beta = 0.227$, $p < 0.05$), significantly predicts financial and market performance.

Table 40. Results of regression analysis for financial and market performance as dependent variable

	Dependent: Financial and market performance	
	Model 1	**Model 2**
SPPD	0.062	
SOL	0.227*	
SOEI		0.038
RSI		0.269**
PMEI		0.066
R^2	0.075	0.107
Adjusted R^2	0.066	0.094
F	8.591	8.421
P-value of overall model	0.000	0.000

*P < 0.05, **P < 0.01

The results (Table 40) indicate that SOL and RSI have a moderately significant relationship with financial and market performance. However, the results imply that low amount of the variation in the financial and market performance can be explained by these two regression models.

As observed in Table 41, the results illustrate that SOL ($\beta = 0.296$, $p < 0.01$) and RSI ($\beta = 0.494$, $p < 0.01$) are significant predictors of quality performance. In comparison with previous results (Table 41) it is obvious that regression effects are greater. In particular, RSI seems to have the strongest positive impact on quality performance. R square also indicate that both regression models have greater explanatory power compared to previous results ($R^2 = 0.138$ and $R^2 = 0.253$ respectively).

Table 41. Results of regression analysis for quality performance as dependent variable

	Dependent: Quality performance	
	Model 1	**Model 2**
SPPD	0.100	
SOL	0.296**	
SOEI		0.015
RSI		0.494**
PMEI		0.004
R^2	0.138	0.253
Adjusted R^2	0.130	0.243
F	17.396	24.405
P-value of overall model	0.000	0.000

*P < 0.05, **P < 0.01

Surprisingly, SOL does not contribute significantly to the prediction of innovation performance ($p > 0.05$) (Table 42). In contrast, SPPD has a positive and significant effect on innovation performance ($\beta = 0.359$, $p < 0.01$). The results (Model 2) show that RSI is a predictor within SEI that has a positive and significant effect on innovation performance ($\beta = 0.269$, $p < 0.01$).

Table 42. Results of regression analysis for innovation performance as dependent variable

	Dependent: Innovation performance	
	Model 1	**Model 2**
SPPD	0.359**	
SOL	0.076	
SOEI		0.044
RSI		0.269**
PMEI		0.164
R^2	0.172	0.160
Adjusted R^2	0.164	0.148
F	22.020	13.384
P-value of overall model	0.000	0.000

*P < 0.05, **P < 0.01

Models 1 and 2 in Table 43 represent the results of the regression analysis for SER, SEI, and environmental performance. The coefficient for SPPD is positive and significant ($\beta = 0.480$, $p < 0.01$). It appears that Model 1 (Table 43) has the greatest explanatory power considering the dimension level regression analysis. Only PMEI in the Model 2, significantly predicts environmental performance ($\beta = 0.174$, $p < 0.05$). The R square is 0.110, which means that PMEI can account for 11% of the variation in environmental performance. The other two items of SEI do not contribute significantly to the prediction of environmental performance.

Table 43. Results of regression analysis for environmental performance as dependent variable

	Dependent: Environmental performance	
	Model 1	**Model 2**
SPPD	0.480**	
SOL	-0.041	
SOEI		0.086
RSI		0.149
PMEI		0.174*
R^2	0.206	0.110
Adjusted R^2	0.198	0.097
F	27.577	8.717
P-value of overall model	0.000	0.000

*P < 0.05, **P < 0.01

As shown in Table 44, SPPD ($\beta = 0.247$, $p < 0.01$) and SOL ($\beta = 0.218$, $p < 0.05$) are both significantly related to the social performance (Model 1). Furthermore, the regression analyses results (Model 2 in Table 44) indicate that only RSI ($\beta = 0.254$, $p < 0.01$) is significantly related to the social performance. The other two sub-constructs are not considered to be significant for social performance.

Table 44. Results of regression analysis for social performance as dependent variable

	Dependent: Social performance	
	Model 1	**Model 2**
SPPD	0.247**	
SOL	0.218*	
SOEI		0.126
RSI		0.254**
PMEI		0.053
R^2	0.183	0.134
Adjusted R^2	0.175	0.122
F	23.901	10.972
P-value of overall model	0.000	0.000

*P < 0.05, **P < 0.01

The construct-level multiple regression analysis results signify that sustainable product and process development (SPPD), sustainability-oriented learning (SOL), stakeholder responsiveness and integration (SRI) and process management for exploitation (PMEI) reasonably predict organisational performance dimensions.

With regard to the sustainability exploitation dimensions, stakeholder responsiveness and integration (SRI) seems to be the predominant sub-construct that enhances organisational performance on a composite level (i.e. aggregate level). In contrast, both sub-constructs of sustainability exploration tend to have an important role in contributing to the organisational performance.

5.5.2 MANOVA – Effect of sustainability exploration on organisational performance

The purpose of this section is to explore whether the measures (dimensions) of organisational performance when considered collectively (as examined by MANOVA) and individually (as examined by ANOVA), significantly differ for high and low levels of the sustainability exploration.

A score of above 4 (i.e. 4 and 5) was treated as high, and a score of 3 or below was treated as low, for defining the two categories high and low.

Two research questions are posited in section in terms of guidelines:

- Are there significant mean differences in organisational performance (as measured by the financial and market performance, quality performance, innovation performance, environmental performance and social performance) for low and high levels of sustainability exploration?
- Is there any significant main effect for level of sustainability exploration?

Table 45 demonstrates the means and standard deviations of the DVs (organisational performance based on: financial and market performance, quality performance, innovation performance, environmental performance and social performance), by high and low categories/levels of sustainability exploration.

Table 45. Means and standard deviations for organisational performance dimensions by sustainability exploration

DV	Groups	Mean	Std. Deviation	N
Financial and market performance	Low SER	3.0087	1.07466	45
	High SER	3.5224	.87300	84
Quality performance	Low SER	3.5256	.87312	45
	High SER	4.1487	.65504	84
Innovation performance	Low SER	3.1496	1.11981	45
	High SER	3.8155	.80495	84
Environmental performance	Low SER	3.0426	.94006	45
	High SER	3.8131	.85737	84
Social performance	Low SER	2.8563	.99861	45
	High SER	3.6675	.82005	84

In the following, several assumptions were checked in order to ensure the robustness of the analysis. First, we checked the correlations between dependent variables ranging from 0.30 to 0.55, which indicate that this should not represent a problem in our analysis.

As seen above, the sample size of each group differs. Taking into account the unequal sample sizes, we used both Pillai's Trace statistic and Wilks' Lambda in terms of test power and robustness.

Considering the unequal sample sizes, we perform MANOVA by using both Type 3 sums of squares and Type 1 sums of squares. However, no significant difference between the two options was observed. Hence, the results of using Type 3 sums of squares are presented.

In addition, we tested the null hypothesis that the observed covariance matrices of the dependent variables are equal across groups. Box's Test (Table 46) is not significant and indicates that homogeneity of variance-covariance is fulfilled.

Whenever Levene's test for homogeneity of variance was significant at the $p < 0.05$ level (as observed in the case of innovation and social performance), nonparametric statistics (Kruskal-Wallis) were used to confirm the effects obtained by the MANOVA. The results show that the null hypothesis that the distributions of these two dependent variables are the same across categories of groups can be rejected.

Table 46. Box's Test of Equality of Covariance Matrices

Box's M	15.875
F	1.007
df1	15
df2	33246.541
Sig.	0.444

The multivariate tests indicate that there is a significant effect of the IV on all of the DVs, considered as a group. In this case, all statistics are significant ($p < .01$), so we can conclude that level of sustainability exploration has a significant effect on all of the performance variables. Therefore, the results indicate that the organisational performance, in terms of financial and market performance, quality performance, innovation performance, environmental performance and social performance, significantly differs for high and low levels of sustainability exploration (Pillai's Trace = 0.240, Wilks' $\lambda = 0.76$, $F(7.751)$, $p < 0.01$). Moreover, the results have revealed that the partial eta squared associated with the main effect of sustainability exploration group is .240 and the power to detect the main effect is 0.999 which furthermore substantiate the findings of MANOVA. The multivariate tests are presented in Table 47.

Table 47. The results of the multivariate tests

Statistic	Value	F	Hypothesis df	Error df	Sig. (p)	Partial Eta Squared
Pillai's Trace	0.240	7.751	5.000	123.000	0.000	0.240
Wilks' Lambda	0.760	7.751	5.000	123.000	0.000	0.240

Since the multivariate test was significant, we examine the ANOVA results (i.e. univariate tests of individual DVs). The ANOVA results (Table 48) indicate that the organisational performance based on financial and market performance ($F = 8.609$, $p < 0.01$, partial $\eta^2 = 0.063$), quality performance ($F = 20.896$, $p < 0.01$, partial $\eta^2 = 0.141$), innovation performance ($F = 15.143$, $p < 0.01$, partial $\eta^2 = 0.107$), environmental performance ($F = 22.116$, $p < 0.01$, partial $\eta^2 = 0.148$) and social performance ($F = 24.562$, $p < 0.01$, partial $\eta^2 = 0.162$), significantly differs for high and low levels of sustainability exploration. Although significant group differences were found for all DVs, the effect size is small in the case of financial and market performance ($\eta^2 = 0.063$), indicating that a small proportion of variance in the dependent variable is predictable from the independent variable.

Table 48. ANOVA Summary for the dependent variables

Source	Dependent Variable	Sum of Squares	df	Mean Square	F	Sig. (p)	Partial Eta Squared
SER levels	Financial and market performance	7.733	1	7.733	8.609	0.004	0.063
	Quality performance	11.379	1	11.379	20.896	0.000	0.141
	Innovation performance	12.991	1	12.991	15.143	0.000	0.107
	Environmental performance	17.396	1	17.396	22.116	0.000	0.148
	Social performance	19.281	1	19.281	24.562	0.000	0.162

Nevertheless, after examining the results (as given by MANOVA and ANOVA tests), we can cautiously conclude that high and low levels of sustainability exploration significantly differ on the five dependent variables.

5.5.3 MANOVA – Effect of sustainability exploitation on organisational performance

In this section, similar estimates are provided for the level of sustainability exploitation. Considering the methodology used in previous section, we posited to research question in this section as well:

- Are there significant mean differences in organisational performance (as measured by the financial and market performance, quality performance, innovation performance, environmental performance and social performance) for low and high levels of sustainability exploitation?
- Is there any significant main effect for level of sustainability exploitation?

We therefore performed a one-way MANOVA with sustainability exploitation as independent variable (with two categories – high and low) and the five dimensions of organisational performance.

Table 49 shows the means and standard deviations of the DVs by considering a high and low categories/levels of sustainability exploration. The results presented in Table 49 signify that organisations can enhance their organisational performance (in terms of five dimensions used in this study) to a greater extent if they have high levels of sustainability exploitation.

Table 49. Means and standard deviations for organisational performance dimensions by sustainability exploitation

DV	Groups	Mean	Std. Deviation	N
Financial and market performance	Low SEI	2.4348	0.96888	23
	High SEI	3.4809	0.85515	102
Quality performance	Low SEI	3.0290	1.04011	23
	High SEI	4.0326	0.68187	102
Innovation performance	Low SEI	2.5942	1.27111	23
	High SEI	3.6928	0.87903	102
Environmental performance	Low SEI	2.9783	0.88841	23
	High SEI	3.7685	0.79516	102
Social performance	Low SEI	2.6377	0.97397	23
	High SEI	3.5824	0.77489	102

Box's test shows that variance-covariance matrices are the same in both groups ($p = 0.157$) (Table 50). Therefore, the covariance matrices are roughly equal and the assumption is reasonable. However, Levene's test for homogeneity of variance was significant at the $p < 0.05$ level in the case of quality performance and innovation performance. Subsequently, nonparametric statistics (Kruskal-Wallis) were used to confirm the effects obtained by the MANOVA. The results show that the null hypothesis that the distributions of these two dependent variables are the same across categories of groups can be rejected.

Table 50. Box's Test of Equality of Covariance Matrices

Box's M	22.361
F	1.362
df1	15
df2	6199.367
Sig.	0.157

Using the Pillai's Trace and Wilks' Lambda criteria, the multivariate effect of the level of sustainability exploitation on the organisational performance dimensions is significant. A one-way MANOVA revealed a significant multivariate main effect for level of sustainability exploitation (Wilks' $\lambda = 0.705$, F(9.937), Pillai's Trace = 0.295, F(9.937), $p < 0.01$, partial $\eta^2 = 0.295$. The partial eta square shows that reasonable amount of variance is explained by the independent variable. Furthermore, power to detect the effect was 1, in this case. The results are summarised in Table 51.

Table 51. The results of the multivariate tests

Statistic	**Value**	**F**	**Hypothesis df**	**Error df**	**Sig. (p)**	**Partial Eta Squared**
Pillai's Trace	0.295	9.937	5.000	119.000	0.000	0.295
Wilks' Lambda	0.705	9.937	5.000	119.000	0.000	0.295

Given the significance of the overall test, the univariate main effects were examined. Significant univariate main effects for SEI groups were obtained for all dependent variables. The ANOVA results (Table 52) indicate that the organisational performance based on financial and market performance ($F = 26.729$, $p < 0.01$, partial $\eta^2 = 0.179$),

quality performance ($F = 32.860$, $p < 0.01$, partial $\eta^2 = 0.211$), innovation performance ($F = 24.529$, $p < 0.01$, partial $\eta^2 = 0.166$), environmental performance ($F = 17.747$, $p < 0.01$, partial $\eta^2 = 0.126$) and social performance ($F = 25.272$, $p < 0.01$, partial $\eta^2 = 0.170$) significantly differs for high and low levels of sustainability exploitation.

Table 52. ANOVA Summary for the dependent variables

Source	Dependent Variable	Sum of Squares	df	Mean Square	F	Sig. (p)	Partial Eta Squared
SEI levels	Financial and market performance	20.538	1	20.538	26.729	0.000	0.179
	Quality performance	18.904	1	18.904	32.860	0.000	0.211
	Innovation performance	22.652	1	22.652	24.529	0.000	0.166
	Environmental performance	11.719	1	11.719	17.747	0.000	0.126
	Social performance	16.749	1	16.749	25.272	0.000	0.170

In general, after examining the results, we can conclude that high and low levels of sustainability exploitation, both collectively (as given by MANOVA results) and individually (as given by ANOVA results), significantly differ on the five dependent variables.

5.6 THE ROLE OF CONTINGENCY FACTORS

5.6.1 Exploratory measurement results

Data analysis involves several steps. First, since our research variables (contingency factors) were measured through multiple-item constructs, we need to verify that items converge into the corresponding construct. Accordingly, we conduct the factorial analysis with varimax rotation by using SPSS 20. The results show four-factor solution, accounting for 70.7% of the variance (K-M-O statistic 0.813; Bartlett statistic 66; significance 0.000). The results of the factor analysis are illustrated in Table 53.

According to the results, one item (CONT11) was excluded from further analysis because it cross-loaded on two factors. Subsequently, items were grouped together based on their factor loadings, performed internal consistency test, and created a single scale score by simply averaging the responses to the items for each grouping.

Table 53. Items, factor loadings and internal consistency measures

Construct	Measurement item	Loading	% of Variance	Reliability (Cronbach's α)
Long-Term Orientation	It is considered important to remain competitive for a long time (CONT9).	.870	34.556	0.850
	Strategies are planned with a focus on a long-term success (CONT7).	.820		
	Long-term performance is more critical than meeting this year's financial goals (CONT8).	.790		
	We are constantly seeking new improvement opportunities related to our present operations (CONT10).	.761		
Competitiveness	Our local markets are characterised by a strong price competition (CONT6).	.872	18.318	0.809
	Competition in our local markets is intense (CONT5).	.805		
	The organisation is faced with high competitive pressures in global markets (CONT6).	.739		
Uncertainty	The demand for our organisation's products and services is unstable and difficult to predict (CONT1)	.837	10.388	0.686
	Products/services quickly become obsolete in our industry (CONT3).	.694		
	Our organisation must frequently improve its products and practices to keep up with competitors (CONT2).	.682		
Proactiveness	It is difficult for our competitors to imitate our processes and products/services (CONT12).	.911	7.459	0.582

	We are usually the first to introduce new brands or products in the market (CONT11).*	.614

*item was excluded from further analysis

5.6.2 Cluster analysis

A cluster analysis was applied to the environmental dimensions in order to define different environmental contexts in terms of competitiveness and uncertainty. A first step of the clustering technique is determining the number of clusters. In our case, we applied Ward's hierarchical method using the Euclidean distance and an agglomeration schedule to determine the number of clusters to be used in a second K-means non-hierarchical analysis that provides the final categorisation of the organisations.

The characterisation of clusters based on the final centres is presented in Table 54. Cluster 1 includes 42 organisations with moderate levels of competitiveness and low levels of uncertainty. Cluster 2 corresponds to high levels of competitiveness and moderate levels of uncertainty. Cluster 3 consists of 44 organisations that operate at moderate levels of competitiveness and uncertainty. Cluster 4 comprises of 21 organisations with low levels in both competitiveness and uncertainty. Finally, the high levels of competitiveness and uncertainty characterise Cluster 5.

Table 54. Results of cluster analysis of context dimensions (K-means)

	Cluster 1 Moderate–Low	Cluster 2 High–Moderate	Cluster 3 Moderate–Moderate	Cluster 4 Low–Low	Cluster 5 High–High
Competitiveness	3.44	4.64	3.22	1.60	4.61
Uncertainty	1.70	3.06	3.28	2.00	4.39
N	42	78	44	21	57

Furthermore, the ANOVA test was applied to examine differences in exploration and exploitation as a result of differences in the environmental context (in the context of competitiveness and uncertainty). The results of ANOVA test (Table 55) show significant mean difference among the clusters in terms of sustainability exploration ($F = 3.158$, $p < 0.05$).

The Games-Howell post hoc testing revealed a significant difference between Cluster 2 and Cluster 3 and between Cluster 3 and Cluster 5.

Table 55. ANOVA test for effects of environment dimensions on sustainability practices

Cluster	SER Mean (Std. Deviation)	SEI Mean (Std. Deviation)
Cluster 1: Moderate Competitiveness–Low Uncertainty	3.68 (0.9)	3.88 (0.7)
Cluster 2: High Competitiveness–Moderate Uncertainty	3.74 (0.8)	3.92 (0.6)
Cluster 3: Moderate Competitiveness–Moderate Uncertainty	3.31 (0.8)	3.74 (0.6)
Cluster 4: Low Competitiveness–Low Uncertainty	3.44 (1.2)	3.55 (1.1)
Cluster 5: High Competitiveness–High Uncertainty	3.88 (0.9)	4.02 (0.6)
F (Signif.)	3.12 ($p < 0.05$)	2.314 ($p > 0.05$)
Welch (Signif.)	3.158 ($p < 0.05$)	1.645 ($p > 0.05$)
Main Group differences (Games-Howell Test)	(2-3), (3-5)	

Table 55 shows that those environments with moderate and low competitiveness and uncertainty (Cluster 3 and Cluster 4) lead to the lowest mean values in exploration (3.31 and 3.44, respectively). In contrast, environments with low competitiveness and uncertainty lead to low value in exploitation (3.55). The environments with high levels of competitiveness and uncertainty (Cluster 5) lead to the highest mean values in exploration (3.88) and a similar mean value in exploitation (4.02). Furthermore, the environmental context with a higher level in competitiveness but lower levels of uncertainty (i.e. Cluster 1 and Cluster 2) show higher mean values for exploitation (3.88 and 3.92, respectively) than for exploration (2.68 and 3.74, respectively).

To further analyse the differences between clusters, we performed regression analysis. Table 56 shows the results of regression analysis for different clusters (i.e. clusters that present environments with high competitiveness and moderate uncertainty, environments with moderate competitiveness and uncertainty and cluster with high levels of competitiveness and uncertainty). The results show that in moderate environmental contexts, SEI seems to be predominant predictor of organisational performance ($\beta = 0.393$, $p < 0.05$).

In contrast, it appears that when the level of competitiveness increases, SER becomes positively and significantly related to the organisational performance ($\beta = 0.420$, $p < 0.01$). However, when the criterion for sustainability practices becomes more stringent, the relationship for both SER and SEI becomes less significant. The regression model for low levels of competitiveness and uncertainty was not considered due to the low sample size.

Table 56. Comparison of regression analysis for different clusters

	Dependent: Organisational performance		
	Cluster 2	**Cluster 3**	**Cluster 5**
SER	0.420**	0.132	0.266
SEI	0.166	0.393*	0.217
R^2	0.286	0.243	0.199
Adjusted R^2	0.266	0.205	0.165
F	14.419	6.430	5.953
P-value of overall model	0.000	0.000	0.000

*P < 0.05, **P < 0.01

5.6.3 Regression analysis results for contingency factors

The following results (Table 57) show the regression results in the two subgroups: low competitiveness and high competitiveness. A median cut-off criterion was used to distinguish between these two subgroups. The results show that coefficient for SER is positive and significant ($\beta = 0.361$, $p < 0.01$) in the regression model that corresponds to low levels of competitiveness. In addition, the explanatory power is reasonable (R square = 0.279). When organisations are faced with high levels of competitiveness, both SER and SEI are positive and significant ($\beta = 0.324$, $p < 0.01$ and $\beta = 0.237$, $p < 0.05$, respectively).

Table 57. Results of regression analysis within subgroups of low and high competitiveness

	Dependent: Organisational performance	
	Low	**High**
SER	0.361**	0.324**
SEI	0.220	0.237*
R^2	0.296	0.265
Adjusted R^2	0.279	0.251
F	17.666	19.297
P-value of overall model	0.000	0.000

*P < 0.05, **P < 0.01

Regarding Hypotheses 4a and 4b, we conducted additional regression analysis with the multiplicative interaction of sustainability practices and competitiveness (Table 58).

Although the coefficient for the interaction term (SER × competitiveness) is negative, it is not statistically significant. As such, Hypothesis 4a is not supported. In addition, interaction effect between sustainability exploitation practices and competitiveness was also found as insignificant. Hence, Hypothesis 4b is not supported. In contrast, both SER and SEI appear to positively and significantly influence the organisational performance ($\beta = 0.354$, $p < 0.01$ and $\beta = 0.206$, $p < 0.05$, respectively).

Table 58. Interaction effect of sustainability practices on the organisational performance

	Dependent: Organisational performance
SER	0.354**
SEI	0.206*
SER × competitiveness	-0.045
SEI × competitiveness	-0.002
R^2	0.284
Adjusted R^2	0.272
F	22.158
P-value of overall model	0.000

*P < 0.05, **P < 0.01

In order to provide better insight into the context dependency of sustainability practices, regression analyses of greater detail were conducted. Hence, each particular dimension of organisational performance (quality performance, innovation performance, environmental performance and social performance) was analysed in a separate regression analysis. Financial and market performance was excluded as the regression models are found to be insignificant.

When competitiveness is low, SEI shows a significant positive relationship with the quality performance ($\beta = 0.332$, $p < 0.05$). Similarly, the SEI seems to be the only significant predictor in the case of a high competitiveness ($\beta = 0.313$, $p < 0.05$). The results indicate that there are no considerable differences between these two environmental contexts (Table 59).

Table 59. Results of regression analysis within subgroups of low and high competitiveness

	Dependent: Quality performance	
	Low	**High**
SER	0.145	0.077
SEI	0.332*	0.313*
R^2	0.202	0.136
Adjusted R^2	0.182	0.120
F	10.009	8.197
P-value of overall model	0.000	0.000

*P < 0.05, **P < 0.01

The results presented in Table 60 illustrate that sustainability practices fail to show a significant relationship with innovation performance in the context of low competitiveness. In contrast, when competitiveness is high, SER shows a significant positive relationship with innovation performance ($\beta = 0.283$, $p < 0.05$).

Table 60. Results of regression analysis within subgroups of low and high competitiveness

	Dependent: Innovation performance	
	Low	**High**
SER	0.229	0.283*
SEI	0.236	0.194
R^2	0.188	0.192
Adjusted R^2	0.167	0.177
F	8.908	12.260
P-value of overall model	0.000	0.000

*P < 0.05, **P < 0.01

According to the results presented in Table 61, SER appears to influence environmental performance to a greater degree when the competitiveness is low ($\beta = 0.467$, $p < 0.01$). In contrast, in the context of high competitiveness, SEI becomes positive and significant ($\beta = 0.299$, $p < 0.05$).

Table 61. Results of regression analysis within subgroups of low and high competitiveness

	Dependent: Environmental performance	
	Low	**High**
SER	0.467**	0.155
SEI	-0.037	0.299*
R^2	0.194	0.175
Adjusted R^2	0.173	0.159
F	9.374	10.727
P-value of overall model	0.000	0.000

*P < 0.05, **P < 0.01

Regarding the influence on social performance (Table 62), SER is positive and significant within both subgroups ($\beta = 0.340$, $p < 0.05$, $\beta = 0.382$, $p < 0.01$).

As shown by results, the relationship becomes a little bit stronger within the group of high competitiveness. SEI shows no significant relationship regardless of the context ($p > 0.05$).

Table 62. Results of regression analysis within subgroups of low and high competitiveness

	Dependent: Social performance	
	Low	**High**
SER	0.340*	0.382**
SEI	0.153	0.068
R^2	0.215	0.186
Adjusted R^2	0.195	0.171
F	10.564	11.911
P-value of overall model	0.000	0.000

*P < 0.05, **P < 0.01

Furthermore, the regression analysis was also used to perform subgroup analysis in the context of low and high uncertainty. Consistently with the median cut-off criterion, two subgroups were defined (an organisation was assigned to a low uncertainty subgroup if it scored less than 3 on uncertainty construct, and was categorised as part of a high level uncertainty subgroup if it scored above 3 on uncertainty construct). The results presented in Table 63 reveal that SER seems to be dominant independent variable when environmental uncertainty is low ($\beta = 0.397$, $p < 0.01$). When environmental uncertainty is high, SER and SEI show significant positive relationships with organisational performance ($\beta = 0.286$, $p < 0.05$ and $\beta = 0.257$, $p < 0.05$, respectively). Regarding the overall organisational performance, the results do not support Hypotheses 3a and 3b.

Table 63. Results of regression analysis within subgroups of low and high uncertainty

	Dependent: Organisational performance	
	Low	**High**
SER	0.397**	0.286*
SEI	0.212	0.257*
R^2	0.320	0.250
Adjusted R^2	0.304	0.236
F	20.257	18.036
P-value of overall model	0.000	0.000

*P < 0.05, **P < 0.01

As revealed by the results presented in Table 64, SEI is positive and significant when uncertainty is high ($\beta = 0.374$, $p < 0.01$). In the context of low uncertainty, neither SEI nor SER appears to be significant predictor of quality performance ($p > 0.05$).

Table 64. Results of regression analysis within subgroups of low and high uncertainty

	Dependent: Quality performance	
	Low	**High**
SER	0.122	0.091
SEI	0.277	0.374**
R^2	0.140	0.196
Adjusted R^2	0.120	0.181
F	6.981	12.811
P-value of overall model	0.000	0.000

*P < 0.05, **P < 0.01

Table 65 shows that in subgroup of high levels of uncertainty, SER has a significant positive relationship with innovation performance ($\beta = 0.295$, $p < 0.05$). When organisations are faced with low uncertainty, sustainability practices apparently are not considered beneficial in terms of innovation performance. In terms of innovation performance, the results partially support Hypothesis 3b.

Table 65. Results of regression analysis within subgroups of low and high uncertainty

	Dependent: Innovation performance	
	Low	**High**
SER	0.235	0.295*
SEI	0.239	0.150
R^2	0.193	0.172
Adjusted R^2	0.173	0.156
F	9.894	10.591
P-value of overall model	0.000	0.000

*P < 0.05, **P < 0.01

Clearly, SER is positively and significantly related to environmental performance ($\beta = 0.525$, $p < 0.01$) (Table 66). However, the results do not reveal any significant effects of sustainability practices on environmental performance when the uncertainty is high ($p > 0.05$). In addition, the regression model that corresponds to low levels of uncertainty also shows superior explanatory power (R square = 0.279).

Table 66. Results of regression analysis within subgroups of low and high uncertainty

	Dependent: Environmental performance	
	Low	**High**
SER	0.525**	0.246
SEI	0.005	0.097
R^2	0.279	0.103
Adjusted R^2	0.262	0.086
F	16.455	5.921
P-value of overall model	0.000	0.000

*P < 0.05, **P < 0.01

Regarding the effects of sustainability practices on social performance (Table 67), the results indicate that SER is positively and significantly related to the social performance within both subgroups, low and high levels of uncertainty ($\beta = 0.446$, $p < 0.01$ and $\beta = 0.338$, $p < 0.01$, respectively).
Therefore, the results suggest that pursuing sustainability exploration practices is crucial in achieving higher social performance, irrespective of the environmental context of the organisation.

Table 67. Results of regression analysis within subgroups of low and high uncertainty

	Dependent: Social performance	
	Low	**High**
SER	0.446**	0.338**
SEI	0.021	0.128
R^2	0.212	0.191
Adjusted R^2	0.193	0.176
F	11.188	12.665
P-value of overall model	0.000	0.000

*P < 0.05, **P < 0.01

Regarding the internal contingency factor, the results indicate (Table 68) that organisations with low levels (median cut-off value of 4.25 was used to distinguish between subgroups) of long-term orientation show significant positive coefficients for SER and SEI ($\beta = 0.250$, $p < 0.05$ and $\beta = 0.367$, $p < 0.01$, respectively). In contrast, the positive and significant relationship between SEI and organisational performance becomes insignificant in the context of high levels of long-term orientation, while SER shows positive and significant relationship ($\beta = 0.331$, $p < 0.05$).

Hence, SER seems to be important predictor when organisation aggressively follows long-term orientation.

Table 68. Results of regression analysis within subgroups of low and high levels of long-term orientation

	Dependent: Organisational performance	
	Low	**High**
SER	0.250*	0.331*
SEI	0.367**	0.014
R^2	0.314	0.115
Adjusted R^2	0.301	0.094
F	24.227	5.477
P-value of overall model	0.000	0.006

*P < 0.05, **P < 0.01

The findings of regression model presented in Table 69 show that the interaction between exploration and exploitation has a negative and significant effect ($\beta = 0.243$, $p < 0.05$) on organisational performance when an organisation reflects a low long-term orientation. In the case of high levels of long-term orientation, the interaction effect is positive but not significant. Overall, the results do not provide support for Hypothesis 5. However, in the case of the high levels of long-term orientation, SER appears to be the most important predictor of the organisational performance ($\beta = 0.325$, $p < 0.05$).

Table 69. Interaction effect of sustainability practices on the organisational performance within subgroups of low and high levels of long-term orientation

	Dependent: Organisational performance	
	Low	**High**
SER	0.201	0.325*
SEI	0.219	-0.087
SER × SEI	-0.243*	0.157
R^2	0.340	0.129
Adjusted R^2	0.321	0.098
F	17.991	4.103
P-value of overall model	0.000	0.009

*P < 0.05, **P < 0.01

With respect to the particular organisational performance dimension, the results indicate that SEI has a positive influence on financial and market performance ($\beta = 0.310$, $p < 0.01$) while SER ($\beta=0.144$, $p > 0.05$) has a positive, although not significant, influence on organisation's financial and market performance (Table 70). The positive and significant relationship was found only in the case when organisations' long-term orientation levels are below median value of 4.25.

Table 70. Results of regression analysis within subgroups of low and high levels of long-term orientation

	Dependent: Financial and market performance	
	Low	**High**
SER	0.144	0.092
SEI	0.310**	0.002
R^2	0.172	0.009
Adjusted R^2	0.156	-0.016
F	10.714	0.356
P-value of overall model	0.000	0.701

As shown in Table 71, SEI is positively and significantly related to the quality performance ($\beta = 0.464$, $p < 0.01$), particularly within the subgroup that corresponds to the low levels of long-term orientation. However, both SER and SEI are not found to be significant within the subgroup of high levels of long-term orientation ($p > 0.05$).

Table 71. Results of regression analysis within subgroups of low and high levels of long-term orientation

	Dependent: Quality performance	
	Low	**High**
SER	-0.050	0.166
SEI	0.464**	0.037
R^2	0.189	0.036
Adjusted R^2	0.174	0.012
F	12.348	1.526
P-value of overall model	0.000	0.000

*P < 0.05, **P < 0.01

The results presented in Table 72 are consistent with the interpretation that SER influences innovation performance to a greater degree than SEI when organisation is strongly focused on long-term orientation ($\beta=0.340$, $p > 0.05$). In contrast, SEI ($\beta =$

0.312, $p < 0.01$) dominates as a significant predictor within subgroups with lower focus on long-term orientation.

Table 72. Results of regression analysis within subgroups of low and high levels of long-term orientation

	Dependent: Innovation performance	
	Low	**High**
SER	0.128	0.340*
SEI	0.312**	-0.042
R^2	0.164	0.101
Adjusted R^2	0.148	0.078
F	10.207	4.381
P-value of overall model	0.000	0.016

*P < 0.05, **P < 0.01

Comparing the results presented in Table 73, it can be determined that SER is positively and significantly related to the environmental performance within both subgroups ($\beta = 0.339$, $p < 0.01$ and $\beta = 0.263$, $p < 0.05$, respectively). Sustainability exploitation practices do not appear to be significant either within the subgroup of low long-term orientation nor within the subgroups of strong focus on long-term orientation.

Table 73. Results of regression analysis within subgroups of low and high levels of long-term orientation

	Dependent: Environmental performance	
	Low	**High**
SER	0.339**	0.263*
SEI	0.136	0.078
R^2	0.191	0.099
Adjusted R^2	0.175	0.076
F	12.263	4.380
P-value of overall model	0.000	0.016

*P < 0.05, **P < 0.01

Similar to the above results, coefficients for SER are positive and significant regarding the effects on social performance as well ($\beta = 0.342$, $p < 0.01$ and $\beta = 0.340$, $p < 0.05$, respectively) (Table 74). The regression analysis results indicate that SEI is not

significantly related to the social performance ($\beta = 0.072$, $p > 0.05$ and $\beta = 0.000$, $p > 0.05$, respectively).

Table 74. Results of regression analysis within subgroups of low and high levels of long-term orientation

	Dependent: Social performance	
	Low	**High**
SER	0.342**	0.340*
SEI	0.072	0.000
R^2	0.154	0.115
Adjusted R^2	0.137	0.094
F	9.431	5.285
P-value of overall model	0.000	0.007

*P < 0.05, **P < 0.01

5.7 COMPARISON OF THE RESULTS ACROSS DATASETS

5.7.1 PCA bi-plot: a cross-country comparison

This section illustrates Principal Component Analysis (PCA) bi-plots as applied to discover the main patterns of variation between countries. They are helpful for revealing clustering, multi-collinearity, and multivariate outliers of a dataset, and they can also be used to guide the interpretation of principal component analyses (PCA) (Kohler and Luniak, 2005). PCA bi-plots are used in this section mainly to graphically represent and summarise the key features of a dataset.

It should be noted that lines are used to reflect the variables of the dataset and numbers are used to show the observations. The observations of this dataset are organisations, while the variables are representing sustainability practices (SER and SEI) and measures of organisational performance: financial and market performance (Fmperf), quality performance (Qperf), innovation performance (Innovperf), environmental performance (Envirperf) and social performance (Socialperf).

In a bi-plot, the length of the lines (vectors) approximates the variances of the variables. The longer the line, the higher is the variance. The angle between the lines approximates the correlation between the variables they represent. The vectors that point in the same directions correspond to variables that have similar profiles, and can be interpreted as heaving similar meanings in the context set by particular data subset.

The PCA bi-plot for the Slovenian data subset is presented in Figure 16.

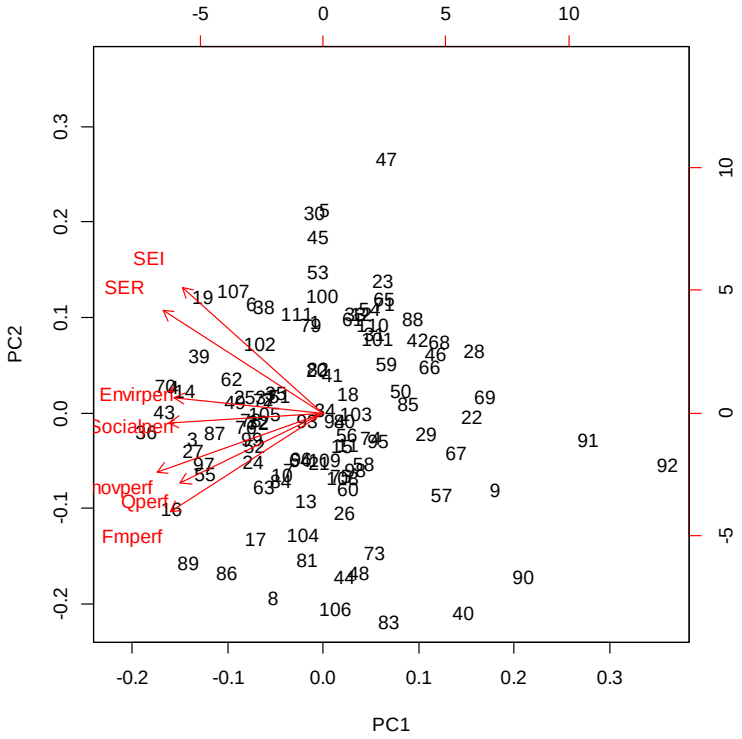


Figure 16. PCA bi-plot for the Slovenian data subset

The bi-plot in Figure 16 shows a strong relationship between the innovation performance, quality performance and financial and market performance, as well as between SER and SEI. However, all variables point to the same direction, which indicate that variables are positively associated.

The eigenvalues indicate that two components (cumulative proportion of variance for three components is 69.12 %) provide a reasonable summary of the data, accounting for about 69% of the total variance. From the PCA bi-plot (Figure 16) it can be observed that the variance along the Comp. 1 axis is higher than along Comp. 2 axis, especially if the account outliers (e.g. 91 and 92) are taken into account. For example, in this case, outliers have significantly lower values of SER, SEI and the values corresponding to the organisational performance dimensions.

Note that negative correlations among variables and negative loadings do not cause any specific concerns in PCA. In the interpretation of PCA, a negative loading simply means that a certain characteristic is lacking in a latent variable associated with the given principal component.

In the biplot shown in Figure 16, groups of organisations that correspond to the high values of sustainability practices and high values of performance measures can be

observed. However, a cluster of organisations with high values of sustainability practices and lower values of performance measures can also be found.

As shown below, the PCA biplot (Figure 17) for Spanish data subset illustrates some differences compared to Slovenian data subset. However, these results should be interpreted with caution due to a low sample size of the Spanish data subset. Also, the two components account for approximately 53% of the variance, which is lower than the Slovenian data subset.

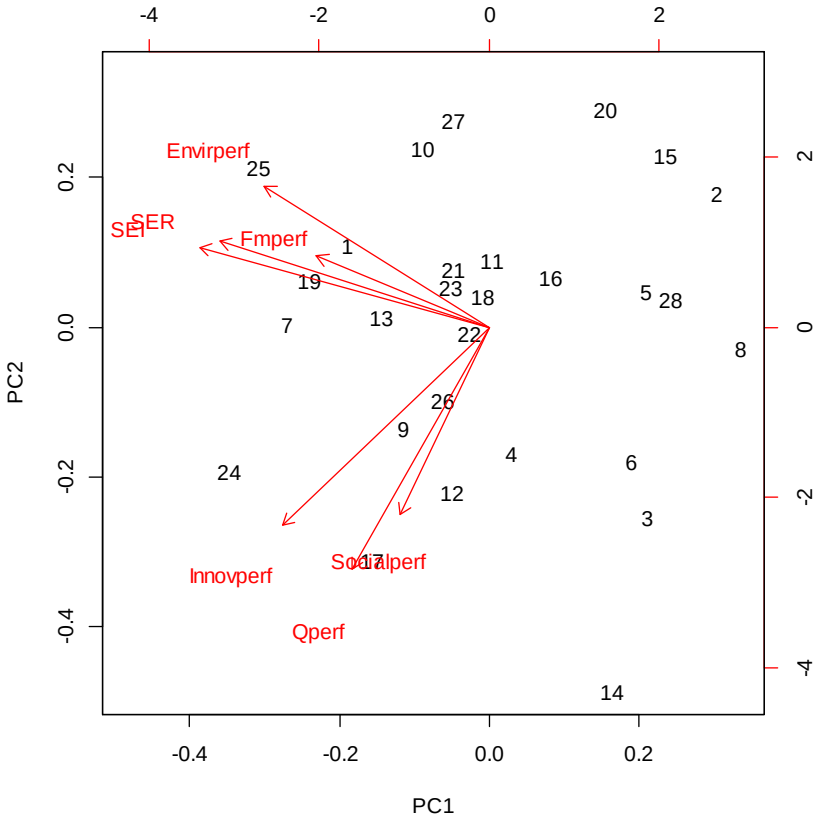


Figure 17. PCA bi-plot for the Spanish data subset

As can be seen in Figure 17, all lines are pointing in the same direction, which means that the variables are positively correlated. Considering the Comp. 2 axis, it can be discerned that sustainability practices, environmental performance and financial and market performance all heavily load on this component. Thus, organisations that have high positive scores on Comp. 2 seems to have a lack of performance within either innovation, quality or social performance dimensions. For instance, the organisation marked with a number 19 has a high values within all variables (mean of SER = 4.17, mean of SEI = 4.67, mean of financial and market performance = 3.33, mean of quality performance = 5, mean of innovation performance = 4, mean of environmental performance = 4.25) except within social performance (mean = 1.67).

Some outliers are also observed within Spanish data subset (e.g. 2, 8, 28).

Regarding the Serbian data subset (Figure 18), a similar but opposite pattern as far as Comp. 2 is concerned can be observed. The variables financial and market performance, innovation performance and social performance have high positive loadings on Comp. 2.

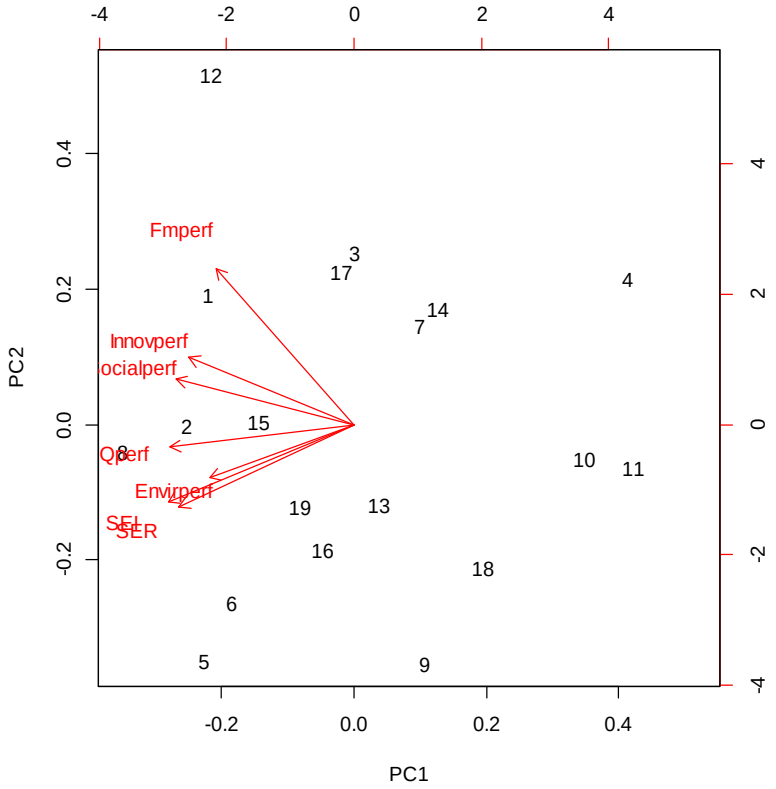


Figure 18. PCA bi-plot for the Serbian data subset

However, strong correlations between SER, SEI and environmental performance can be observed. In regard to the dispersion of observations, it is difficult to highlight groups of homogeneous individuals (i.e. organisations).

Furthermore, as revealed in Polish data subset (Figure 19), sustainability practices are strongly related with innovation performance, and financial and market performance. Interestingly, the majority of organisations contribute significantly more portions of SER, SEI, financial and market performance and innovation performance compared to other organisations within this data subset.

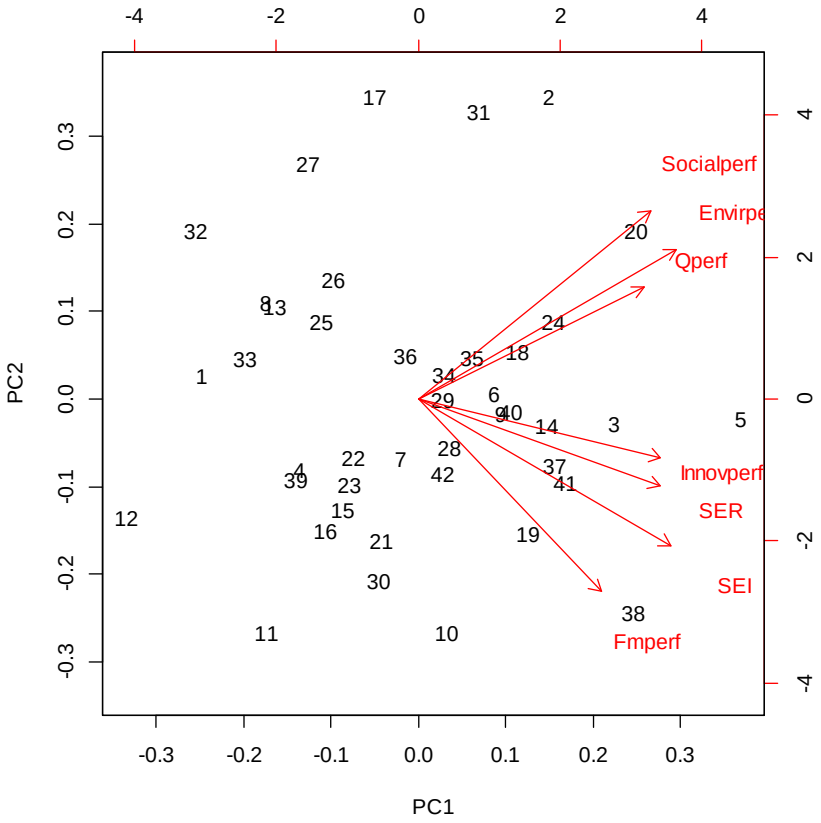


Figure 19. PCA bi-plot for the Polish data subset

Similarly to the Spanish bi-plot, sustainability practices are also highly correlated to the financial and market performance within the Polish data subset. However, this is not the case in Slovenian and Serbian PCA bi-plots, nor in the case of the German data subset.

The PCA bi-plot (Figure 20) for the German data subset also indicates that all variables are pointing in the same direction. As observed in the bi-plot, sustainability practices are highly correlated with quality performance, while innovation performance is highly correlated with financial and market performance. It seems that both social and environmental performance measures do not have very high correlations with either of the two distinct groups of variables.

Based on the PCA results, the first component explains 52.4% of the total variation in the German data subset. This indicates that Comp. 1 tends to be more significantly to the total variability as other components (e.g. Comp. 2 accounts for approximately 17.6% of the variance). This also highlights the importance of SER, SEI, quality performance and social performance as having the highest loadings on Comp. 1.

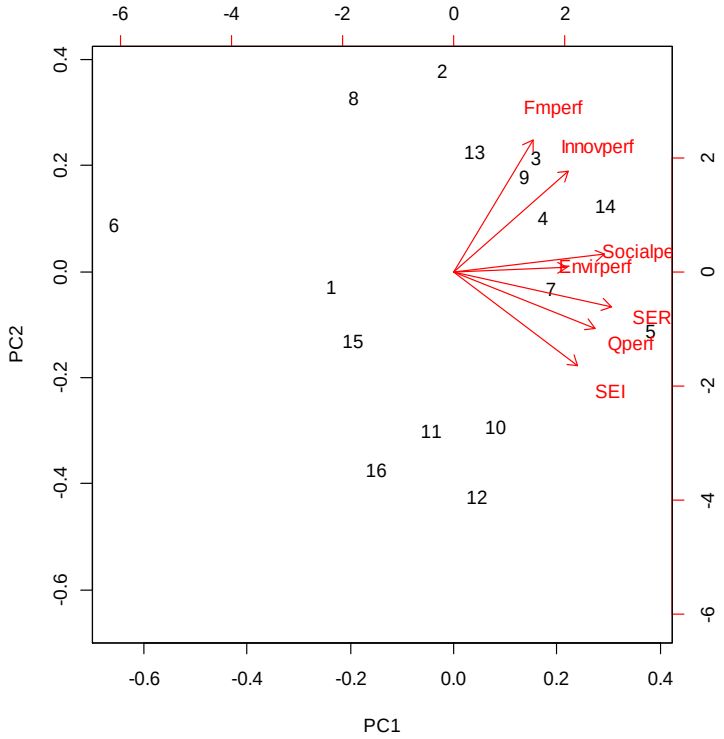


Figure 20. PCA bi-plot for the German data subset

To summarise, we can conclude that there are some similarities as well as some differences between data subsets of countries involved in this study.

First, PCA bi-plots revealed that all variables are positively correlated, which corresponds to our previous results of different analyses (e.g. MANOVA, regression analysis). Second, the results indicate that sustainability practices (as measured by SER and SEI) are highly correlated in all of the observed bi-plots. It appears that sustainability practices, and financial and market performance are highly correlated only in the Spanish and Polish data subsets. Moreover, sustainability practices are highly correlated with quality performance, as can be seen in the Serbian and German data subsets.

Apart from Slovenian and Spanish data subsets, financial and market performance is highly correlated with innovation performance, which is somewhat consistent with the mediation analysis.

There is clear evidence that organisations that fully engage in sustainability efforts can achieve superior results in different performance measures. It does not mean that the deployment of sustainability practices is associated to the same extent to all

performance measures. However, it is encouraging to find performance benefits regardless of particular performance dimension.

5.7.2 One-way ANOVA

One-way ANOVA was utilised to analyse the country effects. The purpose of using one-way ANOVA analysis is to verify if there are significant differences of SEI and SER implementation across countries. Table 75 present important descriptive statistics for the ANOVA with respect to the SER practices. From the descriptive statistics presented, there appears to be some differences in the mean of SER practices between the five levels or groups (countries). From the data, one could assume that country of origin affects organisations engagement in SER practices. However, to determine if this relationship is significant, examination of the ANOVA results needs to be applied.

Table 75. Descriptive statistics for SER across countries

Country	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean	
					Lower Bound	Upper Bound
Slovenia	116	3.8337	0.77286	0.07176	3.6916	3.9758
Spain	34	3.0735	0.88401	0.15161	2.7651	3.3820
Serbia	20	3.4750	1.16010	0.25941	2.9321	4.0179
Poland	57	3.8099	0.77501	0.10265	3.6043	4.0156
Germany	20	3.3167	1.09344	0.24450	2.8049	3.8284
Total	247	3.6527	0.89239	0.05678	3.5408	3.7645

The ANOVA analysis of SEI implementation across the five countries has an F value of 6.689 and a p-value of 0.000. However, Levene's test of homogeneity of variances was significant ($p < 0.05$), indicating that the equal variance assumption has been violated. In the case in which the assumption of homogeneity of variance is questionable, using adjusted F statistic is suggested. Two such types of adjustments are provided by the Welch statistic and the Brown-Forsythe statistic (Field, 2005). As such, using the Welch statistic, we find that $F(4, 60.843) = 6.028$, $p < 0.001$. We can interpret Welch's Robust ANOVA as indicating a significant mean difference among the countries in terms of sustainability exploration. The above results show that for SER implementation, organisations within the same country demonstrated significant similarity. In this regard, strong country effect is shown through ANOVA analysis.

Moreover, we use the Games-Howell post hoc test as being appropriate when the equal variances assumption has been violated. The Games-Howell post hoc testing reveals a significant difference between the Slovenian group and the Spanish group, as well as a significant difference between the Spanish and Polish group. The results, therefore, indicate that organisations within Slovenian and Polish subsets achieve significantly higher values of SER practices compared to the organisations within the Spanish subset.

In the following, descriptive statistics for SEI are presented (Table 76). According to the results, only one mean value (Serbia) differs to a greater extent from the other values. Thus, there is no strong assumption that mean values of SEI differ across countries.

Table 76. Descriptive statistics for SEI across countries

Country	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean	
					Lower Bound	Upper Bound
Slovenia	116	3.9187	0.62370	0.05791	3.8040	4.0334
Spain	34	3.7157	0.69210	0.11869	3.4742	3.9572
Serbia	20	3.5583	1.10193	0.24640	3.0426	4.0741
Poland	57	3.9181	0.63396	0.08397	3.7499	4.0863
Germany	20	3.9000	0.63614	0.14225	3.6023	4.1977
Total	247	3.8599	0.68953	0.04387	3.7735	3.9463

ANOVA test results do not show a significant difference among the countries in terms of sustainability exploitation (ANOVA statistic $F(1.676)$, $p > 0.05$; Welch statistics $F(4, 61.939) = 1.039$, $p > 0.05$).

Difference of means (t-test)

To further investigate the effect of each country, the implementation of SER and SEI was compared within each country. T-tests were used here to examine whether there is significant difference of SER and SEI implementation within each country. The results are presented in Table 77.

Table 77. Difference between SER and SEI within countries

		SER-SEI		
Country	N	Mean	Std. Error	t
Slovenia	116	-0.08499	0.04993	-1.702
Spain	34	-0.64216	0.10297	-6.236**
Serbia	20	-0.08333	0.14932	-0.558
Poland	57	-0.10819	0.08746	-1.237
Germany	20	-0.58333	0.17791	-3.279**

*P < 0.05, **P < 0.01

The results in Table 77 show that within particular countries, there are differences in deployment of SER and SEI. Two countries show significant differences of SER and SEI deployment. In Spain and Germany, more exploitative practices are implemented than explorative sustainability practices while within other countries there is no significant difference between SER and SEI. These results could to some extent support the institutional argument, which suggests that there is a significant difference between sustainability exploitation (SEI) and sustainability exploration (SER) as a function of country of origin.

5.7.3 Descriptive statistics for organisational performance measures

Descriptive statistics were analysed before undertaking further analysis. Table 78 presents mean values and standard deviations for organisational performance dimensions with respect to the particular data sub-set (i.e. country). According to the results, the mean values for financial and market performance range from 2.63 to 3.59. We applied ANOVA to examine whether the differences were statistically significant. The ANOVA test results show a significant difference among the countries in terms of financial and market performance (ANOVA statistic $F(4.128)$, $p < 0.01$; Welch statistics $F(4, 56.310) = 4.619$, $p < 0.01$). Moreover, the Games-Howell post hoc testing revealed a significant difference between the Polish subset and the Serbian subset. Regarding other performance dimensions, no significant differences were found between data subsets (i.e. countries).

Table 78. Mean values, standard deviations, and sample sizes for organisational performance dimensions

Performance	Slovenia	Spain	Serbia	Poland	Germany
Financial and market performance	3.21 (.91)	3.06 (.90)	2.63 (.78)	3.59 (.93)	3.39 (1.06)
	N = 112	N = 27	N = 19	N = 44	N = 18
Quality performance	3.81 (.68)	3.83 (.65)	3.72 (1.21)	3.95 (.89)	4.13 (.91)
	N = 113	N = 29	N = 19	N = 46	N = 18
Innovation performance	3.48 (.96)	3.39 (.89)	3.12 (1.28)	3.44 (.82)	3.36 (1.09)
	N = 112	N = 29	N = 19	N = 43	N = 16
Environmental performance	3.54 (.82)	3.74 (.87)	3.42 (1.14)	3.44 (1.03)	2.83 (1.04)
	N = 113	N = 29	N = 19	N = 45	N = 15
Social performance	3.4 (.86)	3.38 (.77)	2.98 (1.05)	3.46 (.96)	2.89 (1.34)
	N = 111	N = 28	N = 19	N = 46	N = 18

Another interesting point is related to the quality performance. Looking at overall descriptive statistics results, we can see that the highest mean values correspond to the quality performance in comparison to other performance dimensions.

In order to empirically assess whether there are significant differences between means of organisational performance dimensions, we performed several paired-samples t-tests. The results show that there are significant differences between the mean values of the financial and market performance and quality performance concerning Slovenian, Spanish, Serbian and German data subsets ($t = 7.894$, $p < 0.01$, $t = 3.679$, $p < 0.01$, $t = 4.471$, $p < 0.01$, $t = 2.494$, $p < 0.05$, respectively).

Furthermore, the results also indicate that there are significant difference between quality performance and social performance within all subsets: Slovenian, Spanish, Serbian, Polish and German subset ($t = 5.478$, $p < 0.01$, $t = 2.218$, $p < 0.05$, $t = 3.055$, $p < 0.01$, $t = 3.254$, $p < 0.01$, $t = 4.767$, $p < 0.01$, respectively).

Regarding the comparison between quality performance and innovation performance, results revealed significant difference within Slovenian, Spanish, Polish and German subsets ($t = 4.178$, $p < 0.01$, $t = 2.530$, $p < 0.05$, $t = 4.023$, $p < 0.01$, $t = 2.424$, $p < 0.05$, respectively).

With respect to the comparison between mean values of quality performance and environmental performance, the results provide empirical evidence for significant difference within Slovenian, Polish and German data subset ($t = 3.418$, $p < 0.01$, $t = 3.126$, $p < 0.01$, $t = 3.757$, $p < 0.01$, respectively).

5.7.4 Regression analysis

Multiple regression with categorical predictors (dummy variables which take the value of 0 and 1) (Field, 2005) was utilised in order to examine country effects on each of the performance measures. When dummy coding is used in the regression analysis, the overall results indicate whether there is a relationship between the dummy variables and the dependent variables. The Slovenian subset was chosen as a baseline (i.e. a group against which all other groups are compared). Five countries are included in the research, so there are four dummy variables included in the multiple regression analysis. For example, the dummy variable 'Germany' actually means Slovenia vs. Germany.

Table 79 presents the results of regression analysis for dummy variables (referred to a particular country) and SER and SEI as dependent variables. Model 1 includes dummy variables as predictors and SER as a dependent variable. Model 1 shows that by entering dummy variables we can explain 8.5% of the variance in the sustainability exploration practices (SER). The ANOVA indicates that the model is significantly better at predicting the SER than having no model ($F(6.689)$, $p < 0.01$).

The first dummy variable shows the difference between the SER for the Slovenia and the Germany. The beta value ($\beta = -0.158$, $p < 0.05$) refers to the change in the outcome due to a unit change in the predictor. As such, it shows the shift in the change in SER that results from the dummy variable changing from 0 to 1. In this regard, the beta value represents the relative difference between German subset and the subset that was defined as a baseline category (i.e. Slovenia). Therefore, the results suggest that the level of SER is greater for the Slovenian subset than it is for the German data subset.

The highest negative coefficient corresponds to the dummy variable that compares the Spanish subset with the Slovenian subset ($\beta = -0.294$, $p < 0.01$). For the other two dummy variables (Model 1), the t-test is not significant, so we can conclude that the

level of SER is the same if country changes from Slovenia to Serbia or Poland. In other words, the level of SER is not predicted by whether organisations originate from Serbia or Poland, compared to if they originate from Slovenia.

Table 79. Results of regression analysis for SER and SEI as dependent variables

	Standardised β coefficient	
	Dependent: SER (Model 1)	**Dependent: SEI** (Model 2)
Germany	-0.158*	-0.007
Poland	-0.011	0.000
Serbia	-0.110	-0.143*
Spain	-0.294**	-0.102
R^2	0.100	0.027
Adjusted R^2	0.085	0.011
F	6.689	1.676
P-value of overall model	0.000	0.156

*P < 0.05, **P < 0.01

We ran additional regression analyses with the four dummy variables as independent variables and with three control variables included (Table 80). As shown in Table 80, long-term orientation is positively and significantly related to the SER and SEI ($\beta = 0.570$, $p < 0.01$, $\beta = 0.546$, $p < 0.01$, respectively). It appears that, apart from Spain ($\beta = - 0.194$, $p < 0.01$), long-term orientation completely masks the country effects.

Table 80. Results of regression analysis for SER and SEI as dependent variables

	Standardised β coefficient	
	Dependent: SER (Model 1)	**Dependent: SEI** (Model 2)
Competitiveness	-0.008	0.001
Uncertainty	0.015	0.067
Long-term orientation	0.570**	0.546**
Germany	-0.098	0 .056
Poland	0.070	0.065
Serbia	-0.003	-0.043
Spain	-0.194**	-0.009
R^2	0.402	0.325
Adjusted R^2	0.384	0.305
F	22.477	16.115
P-value of overall model	0.000	0.000

*P < 0.05, **P < 0.01

In the case in which the SEI is included as dependent variable (Model 2), only one dummy variable appears to be significant. However, the explanatory power of the regression model for the level of SEI is low (1.1% of the variance is explained by country of origin), and the overall model is insignificant (F(1.676), p > 0.05). It seems that the level of SEI is not predicted by country of origin.

Table 81 presents two regression models with financial and market performance as a dependent variable.

Table 81. Results of regression analysis for financial and market performance as dependent variable

	Dependent: Financial and market performance	
	Model 1	**Model 2**
SER	0.265**	
SEI		0.266**
Germany	0.098	0.058
Poland	0.165*	0.163*
Serbia	-0.142*	-0.133*
Spain	0.032	-0.019
R^2	0.134	0.139
Adjusted R^2	0.114	0.119

F	6.612	6.936
P-value of overall model	0.000	0.000

*P < 0.05, **P < 0.01

Model 1 examines the effects of SER and dummy variables on financial and market performance. Regarding the effects of SER, Model 1 shows that that the coefficient for SER is positive and significant ($\beta = 0.265$, $p < 0.01$). With respect to the country effects, two coefficient appears to be significant: Poland ($\beta = 0.165$, $p < 0.05$) and Serbia ($\beta = -0.142$, $p < 0.05$). According to the results, the level of financial and market performance is higher for the Polish subset than it is for the Slovenian subset. In contrast, the level of financial and market performance decreases if the country changes from Slovenia to Serbia.

Model 2 is distinguished from Model 1 by a change in a set of independent variables (SEI is included instead of SER). The results are very similar to Model 1. As shown in Model 2, the coefficient for SEI is positive and significant ($\beta = 0.266$, $p < 0.01$). Regarding the dummy variables, Poland ($\beta = 0.163$, $p < 0.05$) and Serbia ($\beta = -0.133$, $p < 0.05$) are significant. Thus, Poland seems to have significantly greater effect on the financial and market performance than Slovenia, while Serbia has significantly lower financial and market performance than Slovenia. However, the T-test results show that the differences between Slovenia, Germany and Spain are insignificant. The value of R square indicates that 13.9% of the variance in the financial and market performance is explained by independent variables (Model 2). The results are consistent with the explanatory power of Model 1 (R square = 0.134).

In the following, a regression analysis with interaction effects is presented (Table 82). The underlying assumption is that sustainability practices have different effects on financial and market performance regarding different groups (i.e. countries). It is important to note that the interaction terms (Model 1) are identical to the SER if dummy variables are 1; otherwise, the values are zero. Results are consistent with the interpretation that organisations within the Polish data subset gain superior financial and market benefits from sustainability practices compared to the Slovenian data subset ($\beta = 0.168$, $p < 0.05$ and $\beta = 0.175$, $p < 0.01$, respectively). In contrast, organisations within the Serbian data subset achieve significantly lower benefits from sustainability practices compared to organisations within the Slovenian data subset ($\beta = -0.141$, $p < 0.05$ and $\beta = 0.131$, $p < 0.05$, respectively). Furthermore, the results indicate that interaction effects between sustainability practices and Germany as well as between sustainability practices and Spain are not significantly different from the Slovenian data subset.

Table 82. Interaction effects of sustainability practices and country of origin on financial and market performance

	Dependent: Financial and market performance	
	Model 1	**Model 2**
SER	0.255**	
SEI		0.278**
SER × Germany	0.080	
SER × Poland	0.168*	
SER × Serbia	-0.141*	
SER × Spain	-0.011	
SEI × Germany		0.050
SEI × Poland		0.175**
SEI × Serbia		-0.131*
SEI × Spain		-0.031
R^2	0.133	0.144
Adjusted R^2	0.112	0.124
F	6.543	7.177
P-value of overall model	0.000	0.000

*P < 0.05, **P < 0.01

Analysing the coefficients in Table 83 (Model 1), it can be observed that two coefficients are positive and significant: SER and Germany ($\beta = 0.390$, $p < 0.01$ and $\beta = 0.174$, $p < 0.01$, respectively). Hence, the quality performance increases if the country changes from Slovenia to Germany. Other dummy variables are not found to be significant, neither in Model 1, nor in Model 2.

Table 83. Results of regression analysis for quality performance as dependent variable

	Dependent: Quality performance	
	Model 1	**Model 2**
SER	0.390**	
SEI		0.398**
Germany	0.174**	0.115
Poland	0.077	0.073
Serbia	0.013	0.027
Spain	0.124	0.050
R^2	0.154	0.171
Adjusted R^2	0.135	0.152
F	7.975	9.023

P-value of overall model	0.000	0.000

*P < 0.05, **P < 0.01

Table 84 shows the regression results for interactions between dummy variables, SER and SEI. The results suggest that deployment of SER practices and deployment of SEI practices provide greater benefits (as represented by quality performance) to organisations within the German data subset than organisations within the Slovenian data subset ($\beta = 0.178$, $p < 0.01$ and $\beta = 0.135$, $p < 0.05$, respectively). Organisations within the Slovenian subset and organisations within any other countries in the sample appear to have similar patterns, given the insignificance of the coefficients for interaction effects.

Table 84. Interaction effects of sustainability practices and country of origin on quality performance

	Dependent: Quality performance	
	Model 1	**Model 2**
SER	0.339**	
SEI		0.380**
SER × Germany	0.178**	
SER × Poland	0.079	
SER × Serbia	0.058	
SER × Spain	0.073	
SEI × Germany		0.135*
SEI × Poland		0.082
SEI × Serbia		0.077
SEI × Spain		0.027
R^2	0.153	0.179
Adjusted R^2	0.134	0.160
F	7.929	9.532
P-value of overall model	0.000	0.000

*P < 0.05, **P < 0.01

Table 85 presents the effects of dummy variables on the environmental performance. According to the results (Model 1), environmental performance increases if the country changes from Slovenia to Spain ($\beta = 0.197$, $p < 0.01$). Thus, the environmental performance is greater for the Spanish data subset than for the Slovenian data subset. Apart from SER ($\beta = 0.441$, $p < 0.01$), other beta coefficients are insignificant, indicating no significant difference between Slovenia and other countries.

In the case in which SEI is entered in the regression model as a predictor variable (Model 2), the results show no significant difference between Slovenia and Spain ($p > 0.05$).

However, it appears that dummy variable that represents the German subset has significantly lower effects on environmental performance than a baseline dummy variable (i.e. Slovenian subset) ($\beta = -0.189$, $p < 0.01$).

Table 85. Results of regression analysis for environmental performance as dependent variable

	Dependent: Environmental performance	
	Model 1	**Model 2**
SER	0.441**	
SEI		0.337**
Germany	-0.122	-0.189**
Poland	-0.041	-0.046
Serbia	0.011	0.011
Spain	0.197**	0.102
R^2	0.220	0.156
Adjusted R^2	0.202	0.136
F	12.148	7.928
P-value of overall model	0.000	0.000

*P < 0.05, **P < 0.01

Regarding the interaction effects (Table 86), the results seem to be consistent with the findings presented in Table 85. The interaction effect between SER and Spain is positive and significant ($\beta = 0.178$, $p < 0.01$), which indicates that SER provides greater environmental performance benefits for Spain that for organisations within the Slovenian subset. With respect to Model 2, the difference is significant in terms of interaction effect between SEI and Germany. The results show that the effect of SEI on environmental performance is significantly lower for the organisations within German subset than it is for Slovenian Subset ($\beta = -0.191$, $p < 0.01$). All other coefficients are not supporting any significant difference in interaction effects' sustainability practices and dummy variables.

Table 86. Interaction effects of sustainability practices and country of origin on environmental performance

	Dependent: Environmental performance	
	Model 1	**Model 2**
SER	0.423**	
SEI		0.336**
SER × Germany	-0.111	
SER × Poland	-0.029	
SER × Serbia	0.010	
SER × Spain	0.178**	
SEI × Germany		-0.191**
SEI × Poland		-0.031
SEI × Serbia		0.023
SEI × Spain		0.096
R^2	0.208	0.154
Adjusted R^2	0.189	0.134
F	11.287	7.835
P-value of overall model	0.000	0.000

*P < 0.05, **P < 0.01

Regarding the effects of dummy variables on social performance, Model 1 (Table 87) shows that dummy variables are not significant predictors of the social performance, thereby not supporting the institutional view. However, the coefficient for SER is positive and significant ($\beta = 0.450$, $p < 0.01$). As shown in Model 2, the coefficient for Germany is negative and significant ($\beta = -0.146$, $p < 0.05$). However, the coefficients for other dummy variables are not significant ($p > 0.05$). Overall, the results partially support the institutional view regarding the effect of sustainability practices on the social performance.

Table 87. Results of regression analysis for social performance as dependent variable

	Dependent: Social performance	
	Model 1	**Model 2**
SER	0.450**	
SEI		0.321**
Germany	-0.077	-0.146*
Poland	0.029	0.024
Serbia	-0.075	-0.079
Spain	0.124	0.024
R^2	0.219	0.137
Adjusted R^2	0.201	0.117
F	12.106	6.839
P-value of overall model	0.000	0.000

*P < 0.05, **P < 0.01

The results of interaction effects are presented in Table 88. Regarding the regression results, the first important outcome is that the effect of SER on social performance is positive and significant ($\beta = 0.446$, $p < 0.01$). The second notable result consists of the significant positive effect of SEI on social performance ($\beta = 0.335$, $p < 0.01$). However, the only significant interaction term is SEI × Germany ($\beta = -0.140$, $p < 0.05$), indicating that the effect of SEI on social performance is significantly lower for the organisations within the German subset than it is for the Slovenian data subset.

Table 88. Interaction effects of sustainability practices and country of origin on social performance

	Dependent: Social performance	
	Model 1	**Model 2**
SER	0.446**	
SEI		0.335**
SER × Germany	-0.038	
SER × Poland	0.028	
SER × Serbia	-0.061	
SER × Spain	0.087	
SEI × Germany		-0.140*
SEI × Poland		0.017
SEI × Serbia		-0.070
SEI × Spain		0.012
R^2	0.203	0.132
Adjusted R^2	0.184	0.112
F	10.984	6.558
P-value of overall model	0.000	0.000

*P < 0.05, **P < 0.01

To summarise, there is some evidence that supports the assumption that the impact of sustainability practices on organisational performance measures is dependent upon institutional factors, such as country of origin.

Part IV
Discussion, Implications, and Conclusions

6 DISCUSSION AND CONCLUSION

6.1 INTRODUCTION

This research was aimed at examining how the deployment of sustainability exploitation and sustainability exploration practices affects organisational performance. To enable such an examination, the empirical research has not only examined whether pursuing exploratory and exploitative practices effect organisational performance, but has also examined the effects of selected contingency factors regarding the relationship between sustainability practices and organisational performance. In other words, this research questioned whether sustainability practices can contribute to overall organisational performance. Accordingly, the purpose of this study was to enhance the conceptually and empirically validated understanding regarding the influence of the two distinct dimensions of sustainability practices on organisational performance. In this way, this research provides the first empirical study that has assessed the potential of applying the concepts of exploration and exploitation in the field of sustainability.

To achieve the study's purpose, we first developed, based on the literature, a conceptual model and corresponding hypotheses indicating the causal relationships between the constructs. We used a quantitative approach to support the validation of the conceptual model, hypotheses testing, and to help interpret the results.

Therefore, Chapter 6 discusses the empirical findings, illustrates theoretical and managerial implications of the study, clarifies its limitations, and identifies some interesting directions for future research.

6.2 DISCUSSION OF THE FINDINGS

6.2.1 The conceptual distinction between sustainability exploration and sustainability exploitation practices

With the increasing reliance on corporate sustainability performance to gain competitive advantage (Wagner, 2010), more knowledge about implementing and obtaining performance benefits from sustainability practices is needed in order to better understand the ways that organisations can best execute sustainability strategies.

Regarding the multi-dimensional nature of corporate sustainability, a rapidly growing body of literature comprises a wide range of specific sustainability practices being implemented by organisations (e.g. Fairfield et al., 2011; Hahn and Scheermesser,

2006). For example, there are diverse sets of practices that are related to eco-efficiency and to the improvement of environmental quality, mainly through reduction of physical production inputs (materials, energy, water), while maintaining economic performance. Still others are, for instance, related to the adoption of a more sustainable approach to product design, which also brings the potential of stimulating innovations in the field of product design.

Given the diversity of sustainability practices, it can be argued that the field to which corporate sustainability is applied is extremely wide and can range from highly efficiency related approaches to others that are almost entirely focused on the innovation aspects or on human aspects of sustainability. The latter is (to a certain extent) consistent with the notion of March (1991), who emphasises that one of the more enduring ideas in organisation science is that an organisation's long-term success depends on its ability to exploit its current capabilities while simultaneously exploring new competencies. However, no prior study has provided a solution to the dilemma of exploration-exploitation within a corporate sustainability framework. In this regard, our study provides a first empirical attempt to validate and discriminate between the two distinct aspects within the corporate sustainability framework.

To better understand the depth and breadth of the concepts of exploration and exploitation in the field of corporate sustainability, we observed this phenomenon within quality management framework, since we acknowledge its congruence with corporate sustainability (see Chapter 3 for a detailed description). Therefore, the question that arises here is to what point sustainability practices can be distinguished in the context of exploration and exploitation.

This study provides possible solutions to this question by distinguishing between different sustainability practices. In this regard, the study develops and validates a set of measures for operationalising the sustainability exploration and sustainability exploitation. The scales for each of the sustainability practices construct were validated by adopting a combined exploratory-confirmatory approach. The main characteristics that emerged from empirical examination are summarised in Table 89.

Table 89. The summary of main characteristics of sustainability exploration and sustainability exploitation practices

	Sustainability exploration practices	Sustainability exploitation practices
Key features	Product and process improvements and innovations	The adoption of a stakeholder approach
	Continuous upgrading of employees' skills	Improvements in business process flexibility
	Fostering a learning culture that stimulates innovation for sustainability	Sustainability performance measurement

The results of the empirical research support the theoretical assumptions that there exist two distinct yet related aspects of sustainability practices: sustainability exploration (SER) and sustainability exploitation (SEI). However, the results also suggest that there are some differences between the empirical findings and the theoretical conceptualisation of sustainability practices as proposed in the conceptual framework (see Chapter 3).

The most notable difference is that empirical evidence does not completely support the theoretical conceptualisation of the sub-constructs. For example, sustainability practices related to the learning for sustainability have more or less fallen under the domain of exploration. In contrast, practices related to the stakeholder orientation appear to be predominantly linked to the exploitation perspective.

Nonetheless, our results provide some intriguing insights into how exploration and exploitation concepts can be applied to the organisational sustainability. The first important observation that emerged from our empirical investigation concerning the dimensionality of sustainability exploration construct is that the construct consists of two dimensions. The first dimension (SPPD) refers to the innovation (either of the products or the processes), while the second dimension underlines the learning environment that supports the sustainability strategies. Indeed, conceptual arguments assert that deployment of exploratory practices is inherently linked to pursuing new knowledge and developing new products and services (Jansen et al., 2006). The latter can be supported with the argument that transformation towards sustainability requires the adoption of innovative behaviours and new forms of consciousness (Edwards, 2009).

However, organisations at the (higher ambition levels) post-conventional stage, which are committed to embedding broad-ranging sustainability principles and practices within their culture and systems, will also retain the capacity to function at the conventional stages of ‘efficiency‘ and ‘conforming‘ (Edwards, 2009). These conventional stages include, in turn, the pre-conventional requirements to survive and compete as an organisation in a competitive market place. Accordingly, our study affirms the importance of exploitation practices that tend to enhance operational efficiency. In this context, we argue that organisation should be highly efficient in terms of responsiveness towards diverse needs and expectations of stakeholders. Indeed, several studies (e.g. Rocha et al., 2007) recognise that an increasingly broad range of stakeholders can influence the success or failure of a business.

Additionally, efficient processes should be put in place in order to transform resources into outcomes that match stakeholders’ requirements. Moreover, taking into account a wide variety of approaches that can be employed by organisations to address sustainability issues, a suitable performance measurement system should be established to monitor the progress of these various approaches (Searcy, 2011).
In particular, this means that managers are able to understand better both the implications of their decisions and the actions that they can take to produce improved performance (Epstein and Roy, 2001).

6.2.2 Direct effects of implementation enablers on SER and SEI

The findings indicate positive association of implementation enablers with sustainability practices. The hypotheses and the corresponding empirical findings are shown in Table 90. The results support the assumption that ‘implementation enablers‘ have a strong effect on sustainability practices, particularly on exploration practices.

With regard to the organisational support, our findings suggest that the main enablers for successful adoption of sustainable practices are *top management support*, *integration of sustainability into vision and strategy*, and *establishing a sustainability-centred culture*. These findings are consistent with prior studies (e.g. Fairfield et al., 2011), indicating that foundational organisational enablers such as values, top management support, and strategic integration appeared to play a crucial role in strengthening the sustainability agenda.

Table 90. Main findings regarding implementation enablers and sustainability practices

		Direct effect	
H1a	There is a positive relationship between sustainability enablers and sustainability exploration practices.	.820**	Supported
H1b	There is a positive relationship between sustainability enablers and sustainability exploitation practices.	.691**	Supported

**P < 0.01

Furthermore, there are several plausible explanations on the implementation enablers–sustainability practices relationship. For example, as it argued by Baumgartner (2009), corporate sustainability activities and strategies have to be embedded in the organisational culture in order to be successful. Likewise, it also crucial that organisation reach a fit between the culture and the sustainability activities (ibid.). It is interesting to note, however, that higher levels of sustainability integration lead to a more complex organisational culture and structure (van Marrewijk and Werre, 2003).

Moreover, management commitment to sustainability as a core value, and management recognition that sustainability can create financial value for the organisation through enhanced revenues and/or lower costs are also critically important (Epstein and Rejc-Buhovac, 2010). Regarding the management commitment to sustainability, a vision that includes sustainability as a core value and therefore includes economic, environmental and social elements, is considered to be an essential element in putting sustainability in a business context (Bonn and Fisher, 2011). In particular, the role of vision is to communicate strong corporate norms and values and to provide principles that guide the decisions of senior managers as well as that line managers and employees (Bonn and Fisher, 2011).

6.2.3 Direct effects of SER and SEI on organisational performance

A number of insights are drawn from this empirical study. First, our study underscores previous assertions that organisations can benefit from pursuing sustainability (e.g. Wagner, 2010; Orlitzky et al., 2003). The results of our study have confirmed the hypothesis that sustainability practices (in terms of exploration and exploitation) positively influence the organisational performance (Table 91). Moreover, the results also suggest that ambidextrous orientation has a positive and significant effect on the

organisational performance. Accordingly, organisations that are able to simultaneously pursue exploratory and exploitative sustainability practices are not only able to efficiently exploit existing products, services, and processes, but are also able to develop new (improved) processes, and develop more innovative solutions for products and services aimed at new customers and markets. Moreover, the results also indicate that when organisations maintain relatively high levels of exploratory and exploitative practices, significant relationships between sustainability practices and organisational performance seems to disappear. The latter can be, to some extent, interpreted in the light of punctuated equilibrium, which refers to temporal rather than organisational differentiation and suggests that cycling through periods of exploration and exploitation is a more viable approach than a simultaneous pursuit of the two (Gupta et al., 2006). These findings indicate the complexity of managing the balance between exploration and exploitation. These constraints emerge even more substantially since exploration and exploitation compete for resources that are limited within organisation (Cheng and Kesner, 1997)

Table 91. Main findings regarding sustainability practices and organisational performance

		Direct effect	
H2a	There is a positive relationship between sustainability exploration practices and organisational performance.	0.331**	Supported
H2b	There is a positive relationship between sustainability exploitation practices and organisational performance.	0.246**	Supported

**P < 0.01

In addition to examining whether sustainability practices are positively related to organisational performance, this dissertation has also investigated the effects of sustainability practices on particular organisational performance dimension. The main findings of multiple regression analysis are shown in Table 92.

Table 92. Main findings regarding sustainability practices and organisational performance dimensions

		Direct effect	
	Sustainability exploration practices		
H2a1	There is a positive relationship between sustainability exploration practices and financial and market performance.	0.107	Not supported
H2a2	There is a positive relationship between sustainability exploration practices and quality performance.	0.155	Not supported
H2a3	There is a positive relationship between sustainability exploration practices and innovation performance.	0.253**	Supported
H2a4	There is a positive relationship between sustainability exploration practices and environmental performance.	0.325**	Supported
H2a5	There is a positive relationship between sustainability exploration practices and social performance.	0.362**	Supported
	Sustainability exploitation practices		
H2b1	There is a positive relationship between sustainability exploitation practices and financial and market performance.	,224*	Supported
H2b2	There is a positive relationship between sustainability exploitation practices and quality performance.	0.293**	Supported
H2b3	There is a positive relationship between sustainability exploitation practices and innovation performance.	0.202*	Supported
H2b4	There is a positive relationship between sustainability exploitation practices and environmental performance.	0.097	Not supported
H2b5	There is a positive relationship between sustainability exploitation practices and social performance.	0.088	Not supported

P < 0.01; P < 0.01

The results of the analyses suggest that both exploitation and exploration are positively and significantly associated with different dimensions of organisational performance (Table 92). Specifically, our findings suggest that exploitation has a greater positive impact on financial and market performance, and quality performance compared to the exploration practices. In contrast, exploration has a greater positive impact on innovation performance, environmental performance, and social performance compared to the exploitation practices.

Another theoretically interesting finding revealed by regression analysis is the limited amount of variation across organisations in financial and market performance that could be explained, with sustainability practices accounting for merely 8.7% of variance. One interpretation would be that other factors not specified in the model exist that explain what contributes to the financial and market performance. Another plausible explanation for this result is that sustainable development is less likely to appear in a short period of time, requiring a long-term concerted effort for delivering market benefits (Hart, 1995). Furthermore, concerning theoretical research in this area of sustainability, researchers often argue that the relationship between economic performance and ecological/social performance is dependent on the strategy of an organisation (e.g. Weber, 2008; Schaltegger and Synnestvedt, 2002). This suggests that organisations that actively pursue a value-oriented (in terms shareholder value orientation) corporate strategy seem to be most likely to achieve a positive relationship between sustainability and economic performance (Wagner and Schaltegger, 2004).

However, as reflected above, it is strongly recommended that organisations pursue the benefits derived from sustainability strategies, as these benefits will sustain themselves over time and, in turn, will produce market benefits (i.e., economic bottom line). Accordingly, studies have shown that by greening their operations, organisations have gained benefits in their operations, including cost reduction, productivity, and innovation (e.g. de Oliveira et al., 2010; Iraldo et al., 2009). Furthermore, Zairi and Peters (2002) state that social responsibility of business organisations is not only a gesture, but rather a critical driver of corporate performance.

As expected, exploitation practices are positively associated with quality performance. The latter needs to be interpreted form the stakeholders' perspectives, suggesting that the nature of the responsibilities regarding quality has become more diverse, and, as a consequence, its sphere of influence has enlarged (see section 2.1.1 and 3.2.2 for detailed discussion). Based on the quality standpoint, it can be argued that organisations need to yield value for one or more stakeholders, which is ultimately reflected in performance benefits. Most likely, customers are one of the most important

stakeholders from the organisations' point of view. However, organisations are faced with several internal and external stakeholders, who might have in some sense different views on quality. Notwithstanding the diversity of the stakeholders, previous studies (e.g. Delmas, 2001) affirm that there is a strong and positive impact of external stakeholder involvement (customers/clients, shareholders, community members, distributors, and regulatory agencies) on competitive advantage.

Another notable finding arising from the regression analysis is that both SER and SEI are positively and significantly associated with innovation performance. The results are consistent with the notion that sustainable development drives innovations (Hockerts, 2003). Considering that innovation performance significantly influence financial and market performance ($\beta = 0.417$, $p < 0.01$), it could be argued that organisations can achieve performance outcomes also through their impact on innovation performance. The results, therefore, affirm the importance of achieving sustainable innovation excellence, which means that innovative new products or services are developed in a way that satisfies the customers and other stakeholders, such as employees, suppliers and society, in a balanced way, both in the short term and in the long run (Dahlgaard-Park and Dahlgaard, 2010).

The results also confirm the positive relationship between sustainability exploration practices and social performance. Accordingly, Gond et al. (2010) argue that sustainability-related activities, particularly CSR activities, positively influence job satisfaction, and negatively influence turnover and turnover intentions. The results can also be viewed in the context that employees strongly identify with organisations that are perceived as socially responsible (Gond et al., 2010).
It is therefore congruent with our findings that employees' involvement in sustainability-related activities, especially those related to the exploration, strengthens employees' satisfaction and motivation. This could in some sense confirm the earlier arguments that the participation of employees in continuous improvement approaches may lead to reductions of waste, higher resource efficiency and decreasing costs of poor quality while simultaneously strengthening employees' satisfaction and motivation (Zink et al., 2008).

The MANOVA furthermore provides interesting insights into the effects of sustainability practices on organisational performance. The results indicate that there are significant mean differences in organisational performance (as measured by the financial and market performance, quality performance, innovation performance, environmental performance and social performance) for low and high levels of sustainability practices. Therefore, by focusing on exploration and exploitation

practices, organisations can expect to achieve higher performance outputs and outcomes.

Moreover, dimension-level analysis provides better understanding about the specific sustainability practice dimensions that positively influence the organisational performance. The results indicate that sustainable product and process development (SPPD), sustainability-oriented learning (SOL), stakeholder responsiveness and integration (SRI) were most influential in enhancing the organisational performance. The results imply that organisations need to: a) identify various stakeholders' needs and expectations, b) integrate those requirements into product and process characteristics, and c) establish supportive learning environments. Thus, sustainability aspects should be integrated during product/process conceptualisation, when quality characteristics are not finally determined. This means building sustainability aspects into tangible and intangible product/process quality characteristics, through a constant focus on stakeholders' wants and needs, and on the basis of principles of continuous improvement. The focus on processes is essential, since the core processes of an organisation are those that deliver output to external stakeholders (Isaksson, 2006).
The resource-based view can be suggested in this context as a complementary theoretical perspective for a more comprehensive explanation of the importance for an organisation to possess resources (i.e. financial and physical assets) and organisational capabilities (i.e. intangible assets that are based on skills, learning, and knowledge in deploying resources) in its attempt to secure competitive advantages (Wilden et al., 2007).

To summarise, from a theoretical point of view, our results confirm the postulate of the exploration-exploitation-based view of the organisation in the innovation management literature; concerning performance benefits as the result of the organisation's ability to successfully engage in exploration and exploitation (He and Wong, 2004).

6.2.4 Indirect effects of SER and SEI on organisational performance

Multiple mediation analysis was applied to examine whether SER and SEI affect financial and market performance indirectly through nonfinancial performance measures. Table 93 shows the indirect effects of mediators on financial and market performance as well as the total effects of each of the multiple mediation models. The results revealed that innovation performance is a significant mediator in the relationship between sustainability practices and financial and market performance. The interpretation of mediation analysis is that, taken as a set, innovation performance does mediate the relationship between sustainability practices and financial and market

performance. This suggests that greater engagement in sustainability exploration and sustainability exploitation leads to greater innovation performance, which in turn leads to greater financial and market performance. Indeed, Porter and van der Linde (1995) assert that the innovation triggered by properly designed environmental standards will eventually enhance the competitive advantage of firms and benefit their economic performance. The latter can be substantiated from Cooper's (1996) view, indicating that innovation is a key factor to long-term competitiveness.

Interestingly, the results indicate a strong indirect effect of SEI on financial and market performance. However, the findings should be interpreted in the context of stakeholder orientation, which is important sub-construct of SEI. Stakeholder orientation, particularly a customer relationship orientation plays an important role in stimulating innovations (Sainio et al., 2012). Furthermore, previous studies have suggested that the effect of the stakeholder orientation on business performance may be mediated by innovation (Han et al., 1998).

Table 93. Main findings regarding multiple mediation analysis

Sustainability practices	Significant mediator	Indirect effect	Total effect
SER	Innovation performance	0.1779	0.2883
SEI	Innovation performance	0.2289	0.4316

**P < 0.01

Finally, the positive associations among the sustainability practices, performance output and performance outcome could reflect a chain of reactions among the benefits of sustainability practices deployment.

6.2.5 The role of the contingency factors

The context-dependent approach has been widely discussed in organisational theory literature (Sila, 2007). In particular, studies within the field of quality management have raised doubts as to the universal validity of the entire range of quality management practices (Sousa and Voss, 2001). Moreover, recent research (Zhang et al., 2012) provides strong evidence to support a context-dependent approach to quality management. Similarly, the contingency approach can also be reflected in the field of organisational sustainability, especially if we acknowledge the synergies and overlaps between quality management and sustainability. This raises the question of whether organisations should use different sustainability practices depending on particular situational factor in order to achieve superior results.

This study provides possible solutions to this question by investigating the performance implication of SEI and SER under different levels of competitiveness, environmental uncertainty and long-term orientation. Several regression analyses were used to gain insight into the relationship between sustainability practices and organisational performance, depending on different levels of contingency factors. The main findings are summarised in Table 94.

Regarding the high levels of competitiveness, the results indicate that exploitative sustainability practices bring more performance benefit than explorative sustainability practices in the context of quality performance and environmental performance. In contrast, SER appears to dominate n regarding the effect on the innovation performance and the effect on the social performance. Within the low levels of competitiveness, SER is the strongest predictor of performance measures, except in the case of quality performance. Considering organisational performance as a composite score, the results reveal that both SER and SEI are positive and significant within the sub-group of high levels of competitiveness. This is somewhat consistent with the findings of Leavengood et al. (2013), suggesting that quality-focused innovations might be considered to be a key success factor for organisations. In other words, being faced with high competitiveness, organisations should include innovation as part of their competitive strategy as a means to achieving quality and profitability. Contrary to our expectations, interaction effects between sustainability practices and competitiveness are not significant, thus not supporting the H4.

Table 94. Main findings regarding regression analysis within subgroups of low and high levels of contingency factors

Contingency factor	**Low level**	**High level**
	Competitiveness	
Organisational performance	SER (0.361**)	SER (0.324**) SEI (0.237*)
Quality performance	SEI (0.332*)	SEI (0.313*)
Innovation performance	n.a.	SER (0.283*)
Environmental performance	SER (0.467**)	SEI (0.299*)
Social performance	SER (0.340*)	SER (0.382**)
	Uncertainty	
Organisational performance	SER (0.397**)	SER (0.286*) SEI (0.257*)
Quality performance	n.a.	SEI (0.374**)
Innovation performance	n.a.	SER (0.295*)
Environmental performance	SER (0.525**)	n.a.
Social performance	SER (0.446**)	SER (0.338**)
	Long-term orientation	
Organisational performance	SER (0.250*) SEI (0.367**)	SER (0.331*)
Financial and market performance	SEI (0.310**)	n.a.
Quality performance	SEI (0.464**)	n.a.
Innovation performance	SEI (0.312**)	SER (0.340*)
Environmental performance	SER (0.339**)	SER (0.263*)
Social performance	SER (0.342**)	SER (0.340*)

*P < 0.05, **P < 0.01

Surprisingly, results indicate that organisations facing low uncertainty in the environment will tend to be more explorative oriented; this does not supporting our hypothesis (H3). One explanation might be that when market uncertainty is low, the organisations, particularly those with a technology-oriented strategy, may utilise radical innovations because they can outrun relatively stable markets with their novel solutions and proactive approaches (Sainio et al., 2012).

Furthermore, the results indicate that both type of practices, SER and SEI, appear to be beneficial in influencing organisational performance when environmental uncertainty is high. One plausible explanation is that when organisations are faced with high levels of uncertainty, they associated uncertainty with a risk rather than just an

opportunity. Hence, it is suggested that organisations respond to high uncertainty in the environment with proactive innovative behaviour together with a tendency towards a stable business environment. Thus, the results suggest that in highly uncertain environments, it is necessarily for organisations to provide efficiency, such as high level of stakeholder responsiveness, while at the same time being able to move into new areas. Another perspective suggests that in a business climate of increased uncertainty and increasingly complex technologies, managers tend to consider practices to be legitimate if they are regarded as 'best practices' in their organisational field (Matten and Moon, 2008).

According to the clustering results, sustainability exploitation practises dominate in predicting the organisational performance when an organisation is faced with moderate levels of competitiveness and uncertainty. It appears that when the level of competitiveness strengthens, sustainability exploration practices influence the organisational performance to a greater extent than sustainability exploitation practices. However, when both competitiveness and uncertainty reached high levels, significant effects of sustainability exploration and exploitation practices seem to disappear. Interestingly, alongside the high levels of these two contingency factors, our results indicate that organisations simultaneously deploy sustainability practices to a high extent. It is worth noting that our results indirectly support the findings of He and Wong (2004), who suggest that tension between exploration and exploitation may become unmanageable when both are pushed to their extreme limits.

Regarding the strategic context, the results indicate that explorative sustainability practices take the strongest position concerning the performance benefits in the context of an organisation's strong focus on long-term orientation. This supports the existence of the link between long-term orientation and the pattern of use of sustainability practices. The findings can be supported from the quality management perspective, suggesting that quality management practices are strongly influenced by an organisation's overall strategic context (Sousa and Voss, 2001).

In general, the results support the contingency view of the relationship between sustainability practices and performance rather than relying upon 'universal' view of sustainability practices. In this regard, we can argue that organisations with similar characteristics (capabilities, performance, and activity) may develop different approaches for managing the interface between business and the natural environment (Aragon-Correa and Sharma, 2003).

6.2.6 A cross-country comparison

Despite the recent expansion of sustainability literature, the application of institutional theory to understand sustainability-related phenomena has not yet been widely investigated. As noted by Campbell (2007), most of the literature on corporate social responsibility does not explore whether institutional conditions affect the tendency for firms to behave in socially responsible ways.

Research into the relationship between institutions and organisations illustrates that the institutional environment shape and influence sustainability-related business practices (Matten and Moon, 2008; Campbell, 2007; Schultz and Wehmeier, 2010). The term 'institutions' emphasises the formal organisation of government and corporations, as well as norms, incentives, and rules (Matten and Moon, 2008). This suggests that organisations and their strategies are substantially influenced by the broader institutional settings in which they operate, and shaped by the institutional legacies that reflect the culture, history, and polity of the particular country or region (Doh and Guay, 2006).

As stated by Harzing and Noorderhaven (2003), differences between countries that can give rise to country-of-origin effects are well documented in international comparative management literature. Moreover, Zadek et al. (2003) have outlined that a nation or region's competitiveness is fundamental to its economic health, which is in turn fundamental to its sustainability.

The question arises whether sustainability practices as conceptualised in this thesis are characterised by organisation's country of origin. In particular, the study examines the effects of country of origin on the relationship between sustainability practices and organisational performance.

Our study findings clearly show that organisations based in different countries hold substantially different perspectives on: 1) correlations among organisational performance dimensions; 2) achieved levels of organisational performance dimensions; 3) deployment of sustainability exploration practices; 4) country effects on the organisational performance.

First, the comparison of the PCA bi-plots reveals that all vectors that correspond to the studied variables point in the same directions, which means that all variables (sustainability practices and performance dimensions) are positively correlated.

Thus, the PCA bi-plots suggest that subsets have similar profiles. Furthermore, the results indicate that sustainability practices (as measured by SER and SEI) are highly correlated in all of the observed bi-plots.

Further observations of the PCA bi-plots indicate that sustainability practices are highly correlated with the environmental performance, as observed within the Spanish and Serbian data subsets. Moreover, within the Spanish and Polish subsets, sustainability practices are strongly correlated to the financial and market performance. However, results indicate that apart from the Slovenian and Spanish subsets, financial and market performance is not significantly correlated with sustainability practices (measured by Pearson's correlation coefficient).

It appears that financial and market performance is relatively strongly correlated with innovation performance concerning the Slovenian, Serbian and German data subsets. In contrast, sustainability practices are highly and significantly correlated with quality performance, as shown by the Serbian and German PCA bi-plots. The aforementioned results can also be interpreted in accordance to the findings of the mediation analysis.

Generally, organisations in different countries show many more differences in relation to the sustainability practices and organisational performance compared to the organisations within the same country. Nevertheless, these results should be interpreted with caution, keeping in mind some main limitations of the research. First, the analysis was based on different research settings as indicated by different sample sizes and by the diversity of organisations covered by samples. In addition, several relevant control variables could be included to control for possible alternative explanations.

Furthermore, regression analysis shows that there is certain evidence to support that there are implementation differences between SER and SEI based on organisational performance and country effects.

Table 95. Main finding regarding the country effect

Regression model
Financial and market performance = $\beta_0 + \beta_{1*}$SER + β_{2*}SER × Poland – β_{3*}SER × Serbia
Financial and market performance = $\beta_0 + \beta_{1*}$SEI + β_{2*}SEI × Poland - β_{3*}SEI × Serbia
Quality performance = $\beta_0 + \beta_{1*}$SER + β_{2*}SER × Germany
Quality performance = $\beta_0 + \beta_{1*}$SEI + β_{2*}SEI × Germany
Environmental performance = $\beta_0 + \beta_{1*}$SER + β_{2*}SER × Spain
Environmental performance = $\beta_0 + \beta_{1*}$SEI - β_{2*}SEI × Germany
Social performance = $\beta_0 + \beta_{1*}$SEI - β_{2*}SEI × Germany
SER = $\beta_0 + \beta_{1*}$Long-term orientation – β_{2*}Spain
SEI = $\beta_0 + \beta_{1*}$Long-term orientation

The findings presented in Table 95 consist of nine regression equations with statistically significant slopes and intercepts. The regression models provide some empirical evidence regarding the justification of institutional perspective. For instance, the effects of sustainability practices on the financial and market performance increase if the country changes from Slovenia to Poland and decrease if country changes from Slovenia to Serbia.

Furthermore, Germany appears to be dominant in accounting for the country effect on the quality performance. However, the interaction term of Germany and SEI is negatively related to the environmental and social performance. This suggests that environmental and social performance decrease if country changes from Slovenia to Germany. In contrast, environmental performance increases if country changes from Slovenia to Spain. Additionally, findings indicate that Germany and Spain show higher levels of SEI deployment compared to the level of SER deployment.

Therefore, results reveal some differences in the achieved levels of performance measures across countries. One possible explanation is perhaps that businesses can compete (and can compete effectively) in quite different ways (Zadek et al., 2003). For instance, some organisations invest in environmentally-friendly technology, raise productivity by improving their employees' work-life balance, and lower long-term supply costs by building long-term relationships with quality suppliers (Zadek et al., 2003).

Regarding the deployment of sustainability practices, the results reflect some similarities across countries. The results revealed that the highest level of the deployment of sustainability practices corresponds to the stakeholder integration and responsiveness oriented practices, as observed in all examined data subset, except in the Serbian subset. As previously discussed, a key challenge of corporate sustainability integration is to address the diverse needs of different stakeholders (Asif et al., 2011). The findings also, to some extent, reflect a shift of emphasis from a compliance-based to a market and competition based focus in managing sustainability issues.

Regarding the deployment of SER and SEI, regression analysis reveals that strategic context in particular long-term orientation appears to be the most important predictor. The findings of the study show that when organisations implement sustainability practices, they predominantly consider their own strategic orientation. This could confirm the earlier arguments that the inherent nature of sustainability initiatives requires a long-term vision (Bonn and Fisher, 2011; Hart, 1995), especially from the perspective of competitive advantages (Bansal and Roth, 2000). However, these arguments suggest that organisations can face substantial barriers in the adoption of sustainability initiatives if short-term divisional objectives are pursued.

In summary, the findings provide some indication of the influence of institutional mechanism on the deployment and the effects of sustainability practices on the organisational performance. In this regard, the results support Hypothesis 7, suggesting that there is a significant difference on the effect of sustainability exploitation and sustainability exploration on organisational performance as a function of country of origin.

However, a more comprehensive picture is needed to better understand the unlikeliness of a universally valid definition of sustainability-related practices. For example, Matten and Moon (2008) discuss how and why corporate social responsibility (CSR) practices differ among countries. Drawing on the ‘country-of-origin effect’ in institutional theory, authors suggest that European countries predominantly demonstrate elements of implicit activities that normally consist of values, norms, and rules that result in (mandatory and customary) requirements for corporations to address stakeholder issues and that define proper obligations of corporate actors in collective rather than individual terms. In this regard, Matten and Moon (2008) argued that the organisation is both embedded in its historically grown national institutional framework and its respective national business system, as well as in its organisational field.

6.3 CONTRIBUTION TO THE THEORY

Due to the importance for organisations to perceive sustainability performance as an integral part of the overall performance, an examination of the links and causal relations between sustainability performance, competitiveness and business success is becoming an underlying theme in sustainability-related literature (Schaltegger and Wagner, 2006). Consequently, several studies (e.g. Wagner, 2010; Wagner and Schaltegger, 2004; Orlitzky et al., 2003) address the link between sustainability and performance outcomes. Notwithstanding these valuable contributions, researchers still struggle to deepen understanding of the link between organisational sustainability and organisational performance. More recently, some partial aspects of the performance benefits of sustainability (e.g. the link between corporate sustainability performance and economic performance) have been studied from a theoretical as well as an empirical perspective (e.g. Wagner, 2010; Weber, 2008). By developing and testing the proposed relationships within the conceptual framework dealing with sustainability exploration and sustainability exploitation practices and organisational performance, this doctoral dissertation contributes to existing bodies of literature in several ways.

First, the main theoretical implication of this study is the development of an empirically based framework for analysing the relationship between sustainability practices and organisational performance. Moreover, this study is the first empirical test for measuring and discriminating between the exploration and exploitation concepts in sustainability literature. It provides a foundation for further research on developing a measurement scale of sustainability practices. As argued by the Chang and Kuo (2008), measurement of corporate sustainability has been a challenge for researchers and organisations attempting to evaluate their efficiency and effectiveness. In this respect, this study tends to contribute to a better understanding of the underlying dimensions of sustainability practices and organisational performance. Section 2.3.4 highlights this issue, suggesting that sustainability literature lacks systematic empirical studies that would directly addressed the question of how corporate sustainability is or should be measured.

Second, although various researchers have claimed the performance benefits from sustainability-related activities, few studies have actually empirically studied the performance implications of sustainability practices. Therefore, through theoretical explanation and empirical assessment, the study contributes to a greater clarity and better understanding of the linkages between sustainability practices and organisational performance dimensions such as: *environmental performance, social performance, quality performance, innovation performance* as well as *financial and*

market performance. Thus, whereas studies on organisational sustainability tend to focus on illustrating how sustainability performance impact economic performance (e.g. Wagner, 2010), this study delivers a contribution by investigating the sustainability practices that influence the overall organisational performance.

Third, regarding the mediating role of innovation performance, our study contributes to prior literature concerning the examination of the benefits of sustainability-related innovation activities (e.g. Pujari, 2006). Hence, this research contributes to studies pertaining to the literature on sustainability-related innovation (Wagner, 2008) by revealing that innovation performance mediates the relationship between sustainability practices and organisational performance.

Fourth, the results of this study deliver a general contribution to current studies on sustainability management, which lack understanding about contingency approach. This study draws on theoretical and empirical findings in the quality management literature (e.g. Sousa and Voss, 2001; Zhang et al., 2012) by testing the three contextual factors: *competitiveness*, *uncertainty* and *long-term orientation*. Considering the overall organisational performance, the results indicate that when competitiveness is high organisations appear to benefit from both sustainability exploration and sustainability exploitation practices. Similar results were found in the case of high levels of uncertainty, while strategic context shows opposite results. Moreover, results suggest that for organisations that operate in high competitiveness and moderate uncertainty, exploration practices bring more performance benefits than exploitation practices.

Finally, by investigating country of origin effects, our results support the literature (e.g. Matten and Moon, 2008; Zadek et al., 2003) suggesting that institutional mechanisms might be a plausible explanation for differences in the deployment of sustainability practices and the effects of sustainability practices on the organisational performance.

6.4 LIMITATIONS AND FUTURE RESEARCH

In considering the limitations and directions for future research, our study highlights various research opportunities which have not yet been adequately addressed.

First, to some extent, this study is an exploratory research aiming to explore, define and identify the phenomenon of exploration and exploitation in the field of corporate sustainability. Although the measurement scales used in the study are developed based

on a comprehensive literature review, future studies are still needed to develop consistent metrics for measuring corporate sustainability. Therefore, future research should consider the findings of this study and revalidate measurement scales in order to enhance generalisability for measurement instrument.

Second, while the use of perceptual measures is widely recognised in management studies, this stream of research could be improved by using other sources of data, such as real metric and objective data for the evaluation of performance outcomes. Additionally, although the respondents of this survey were managers (e.g. Director of Quality) who presumably have adequate knowledge and are in a position to take a holistic view across the organisation, biases can occur, because there is only one source of information. In this regard, the study could be improved by involving different managers in the participating organisations to respond to the independent and dependent variables. Therefore, future research should seek to utilise multiple respondents from each participating organisation in an effort to enhance reliability and reduce common method bias.

Third, the cross-sectional nature of this study might limit the interpretation of the empirical results. This limitation provides a chance for future studies to extend this topic to specific industrial sectors. Moreover, limitations in terms of demonstrating the causal effect between sustainability practices and realised performance benefits, deliver opportunity for future research.

Fourth, it would be useful to explore gaps in research not previously examined in any great detail apart from more single-dimensional studies, such as the examination of the relationship between corporate sustainability performance and profitability (Chang and Kuo, 2008). In this regard, the present study provides valuable insights for future research directions. Apart from sustainability and economic performance, this study examines also the relationships between sustainability practices, innovation performance, and quality performance.
Future studies could be focused in searching the potential mediators and moderators on the relationship between sustainability practices and performance outcomes.

Future research may also examine performance implications of different levels of exploratory and exploitative practices by including several relevant control variables (e.g. industry type, size, age). Moreover, institutional isomorphism as underlined by self-regulatory and voluntary initiatives (e.g. EMS, quality management approaches, etc.) could also be useful theoretical underpinning to investigate sustainability practices orientation.

Fifth, although shortcomings in the sample sizes of data subsets limit the generalisability of the findings, we believe our research provides valuable insights for considering the country of origin effects. However, future research can extend and/or replicate the study in order to enhance its generalisability.

Sixth, previous research on corporate sustainability (Linnenluecke and Griffiths, 2010) has indicated a sustainability-oriented organisational culture as a potential research direction, suggesting that culture affect how corporate sustainability is implemented and the types of outcomes that can be observed. Therefore, future studies could examine the influence of a sustainability-oriented organisational culture on sustainability exploration and sustainability exploitation orientation.

Seventh, regarding the strategic context, this study was limited to the long-term orientation. It is desirable to extend the research by considering other dimensions of strategic orientation, such as proactiveness, defensiveness, aggressiveness (Morgan and Strong, 2003) or Porter's (1980) low cost and differentiation business strategy.

Finally, further studies are needed in order to investigate the interplay between sustainability exploration and sustainability exploitation. Future research should use ambidexterity and punctuated equilibrium as the two theoretical underpinnings (Gupta et al., 2006) in examining the balance between exploitation and exploration in regard to organisational performance. Additionally, future research may also capture multiple levels of analysis to uncover how unit-level of sustainability exploration and sustainability exploitation practices moderates the relationship between sustainability practices and organisational performance. A similar approach was applied by Jansen (2005).

6.5 CONCLUSION

As stated in Chapter 1, the main research question of this thesis was focused on investigation of the question '*How does deployment of sustainability exploitation and sustainability exploration practices affect organisational performance?*'

This research has, therefore, provided a closer examination of the concept of corporate sustainability and its link to organisational performance. Recognising the research opportunities in the literature, this thesis sought to assess what constitutes sustainability-oriented practices by referring to the well-established concepts of exploitation and exploration. In this respect, the research has provided a framework

for discussing the theoretical underpinnings on how corporate sustainability dimensions can be distinguished and the types of outcomes that can be achieved.

A first conclusion drawn from the thesis is that the sustainability exploration and sustainability exploitation concepts imply the following fundamental perspectives: 1) sustainable product and process development, 2) sustainability oriented learning, 3) stakeholder orientation for exploitation, 4) stakeholder responsiveness and integration, 5) process management for exploitation.

In terms of underlying mechanisms, the research revealed that sustainability practices can be driven by the top management support, by integration of sustainability into vision and strategy, as well as through establishing sustainability centred culture.

In terms of performance benefits, sustainability practices can be understood as implying strong positive effects. In this regard, the main premise of the deployment of sustainability practices is that organisations can improve organisational performance while at the same time reducing the negative environmental and social impact. In particular, sustainability exploitation practices tend to bring more benefits to financial, market, and quality performance than sustainability exploration practices, while exploration practices dominate in predicting the sustainability performance. Encouragingly, both exploration and exploitation practices significantly contribute to the innovation performance, which is also found to be a mediator of the relationship between sustainability practices and financial and market performance.

A conclusion drawn from contingency and institutional views, one that aims to bring more clarity into the context dependency of sustainability practices, is that organisations may develop different approaches for managing the interactions between corporate sustainability and organisational performance.

In summary, the findings of the thesis contribute to the understanding of how to build both sustainability exploration and sustainability exploitation practices within an organisation, which will contribute to the organisational performance.

References

Adler, P.S. and Kwon, S.W. (2002). Social capital: prospects for a new concept. Academy of Management Review, 27(1), 17–40.

Ahire, S.L., Golhar, D.Y., Waller, M.A. (1996). Development and validation of TQM implementation constructs. Decision Sciences, 27 (1), 23–56.

Ahire, S.L. and O'Shaughnessy, K.C. (1998). The role of top management commitment in quality management: an empirical analysis of the auto parts industry. International Journal of Quality Science, 3(1), 5-37.

Ammenberg, J. (2001). How do standardised environmental management systems affect environmental performance and business? Licentiate Thesis No.907, Department of Physics and Measurement Technology, Linköping Universitet, Linköping.

Antony, J.P. and Bhattacharyya, S. (2010). Measuring organizational performance and organizational excellence of SMEs – Part 1: a conceptual framework. Measuring Business Excellence, 14(2), 3-11.

Aragon-Correa, J.A. and Sharma, S.A. (2003). Contingent resource-based view of proactive corporate environmental strategy. The Academy of Management Review, 28(1), 71-88.

Aras, G., Aybars, A. and Kutlu, O. (2010). Managing corporate performance: Investigating the relationship between corporate social responsibility and financial performance in emerging markets. International Journal of Productivity and Performance Management, 59(3), 229-254.

Arendt, S. and Brettel, M. (2010). Understanding the influence of corporate social responsibility on corporate identity, image, and firm performance. Management Decision, 48(10), 1469-1492.

Asif, M., Searcy, C., Zutshi, A. and Fisscher, O.A.M. (2013). An integrated management systems approach to corporate social responsibility. Journal of Cleaner Production, 56, 7-17.

Asif, M., Searcy, C., Zutshi, A. and Ahmad, N. (2011). An integrated management systems approach to corporate sustainability. European Business Review, 23(4), 353-367.

Asif, M., de Bruijn, E.J., Fisscher, O.A.M. and Searcy, C. (2010). Meta-management of integration of management systems. The TQM Journal, 22(6), 570-582.

Ayuso, S., Rodríguez, M.Á., García-Castro, R. and Ángel Ariño, M. (2011). Does stakeholder engagement promote sustainable innovation orientation? Industrial Management & Data Systems, 111(9), 1399-1417.

Azapagic, A. (2003). Systems approach to corporate sustainability. A general management framework. Process Safety and Environmental Protection, 81(5), 303-316.

Bagozzi, R.P. and Phillips, L.W. (1982). Representing and Testing Organizational Theories: A Holistic Construal. Administrative Science Quarterly, 27(3), 459.

Baird, K., Hu, K.J. and Reeve, R. (2011). The relationships between organizational culture, total quality management practices and operational performance. International Journal of Operations & Production Management, 31(7), 789-814.

Banerjee, S.B., Iyer, E.S. and Kashyap, R.K. (2003). Corporate environmentalism: antecedents and influence of industry type. Journal of Marketing, 67, 106-122.

Banerjee, S.B. (2001). Managerial perceptions of corporate environmentalism: interpretations from industry and strategic implications for organizations. Journal of Management Studies, 38(4), 489-513.

Banker, R.D., Lee, S.Y., Potter, Gordon, P., Srinivasan, D. (2000). An empirical analysis of continuing improvements following the implementation of a performance-based compensation plan. Journal of Accounting and Economics, 30(3), 315–350.

Bansal, P. (2002). The corporate challenges of sustainable development. Academy of Management Executive, 16(2), 122-131.

Bansal, P. and Roth, K. (2000). Why Companies go Green. A Model of Ecological Responsiveness. Academy of Management Journal, 43(4), 717-736.

Barla, P. (2007). ISO 14001 certification and environmental performance in Quebec's pulp and paper industry. Journal of Environmental Economics and Management, 53, 291–306.

Baron, R.M. and Kenny, D.A. (1986). The moderator-mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. Journal of Personality and Social Psychology, 51(6), 1173-1182.

Baum, J.R. and Wally, S. (2003). Strategic decision speed and firm performance. Strategic Management Journal, 24, 1107- 1129.

Baumgartner, R.J. (2009). Organizational Culture and Leadership: Preconditions for the Development of a Sustainable Corporation. Sustainable Development, 17, 102–113.

Benn, S. and Dunphy, D. (2004). Human and ecological factors: a systematic approach to corporate sustainability. In Cheney, H., Katz, E. and Solomon F. (Eds.). Sustainability and Social Science: Round Table Proceedings, The Institute for Sustainable Futures, Sydney and CSIRO Minerals, Melbourne, July 2004, 95-124. Retrieved from: http://www.minerals.csiro.au/sd/pubs/

Blomgren, A. (2011). Does Corporate Social Responsibility Influence Profit Margins? A Case Study of Executive Perceptions. Corporate Social Responsibility and Environmental Management, 18, 263–274.

Bonilla, S.H., Almeida, C. M.V.B., Giannetti, B.F. and Huisingh, D. (2010). The roles of cleaner production in the sustainable development of modern societies: an introduction to this special issue. Journal of Cleaner Production, 18, 1–5.

Bonn, I. and Fisher, J. (2011). Sustainability: the missing ingredient in strategy. Journal of Business Strategy, 32(1), 5-14.

Bourne, M., Mills, J., Wilcox, M., Neely, A. and Platts, K. (2000). Designing, implementing and updating performance measurement systems. International Journal of Operations & Production Management, 20(7), 754-771.

Boys, K., Karapetrovic, S. and Wilcock, A. (2004). Is ISO 9004 a path to business excellence? Opinion of Canadian standards experts. International Journal of Quality &Reliability Management, 21(8), 841-860.

Brewerton, P. and Millward, L. (2001). Organizational Research Methods. London: Sage Publications.

Brik, A.B. (2006). Does sustainability oriented organizational learning shape corporate strategy in ways that have important implication for firms' survivals? In Integration and Communication: A Clear Route to Sustainability? 13th International Conference of the Greening of Industry Network Cardiff, Wales, UK July 2-5, 2006.

Brown, M.G. (2000), Winning Score: How to Design and Implement Organizational Scorecards, Productivity, Portland, OR.

Bryman, A. (1988). Quantity and quality in social research. London: Routledge.

Burke, L. and Logsdon, J.M. (1996). How corporate social responsibility pays off. Longe Range Planning, 29(4), 495–502.

Byggeth, S., Broman, G. and Robèrt, K. (2007). A Method for Sustainable Product Development based on a Modular System of Guiding Questions. Journal of Cleaner Production, 15(1), 1-11.

Callan, S.J. and Thomas, J.M. (2011). Executive Compensation, Corporate Social Responsibility, and Corporate Financial Performance: A Multi-Equation Framework. Corporate Social Responsibility and Environmental Management, 18, 332–351.

Campbell, J.L. (2007). Why Would Corporations Behave In Socially Responsible Ways? An Institutional Theory of Corporate Social Responsibility. Academy of Management Review, 32(3), 946-967.

Cohen, W.M., Levinthal, D.A. (1990). Absorptive capacity: A new perspective on learning and innovation. Administrative Science Quarterly, 35, 128-152.

Carayon, P., Schoepke, J., Hoonakker, P. L. T., Haims, M. C. and Brunette, M. (2006). Evaluating causes and consequences of turnover intention among IT workers: The development of a questionnaire survey. Behaviour & Information Technology, 25(5), 381-397.

Carpinetti, C.R., Buosi, T. and Gerólamo, M.C. (2003). Quality management and improvement: A framework and a business-process reference model. Business Process Management Journal, 9(4), 543-554.

Carroll, A.B. and Shabana, K.M. (2010). The Business Case for Corporate Social Responsibility: A Review of Concepts, Research and Practice. International Journal of Management Reviews, 12(1), 85-105.

Carroll, A.B. (1991). The pyramid of corporate social responsibility: toward the moral management of organizational stakeholders. Business Horizons, July–August, 39–48.

Castka, P. and Balzarova, M.A. (2008). Adoption of social responsibility through the expansion of existing management systems. Industrial Management & Data Systems, 108(3), 297-309.

Castka, P. and Balzarova, M.A. (2008a). The impact of ISO 9000 and ISO 14000 on standardisation of social responsibility—an inside perspective. International Journal of Production Economics, 113, 74–87.

Castka, P. and Balzarova, M.A. (2007). A critical look on quality through CSR lenses. Key challenges stemming from the development of ISO 26000. International Journal of Quality & Reliability Management, 24(7), pp. 738-752.

Cegarra-Navarro, J.G. and Martínez-Martínez, A. (2009). Linking corporate social responsibility with admiration through organizational outcomes. Social Responsibility Journal, 5(4), 499-511.

Chang, D.S. and Kuo, L.C.R. (2008). The Effects of Sustainable Development on Firms' Financial Performance – an Empirical Approach. Sustainable Development, 16, 365–380.

Chang, D.S., Kuo, L.C.R. and Chen, Y.T. (2013). Industrial changes in corporate sustainability performance e an empirical overview using data envelopment analysis. Journal of Cleaner Production, 56, 147-155.

Chen, H. and Wang, X. (2011). Corporate social responsibility and corporate financial performance in China: an empirical research from Chinese firms. Corporate Governance, 11(4), 361-370.

Cheng, J. and Kesner, I. (1997). Organizational slack and response to environmental shifts: The impact of resource allocation patterns. Journal of Management, 23(1), 1–18.

Chenhall, R.H. and Langfield-Smith, K. (2007). Multiple Perspectives of Performance Measures. European Management Journal, 25(4), 266–282.

Chenhall, R.H. (1996). Strategies of manufacturing flexibility, manufacturing performance measures and organizational performance: an empirical investigation. Integrated Manufacturing Systems, 7(5), 25–32.

Choi, T.Y. and Eboch, K. (1998). The TQM Paradox: Relations among TQM practices, plant performance, and customer satisfaction. Journal of Operations Management, 17, 59-75.

Clarkson, M.B.E. (1995). A stakeholder framework for analyzing and evaluating corporate social performance. Academy of Management Review, 20(1), 92–117.

Coltman, T., Devinney, T.M., Midgley, D.F. and Venaik, S. (2008). Formative versus reflective measurement models: Two applications of formative measurement. Journal of Business Research, 61, 1250-1262.

Cooper, R.G. (1996). Overhauling the new product process. Industrial Marketing Management, 25, 465–482.

Corbett, C.J. and Klassen, R.D. (2006). Extending the Horizons: Environmental Excellence as Key to Improving Operations. Manufacturing & Service Operations Management, 8(1), 5–22.

Cresti, E. (2009). Sustainability Management Control Systems. Towards a Socially Responsible Planning and Control Framework. In Oxford Business & Economics Conference (OBEC). Oxford: St. Hugh's College, Retreived 8.9.2011 from www.gcbe.us/2009_OBEC/data/Erika%20Cresti.doc

Crisóstomo, V.L., Freire, F.S. and Vasconcellos, F.C. (2011). Corporate social responsibility, firm value and financial performance in Brazil. Social Responsibility Journal, 7(2), 295-309.

Crotty, M. (2003): The Foundations of Social Research: Meaning and Perspectives in the Research Process, London: Sage Publications, 3rd edition, 10.

Crossan, M., Lane, H. and White, R. (1999). An Organizational Learning Framework: From Intuition To Institution. Academy of Management Review, 24(3), 522-537.

Curkovic, S., Sroufe, R. and Landeros, R. (2005). Measuring TQEM returns from the application of quality frameworks. Business Strategy and the Environment, 17(2), 93-106.

Curkovic, S., Vickery, S.K. and Droge, C. (2000). An empirical analysis of the competitive dimensions of quality performance in the automotive supply industry. International Journal of Operations & Production Management, 20(3), 386-403.

Daft, R.L. (2004). Organization Theory and Design. South Western College Publishing, Cincinnati.

Dahlgaard-Park, S.M. (2011). The quality movement: where are you going? Total Quality Management & Business Excellence, 22(5), 493-516.

Dahlgaard-Park, S.M. and Dahlgaard, J.J. (2010). Organizational learnability and Innovability: A system for assessing, diagnosing and Improving Innovations. International Journal of Quality and Service Sciences, 2(2), 153-174.

Dahlgaard-Park, S.M. (2009). Decoding the code of excellence – for achieving sustainable excellence. International Journal of Quality and Service Sciences, 1(1), 5-28.

Dahlgaard-Park, S.M. (2006). Consistency and transformation in the quality movement. The TQM Magazine, 18(3).

Dahlgaard, J.J., Kristensen, K. and Kanji, G.K. (1998). Fundamentals of Total Quality Management: Process Analysis and Improvement. Cheltenham: Nelson Thorne.

Dahlsrud, A. (2008). How corporate social responsibility is defined: an analysis of 37 definitions. Corporate Social Responsibility and Environmental Management, Vol. 15, November, 1-13.

Daily, B.F. and Huang, S. (2001). Achieving sustainability through attention to human resource factors in environmental management. International Journal of Operations & Production Management, 21(12), 1539-1552.

Danneels, E. (2002). The dynamics of product innovation and firm competencies. Strategic Management Journal, 23, 1095–2022.

Davidson, W.N. and Worrell, D.L. (1988). The impact of announcements of corporate illegalities on shareholder returns. Academy of Management Journal, 31, 195-200.

De Visser, M., de Weerd-Nederhof, P., Faems, D., Song, M., van Looy, B. and Visscher, K. (2010). Structural ambidexterity in NPD processes: A firm-level assessment of the impact of differentiated structures on innovation performance. Technovation, 30, 291–299.

Doppelt, B. (2003). Leading Change Toward Sustainability, Greenleaf, Sheffield.

Driessen, P.H. and Hillebrand, B. (2010). Integrating Multiple Stakeholder Issues in New Product Development: An Exploration. Journal of Product Innovation Management. Retrieved January 20, 2012, from http://www.ru.nl/fm/driessen

Dyllick, T. and Hockerts, K. (2002). Beyond the business case for corporate sustainability. Business Strategy and the Environment, 11(2), 30-141.

Donaldson, L. (2001). The Contingency Theory of Organisation. Sage, Thousand Oaks.

Dunphy, D., Griffiths, A. and Benn, S. (2003). Organisational Change for Corporate Sustainability, Routledge, London.

De Oliveira, O.J., Serra, J.R. and Salgado, M.H. (2010). Does ISO 14001 work in Brazil? Journal of Cleaner Production, 18, 1797-1806.

Dean, H.W. and Bowen, D.E. (1994). Management theory and total quality: improving research and practice through theory development. Academy of Management Review, 19(3), 392-418.

Delmas, M. (2001). Stakeholders and Competitive Advantage. Production and Operations Management, 10(3), 343-358.

Demirbag, M., Tatoglu, E., Tekinkus, M. and Zaim, S. (2006). An analysis of the relationship between TQM implementation and organizational performance: Evidence from Turkish SMEs. Journal of Manufacturing Technology Management, 17(6), 829-847 .

Diamantopoulos, A. (2005). The C-OAR-SE procedure for scale development in marketing: a comment. Intern. J. of Research in Marketing, 22(1),1–9.

Diamantopoulos, A. and Winklhofer, H.M. (2001). Index construction with formative indicators: an alternative to scale development. Journal of Marketing Research, 38, 269–277.

DiLiello, T.C. and Houghton, J.D. (2008). Creative potential and practiced creativity: identifying untapped creativity in organisations. Creativity and Innovation Management, 17(1), 37-46.

Doh, J.P. and Guay, T.R. (2006). Corporate Social Responsibility, Public Policy, and NGO Activism in Europe and the United States: An Institutional-Stakeholder Perspective. Journal of Management Studies, 43(1), 47-73.

Dow, D., Samson, D. and Ford, S. (1999). Exploding the myth: do all quality management practices contribute to superior quality performance?, Production and Operations Management, 8(1), 1-27.

Dray, S. (2008). On the number of principal components: A test of dimensionality based on measurements of similarity between matrices. Computational Statistics & Data Analysis, 52, 2228–2237.

Driver, M. (2006). Beyond the Stalemate of Economics Versus Ethics: Corporate Social Responsibility and the Discourse of the Organizational Self. Journal of Business Ethics, 66, 337–356.

Dudok van Heel, O., Elkington, J. and Fennel, S. (2001). Buried treasure: uncovering the business case for corporate sustainability, SustainAbility, London.

Easterby, M., Thorpe, R. and Lowe, A. (1991). The philosophy of research design. Management Research an Introduction, Sage, London

Easton, G. (2010). Critical realism in case study research. Industrial Marketing Management, 39, 118–128.

EC (2001), Green Paper – Promoting a European Framework for Corporate Social Responsibility, The European Commission (EC), Brussels.

Edwards, M.G. (2009). An integrative metatheory for organizational learning and sustainability in turbulent times. The Learning Organization, 16(3), 189-207.

Eiadat, Y., Kelly, A., Roche, F. and Eyadat, H. (2008). Green and competitive? An empirical test of the mediating role of environmental innovation strategy. Journal of World Business, 43, 131–145.

Elkington, J. (1999). Cannibals with Forks: The Triple Bottom Line of 21st Century Business, Capstone Publishing Ltd, Oxford.

Enquist, B, Johnsson, M and Skålén, P. (2006). Adoption of Corporate Social Responsibility - Incorporating a Stakeholder Perspective. Qualitative Research in Accounting & Management, 3 (3), 188 – 207

Epstein, M.J. and Rejc-Buhovac, A. (2010). Solving the sustainability implementation challenge. Organizational Dynamics, 39, 306—315.

Epstein, M.J. and Roy, M.J. (2001). Sustainability in Action: Identifying and Measuring the Key Performance Drivers. Long Range Planning, 34, 585–604.

Ernst, H. (2002). Success factors of new product development: a review of the empirical literature. International Journal of Management Reviews, 4(1), 1-40.

Espinosa, A. and Porter, T. (2011). Sustainability, complexity and learning: insights from complex systems approaches. The Learning Organization, 18(1), 54-72.

Fairfield, K.D., Harmon, J., Behson, S.J. (2011). Influences on the organizational implementation of sustainability: an integrative model. Organization Management Journal, 8, 4–2

Faber, N., Jorna, R. J. and van Engelen, J. (2005). The sustainability of "sustainability". Journal of Environmental Assessment Policy and Management, 7(1), 1-33.

Field, A. (2005). Discovering Statistics Using SPSS (Introducing Statistical Methods series). London: Sage Publications Ltd; Second Edition.

Figge, F. (2005). Value-based environmental management. From environmental shareholder value to environmental option value. Corporate Social Responsibility and Environmental Management, 12(1), 19–30.

Figge, F., Hahn, T., Schaltegger, S. and Wagner, M. (2002). The Sustainability Balanced Scorecard – Linking Sustainability Management to Business Strategy.

Floyd, S.W., Lane, P.J.. (2000). Strategizing throughout the organization: Managing role conflict in strategic renewal. Academy Management Review, 25 154–177.

Foster, D. and Jonker, J. (2003). Third generation quality management: the role of stakeholders in integrating business into society. Managerial Auditing Journal, 18, 323-328.

Franke, N. and Shah, S. (2003). How communities support innovative activities: an exploration of assistance and sharing among end-users. Research Policy, 32, 157-178.

Franco-Santos, M., Kennerley, M., Micheli, P., Martinez, V., Mason, S., Marr, B., Gray, D. and Neely, A. (2007). Towards a definition of a business performance measurement system. International Journal of Operations & Production Management, 27(8), 784-801.

Freeman, R.E. (1984), Strategic Management: A Stakeholder Approach, Pitman, Boston, MA.

Fuentes-Fuentes, M.M., Albacete-Sáez, C.A. Lloréns-Montes, F.J. (2004). The impact of environmental characteristics on TQM principles and organizational performance. Omega, 32, 425–442.

Garvare, R. and Johansson, P. (2010). Management for Sustainability - A stakeholder theory. Total Quality Management & Business Excellence, 21(7), 737-744.

Garvare, R. and Isaksson, R. (2001). Sustainable development: Extending the Scope of Business Excellence Models. Measuring Business Excellence, 5(3), 11-15.

Garvin, D.A. (1987). Competing on the eight dimensions of quality. Harvard Business Review, 65(6), 101-109.

Garvin, D. A. (1988). Managing Quality, the Strategic and Competitive Edge (The Free Press, New York).

Gates, S. (1999). Aligning strategic performance measures and results. New York, NY: The Conference Board.

Gentili, E., Stainer, A. and Stainer, L. (2003). Ethical dimensions of total quality management. International Journal of Business Performance Management, 5(2/3), 237-44.

Ghobadian, A. and Gallear, D. (2007). TQM and CSR nexus. International Journal of Quality & Reliability Management, 24(7), 704-721.

Gibson, C.B., Birkinshaw, J. (2004). The antecedents, consequences, and mediating role of organizational ambidexterity. Academy of Management Journal, 47, 209–226.

Gloet, M. (2006). Knowledge management and the links to HRM: Developing leadership and management capabilities to support sustainability. Management Research News, .29(7), 402-413.

Godfrey, P.C. and Hatch, N.W. (2007). Researching Corporate Social Responsibility: An Agenda for the 21st Century. Journal of Business Ethics, 70(1), 87–98.

Gomes, C.F., Yasin, M.M. and Lisboa, J.V. (2011). Performance measurement practices in manufacturing firms revisited. International Journal of Operations & Production Management, 31(1), 5-30.

Gond, J.P., El Akremi, A., Igalens, J. and Swaen, V. (2010). Corporate Social Responsibility Influence on Employees. Research Paper Series, Nottingham: Nottingham University, International Centre for Corporate Social Responsibility

González-Benito, J. and González-Benito, Ó. (2005). Environmental proactivity and business performance: an empirical analysis. Omega, 33(1), 1-15.

Greene, J.C. and Caracelli, V.J. (2003). Making paradigmatic sense of mixed methods practice. In A. Tashakkori and C. Teddlie (eds.), Handbook of mixed methods in social and behavioral research (pp. 91-110). Thousand Oaks, CA: Sage.

Guadamillas-Gómez F., Donate-Manzanares, M.J. and Škerlavaj, M. (2010). The integration of corporate social responsibility into the strategy of technology-intensive firms: a case study. Zb. rad. Ekon. fak. Rij., 28(1), 9-34.

Guba, E.G. and Lincoln, Y.S. (1994) Competing paradigms in qualitative research. In: Denzin, Norman K. and Lincoln, Yvonna S. (Eds.) Handbook of qualitative research. Thousand Oaks (CA): Sage Publications: 105-117.

Gupta, A.K., Smith, K.G. and Shalley, C.E. (2006). The interplay between exploration and exploitation. Academy of Management Journal, 49(4), 693-706.

Hahn, T. and Scheermesser, M. (2006). Approaches to Corporate Sustainability among German Companies. Corporate Social Responsibility and Environmental Management. 13, 150–165.

Hair, J.F.Jr., Black, W.C., Babin, B.J. and Anderson, R.E. (2010). Multivariate Data Analysis, 7th ed. London: Pearson Prentice Hall.

Hallstedt, S.I., Thompson, A.W. and Lindahl, P. (2013). Key elements for implementing a strategic sustainability perspective in the product innovation process. Journal of Cleaner Production, 51, 277-288.

Han, J.K., Kim, N. and Srivastava, R.K. (1998). Market orientation and organizational performance: is innovation the missing link? Journal of Marketing, 62(4), 30-45.

Han, M. and Celly, N. (2009). Strategic Ambidexterity and Performance in International New Ventures. Canadian Journal of Administrative Sciences, 25, 335–349.

Hardjono, T.W. and van Marrewijk, M. (2001). The Social Dimensions of Business Excellence. Corporate Environmental Strategy, 8(3), 223-233.

Harzing, A.W. and Sorge, A. (2003). The relative impact of country of origin and universal contingencies on internationalization strategies and corporate control in multinational enterprises: worldwide and European perspectives. Organization Studies, 24 (2), 187–214.

Hart, S. (2005). Innovation, creative destruction and sustainability. Research Technology Management, September-October, 21-7.

Hart, S.L. (1997). Beyond greening: strategies for a sustainable world. Harvard Business Review, Vol. 75, pp. 67-76.

Hart, S.L., (1995). A natural-resource-based view of the firm. Academy of Management Review, 20, 986-1014.

Harzing, A.W. and Noorderhaven, N.G. (2003). The "Country-of-Origin Effect" in Multinational Corporations: Sources, Mechanisms and Moderating Conditions. Management International Review, 43, 47–66.

Hazlett, S.A., McAdam, R: and Murray, L. (2007). From quality management to socially responsible organisations: the case for CSR. International Journal of Quality & Reliability Management, 24(7), 669-682.

Healy, M. and Perry, C. (2000). Comprehensive criteria to judge validity and reliability of qualitative research within the realism paradigm. Qualitative Market Research – An International Journal, vol.3, no.3, pp118-126.

He, Z.L. and Wong, P.K. (2004). Exploration vs. Exploitation: An Empirical Test of the Ambidexterity Hypothesis. Organization Science, 15(4), 481-494.

Henri, J.F. and Journeault, M. (2008). Environmental performance indicators: an empirical study of Canadian manufacturing firms. Journal of Environmental Management, 87, 165-76.

Herva, M., Franco, A., Carrasco, E.F. and Roca, E. (2011). Review of corporate environmental indicators. Journal of Cleaner Production, 19, 1687-1699.

Ho, L.A. (2011). Meditation, learning, organizational innovation and performance. Industrial Management & Data Systems, 111(1), 113-131.

Hockerts, K. (2003). Sustainability innovations, ecological and social entrepreneurship and the management of antagonistic assets. Ph.D. Thesis, University St. Gallen, Bamberg: Difo-Druck.

Hockerts, K. and Morsing, M. (2008). A Literature Review on Corporate Social Responsibility in the Innovation Process. Frederiksberg: Copenhagen Business School (CBS), Center for Corporate Social Responsibility, Retrieved December 15, 2011, from http://www.csrgov.dk/graphics/Samfundsansvar.dk/csrinnovation/Dokumenter/literaturereviewsep08full.pdf

Holliday, C. (2001). Sustainable growth, the DuPont way. Harvard Business Review, 79, 129-34.

Homburg, C., Workman Jr., J.P. and Krohmer, H. (1999). Marketing's influence within the firm. Journal of Marketing, 63 (2), 1–18.

Hubbard, G. (2009). Measuring Organizational Performance: Beyond the Triple Bottom Line. Business Strategy and the Environment, 18, 177–191.

Hussey, D.M. and Eagan, P.D. (2007). Using structural equation modeling to test environmental performance in small and medium-sized manufacturers: can SEM help SMEs? Journal of Cleaner Production, 15, 303-312.

Hutchins, J. and Sutherland, J.W. (2008). An exploration of measures of social sustainability and their application to supply chain decisions. Journal of Cleaner Production, 16, 1688–1698.

Isaksson, R. and Steimle, U. (2009). What does GRI-reporting tell us about corporate sustainability? The TQM Journal, 21(2), 168-181.

Isaksson, R. (2006). Total quality management for sustainable development Process based system models. Business Process Management Journal, Vol. 12 No. 5, pp. 632-645.

ISO (2010). ISO 26000: Guidance on Social Responsibility, Genève, 106 p.

Ittner, C.D., Larcker, D.F. and Randall,T. (2003). Performance implications of strategic performance measurement in financial services firms. Accounting, Organizations and Society, 28, 715–741.

Ivanović, M.D. and Majstrović, V.D. (2006). Model developed for the assessment of quality management level in manufacturing systems. The TQM Magazine, Vol.18 No.4, pp. 410-423.

Iraldo, F., Testa, F. and Frey, M. (2009). Is an environmental management system able to influence environmental and competitive performance? The case of the eco-management and audit scheme (EMAS) in the European union. Journal of Cleaner Production, 17, 1444–1452.

Jabbour, C.J.C. (2011). How green are HRM practices, organizational culture, learning and teamwork? A Brazilian study. Industrial and Commercial Training, 43(2), 98-105.

Jackson, S., Farndale, E. and Kakabadse, A. (2003). Executive development: meeting the needs of top teams and boards. Journal of Management Development, 22(3), 185-265.

Jacobs, B.W., Singhal, V.R. and Subramanian, R. (2010). An empirical investigation of environmental performance and the market value of the firm. Journal of Operations Management.

Jansen, J.J.P., Van Den Bosch, F.A.J. and Volberda, H.W. (2006). Exploratory Innovation, Exploitative Innovation, and Performance: Effects of Organizational Antecedents and Environmental Moderators. Management Science, 52(11), 1661–1674.

Jansen, J. (2005). Ambidextrous Organizations: A Multiple-Level Study of Absorptive Capacity, Exploratory and Exploitative Innovation and Performance. PhD Thesis. Rotterdam: Erasmus Research Institute of Management (ERIM), Erasmus University Rotterdam.

Jansen, J.J.P., Tempelaar, M.P., van den Bosch, F.A.J. and Volberda, H.W. (2009). Structural Differentiation and Ambidexterity: The Mediating Role of Integration Mechanisms. Organization Science, 20(4), 797–811.

Jasch, C. (2000). Environmental performance evaluation and indicators. Journal of Cleaner Production, 8, 79–88.

Johnson, H.T. and Kaplan, R.S. (1987) Relevance Lost: The Rise and fall of Management Accounting. Harvard Business School Press, Boston, Mass.

Karapetrovic, S. (2003). Musings on integrated management systems. Measuring Business Excellence, 7(1), 4-13.

Karapetrovic, S. (2002). Strategies for the integration of management systems and standards. TQM Magazine, 14(1), 61–7.

Karapetrovic, S. and Willborn, W. (1998), Integration of quality and environmental management systems. The TQM Magazine, 10(3), 204-13.

Kaplan, R.S. and Norton, D.P. (2001). The strategy-focused organization: how balanced scorecard companies thrive in the new business environment. Boston: Harvard Business School Press.

Kaplan, R.S., Norton, D.P. (1996). The Balanced Scorecard: Translating Strategy into Action. Harvard Business School, Boston.

Kaplan, R.S. (1983). Measuring manufacturing performance: a new challenge for managerial accounting research. Accounting Review, 58(4), 686-703.

Kaynak, H. (2003). The relationship between total quality management practices and their effects on firm performance. Journal of Operations Management, 21, 405–435.

Keeble, J., Topiol, S. and Berkeley, S. (2003). Using indicators to measure sustainability performance at a corporate and project level. Journal of Business Ethics, vol. 44, pp. 149-158.

Kerlinger, F. N. (1992). Foundations of behavioral research (3rd edn.). Orlando, FL: Harcourt Brace & Company.

Klefsjö, B., Bergquist, B. and Garvare, R. (2008). Quality management and business excellence, customers and stakeholders. Do we agree on what we are talking about, and does it matter? The TQM Journal, 20(2), pp. 120-129.

Kleindorfer, P., Singhal, K. and Van Wassenhove, L. (2005). Sustainable Operations Management. Production and Operations Management, 14(4), 482-492.

Klewitz, J. and Hansen, E.G. (2013). Sustainability-oriented innovation of SMEs: a systematic review, Journal of Cleaner Production, In Press, doi: 10.1016/j.jclepro.2013.07.017

Kok, P., van der Wiele, T., McKenna, R. and Brown, A. (2001). A Corporate Social Responsibility Audit within a Quality Management Framework. Journal of Business Ethics, 31, 285–297.

Kotler, P. (1984). Marketing Management Analysis, Planning and Control, Prentice-Hall, Englewood Cliffs, NJ.

Koufteros, X.A. (1999). Testing a model of pull production: a paradigm for manufacturing research using structural equation modelling. Journal of Operations Management, 17, 467-488.

Kumar, R. (2005). Research Methodology: A Step-by-Step Guide for Beginners. 2nd ed. London: Sage Publications Ltd.

Kurucz, E., Colbert, B. and Wheeler, D. (2008). The business case for corporate social responsibility. In Crane, A.,McWilliams, A., Matten, D., Moon, J. and Siegel, D.(eds), The Oxford Handbook of Corporate Social Responsibility . Oxford: Oxford University Press, pp. 83–112.

Lakhal, L., Pasin, F. and Limam, M. (2006). Quality management practices and their impact on performance. International Journal of Quality & Reliability Management, 23(6), 625-646.

Lamberton, G. (2005). Sustainability accounting – A brief history and conceptual framework. Accounting Forum, 29(1), 7–26.

Leavengood, S., Anderson, T.R. and Daim, T.U. (2013). Exploring linkage of quality management to innovation. Total Quality Management & Business Excellence, DOI:10.1080/14783363.2012.738492

Lau, R.S.M., Zhao, X. and Xiao, M. (2004). Assessing quality management in China with MBNQA criteria. International Journal of Quality & Reliability Management, 21(7), 699-713.

Lawrence, G. (1997). Indicators for sustainable development. In: Dodds, F. (Ed.), The Way Forward: Beyond Agenda 21. London: Earthscan, pp.179–189.

Lee, K.H. and Saen, R.F: (2011). Measuring corporate sustainability management: A data envelopment analysis approach. International Journal of Production Economics, In Press.

Lee, K.H. (2009). Why and how to adopt green management into business organizations? The case study of Korean SMEs in manufacturing industry. Management Decision, 47(7), pp. 1101-1121.

Levin, D. M. (1988). The Opening of Vision: Nihilism and the Postmodern Situation. New York: Chapman & Hall Inc.

Li, M., Simerly, R.L. (1998). The Moderating Effect of Environmental Dynamism on the Ownership and Performance Relationship. Strategic Management Journal 19(2), 169–79.

Lin, C.H., Yang, H.L. and Liou, D.Y. (2009). The impact of corporate social responsibility on financial performance: Evidence from business in Taiwan. Technology in Society, 31, 56–63.

Lin, C.Y. and Kuo, T.H. (2007). The mediate effect of learning and knowledge on organizational performance. Industrial Management & Data Systems, 107(7), 1066-1083.

Lingteringen, E. and Zadek, S. (2005). The Future of Corporate Responsibility Codes, Standards and Frameworks. Executive Briefing. GRI and AccountAbility, 4.

Link, S. and Naveh, E. (2006). Standardization and discretion: does the environmental standard ISO 14001 lead to performance benefits? IEEE Transactions on Engineering Management, Vol. 53 No. 4, pp. 508-19.

Linnenluecke, M.K. and Griffiths, A. (2010). Corporate sustainability and organizational culture. Journal of World Business, 45, 357–366.

Lohman, C. Fortuin, L. and Wouters, M. (2004). Designing a performance measurement system: a case study. European Journal of Operational Research, 156, 267-286.

Lozano, R. (2012). Towards better embedding sustainability into companies' systems: an analysis of voluntary corporate initiatives. Journal of Cleaner Production, 25, 14-26.

Lozano, R. (2011). Creativity and Organizational Learning as Means to Foster Sustainability. Sustainable Development. . doi: 10.1002/sd.540

Luzon, M.D.M. and Pasola, J.V. (2011). Ambidexterity and total quality management: towards a research agenda. Management Decision, 49(6), 927-947.

McAdam, R. and Leonard, D. (2003). Corporate social responsibility in a total quality management context: opportunities for sustainable growth. Corporate Governance, 3(4), 36-45.

Maletič, M., Maletič, D. and Gomišček, B. (2012). An organizational sustainability performance measurement framework. In: Rodrigues, R., Rui, A., Straupe, I. and Panagopoulos, T. (Eds.). Recent researches in environment, energy systems and sustainability: proceedings of the 8th WSEAS International conference on Energy, Environment, Ecosystems and Sustainable development (EEESD '12), Faro, Portugal, May 2-4, 2012, pp. 220-225.

Maletič, M., Maletič, D. and Gomišček, B. (2012a). The development of a sustainability performance measurement framework using exploratory factor analysis. In: Ferjan, M., Kljajić Borštnar, M., Marič, M. and Pucihar, A. (Eds.). Proceedings of the 31st International Conference on Organizational Science Development. March 21st-23rd, 2012, Portorož, pp. 653-662.

Maletic, M., Maletic, D. and Gomiscek, B. (2011). Can sustainable quality management contribute to the organizational performance? African Journal of Business Management, 5(9), 3723-3734.

March, J.G. (1991). Exploration and exploitation in organizational learning. Organization Science, 2(1), 71–87.

Margolis, J.D. and Walsh, J.P. (2003). Misery loves companies: Rethinking social initiatives by business. Administrative Science Quarterly, 48(2), 268–305.

Martensen, A., Dahlgaard, J.J., Park-Dahlgaard, S.M. and Grønholdt, L. (2007). Measuring and diagnosing innovation excellence – simple contra advanced approaches: a Danish study. Measuring Business Excellence, 11(4), 51-65.

Matten, D. and Moon, J. (2008). "Implicit" and "Explicit" CSR: A Conceptual Framework for a Comparative Understanding of Corporate Social Responsibility. Academy of Management Review, 33(2), 404–424.

Maxwell, D. and van der Vorst, R. (2003). Developing sustainable products and services. Journal of Cleaner Production, 11, 883–895.

McAdam, R. and Leonard, D. (2003). Corporate social responsibility in a total quality management context: opportunities for sustainable growth. Corporate Governance, 3(4), pp. 36-45.

McWilliams, A., Siegel, D.S. and Wright, P.M. (2006). Introduction – corporate social responsibility: strategic implications. Journal of Management Studies, 26(1), 1-18.

McWilliams, A. and Siegel, D. (2000). Corporate Social Responsibility and Financial Performance: Correlation or Misspecification? Strategic Management Journal, 21, 603–10.

Melnyk, S.A., Sroufe, R.P. and Calantone, R. (2003). Assessing the impact of environmental management systems on corporate and environmental performance. Journal of Operations Management, 21, 329-51.

Michelon, G., Boesso, G. and Kumar, K. (2012). Examining the Link between Strategic Corporate Social Responsibility and Company Performance: An Analysis of the Best Corporate Citizens. Corporate Social Responsibility and Environmental Management. DOI: 10.1002/csr.1278

Miller, T. R., T. D. Baird, C. M. Littlefield, G. Kofinas, F. Chapin, III, and C. L. Redman. (2008). Epistemological pluralism: reorganizing interdisciplinary research. Ecology and Society, 13(2), 46.

Mittal, R.K., Sinha, N. and Singh, A. (2008). An analysis of linkage between economic value added and corporate social responsibility. Management Decision, 46(9), 1437-1443.

Moir, L. (2001). What do we mean by corporate social responsibility? Corporate Governance, 1(2), 16-22.

Molnar, E. and Mulville, P. (2003). Sustainability-focused organizational learning: recent experiences and new challenges. Journal of Environmental Planning and Management, 46(2), 167-79.

Molteni, M. (2006). The social-competitive innovation pyramid. Corporate Governance, 6(4), 516-526.

Moneva, J.M. and Ortas, E. (2010). Corporate environmental and financial performance: a multivariate approach. Industrial Management & Data Systems, 110(2), 193-210.

Morgan, R.E. and Strong, C.A. (2003). Business performance and dimensions of strategic orientation. Journal of Business Research, 56, 163– 176.

Moutinho, L.A.M. and Hutcheson, G.D. (2011). The SAGE dictionary of quantitative management research. Carlifornia: SAGE Publications, Inc.

Muller, M. and Siebenhuner, B. (2007). Policy Instruments for sustainability oriented Organization Learning. Business Strategy and the Environment, 16, 232-245.

Nawrocka, D. and Parker, T. (2009). Finding the connection: environmental management systems and environmental performance. Journal of Cleaner Production, 17, 601–607.

Neely, A. (2005). The evolution of performance measurement research: Developments in the last decade and a research agenda for the next. International Journal of Operations & Production Management, 25(12), 1264-1277.

Neely, A.D., Gregory, M. and Platts, K. (2005). Performance measurement system design A literature review and research agenda. International Journal of Operations & Production Management, 25(12), 1228-1263.

Neely, A. and Adams, C. (2000). Perspectives on performance: the performance prism. In Bourne, M. (Ed.), Handbook of Performance Measurement, Gee Publishing, London.

Neely, A, Adams, C. and Crowe, P. (2001). The performance prism in practice. Measuring Business Excellence, 5(2), 6-11.

Neely, A.D. (1994). Performance measurement system design – third phase. Performance Measurement System Design Workbook.

Nunnally, J.C. and Bernstein, I.H. (1994). Psychometric theory (3rd ed.). New York: McGraw-Hill.

Oakland, J.S. (1989). Total Quality Management. Heinemann Professional Publishing Ltd., Oxford.

O'Leary-Kelly, S.W. and Vokurka, R.J. (1998). The empirical assessment of construct validity. Journal of Operations Management, 16, 387-405.

Oral, M. (2009). Green Supply Chain Management: Ontological and Epistemological Issues,? Faculty of Management, Sabanci University, Istanbul, Turkey and CIRRELT-2009-57, Interuniversity Research Center on Enterprise Networks, Logistics, and Transportation, Montreal, Canada.

O'Reilly, C.A. and Tushman, M.L. (2004). The ambidextrous organization. Harvard Business Review, 82(4), 74–82.

Orlitzky, M., Schmidt, F.L. and Rynes, S.L. (2003). Corporate Social and Financial Performance: A Meta-Analysis. Organization Studies, 24(3), 403.

Ortiz Martinez, E. and Crowther, D. (2005). Corporate social responsibility creates an environment for business success. In Crowther, D. and Jatana, R. (Eds), Representations of Social Responsibility, Vol. 1, Hyderabad, ICFAI University Press, Andhra Pradesh, pp. 125-40.

Otley, D. (1999). Performance management: A framework for management control systems research. Management Accounting Research, 10 (4), 363–382.

Palme, U. and Tillman, A.M. (2008). Sustainable development indicators: How are they used in Swedish water utilities? Journal of Cleaner Production, 16, 1346 – 1357.

Pedersen, E.R. and Neergaard, P. (2009). What matters to managers? The whats, whys, and hows of corporate social responsibility in a multinational corporation. Management Decision, 47(8), 1261-1280.

Pennings, J.M.E. and Smidts, A. (2000). Assessing the Construct Validity of Risk Attitude. Management Science, 46(19), 1337-1348.

Perotto, E., Canziani, R., Marchesi, R. and Butelli, P. (2008). Environmental performance, indicators and measurement uncertainty in EMS context: a case study. Journal of Cleaner Production, 16, 517-530.

Perry, C., Riege, A. and Brown, L. (1999). Realism role among scientific paradigms in marketing research. Irish Marketing Review, 12(2), 16-23.

Poksinska, B., Dahlgaard, J.J. and Eklund, J.A.E. (2003). Implementing ISO 14000 in Sweden: motives, benefits and comparisons with ISO9000. International Journal of Quality & Reliability Management, 20(5), 585-606.

Polonsky, M.J. and Ottman, J.A. (1998). Stakeholders' Contribution to the Green New Product Development Process, Journal of Marketing Management, 14 (6).

Porter, M.E. and Kramer, M.R. (2006). Strategy & society. The link between competitive advantage and corporate social responsibility. Harvard Business Review, 84(12), 78-92.

Porter, M.E. and van der Linde, C. (1995). Green and Competitive: Ending the Stalemate. Harvard Business Review, Reprint 95507.

Porter, M.E. (1980). Competitive strategy. New York (NY): Free Press.

Post, J.E., Preston, L.E. and Sachs, S. (2002). Managing the extended enterprise: the new stakeholder view. California Management Review, 45(1), 6–28.

Prajogo, D.I., Tang, A.K.Y. and Lai, K.H. (2012). Do firms get what they want from ISO 14001 adoption?: an Australian perspective. Journal of Cleaner Production, 33, 117-126.

Prajogo, D.I. and Sohal, A.S. (2003). The relationship between TQM practices, quality performance, and innovation performance An empirical examination. International Journal of Quality & Reliability Management, 20(8), 901-918.

Prajogo, D.I. and Sohal, A.S. (2004a). The multidimensionality of TQM practices in determining quality and innovation performance — an empirical examination. Technovation 24, 443–453.

Prajogo, D.I. and Sohal, A.S. (2004). The Sustainability and Evolution of Quality Improvement Programmes-an Australian Case Study. Total Quality Management, 15(2), 205-220.

Prajogo, D.I. and Sohal, A.S. (2006). The relationship between organization strategy, total quality management (TQM), and organization performance—the mediating role of TQM. European Journal of Operational Research 168, 35–50.

Prajogo, D. and McDermott, C.M. (2011). The Effect of Exploration and Exploitation Innovation on Performance in SMEs. In A, Sohal (ed.). The 10th International Research Conference on Quality, Innovation and Knowledge Management. Aligning Innovation in Developed and Emerging Economies, 15 – 18 February 2011, Kuala Lumpur, Malaysia.

Preacher, K.J. and Hayes, A.F. (2008). Asymptotic and resampling strategies for assessing and comparing indirect effects in multiple mediator models. Behavior Research Methods, 40 (3), 879-891.

Preacher, K.J. and Hayes, A.F. (2004). SPSS and SAS procedures for estimating indirect effects in simple mediation models. Behavior Research Methods, Instruments, & Computers, 36 (4), 717-731.

Pun, K.F., Hui, I.K., Lau, H.C.W., Law, H.W. and Lewis, W.G. (2002). Development of an EMS planning framework for environmental management practices. International Journal of Quality & Reliability Management, 19(6), 688-709.

Pun, K.F., Fung, Y.K. and Wong, F.Y. (1998). Identification of critical factors for total quality environmental management. Proceedings of the 3rd Annual International Conference on Industrial Engineering Theories, Application and Practice. Hong Kong, December, PN114, pp. 1-9.

Pujari, D. (2006). Eco-innovation and new product development: understanding the influences on market performance. Technovation, 26, 76–85.

Pujari, D., Wright, G. and Peattie, K. (2003). Green and competitive Influences on environmental new product development performance. Journal of Business Research, 56, 657– 671.

Pujari D., Peattie K. and Wright, G. (2004). Organizational antecedents of environmental responsiveness in industrial new product development. Industrial Marketing Management, 33, 381–391.

Putnam, R.D. (2000). Bowling alone: the collapse and revival of American community. New York: Simon and Schuster.

Quairel-Lanoizelée, F. (2011). Are competition and corporate social responsibility compatible? The myth of sustainable competitive advantage. Society and Business Review, 6(1), 77-98.

Qu, R. (2009). The impact of market orientation and corporate social responsibility on firm performance. Evidence from China. Asia Pacific Journal of Marketing and Logistics, 21(4), 570-582.

Radziwill, N.M. (2009). Organizational Sustainability in the Context of ISO 26000. Association or Technology Management and Applied Engineering (ATMAE), Louisville KY, Nov. 7, Retrieved July 7, 2012, from
http://nicoleradziwill.com/portfolio/Radz_ATMAE09_ISO26000.doc

Rao, P. and Holt, D. (2006). Do green supply chains lead to competitiveness and economic performance? International Journal of Operations & Production Management, 25(9), 898-916.

Robson, C. (1993). Real World Research: A Resource for Social Scientist and Practitioner Researcher. Oxford, Blackwell.

Robson, A. and Mitchell, E. (2007). CSR performance: driven by TQM implementation, size, sector? International Journal of Quality and Reliability Management, 24, 722-737.

Rocha, M., Searcy, C. and Karapetrovic, S. (2007). Integrating Sustainable Development into Existing Management Systems.Total Quality Management & Business Excellence, 18(1–2), 83–92.

Sainio, L.M., Ritala, P. and Hurmelinna-Laukkanen, P. (2012). Constituents of radical innovation—exploring the role of strategic orientations and market uncertainty. Technovation, 32, 591–599.

Samson, D. and Terziovski, M. (1999). The relationship between total quality management practices and operational performance. Journal of Operations Management, 17, 393–409.

Sarantakos, S. (2005). Social Research. (3rded.). Melbourne: Macmillan Education.

Sarkis, J. (2003). A strategic decision framework for green supply chain management. Journal of Cleaner Production, 11, 397–409.

Sarkis, J. (2001). Manufacturing's role in corporate environmental sustainability: Concerns for the new millennium. International Journal of Operations & Production Management, 21(5/6), 666-686.

Sarkis, J. and Cordeiro, J.J. (2001). An empirical evaluation of environmental efficiencies and firm performance: Pollution prevention versus end-of-pipe practice. European Journal of Operational Research, 135, 102-113.

Sarkis, J. (1999), How Green is the Supply Chain? Practice and Research, Clark University, Worcester, MA.

Sayer, A. (2000). Realism and social science. London: SAGE Publications Ltd.

Schaltegger, S. and Synnestvedt, T. (2002). The link between ‘‘green’’ and economic success: Environmental management as the crucial trigger between environmental and economic performance. Journal of Environmental Management, 65(4), 339–346.

Schaltegger, S., Herzig, C., Kleiber, O. and Müller J. (2002). Sustainability Management in Business Enterprises. Concepts and Instruments for Sustainable Organisation Development. Bundesumweltministerium (BMU) und Bundesverband der Deutschen Industrie (BDI): Berlin.

Schaltegger, S. and Wagner, M. (2006). Managing and measuring the business case for sustainability: Capturing the relationship between sustainability performance,

business competitiveness and economic performance. In Managing the business case for sustainability: The integration of social, environmental and economic performance, (eds) S. Schaltegger and M. Wagner, pp. 1–27. Greenleaf, Sheffield.

Schaltegger, S. and Wagner, M (2006a). Managing sustainability performance measurement and reporting in an integrated manner. Sustainability accounting as the link between the sustainability balanced scorecard and sustainability reporting. In S. Schaltegger, & M. Bennett, & R. Burritt (Eds.), Sustainability accounting and reporting, Dordrecht: Springer, 681-697, 2006.

Scherrer, Y., Daub, C-H, and Burger, P. (2007). Editorial: Towards Integrating Sustainability into Business Strategy. Business Strategy and the Environment, 16, 459-460.

Schroeder, R.G., Linderman, K. and Zhang, D. (2005). Evolution of Quality: First Fifty Issues of Production and Operations Management. Production and Operations Management, 14(4), 468 – 481.

Schultz, F. and Wehmeier, S. (2010). Institutionalization of corporate social responsibility within corporate communications: Combining institutional, sensemaking and communication perspectives. Corporate Communications: An International Journal, 15(1), 9-2.

Schwartz, B. and Tilling, K. (2009). 'ISO-lating' Corporate Social Responsibility in the Organizational Context: A Dissenting Interpretation of ISO 26000. Corporate Social Responsibility and Environmental Management, 16, 289–299.

Sebhatu, S.P. and Enquist, B. (2007). ISO 14001 as a driving force for sustainable development and value creation. The TQM Magazine, 19(5), 468-482.

Searcy, C. (2011). Updating corporate sustainability performance measurement systems. Measuring Business Excellence, 15(2), 44 – 56.

Searcy, C., Karapetrovic, S. and McCartney, D. (2008). Application of a systems approach to sustainable development performance measurement. International Journal of Productivity and Performance Management, 57(2), 182-197.

Searcy, C., McCartney, D. and Karapetrovic, S. (2007). Sustainable development indicators for the transmission system of an electric utility. Corporate Social Responsibility and Environmental Management, 14(3), 135-151.

Segars, A.H. and Grover, V. (1993). Re-examining perceived ease of use and usefulness: A confirmatory factor analysis. MIS quarterly, 17(4), 517-525.

Senge, P. and Carstedt, G. (2001). Innovating our way to the next industrial revolution. MIT Sloan Management Review, 42(2), 24-38.

Seuring, S. and Gold, S. (2013). Sustainability management beyond corporate boundaries: from stakeholders to performance. Journal of Cleaner Production, http://dx.doi.org/10.1016/j.jclepro.2012.11.033

Sharma, S. (2003). Research in corporate sustainability: What really matters? In S. Sharma & M. Starik (Eds.), Research in corporate sustainability: The evolving theory and practice of organizations in the natural environment. (pp. 1–29). Cheltenham: Edward Elgar.

Sharp, Z. and Zaidman, N. (2010). Strategization of CSR. Journal of Business Ethics, 93, 51–71.

Shen, X.X., Tan, K.C. and Xie, M. (2000). An integrated approach to innovative product development using Kano's model and QFD, European Journal of Innovation Management, 3(2): 91-99.

Siebenhuner, B. and Anold, M. (2007). Organizational learning to manage sustainable Development. Business strategy and the Environment, 16, 339-353.

Sila, I. (2007). Examining the effects of contextual factors on TQM and performance through the lens of organizational theories: An empirical study. Journal of Operations Management, 25, 83–109.

Sila, I. and Ebrahimpour, M. (2005). Critical linkages among TQM factors and business results. International Journal of Operations & Production Management, 25(11), 1123-55.

Sink, D.S. and Tuttle, T.C. (1989). Planning and Measurement in your Organisation of the Future, ch. 5, Industrial Engineering and Management Press, Norcross, GA, pp. 170-84.

Singh, P.J. and Smith, A. (2006). An empirically validated quality management measurement instrument. Benchmarking: An International Journal, 13(4), 493-522.

Smith, P.A.C. and Sharicz, C. (2011). The shift needed for sustainability. The Learning Organization, 18(1), 73-86.

Snider, J., Hill, R.P. and Martin, D. (2003). Corporate social responsibility in the 21st century: a view from the world's most successful firms. Journal of Business Ethics, 48(2), 175-87.

Sousa, R. and Voss, C.A. (2002). Quality management re-visited: a reflective review and agenda for future research. Journal of Operations Management, 20(1), 91-109.

Sousa, R. and Voss, C.A. (2001). Quality Management: Universal or Context Dependent? Production and Operations Management, 10(4), 383–404.

Stone, L.J., 2006. Limitations of cleaner production programmes as organisational change agents. I. Achieving commitment and on-going improvement. Journal of Cleaner Production 14(1), 1-14.

Sumanth, D. (1994), Productivity Engineering and Management, McGraw-Hill, New York, NY.

Škrinjar, R., Bosilj-Vukšić, V. and Indihar-Štemberger, M. (2008). The impact of business process orientation on financial and non-financial performance. Business Process Management Journal, 14(5), 738-754.

Tangen S (2003). An overview of frequently used performance measures. Work Study. 52(7): 347-54.

Tangen, S. (2005). Demystifying productivity and performance. International Journal of Productivity and Performance Management, 54(1), 34-46.

Tarí, J.J. and Molina-Azorín, J.F. (2010). Integration of quality management and environmental management systems. Similarities and the role of the EFQM model. The TQM Journal, 22(6), 687-701.

Teece, D.J. (2007). Explicating Dynamic Capabilities: The Nature and Microfoundations of (Sustainable) Enterprise Performance, Strategic Management Journal, 28, 1319–1350.

Tegarden Linda F., Sarason Y., Childers J.S. and Hatfield D.E. (2005). The Engagement of employees in the strategy process and firm performance: The role of strategic goals and environment. Journal of Business Strategies, 22(2), 75-99.

UNGC (2010). United nations Global Compact annual Review 2010. Retrieved 18 July 2012 from: http://www.unglobalcompact.org/docs/news_events/ 8.1/UN_Global_Compact_Annual_Review_2010.pdf

Uyar A (2009). Quality performance measurement practices in manufacturing companies. The TQM J. 21(1):72-86.

Velazquez, L.E., Esquer, J. and Munguía, N.E. (2011). Sustainable learning organizations. The Learning Organization, 18(1), 36-44.

Vance, S. (1975). Are social responsible corporations good investment risks? Management Review, 64, 18-24.

Van Kleef, J.A.G. and Roome, N.J. (2007). Developing capabilities and competence for sustainable business management as innovation: a research agenda. Journal of Cleaner Production, 15, 38-51.

Van Marrewijk, M. and Were, M. (2003). Multiple levels of corporate sustainability. Journal of Business Ethics, 44, 107-19.

Van Marrewijk, M. (2003). Concepts and definitions of corporate sustainability: Between Agency and Communion, Journal of Business Ethics, 44, 95-105.

Veleva, V., Hart, M., Greiner, T. and Crumbley, C. (2001). Indicators of sustainable production. Journal of Cleaner Production, 9, 447–452.

Veleva, V. and Ellenbecker, M. (2000). A proposal for measuring business sustainability: addressing shortcomings inexisting frameworks. Greener Management International, vol. 31, pp. 101–119.

Venkatraman, N. (1989). Strategic orientation of business enterprises: the construct, dimensionality and measurement. Management Science, 35 (8), 942–962.

Venkatraman, N. and Ramanujam, V. (1986). Measurement of business performance in strategy research: a comparison of approaches. Academy of Management Review, 11(4), 801–14.

Vera, D., Crossan, M. (2004). Strategic leadership and organizational learning. Academy of Management Review, 29, 222–240.

Vogel, D. (2005). The Market for Virtue: The Potential and Limits of Corporate Social Responsibility, Brookings Institution Press, Washington, DC.

Waage, S.A. (2005). Re-considering product design: a practical ‘‘road-map’’ for integration of sustainability issues. Journal of Cleaner Production, 15, 638-649.

Wagner, M. (2010). The role of corporate sustainability performance for economic performance: A firm-level analysis of moderation effects. Ecological Economics, 69, 1553–1560.

Wagner, M. (2008). Links between sustainability-related innovation and sustainability management. SFB 649 Discussion Paper 2008-046. Berlin: Technische Universität München. Retrieved, April 13 from http://sfb649.wiwi.hu-berlin.de/papers/pdf/SFB649DP2008-046.pdf

Wagner, M. (2005). Sustainability and competitive advantage: empirical evidence on the influence of strategic choices between environmental management approaches. Environmental Quality Management, 14, 31-48.

Wagner, M. and Schaltegger, S. (2004). The Effect of Corporate Environmental Strategy Choice and Environmental Performance on Competitiveness and Economic Performance: An Empirical Study of EU Manufacturing. European Management Journal, 22(5), 557–572.

Wagner, M., Van Phu, N., Azomahou, T. and Wehrmeyer, W. (2002). The relationship between the environmental and economic performance of firms. An empirical analysis of the European paper industry. Corporate Social Responsibility and Environmental Management, 9, 133–146.

Wang, C. L. and Ahmed, P. K. (2002). Learning through quality and innovation. Managerial Auditing Journal, 17(7), 417- 423.

Wankel, C. and Stoner, J.A.F: (Eds.) (2009). Management Education for Global Sustainability. Information Age Publishing.

Weber, M. (2008). The business case for corporate social responsibility: A company-level measurement approach for CSR. European Management Journal, 26, 247–261.

Werther, W.B. and Jrand Chandler, D. (2006). Strategic Corporate Social Responsibility. Sage, Thous and Oaks, CA.

Wiesner, R., Chadee, D. and Best, P. (2011). Insight into sustainability change management from an organizational learning perspective: Learning from SME sustainability champions, In: Sohal, Amrik (ed.), Aligning innovation in

developed and emerging economies, conference proceedings, [Malaysia: Monash University].

Wilden, R. Gudergan, S. and Lings, I. (2007). Dynamic Capabilties and Organisational Performance. Accessed April 26 2011 from http://epress.lib.uts.edu.au/research/bitstream/handle/10453/3131/2006010085.pdf?sequence=1

Williams, C.A., and Aguilera, R.V. (2008). Corporate Responsibility in a Comparative Perspective. In D.S. Siegel, J. Moon, D. Matten, A. McWilliams and A. Crane (Eds.). The Oxford Handbook of Corporate Social Responsibility (p. 452-472). Oxford: Oxford UP, 2008.

Wilson, M. (2003). Corporate sustainability: What is it and where does it come from? Ivey Business Journal, March/April, 1-5.

Wu, S.J., Zhang, D. and Schroeder, R.G. (2011). Customization of quality practices: the impact of quality culture. International Journal of Quality & Reliability Management, 28(3), 263 – 279.

Yamin, S., Mavond, F., Gunasekaran, A. and Sarros, J.C. (1997). A study of competitive strategy, organisational innovation and organisational performance among Australian manufacturing companies. Int. J. Production Economics, 52, 161-172.

Yin, R.K. (2003). Case study research: design and methods, third ed., Sage Publications, Inc., Thousand Oaks.

Zadek, S., Sabapathy, J., Dossing, H. and Swift, T. (2003), Responsible competitiveness. Corporate Responsibility Clusters in Action, AccountAbility/The Copenhagen Center, London.

Zairi, M. and Peters, J. (2002). The impact of social responsibility on business performance. Managerial Auditing Journal, 17(4), 174-8.

Zahra, S.A. (1996). Technology strategy and financial performance: Examining the moderating role of the firm's competitive environment. Journal of Business Venturing, 11(3), 189–219.

Zeng, S.X., Tam, C.M., Tam, V.W.Y., Deng, Z.M. (2005). Towards implementation of ISO 14001 environmental management systems in selected industries in China. Journal of Cleaner Production, 13, 645-656.

Zhang, D, Linderman, K. and Schroeder, R.G. (2012). The moderating role of contextual factors on quality management practices. Journal of Operations Management, 30(1-2), 12-23.

Zhao, F. (2004). Siemens' Business Excellence model and Sustainable Development. Measuring Business Excellence, 8(2), 55-64.

Zink, K.J., Steimle, U. and Fischer, K. (2008). Human Factors, Business Excellence and Corporate Sustainability: Differing Perspectives, Joint Objectives. In Zink,

K.J. (Ed.). Corporate Sustainability as a Challenge for Comprehensive Management. New York: Springer Verlag, pp. 3-18.

Zink, K.J. (2005). Stakeholder Orientation and Corporate Social Responsibility as a Precondition for Sustainability. Total Quality Management & Business Excellence, 16(8), 1041-1052.

Zink, K.J. (2007). From total quality management to corporate sustainability based on a stakeholder management. Journal of Management History, 13(4), pp. 394-401.

Zu, X. (2009). Infrastructure and core quality management practices: how do they affect quality? International Journal of Quality & Reliability Management, 26(2), 129-149.

Zwetsloot, G. (2003). From management systems to corporate social responsibility. Journal of Business Ethics, 44, 201-7.

PRILOGA A / APPENDIX A

Razširjeni povzetek v slovenskem jeziku (extended abstract in Slovene language)

1 UVOD

1.1 Opredelitev raziskovalnega problema

V literaturi s področja managementa kakovosti je moč zaznati pripisovanje pomembnosti vključevanju vidikov trajnostnega razvoja (npr. okoljski in družbeni vidiki) v različne dimenzije managementa kakovosti (Zhao, 2004; Isaksson, 2006; Asif et al., 2011). Glede na ugotovitve empiričnih raziskav (Zairi in Peters, 2002; Wagner, 2010; Orlitzky et al., 2003), ki potrjujejo, da sistematično in celovito obvladovanje vidikov trajnostnega razvoja organizacije vodi v večjo učinkovitost in uspešnost (ang. *organisational performance*), je slednje še toliko pomembnejše. Nadalje lahko ugotovimo, da je vpeljava pristopa trajnostnega razvoja v organizacijo precejšen izziv, še zlasti v kontekstu vsakodnevnega poslovanja organizacije (Scherrer et al., 2007). Slednje je skladno z ugotovitvami avtorjev (Hahn in Scheermesser, 2006), ki trdita, da se kljub splošno izraženi visoki stopnji pomembnosti trajnostnega razvoja, uvajanje in nivo izvajanja dejavnosti trajnostnega razvoja, zelo razlikuje med posameznimi organizacijami.

Izhodišče pričujoče doktorske disertacije predstavlja področje managementa kakovosti kot osnovne tematike ter področje trajnostnega razvoja organizacije, ki predstavlja osrednji del raziskave. V nadaljevanju bodo predstavljene nekatere skupne točke managementa kakovosti in trajnostnega razvoja organizacije, zlasti z namenom razumevanja kompleksnosti predmeta raziskovanja.

V začetni fazi razvoja področja managementa kakovosti, je bila kakovost v pretežni meri usmerjena v izdelke in storitve ter z njimi povezano učinkovitostjo (Garvin, 1988). Tradicionalno pojmovanje kakovosti in njen razvoj od kontrole kakovosti, zagotavljanja in managementa celovite kakovosti (Dahlgaard et al., 1998) nam na prvi pogled ne pove veliko o povezavi med managementom kakovosti in trajnostnim razvojem organizacije, ki se na primer lahko izražajo preko zunanjih pričakovanj zainteresiranih udeležencev, v obliki skrbi za okolje in družbo. Iz literature (Boys et al., 2005) lahko ugotovimo, da se je tradicionalno pojmovanje kakovosti razširilo preko klasične interpretacije, ki je usmerjena doseganje pričakovanj kupca, ter tako

vključuje različne vidike povezane z učinkovitostjo in uspešnostjo organizacije, kot so: okoljski vidiki, vidiki varnosti in zdravja pri delu, finančni vidiki in družbeni vidiki. Koncept osredotočenosti na kupca se torej razvija v doseganje zahtev in pričakovanj širše skupine kupcev, vključujoč zainteresirane udeležence, katerih pričakovanja so povezana z različnimi elementi trajnostnega razvoja (npr. z družbenimi vidiki poslovanja organizacije in z okoljsko učinkovitostjo organizacije) (Garvare, 2001; Isaksson, 2006).

Tako imenovana teorija udeleženih strani (*ang. stakeholder theory*) priznava pomembnost ne le deležnikov (*ang. shareholders*), temveč tudi ostalih interesnih skupin kot so: kupci, dobavitelji, zaposleni in širše družbene skupnosti (Freeman, 1984). Doseganje zahtev in pričakovanj različnih interesnih udeležencev je ključnega pomena za dolgoročno uspešnost organizacije (Post et al., 2002). V kontekstu te teorije lahko opredelimo izhodiščno stičišče področja managementa kakovosti in trajnostnega razvoja organizacije. Kot navaja avtor (Klefsjö et al., 2008) se razsežnost področja managementa kakovosti močno poveča, v kolikor razširimo ozko usmerjeno pojmovanje kakovosti in vključimo vse interesne udeležence na katere vpliva proizvod skozi celoten življenjski ciklus. Pravzaprav je v zadnjem času vse več raziskav usmerjenih v proučevanje sinergij med managementom kakovosti in trajnostnim razvojem organizacije, še posebej z vidika modelov poslovne odličnosti (Asif et al., 2011; Zink, 2007; McAdam in Leonard, 2003; Garvare in Isaksson, 2001). Večina raziskav temelji na teoretičnih oz. konceptualnih okvirih, bistveno manj pa je empiričnih raziskav. Na primer, avtorji v empirični raziskavi opredeljujejo pojem trajnostno usmerjenega managementa kakovosti (*ang. sustainable quality management*), zlasti z vidika sistematičnega vključevanja okoljskih in širših družbenih vidikov v karakteristike kakovosti proizvoda.

Avtorji z različnimi metodološkimi pristopi raziskujejo vpliv dejavnosti trajnostnega razvoja na učinkovitost in uspešnost organizacije ter prepoznavajo dodano vrednost (Sharma, 2003), vendar je v literaturi še vedno zelo malo empiričnih raziskav, ki bi proučevale kako naj organizacija načrtuje in razvija dejavnosti trajnostnega razvoja, da bi v odvisnosti od različnih kontekstualnih dejavnikov dosegla čim boljše rezultate.

Raziskovalni problem, ki je izpostavljen v pričujoči disertaciji, je iz teoretskega vidika umeščen v interdisciplinarno področje managementa kakovosti in trajnostnega razvoja organizacije. Potreba po celovitem razumevanju vpliva trajnostnega razvoja na učinkovitost in uspešnost organizacije in razvoju sistematične teorije na tem področju (Dyllik in Hockerts, 2002) je ena izmed temeljnih vodil te disertacije. V disertaciji se osredotočamo predvsem na proučevanje vpliva trajnostnega razvoja organizacije na

učinkovitost in uspešnost organizacije, ob hkratnem proučevanju vloge tako različnih kontingenčnih (npr. konkurenčnost, negotovost, ipd.) kakor tudi institucionalnih (država izvora organizacije) dejavnikov. Posebno mesto v raziskavi ima operacionalizacija konstrukta trajnostnega razvoja organizacije, ki temelji na dveh v literaturi (Zhang et al., 2012; Jansen et al., 2009) uveljavljenih konceptov (*exploitation* in *exploration*) in managementu kakovosti kot osnovnem konceptualnem teoretičnem okviru.

Glede na zgoraj navedene ugotovitve, predpostavljamo, da obstajajo vidiki, ki zahtevajo nadaljnje analize in raziskave. V disertaciji se oredotočamo se predvsem na proučevanje vpliva t.i. trajnostnega managementa kakovosti (ang. *sustainable quality management*) na učinkovitost in uspešnost organizacije.

1.2 Namen, cilji in raziskovalna vprašanja doktorske disertacije

Na podlagi teoretičnih izhodišč, je bil oblikovan namen raziskave, ki se osredotoča na razumevanje vpliva dejavnosti trajnostnega razvoja na učinkovitost in uspešnost organizacije. Kakor je bilo že predhodno izpostavljeno, je slednja tematika izjemnega pomena v sodobni ekonomiji, kjer trajnostni razvoj organizacije postaja prevladujoče vprašanje (Dyllik in Hockerts, 2002; Epstein in Roy, 2001).

Predhodna literatura s področja varstva okolja (ang. *corporate environmentalism*) in s področja prispevka organizacij k trajnostnemu razvoju (ang. *corporate sustainability*) v glavnem temelji na proučevanju povezav med učinkovitostjo dejavnosti trajnostnega razvoja organizacije (predvsem okoljsko in družbeno učinkovitostjo) na eni strani in ekonomsko uspešnostjo na drugi strani (Moneva in Ortas, 2010; Wagner et al., 2010; Chang in Kuo, 2008; Rao in Holt, 2006; Melnyk et al., 2003; Orlitzky et al., 2003).

Pretekle raziskave so se že osredotočale tudi na trajnostni razvoj organizacije z vidika managementa kakovosti, vendar le na konceptualnem nivoju. Obe disciplini sta torej prispevali k dragocenim spoznanjem, vsekakor pa se kaže pomanjkanje empiričnih raziskav, ki bi proučevale vplive na uspešnost in učinkovitost organizacije.

Dosedanje empirične raziskave s področja trajnostnega razvoja organizacije so tudi zelo raznolike z vidika operacionalizacije konstrukta trajnostnega razvoja organizacije. Iz literature je razvidno, da ni enotnega in sistematičnega merjenja konstrukta, ki ga obravnava pričujoča doktorska disertacija. S težnjo po razumevanju vpliva tako učinkovitosti kakor tudi inovativnosti na področju trajnostnega razvoja na učinkovitost in uspešnost organizacije, smo v disertaciji kot izhodišče privzeli dva

koncepta (*exploitation* in *exploration*), ki sta v literaturi s področja strateškega managementa, inovacijskega managementa in organizacijskega učenja (Jansen et al., 2009; He in Wong, 2004; Floyd in Lane 2000; March, 1991) pritegnila veliko pozornosti, še posebej v povezavi z različnimi segmenti učinkovitosti in uspešnosti organizacije. V zadnjem času sta bila oba koncepta aplicirana tudi v empirični raziskavi s področja managementa kakovosti (Zhang et al., 2012), kar še dodatno prispeva k utemeljitvi uporabljenega raziskovalnega pristopa v tej disertaciji.

Čeprav je v zgoraj navedeni literaturi konceptualizacija in operacionalizacija konstruktov (*exploitation* in *exploration*) dobro opredeljena, še vedno ni obstoječih empiričnih raziskav, ki bi opredelile latentne in opazovane spremenljivke teh dveh konceptov na področju merjenja konstrukta trajnostnega razvoja organizacije. Prihodnje raziskave morajo proučiti tudi povezave med dejavnostmi trajnostnega razvoja organizacije (v luči prej omenjenih konceptov) in učinkovitostjo in uspešnostjo organizacije. Temeljni namen doktorske disertacije je torej poglobiti razumevanje na tem interdisciplinarnem področju in proučiti:

vpliv dejavnosti trajnostnega razvoja organizacije z vidika konceptov "exploitation" in "exploration" na učinkovitost in uspešnost organizacije.

Namen te disertacije je z empirično raziskavo zapolniti vrzel v literaturi s področja trajnostnega razvoja organizacije. V skladu z opredeljenim namenom so glavni cilji doktorske disertacije naslednji:

- proučitev teoretičnih izhodišč managementa kakovosti, trajnostnega razvoja organizacije ter učinkovitosti in uspešnosti organizacije,
- proučitev povezav med managementom kakovosti in trajnostnim razvojem organizacije,
- na osnovi pregleda literature razviti konceptualni okvir,
- testiranje predlaganega konceptualnega modela na osnovi empirične raziskave,
- izvedba mednarodne raziskave o vplivih dejavnosti trajnostnega razvoja organizacije na učinkovitost in uspešnost organizacije.

Na podlagi dosedanjih raziskav in pregleda literature smo dejavnosti trajnostnega razvoja organizacije razdelili na dve glavni področji: (1) sustainability exploitation practices, and (2) sustainability exploration practices. Pričakujemo, da bo pričujoča raziskava prispevala k boljšem razumevanju problematike povečevanja učinkovitosti in uspešnosti organizacije ob sočasnem upoštevanju različnih segmentov trajnostnega razvoja organizacije.

Izhajajoč iz dosedanjih ugotovitev, smo oblikovali naslednje raziskovalno vprašanje, ki predstavlja temeljno vodilo doktorske disertacije:

> ***kako izvajanje dejavnosti trajnostnega razvoja organizacije z vidika konceptov "exploitation" in "exploration", vpliva na učinkovitost in uspešnost organizacije.***

2 OPREDELITEV RAZISKOVALNEGA PRISTOPA

Potem, ko smo identificirali namen in cilji disertacije, smo morali izbrati ustrezno raziskovalno strategijo. Z namenom odgovoriti na raziskovalno vprašanje in doseči cilje disertacije, v okviru raziskave predlagamo kvantitativni pristop. Do neke mere pričujoča raziskava vključuje tudi kvalitativni pristop, vendar le v začetni fazi oblikovanja raziskovalnega instrumenta in merskih (opazovanih) spremenljivk. Na splošno kvantitativne podatke uporabimo pri proučevanju povezav med posameznimi konstrukti, hkrati pa kvantitativni pristop tudi prispeva k boljši posplošitvi rezultatov (Bryman, 1988). V okviru načrtovanja in izvedbe raziskave smo upoštevali številne korake raziskovalnega procesa (Brewerton and Millward, 2001), ki so v nadaljevanju tega poglavja podrobneje opisani. S tem, ko raziskava v pretežni meri temelji na kvantitativnim pristopu, je osrednji del namenjen testiranju teorije, ki je opredeljena s konceptualnim okvirom in oblikovanimi hipotezami.

Raziskovalni proces in pripadajoči cilji, so v strnjeni obliki podani v tabeli 1.

Tabela 1. Raziskovalni cilji in koraki raziskovalnega procesa

Raziskovalni cilj	Raziskovalni proces	Raziskovalna metoda
Proučiti teoretična izhodišča managementa kakovosti, trajnostnega razvoja organizacije ter učinkovitosti in uspešnosti organizacije	Korak I	Pregled literature (teoretični okvir doktorske disertacije)
Proučiti povezave med managementom kakovosti in trajnostnim razvojem organizacije.	Korak I	Pregled literature (kritični pregled dosedanjih raziskav)
Razviti konceptualni okvir (model).	Korak II	Pregled literature (konceptualni okvir)
Empirično testiranje predlaganih hipotez.	Korak III	Empirična raziskava (anketna raziskava)

Izvesti mednarodno raziskavo o vplivih dejavnosti trajnostnega razvoja organizacije na učinkovitost in uspešnost organizacije.	Korak III	Empirična raziskava (anketna raziskava)

Namen prvega koraka raziskovalnega procesa je predvsem proučitev teoretičnih izhodišč, identifikacija vrzeli na obravnavanem znanstvenem področju, opredelitev namena, ciljev in raziskovalnega vprašanja. Naslednja faza raziskovalnega procesa temelji na pregledu literature, v kontekstu identifikacije in interpretacije raziskav, ki so v skladu z namenom disertacije in raziskovalnim vprašanjem ter posledično s predmetom proučevanja. Podrobnejši pregled literature je bil izveden z namenom proučiti in pojasniti povezave med managementom kakovosti in učinkovitostjo ter uspešnostjo ter prav tako med trajnostnim razvojem in učinkovitostjo ter uspešnostjo organizacije.

Literatura, ki je bila obravnavana v prvi fazi raziskovalnega procesa, je omogočila vzpostavitev izhodišč za oblikovanje konceptualnega okvira. Rezultat te faze je torej razvoj konceptualnega okvira ter s tem odkritja ključnih področij znotraj literature trajnostnega razvoja organizacije. Z namenom prispevanja k širšemu raziskovalnemu področju, raziskovalni model, poleg povezave med trajnostnim razvojem organizacije in učinkovitostjo ter uspešnostjo organizacije, vključuje tudi različne situacijske (kontingenčne) dejavnike. V sklopu drugega koraka je bila izvedena kritična analiza obstoječih raziskav iz različnih znanstvenih disciplin, katere namen je bil konceptualizacija dveh različnih razsežnosti dejavnosti trajnostnega razvoja organizacije: (1) dejavnosti usmerjene v odkrivanje novih znanj in inovativnost na področju trajnostnega razvoja organizacije (ang. *sustainability exploration practices*), (2) dejavnosti usmerjene v izkoriščanje obstoječih znanj in povečevanje učinkovitosti, zlasti v kontekstu doseganja pričakovanj in zahtev različnih zainteresiranih udeležencev (ang. *sustainability exploitation practices*). Pripadajoča poglavja disertacije, ki so v skladu z raziskovalnim ciljem v drugem koraku, so torej namenjena predstavitvi hipotez, ki opredeljujejo povezave med latentnimi spremenljivkami obravnavanega raziskovalnega modela. V tem delu nas je predvsem zanimalo kakšne povezave lahko med neodvisnimi in odvisnimi spremenljivkami pričakujemo na podlagi preteklih teoretičnih in empiričnih dognanj.

Po opredelitvi konstruktov in povezav smo pozornost namenili naslednjemu vprašanju: kako identificirane konstrukte operacionalizirati in izmeriti. Na podlagi pregleda literature in dosegljivih empiričnih raziskav, je bila oblikovana testna verzija anketnega vprašalnika. Upoštevajoč vsebinsko veljavnost opazovanih merskih

spremenljivk in posledično postavk v anketnem vprašalniku, je bil vprašalnik ocenjen in testiran, tako s strani akademskega osebja, kakor tudi s strani strokovnjakov iz gospodarstva.

Zadnja, tretja faza raziskovalnega procesa vključuje izvedbo empirične raziskave, zlasti z namenom proučevanja vpliva izvajanja dejavnosti trajnostnega razvoja organizacije na učinkovitost in uspešnost organizacije. V okviru tega koraka smo testirali vse hipoteze, ki so bile predhodno predlagane na osnovi konceptualnega okvira. Raziskovalne metode, ki smo jih pri tem uporabili, so bile izbrane na podlagi raziskovalnega instrumenta ter na osnovi predpostavljenih hipotez. S pomočjo eksplanatorne (ang. *EFA*) in konfirmatorne (ang. *CFA*) faktorske analize smo najprej preverili veljavnost raziskovalnega instrumenta, in sicer konvergentno in diskriminantno veljavnost. V sklopu testiranja hipotez, smo uporabili različne statistične metode, kot so na primer: regresijska analiza, enojna analiza variance (ANOVA), multivariatna analiza variance (MANOVA), razvrščanje enot v skupine (ang. *cluster analysis*) in mediacija (ang. *mediation analysis*).

3 PREGLED IN DISKUSIJA GLAVNIH UGOTOVITEV RAZISKAVE

Kot je bilo že predhodno omenjeno, je bila raziskava usmerjena v proučevanje vpliva izvajanja dejavnosti trajnostnega razvoja organizacije na učinkovitost in uspešnost organizacije. V okviru raziskave nismo le proučevali povezav med trajnostnim razvojem organizacije (z vidika konceptov »exploitation« in »exploratoion«) in učinkovitostjo in uspešnostjo organizacije, temveč tudi vpliv izbranih kontekstualnih dejavnikov na te povezave.

V skladu z zgoraj navedenim, je bil namen raziskave prispevati k razumevanju konceptualizacije in operacionalizacije dejavnosti trajnostnega razvoja organizacije in vplivu le-teh na učinkovitost in uspešnost organizacije. V tem kontekstu, raziskava v okviru te doktorske disertacije, predstavlja prvo empirično raziskavo glede proučevanja možnosti aplikacije konceptov »exploitation« in »exploratoion« na področje trajnostnega razvoja organizacije. V nadaljevanju podajamo povzetek glavnih ugotovitev empirične raziskave.

3.1 Neposredni učinki dejavnikov vpeljave dejavnosti trajnostnega razvoja organizacije

Ugotovitve raziskave nakazujejo pozitiven vpliv dejavnikov implementacije trajnostnega razvoja na t. i. *sustainability exploitation practices* (SEI) in *sustainability exploration practices* (SER). Hipoteze in pripadajoče empirične ugotovitve so podane v tabeli 2.

Tabela 2: Glavne ugotovitve glede dejavnikov implementacije trajnostnega razvoja in dejavnostmi trajnostnega razvoja organizacije

		Neposredni učinek	Rezultat hipoteze
H1a	Dejavniki implementacije trajnostnega razvoja imajo pozitiven vpliv na SER.	.820**	Sprejeta
H1b	Dejavniki implementacije trajnostnega razvoja imajo pozitiven vpliv na SEI.	.691**	Sprejeta

**P < 0.01

Glede na organizacijsko podporo, rezultati raziskave izkazujejo podporo naslednjim dejavnikom trajnostnega razvoja: *podpora in zavezanost vodstva, vključitev vidikov trajnostnega razvoja v vizijo in strategijo in vzpostavitev organizacijske kulture usmerjene na trajnostni razvoj organizacije*. Rezultati raziskave so skladni s dosedanjimi raziskavami (Fairfield et al., 2011), ki izpostavljajo pomembnost podpore vodstva in strateške usmerjenosti pri doseganju ciljev trajnostnega razvoja organizacije. Številni drugi avtorji (van Marrewijk in Werre, 2003; Baumgartner, 2009) poudarjajo pomembnost organizacijske kulture pri doseganju višje stopnje trajnostnega razvoja organizacije.

3.2 Neposredni učinki dejavnosti trajnostnega razvoja organizacije (SEI in SER) na učinkovitost in uspešnost organizacije

Rezultati raziskave vsekakor podpirajo ugotovitve dosedanjih raziskav, ki navajajo, da organizacija lahko pridobi številne prednosti in koristi z aktivnim vključevanjem vidikov trajnostnega razvoja v poslovanje organizacije (Wagner, 2010; Orlitzky et al., 2003). V nadaljevanju podajamo nekaj pomembnejših ugotovitev.

Rezultati raziskave potrjujejo hipotezo, da dejavnosti trajnostnega razvoja organizacije, tako z vidika »*exploitation*« kakor tudi z vidika »*exploration*«, pozitivno

vplivajo na učinkovitost in uspešnost organizacije. Glavni hipotezi in pripadajoče empirične ugotovitve so podane v tabeli 3.

Tabela 3: Glavne ugotovitve neposrednih učinkov dejavnosti trajnostnega razvoja organizacije na učinkovitost in uspešnost organizacije

		Neposredni učinek	Rezultat hipoteze
H2a	Dejavnosti trajnostnega razvoja organizacije (SER) imajo pozitiven vpliv na učinkovitost in uspešnost organizacije.	0.331**	Sprejeta
H2b	Dejavnosti trajnostnega razvoja organizacije (SEI) imajo pozitiven vpliv na učinkovitost in uspešnost organizacije.	0.246**	Sprejeta

**P < 0.01

V raziskavi nismo proučevali le vpliva dejavnosti trajnostnega razvoja na konstrukt učinkovitosti in uspešnosti organizacije, temveč tudi vplive na različne dimenzije konstrukta učinkovitosti in uspešnosti organizacije (finančna in tržna uspešnost, učinkovitost na področju kakovosti, učinkovitost na področju inovativnosti, okoljska učinkovitost, družbena učinkovitost).

Natančneje, ugotovitve raziskave kažejo, da imajo dejavnosti trajnostnega razvoja organizacije (SEI) večji vpliv na finančno in tržno uspešnost ($\beta = 0{,}224$; $p < 0{,}05$) ter učinkovitost na področju kakovosti ($\beta = 0{,}293$; $p < 0{,}01$), v primerjavi s SER ($\beta = 0{,}107$; $p > 0{,}05$ in $\beta = 0{,}155$; $p > 0{,}05$). Po drugi strani imajo dejavnosti trajnostnega razvoja organizacije (SER) v primerjavi s SEI, večji pozitiven vpliv na: učinkovitost na področju inovativnosti ($\beta = 0{,}252$; $p < 0{,}01$), okoljsko učinkovitost ($\beta = 0{,}325$; $p < 0{,}01$) in družbeno učinkovitost ($\beta = 0{,}362$; $p < 0{,}01$).

Empirične ugotovitve, ki izhajajo iz regresijske analize kažejo na to, da je le majhen delež variance (8,7%) v odvisni spremenljivki (finančna in tržna uspešnost) pojasnjen z dejavnostmi trajnostnega razvoja. Slednje lahko interpretiramo v kontekstu, da obstajajo tudi drugi dejavniki, ki niso zajeti v raziskovalnem modelu in ravno tako vplivajo na finančno in tržno uspešnost. Naslednja možna razlaga se navezuje na argument, da se učinki trajnostnega razvoja, ki rezultirajo v finančni in tržni uspešnosti, v večji meri pokažejo na dolgi rok (Hart, 1995). Glede na teoretične in empirične raziskave na področju trajnostnega razvoja organizacije (Weber, 2008; Schaltegger in Synnestvedt, 2002), je povezava med učinkovitostjo na področju trajnostnega razvoja organizacije (npr. okoljsko in družbeno učinkovitostjo) in

ekonomsko učinkovitostjo, v precejšnji meri odvisna tudi od strateške usmerjenosti organizacije. Rezultati raziskave in spoznanja iz literature, vsekakor spodbujajo organizacije k vključevanju vidikov trajnostnega razvoja organizacije v strategijo organizacije, saj se bodo pridobljene prednosti ohranjale na dolgi rok in konec koncev rezultirale v ekonomsko uspešnost (ekonomska bilanca poslovanja; ang. *economic bottom line*). Dosedanje raziskave (de Oliveira et al., 2010; Iraldo et al., 2009) potrjujejo, da organizacije z vključevanjem trajnostnih vidikov v različne segmente poslovanja, pridobijo številne prednosti, vključujoč zmanjšanje stroškov, produktivnost in inovativnost.

Kot je bilo pričakovano na osnovi teoretičnih izhodišč in konceptualnega modela, imajo dejavnosti trajnostnega razvoja organizacije (SEI) pozitiven vpliv na učinkovitost na področju kakovosti. Slednje je potrebno interpretirati v luči osredotočenosti na različne vidike zainteresiranih udeležencev (ang. *stakeholders*), ki nakazujejo, da sodobna paradigma kakovosti vključuje razširjeno področje vpliva in odgovornosti (podrobnejša razprava se nahaja v drugem in tretjem poglavju pričujoče doktorske disertacije). Z vidika kakovosti torej lahko trdimo, da mora organizacija ustvarjati vrednost za več kot le eno skupino zainteresiranih udeležencev. Pravzaprav je organizacija soočena z različnimi skupinami primarnih in sekundarnih zainteresiranih udeležencev (Garvare in Johansson, 2010). Ne glede na raznolikost pričakovanj in zahtev zainteresiranih udeležencev, predhodne raziskave (Delmas, 2001) potrjujejo močan pozitiven vpliv vključevanja zunanjih zainteresiranih udeležencev (kupci, deležniki, lokalna skupnost, dobavitelji, regulativne agencije) na konkurenčno prednost organizacije.

Naslednja pomembna ugotovitev, ki izhaja iz raziskave, kaže na to, da sta oba konstrukta dejavnosti trajnostnega razvoja (SEI in SER) pozitivno in statistično značilno povezana z učinkovitostjo na področju inovativnosti. Dobljeni rezultati so skladni z vidikom, da so s trajnostnim razvojem povezane aktivnosti, gonilo inovativnosti (Hockerts, 2003). Ugotovitve raziskave so še toliko pomembnejše, saj smo ugotovili statistično značilen vpliv inovativnosti na finančno in tržno uspešnost organizacije ($\beta = 0{,}417$; $p < 0{,}01$). Navedene rezultate lahko podkrepimo še z rezultati večkratne analize mediacije (ang. multiple mediation analysis). S pomočjo te metode smo ugotovili, da je *učinkovitost na področju inovativnosti* mediator na povezavi med dejavnostmi trajnostnega razvoja organizacije (na primeru SEI in SER) in finančno in tržno uspešnostjo. Rezultati analize mediacije se skladajo z interpretacijo, da večja angažiranost na področju trajnostnega razvoja organizacije, vodi k večji učinkovitosti na področju inovativnosti, kar pa posledično vodi k večji finančni in tržni uspešnosti.

Predhodno smo že omenili, da rezultati raziskave potrjujejo, da imajo dejavnosti trajnostnega razvoja organizacije (SER) pozitiven vpliv na družbeno učinkovitost. Dosedanje raziskave ravno tako navajajo, da dejavnosti trajnostnega razvoja organizacije, zlasti aktivnosti družbene odgovornosti (ang. *Corporate social responsibility - CSR*), pozitivno vplivajo na delovno zadovoljstvo ter negativno na absentizem in fluktuacijo. Ugotovitve lahko interpretiramo tudi z vidika močne identifikacije zaposlenih z organizacijo, ki jo zaznavajo kot družbeno odgovorno (Gond et al., 2010).

Prispevek dejavnosti trajnostnega razvoja organizacije k učinkovitosti in uspešnosti organizacije dodatno osvetljujejo tudi rezultati multivariatne analize variance (MANOVA). Rezultati kažejo na to, da obstaja statistično značilna razlika med aritmetičnimi sredinami pod-konstruktov učinkovitosti in uspešnosti organizacije (finančna in tržna uspešnost, učinkovitost na področju kakovosti, učinkovitost na področju inovativnosti, okoljska učinkovitost, družbena učinkovitost) z ozirom na nizko ali visoko stopnjo izvajanja dejavnosti trajnostnega razvoja organizacije. MANOVA torej potrjuje statistično značilen vpliv neodvisne spremenljivke (dejavnosti trajnostnega razvoja organizacije, ki so bile klasificirane z vidika dveh kategorij: (1) nizka stopnja izvajanja SEI/SER) in (2) visoka stopnja izvajanja SEI/SER)) na vse odvisne spremenljivke (pod-konstrukti učinkovitosti in uspešnosti organizacije). V kontekstu rezultatov MANOVE lahko podamo interpretacijo, da organizacija z osredotočenjem na SER in SEI, lahko doseže višjo stopnjo učinkovitosti in uspešnosti organizacije.

3.3 Vloga kontingenčnih (situacijskih) dejavnikov pri doseganju učinkovitosti in uspešnosti organizacije

Literatura s področja organizacijskih znanosti (Sila, 2007) je posvetila veliko pozornosti proučevanju kontingenčnih (situacijskih) dejavnikov, zlasti z vidika učinkovitosti in uspešnosti organizacije. Na primer, raziskave s področja managementa kakovosti (Sousa in Voss, 2001) so izpostavile dvom o univerzalni veljavnosti celotnega nabora dejavnosti managementa kakovosti. Nedavna raziskava (Zhang et al., 2012) potrjuje odvisnost dveh konceptov dejavnosti managementa kakovosti (ang. *quality exploitation* in *quality exploration*) od različnih kontingenčnih dejavnikov.

Pričujoča doktorska raziskava v kontekstu zgoraj navedenih teoretičnih izhodišč in empiričnih spoznanj, prispeva k razumevanju te tematike na področju trajnostnega razvoja organizacije. Raziskava v okviru te disertacije se osredotoča na proučevanja

vpliva dejavnosti trajnostnega razvoja organizacije (SEI in SER) na učinkovitost in uspešnost organizacije, ob upoštevanju različnih nivojev naslednjih kontingenčnih dejavnikov: *konkurenčnost, negotovost* in *dolgoročna usmerjenost organizacije*. V ta namen smo analizirali vrsto regresijskih modelov, ki so podali podrobnejši vpogled glede vloge teh dejavnikov pri doseganju učinkovitosti in uspešnosti organizacije, tako z vidika izvajanja SEI, kakor tudi z vidika izvajanja SER.

Glede na visoko stopnjo konkurenčnosti, rezultati kažejo, da dejavnosti, ki so osredotočene na učinkovitost in izpolnjevanje zahtev različnih zainteresiranih udeležencev (SEI), doprinašajo več prednosti v kontekstu učinkovitosti na področju kakovosti in okoljske učinkovitosti v primerjavi s SER. V nasprotju, dejavnosti SER prevladujejo pri učinkih inovativnosti in družbene učinkovitosti, v kontekstu visoke stopnje konkurenčnosti. Kar zadeva nizko stopnjo konkurenčnosti, so dejavnosti SER najmočnejši napovedovalec (prediktor) učinkovitosti in uspešnosti organizacije. Izjema je učinkovitost na področju kakovosti, pri čemer imajo očitno SEI najpomembnejšo vlogo.

V kolikor upoštevamo učinkovitost in uspešnost organizacije kot sestavljenega (agregiranega) konstrukta (na podlagi povprečnih vrednosti posameznih pripadajočih indikatorjev), lahko ugotovimo, da obe vrsti dejavnosti trajnostnega razvoja organizacije, SEI in SER, pozitivno vplivata na učinkovitost in uspešnost organizacije v primeru visoke stopnje konkurenčnosti. Ugotovitve lahko interpretiramo v luči argumenta, da morajo organizacije, ki delujejo v okolju visoke konkurenčnosti, vključiti inovativnost v strategijo organizacije, predvsem v smislu doseganja konkurenčnih prednosti kot sta kakovost in dobičkonosnost (Leavengood et al., 2013). Organizacije morajo biti torej sposobne dosegati inovacijski potencial in hkrati ohranjati visoko stopnjo učinkovitosti. V nasprotju z našimi pričakovanji (hipoteza H4), interakcija med dejavnostmi trajnostnega razvoja in konkurenčnostjo ni statistično značilna.

Rezultati kažejo, da so organizacije, ki poslujejo v okolju z nizko stopnjo negotovosti, v večji meri usmerjene v inovativnost na področju trajnostnega razvoja organizacije, kar je v nasprotju z našimi pričakovanji (hipoteza H3). Ena izmed možnih razlag navaja, da organizacije, predvsem tiste, ki so tehnološko usmerjene, v okolju nizke stopnje negotovosti posvečajo pozornost radikalnim inovacijam, zlasti z namenom, da s svojimi novimi rešitvami in proaktivnim pristopom prehitijo konkurente na relativno stabilnem trgu (Sainio et al., 2012).

Nadalje, rezultati raziskave nakazujejo, da sta obe vrsti dejavnosti trajnostnega razvoja organizacije (SER in SEI) koristni pri doseganju učinkovitosti in uspešnosti organizacije, v okolju visoke stopnje negotovosti. Organizacije se torej na visoko stopnjo negotovosti v okolju kjer poslujejo, odzovejo s proaktivnim inovativno usmerjenim vedenjem ter s tendenco po stabilnem in učinkovitem poslovnem okolju. Organizacije morajo tako izkazovati visoko stopnjo učinkovitosti, predvsem z vidika odzivnosti glede pričakovanj in zahtev zainteresiranih udeležencev ter biti hkrati sposobne pri iskanju in uvajanju inovativnih rešitev s področja trajnostnega razvoja.

Z namenom oblikovanja homogenih skupin organizacij, katerih enote so razvrščene v skupine glede na spremenljivki konkurenčnost in negotovost, smo uporabili metodo za razvrščanje enot v skupine (ang. *cluster analysis*). V skupini, katere značilnosti so povezane z zmerno stopnjo konkurenčnosti in zmerno stopnjo negotovosti, so SEI tiste, ki prevladujejo v odnosu do učinkovitosti in uspešnosti organizacije. Kot kažejo rezultati, z naraščanjem stopnje konkurenčnosti, SER vplivajo na učinkovitost in uspešnost organizacije v večji meri kot SEI. Rezultati regresijske analize so pokazali, da znotraj skupine, kjer prevladuje visoka stopnja konkurenčnosti in hkrati visoka stopnja negotovosti, ni statistično značilnega vpliva dejavnosti trajnostnega razvoja organizacije na učinkovitost in uspešnost organizacije. Nadaljnja analiza je pokazala, da organizacije znotraj te skupine, izkazujejo visoke povprečne vrednosti izvajanja SEI (4,02) in SER (3,88). Rezultati posredno podpirajo ugotovitve avtorjev (He in Wong, 2004), ki navajata, da tenzija med dejavnostmi izkoriščanja (ang. *exploitation*) in dejavnostmi odkrivanja (ang. *exploration*) lahko postane neobvladljiva, ko je izvajanje obeh vrst dejavnosti potisnjeno do skrajnih meja.

Rezultati doktorske disertacije z vidika dolgoročne strateške usmerjenosti organizacije kot internega kontingenčnega dejavnika nakazujejo, da ob visoki stopnji dolgoročne strateške usmerjenosti organizacije, pri doseganju učinkovitosti in uspešnosti organizacije, prevladujejo inovativno usmerjene dejavnosti trajnostnega razvoja organizacije (SER). Znotraj pod-skupine organizacij, ki izkazujejo nizko stopnjo dolgoročne usmerjenosti, zlasti v kontekstu finančne in tržne uspešnosti, učinkovitosti na področju kakovosti in učinkovitosti na področju inovativnosti, prevladujejo SEI. Ugotovitve raziskave do neke mere podpirajo spoznanja iz literature s področja managementa kakovosti, ki kažejo na to, da so aktivnosti, ki jih organizacija izvaja, močno odvisne od njene strateške usmerjenosti (Sousa in Voss, 2001).

3.4 Institucionalni vidik: primerjava med državami vključenimi v raziskavo

Navkljub hitremu razvoju literature s področja trajnostnega razvoja organizacije, institucionalna teorija na navedenem področju še vedno ni široko raziskana. Kot navaja Campbell (2007), večina raziskav s področja družbene odgovornosti ni osredotočena na vprašanje ali institucionalni dejavniki vplivajo na težnjo organizacij po ravnanju, ki je v skladu z načeli družbene odgovornosti.

Z namenom prispevanja k razvoju literature na tem področju, smo v pričujoči doktorski disertaciji sledili naslednjemu raziskovalnemu vprašanju: *ali država izvora kot institucionalnega dejavnika, vpliva na povezavo med dejavnostmi trajnostnega razvoja organizacije in učinkovitostjo in uspešnostjo organizacije?*

Ugotovitve disertacije nakazujejo, da se organizacije glede na izvor države, razlikujejo v različnih vidikih, in sicer: (1) korelacijami med posameznimi dimenzijami učinkovitosti in uspešnosti organizacije; (2) doseženem nivoju učinkovitosti in uspešnosti; (3) nivoju izvajanja dejavnosti trajnostnega razvoja organizacije; (4) vplivu institucionalnega dejavnika (države izvora) na učinkovitosti in uspešnosti organizacije.

Analiza glavnih komponent (ang. *Principal Component Analysis – PCA*) je bila v kontekstu s grafov (ang. *biplots*), uporabljena z namenom grafične predstavitve ključnih značilnosti razlik med proučevanimi pod-sklopi podatkov (Slovenija, Srbija, Španija, Poljska in Nemčija).

Rezultati raziskave kažejo, da med proučevanimi državami obstajajo tako nekatere podobnosti med značilnostmi organizacij, kakor tudi razlike. Prva ugotovitev, ki izhaja iz vizualizacije biplotov kaže na to, da sta oba konstrukta dejavnosti trajnostnega razvoja organizacije (operacionalizirana kot SEI in SER) v vseh proučevanih pod-sklopih podatkov močno povezana (močna korelacija). Nadaljnje ugotovitve nakazujejo, da so dejavnosti trajnostnega razvoja organizacije v močni pozitivni korelaciji s finančno in tržno uspešnostjo znotraj pod-sklopa Španije in Poljske. Na podlagi bivariatne korelacije (Pearsonov koeficient korelacije), smo ugotovili statistično značilno povezanost med dejavnostmi trajnostnega razvoja organizacije in finančno in tržno uspešnostjo znotraj pod-sklopa Slovenije in Španije.

Kar zadeva korelacije z učinkovitostjo na področju kakovosti, izstopata pod-sklopa Srbije in Nemčije, kjer je na podlagi biplotov razvidna najmočnejša korelacija. Rezultati nakazujejo tudi precejšnjo povezanost med učinkovitostjo na področju

inovativnosti in finančno in tržno uspešnostjo. Slednje do neke mere podpira tudi ugotovitve mediacijske analize.

Z namenom ugotovitve razlik med izvajanjem dejavnosti trajnostnega razvoja med posameznimi državami, smo uporabili ANOVO. Rezultati ANOVE so pokazali, da obstaja statistično značilna razlika glede izvajanja SER, in sicer: med Slovenijo in Španijo, kakor tudi med pod-sklopoma Španije in Poljske.

Ugotovitve PCA in ANOVE so podale nekaj izhodiščnih značilnosti znotraj posameznih pod-sklopov. Podrobnejši vplivi institucionalnega dejavnika na učinkovitost in uspešnost organizacije so bili proučevani z regresijsko analizo. Uporabljena je bila multipla regresija s kategoričnimi spremenljivkami (binarnimi spremenljivkami, ki zavzamejo vrednosti 0 ali 1 – ang. *dummy variables*) (Field, 2005). Rezultati regresijskih analiz podajajo nekaj empiričnih dokazov, ki podpirajo predpostavko, da je vpliv dejavnosti trajnostnega razvoja na učinkovitost in uspešnost organizacije odvisen od institucionalnega dejavnika, kot je država izvora.

Na primer, vpliv dejavnosti trajnostnega razvoja na finančno in tržno uspešnost se poveča, v kolikor se država izvora spremeni iz Slovenije v Poljsko in pomanjša, v kolikor se spremeni iz Slovenije v Srbijo. Kot nakazujejo rezultati, Nemčija prevladuje v kontekstu vpliva države izvora na učinkovitost na področju kakovosti. V primerjavo s Slovenijo, je interakcija med SEI in Nemčijo negativna z ozirom na okoljsko in družbeno učinkovitostjo.

Rezultati raziskave so torej odkrili nekaj razlik med doseženim nivojem učinkovitosti in uspešnosti organizacije, upoštevajoč pod-sklope podatkov iz petih obravnavanih držav. Ena izmed možnih razlag navaja, da organizacije lahko učinkovito konkurirajo na različne načine (Zadek et al., 2003). Na primer, nekatere organizacije lahko investirajo v okolju prijazno tehnologijo, povečajo produktivnost z osredotočenostjo na zaposlene, znižajo stroške z razvijanjem dolgoročnih partnerstev z dobavitelji, ipd. (Zadek et al., 2003).
V kolikor povzamemo ključne ugotovitve raziskave, lahko argumentiramo, da obstaja nekaj empiričnih dokazov glede vpliva institucionalnega mehanizma na izvajanje dejavnosti trajnostnega razvoja in doseganja nivoja učinkovitosti in uspešnosti organizacije. S tem potrjujemo hipotezo H7, ki opredeljuje, da je vpliv dejavnosti trajnostnega razvoja na učinkovitosti in uspešnosti organizacije v odvisnosti od države izvora organizacije.

4 ZAKLJUČEK

V doktorski disertaciji smo proučevali trajnostni razvoj organizacije v kontekstu učinkovitosti in uspešnosti organizacije. Na proučevanem področju smo bolj ali manj priča teoretičnim in konceptualnim prispevkom, zelo malo pa je empiričnih raziskav, ki bi merile vpliv dejavnosti trajnostnega razvoja organizacije na celokupno učinkovitost in uspešnost organizacije. Zato je bil temeljni cilj doktorske disertacije s teoretično in metodološko osnovo oblikovati konceptualni model in ga empirično preveriti.

Izhajajoč iz teoretičnih predpostavk in dosedanjih empiričnih spoznanj, smo v okviru disertacije poizkušali konceptualizirati konstrukt trajnostnega razvoja organizacije. Konceptualni okvir, ki je predstavljen v drugem delu disertacije, je zgrajen na osnovi razumevanja interdisciplinarnega področja managementa kakovosti in trajnostnega razvoja organizacije. Osrednji del konceptualizacije dejavnosti trajnostnega razvoja organizacije temelji na dveh uveljavljenih konceptih, ki do sedaj še nista bila empirično preverjena na področju trajnostnega razvoja, in sicer: izkoriščanje (ang. *exploitation*) in odkrivanje (ang. *exploration*).

Pomemben metodološki prispevek disertacije je v operacionalizaciji konstruktov trajnostnega razvoja organizacije in učinkovitosti ter uspešnosti organizacije, ki služijo preverjanju raziskoval-nega modela. Empirična spoznanja predstavljajo pomemben prispevek v znanstveni literaturi in služijo kot izhodišče za nadaljnje raziskave na tem področju.

Ugotovitve doktorske disertacije potrjujejo dosedanja teoretična in empirična spoznanja, ki izpostavljajo pomembnost podpore in zavezanosti vodstva, vključitve vidikov trajnostnega razvoja v vizijo in strategijo, kakor tudi vzpostavitve ustrezne kulture v organizaciji, ki spodbuja načela trajnostnega razvoja. Slednje predstavlja pomemben teoretičen in praktičen prispevek k znanstveni in strokovni literaturi.

V luči teoretične razlage in empiričnega ocenjevanja, disertacija prispeva k večji jasnosti in boljšemu razumevanju povezav med dejavnostmi trajnostnega razvoja organizacije in dimenzijami učinkovitosti in uspešnosti organizacije, kot so to: finančna in tržna uspešnost, učinkovitost na področju kakovosti, učinkovitost na področju inovativnosti, okoljska učinkovitost, družbena učinkovitost.

V tem kontekstu je bila potrjena temeljna predpostavka, da izvajanje dejavnosti trajnostnega razvoja organizacije lahko izboljša učinkovitost in uspešnost organizacije ter istočasno zmanjša negativne vplive na okolje in širše družbene vidike.

Ugotovitve raziskave kažejo, da SEI v primerjavi s SER, prinašajo več koristi k finančni in tržni uspešnosti ter učinkovitosti na področju kakovosti, medtem ko SER v večji meri prispevajo k okoljski in družbeni učinkovitosti. Spodbudne so empirične ugotovitve, ki nakazujejo, da tako SEI kot tudi SER, v veliki meri prispevata k učinkovitosti na področju inovativnosti. V okviru raziskave smo tudi ugotovili, da je inovativnost statistično značilen mediator med dejavnostmi trajnostnega razvoja organizacije ter finančno in tržno uspešnostjo.

Pomemben prispevek doktorske disertacije se izkazuje tudi v proučevanju vloge kontingenčnih dejavnikov in institucionalnega dejavnika (države izvora organizacije) pri doseganju učinkovitosti in uspešnosti organizacije. Ugotovitve raziskave izpostavljajo dvom glede univerzalnosti dejavnosti trajnostnega razvoja organizacije. S tem disertacija prispeva k razumevanju načrtovanja in izvajanja dejavnosti trajnostnega razvoja organizacije na način, ki v največji meri prispeva k učinkovitost in uspešnost organizacije.

APPENDIX B – Descriptive statistics for sustainability practices

Question	Mean	Std. Error	Std. Deviation	95% Confidence Interval	
				Lower Bound	Upper Bound
q1.1	4.4692	0.05109	0.80296	4.3686	4.5699
q1.2	4.2362	0.05618	0.88301	4.1256	4.3469
q1.3	3.8540	0.06085	0.95641	3.7342	3.9739
q1.4	3.6026	0.08068	1.26804	3.4437	3.7616
q1.5	3.8370	0.06582	1.03443	3.7074	3.9667
q1.6	3.8051	0.06394	1.00496	3.6791	3.9310
q1.7	3.9864	0.06142	0.96522	3.8655	4.1074
q1.8	3.0824	0.07625	1.19842	2.9322	3.2326
q2.1	4.1838	0.05684	0.89337	4.0718	4.2958
q2.2	3.7909	0.07323	1.15083	3.6467	3.9351
q2.3	3.6030	0.06500	1.02158	3.4750	3.7311
q2.4	4.1502	0.06909	1.08579	4.0141	4.2863
q2.5	3.7455	0.06497	1.02102	3.6176	3.8735
q2.6	3.9310	0.06814	1.07097	3.7968	4.0652
q2.7	4.0881	0.05594	0.87913	3.9779	4.1982
q2.8	3.5648	0.07167	1.12644	3.4236	3.7060
q3.1	3.9012	0.06821	1.07206	3.7669	4.0356
q3.2	3.7516	0.06391	1.00447	3.6257	3.8775
q3.3	3.7911	0.06437	1.01172	3.6643	3.9179
q3.4	3.7597	0.06840	1.07494	3.6250	3.8944
q3.5	3.7913	0.07462	1.17273	3.6443	3.9383
q3.6	3.4443	0.07791	1.22441	3.2909	3.5978
q3.7	3.6591	0.07041	1.10659	3.5204	3.7978
q4.1	3.8794	0.07131	1.12066	3.7389	4.0198
q4.2	3.6636	0.07168	1.12660	3.5224	3.8048
q4.3	3.7057	0.06948	1.09190	3.5688	3.8425
q4.4	3.8221	0.06909	1.08591	3.6860	3.9582
q4.5	3.6291	0.06720	1.05609	3.4968	3.7615
q4.6	3.5713	0.06918	1.08722	3.4350	3.7075
q4.7	3.7787	0.07054	1.10863	3.6398	3.9177

APPENDIX C – Survey questionnaire (English version)

A SURVEY OF SUSTAINABILITY PRACTICES AND ORGANIZATIONAL PERFORMANCE

General Instructions and Information

- This survey is being conducted by the University of Maribor, Faculty of Organizational Sciences.
- This research will study the effect of sustainability practices on organizational performance.
- Please respond to the survey questions as completely as possible. We estimate it will take you about 10 to 15 minutes to complete the survey. Please provide your best estimate.
- If you would like to get a copy of the executive summary of results, please provide the information about request through the email address below.

World Business Council for Sustainable Development (WBCSD) defines sustainable development as forms of progress that meet the needs of the present without compromising the ability of future generations to meet their needs.

Corporate sustainability means integrating economic, ecological and social elements into its strategic and management decisions as well as into its products and services quality characteristics.

Thank you for your active participation in our survey.

If you have any questions, please contact:

Matjaž Maletič
University of Maribor
Faculty of Organizational Sciences
Kidričeva cesta 55a
SI-4000 Kranj
Phone: +386 4 237 4285
Fax: +386 4 237 4 299
Email: matjaz.maletic@fov.uni-mb.si

All RESPONSES WILL BE KEPT CONFIDENTIAL. DATA WILL BE USED FOR STATISTICAL ANALYSIS ONLY

SURVEY QUESTIONNAIRE

I. SUSTAINABILITY PRACTICES

To what extent does your company deploy the following practices? Please indicate your level of agreement with the following statements on a scale from 1 to 5, where 1 means totally disagree and 5 means totally agree.					
Stakeholder orientation					
q1.1: Our objectives and strategies are driven by Customer Focus	1	2	3	4	5
q1.2: We maintain interactive two-way communication with our customers	1	2	3	4	5
q1.3: We always respond to existing stakeholder issues in a regular/systematic way	1	2	3	4	5
q1.4: We have regular staff appraisal meetings in which we discuss employees' needs	1	2	3	4	5
q1.5: The organization constantly evaluates its external environment to uncover issues of importance to key stakeholders (customers, suppliers, local communities)	1	2	3	4	5
q1.6: The organization is constantly exploring new/different ways to understand the expectations and requirements of key stakeholders	1	2	3	4	5
q1.7: The organization involves key market stakeholders (customers, suppliers) early in the product/service design and development stage	1	2	3	4	5
q1.8: The organization involves key non-market stakeholders issues (such as local communities, general public, governments and NGOs) early in the product/service design and development stage	1	2	3	4	5
Process management					
q2.1: We continuously improve processes in order to improve resource efficiency	1	2	3	4	5
q2.2: We have established key performance indicators (KPIs) to determine if the organization is meeting sustainability goals	1	2	3	4	5
q2.3: We make use of appropriate tools and techniques to reduce the variability of key processes	1	2	3	4	5
q2.4: Health and safety preventive activities are an integral part of all processes	1	2	3	4	5
q2.5: Key processes and procedures are continuously assessed to discover new opportunities for environmentally friendly innovative improvements	1	2	3	4	5

q2.6: We acquire innovative environmental-friendly technologies and processes	1	2	3	4	5
q2.7: The business processes are flexible allowing us to achieve high levels of responsiveness towards key stakeholder needs and demands	1	2	3	4	5
q2.8: The organization undertakes regularly business process reengineering with a focus on green perspectives	1	2	3	4	5
Sustainability features of products/services					
q3.1: The organization integrates social aspects (e.g. health and safety aspects of employees and customers, fair operating practices) into product/service design	1	2	3	4	5
q3.2: We regularly make adjustments to existing products and services to reduce negative environmental and social impact	1	2	3	4	5
q3.3: The product/service development process is managed in a systematic way so that environmental improvement activities and responsibilities are planned and clearly defined	1	2	3	4	5
q3.4: Multiple departments (such as marketing, manufacturing, and purchasing) are working together on sustainability related initiatives	1	2	3	4	5
q3.5: We consider sustainability as an opportunity for product/service differentiation	1	2	3	4	5
q3.6: Preliminary market assessments are made to obtain customers' view of green product ideas	1	2	3	4	5
q3.7: The organization makes improvements to radically reduce environmental impacts of products and services' life-cycles	1	2	3	4	5
Learning orientation					
q4.1: Employee education and training is the integral part of our environmental protection activities	1	2	3	4	5
q4.2: The organization upgrades employees' current knowledge and skills based on examples of best practices in corporate social responsibility	1	2	3	4	5
q4.3: The organization continuously strengthens employees' knowledge and skills to improve efficiency of current sustainability practices	1	2	3	4	5
q4.4: We develop new competencies supporting innovation in the organization	1	2	3	4	5
q4.5: We continuously try to strengthen innovation skills in key areas where we have no prior experiences	1	2	3	4	5
q4.6: The organization is characterised by a learning culture stimulating innovation for sustainability	1	2	3	4	5

q4.7: We search for external sources (e.g. partners, customers, research institutions) of knowledge in our search for innovative ideas related to sustainability	1	2	3	4	5

II. IMPLEMENTATION ENABLERS

Please indicate your level of agreement with the following statements on a scale from 1 to 5, where 1 means totally disagree and 5 means totally agree.

Implementation enablers					
enab1: Top management clearly, which means adherence to the principles of social responsibility, supports the development of environmentally friendly products and services by recognizing	1	2	3	4	5
enab2: Top management recognizes the value of sustainability based on new market opportunities	1	2	3	4	5
enab3: The organization is characterized by a culture in which the principles of social responsibility (accountability, transparency, ethical behaviour) are practised	1	2	3	4	5
enab4: Sustainability concerns are an integral part of the strategic goal setting process	1	2	3	4	5
enab5: A shared vision of sustainability is developed	1	2	3	4	5
enab6: The organization has established annual plans to carry out sustainability related activities/ practices	1	2	3	4	5

III. CONTINGENCY FACTORS

Please indicate your level of agreement with the following statements on a scale from 1 to 5, where 1 means totally disagree and 5 means totally agree.

Uncertainty					
CONT1. The demand for our organization's products and services is unstable and difficult to predict	1	2	3	4	5
CONT2. Our organization must frequently improve its products and practices to keep up with competitors	1	2	3	4	5
CONT3. Products/services quickly become obsolete in our industry	1	2	3	4	5
Competitiveness					
CONT4. The organization is faced with high competitive pressures in global markets	1	2	3	4	5
CONT5. Competition in our local markets is intense	1	2	3	4	5

CONT6. Our local markets are characterized by a strong price competition	1	2	3	4	5
Long-Term Orientation					
CONT7. Strategies are planned with a focus on a long-term success	1	2	3	4	5
CONT8. Long-term performance is more critical than meeting this year's financial goals	1	2	3	4	5
CONT9. It is considered important to remain competitive for a long time	1	2	3	4	5
Proactiveness					
CONT10. We are constantly seeking new improvement opportunities related to our present operations	1	2	3	4	5
CONT11. We are usually the first to introduce new brands or products in the market	1	2	3	4	5
CONT12. It is difficult for our competitors to imitate our processes and products/services	1	2	3	4	5

IV. ORGANIZATIONAL PERFORMANCE

Please select the number (on a 5 point Likert scale) that accurately reflects the extent of your organization's overall performance over the last three years on each of the following.

Financial and market performance					
PERF1. Return on investment (ROI) has increased above industry average during the last 3 years	1	2	3	4	5
PERF2. Sales growth has increased above industry average during the last 3 years	1	2	3	4	5
PERF3. Profit growth rate has increased above industry average during the last 3 years	1	2	3	4	5
PERF4. Market share has increased during the last 3 years	1	2	3	4	5
Quality performance					
PERF5. The quality of our products and services has been improved during the last 3 years	1	2	3	4	5
PERF6. Customer satisfaction has increased during the last 3 years	1	2	3	4	5
PERF7. Customer complaints has decreased during the last 3 years	1	2	3	4	5
PERF8. The cost of poor quality has decreased during the last 3 years	1	2	3	4	5
Innovation performance					
PERF9. Our new products and services are perceived by our customers as innovative	1	2	3	4	5

PERF10. The organization has introduced more innovative products and services than our main competitors during the last 3 years	1	2	3	4	5
PERF11. The number of innovations that provide the organization with a sustainable competitive advantage has increased during the last 3 years	1	2	3	4	5
PERF12. The speed of adoption of new technology is faster than at our main competitors	1	2	3	4	5
Environmental performance					
PERF13. The efficiency of the consumption of raw materials has improved during the last 3 years	1	2	3	4	5
PERF14. The resource consumption (thermal energy, electricity, water) has decreased (e.g. per unit of income, per unit of production, …) during the last 3 years	1	2	3	4	5
PERF15. The percentage of recycled materials has increased during the last 3 years	1	2	3	4	5
PERF16. The waste ratio (e.g. kg per unit of product, kg per employee per year) has decreased during the last 3 years	1	2	3	4	5
Social performance					
PERF17. Health and safety performance has improved during the last 3 years	1	2	3	4	5
PERF18. The turnover ratio has decreased during the last 3 years	1	2	3	4	5
PERF19. The employees' satisfaction has increased during the last 3 years	1	2	3	4	5
PERF20. The employees' motivation has increased during the last 3 years	1	2	3	4	5
PERF21. Employee education and training (man-days per employee per year) have increased during the last 3 years	1	2	3	4	5

Number of employees in your company:

- 0-5
- 5-50
- 50-250
- 250-500
- over 500

Type of Industry:

A Agriculture, forestry and fishing
B Mining and Quarrying
C Manufacturing
D Electricity, Gas, Steam and Air Conditioning Supply

E Water Supply, Sewerage, Waste Management and Remediation Activities
F Construction
G Wholesale and retail trade
H Transport and Storage
I Accommodation and Food Service Activities
J Information and Communication
K Financial and Insurance Activities
S Other service activities
Other:_____

We have implemented the following standards, approaches, management systems, etc.:

ISO 9001
ISO/TS 16949
ISO 14001
OHSAS 18001
HACCP (ISO 22001)
ISO 27001
ISO 26000
TQM
EFQM (PRSPO)
Balanced Scorecard (BSC)
6 Sigma
20 Keys
Lean
Others (for example: SA 8000, GMP, …):

In which country are you located?:_____

Please mark your present job function: _____

THANK YOU VERY MUCH FOR YOUR VALUABLE TIME

PRILOGA D: Delovni življenjepis

Osebni podatki

Priimek	Maletič
Ime	Matjaž
Datum rojstva	25.4.1979
E-naslov	matjaz.maletic@fov.uni-mb.si

Izobraževanje

Obdobje	2009-2013
Izobraževanje	Doktorski študij
Institucija	Univerza v Mariboru, Fakulteta za organizacijske vede
Naslov doktorske disertacije	Influence of Sustainable Quality Management on Organisational Performance

Obdobje	2006-2009
Izobraževanje	Podiplomski znanstveni magistrski študij
Institucija	Univerza v Mariboru, Fakulteta za organizacijske vede

Obdobje	2003-2006
Izobraževanje	Dodiplomski univerzitetni študij
Institucija	Univerza v Mariboru, Fakulteta za organizacijske vede
Naslov diplomskega dela	Okoljski vidiki termične obdelave odpadkov

Obdobje	1998-2003
Izobraževanje	Dodiplomski visokošolski strokovni študij
Institucija	Univerza v Ljubljani, Biotehniška fakulteta
Naslov diplomskega dela	Organizacijski vidik ravnanja proizvodnje v podjetju Stol Ambienti d.o.o., Kamnik

Zaposlitev

Obdobje	2013 - trenutno
Organizacija	Univerza v Mariboru, Fakulteta za organizacijske vede
Delovno mesto	Asistent

Obdobje	2010-2013
Organizacija	Univerza v Mariboru, Fakulteta za organizacijske vede
Delovno mesto	Mladi raziskovalec

Obdobje	2007-2010
Organizacija	Univerza v Mariboru, Fakulteta za organizacijske vede
Delovno mesto	Asistent

Raziskovalno delo – šifra raziskovalca ARRS 29803

Raziskovalno delo Matjaža Maletiča je bilo tekom doktorskega študija usmerjeno v interdisciplinarno področje managementa kakovosti in trajnostnega razvoja organizacije.

Vključenost v programsko skupino (v obdobju od 2010 dalje):

- Raziskovalni program P5-0018: Sistemi za podporo v odločanju v elektronskem poslovanju.

Pomembnejše bibliografske enote

MALETIČ, Matjaž, MALETIČ, Damjan, DAHLGAARD, Jens J., DAHLGAARD-PARK, Su Mi, GOMIŠČEK, Boštjan. Sustainability exploration and sustainability exploitation: From a literature review towards a conceptual framework. Journal of Cleaner Production, 2014, doi: 10.1016/j.jclepro.2014.05.045.

MALETIČ, Damjan, MALETIČ, Matjaž, GOMIŠČEK, Boštjan. The impact of quality management orientation on maintenance performance. International Journal of Production Research, ISSN 0020-7543, 2014, vol. 52, no. 6, str. 1744-1754, doi: 10.1080/00207543.2013.848480. [COBISS.SI-ID 7231251],

MALETIČ, Damjan, MALETIČ, Matjaž, AL-NAJJAR, Basim, GOMIŠČEK, Boštjan. The role of maintenance in improving company's competitiveness and profitability: a case study in a textile company. Journal of manufacturing technology management, ISSN 1741-038X, 2014, vol. 25, no. 4, str. 441-456, doi: 10.1108/JMTM-04-2013-0033. [COBISS.SI-ID 7288851], [

MALETIČ, Matjaž, MALETIČ, Damjan, DAHLGAARD, Jens J., DAHLGAARD-PARK, Su Mi, GOMIŠČEK, Boštjan. The relationship between sustainability-oriented innovation practices and organizational performance : empirical evidence from Slovenian

organizations. Organizacija, ISSN 1318-5454, 2014, let. 47, št. 1, str. 3-13, tabele. http://organizacija.fov.uni-mb.si/index.php/organizacija/article/view/548/978, doi: 10.2478/orga-2014-0001. [COBISS.SI-ID 7259667]

MALETIČ, Damjan, MALETIČ, Matjaž, GOMIŠČEK, Boštjan. The role of quality management activities in achieving high performance of maintenance processes. International journal of strategic engineering asset management, ISSN 1759-9741, 2013, vOl. 1, no. 3, str. 253-264. http://www.inderscience.com/info/inarticle.php?artid=56325, doi: 10.1504/IJSEAM.2013.056325. [COBISS.SI-ID 7243027]

MALETIČ, Damjan, MALETIČ, Matjaž, GOMIŠČEK, Boštjan. The relationship between continuous improvement and maintenance performance. Journal of quality in maintenance engineering, ISSN 1355-2511, 2012, vol. 18, no. 1, str. 30-41, ilustr., doi: 10.1108/13552511211226175. [COBISS.SI-ID 7001363]

ZELNIK, Matej, MALETIČ, Matjaž, MALETIČ, Damjan, GOMIŠČEK, Boštjan. Quality management systems as a link between management and employees. Total quality management & business excellence, ISSN 1478-3363, 2012, vol. 23, no. 1, str. 45-62, tabele, doi: 10.1080/14783363.2011.637781. [COBISS.SI-ID 6979603]

MALETIČ, Matjaž, MALETIČ, Damjan, GOMIŠČEK, Boštjan. Can sustainable quality management contribute to the organizational performance?. African journal of business management, ISSN 1993-8233, 4. May 2011, vol. 5, 9, str. 3723-3734. http://www.academicjournals.org/ajbm/PDF/pdf2011/4May/Maletic%20et%20al.pdf. [COBISS.SI-ID 6851347]

MALETIČ, Matjaž, MALETIČ, Damjan, GOMIŠČEK, Boštjan. Green product development - customers and producers reflection. International journal of energy and environment, 2010, vol. 4, no. 4, str. 139-152. http://www.naun.org/journals/energyenvironment/19-513.pdf. [COBISS.SI-ID 6782995]

Mednarodne konference

- QMOD 2013, 2012, 2011, 2010
- WCEAM 2013
- EEESD 2012
- A-MEST 2012
- QIK 2011

- CET 2011
- MPMM 2011
- USCUDAR 2010
- SYMORG 2010

PRILOGA E: Izjava doktorskega kandidata

UNIVERZA V MARIBORU

FAKULTETA ZA ORGANIZACIJSKE VEDE KRANJ

IZJAVA DOKTORSKEGA KANDIDATA

Podpisani Matjaž Maletič, vpisna številka 4103484

izjavljam,

da je doktorska disertacija z naslovom »**Influence of Sustainable Quality Management on Organisational Performance**«

- rezultat lastnega raziskovalnega dela,
- da predložena disertacija v celoti ali v delih ni bila predložena za pridobitev kakršnekoli izobrazbe po študijskem programu druge fakultete ali univerze,
- da so rezultati korektno navedeni in
- da nisem kršil-a avtorskih pravic in intelektualne lastnine drugih.

Podpis doktorskega kandidata: